



**NLSS HD Decoder
(DC-400, DC-400-2, DC-500, DC-500-1)**

User Manual

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Preface

PURPOSE, SCOPE, AND AUDIENCE OF THIS DOCUMENT

This manual provides installation, configuration, and operation instructions for the NLSS HD Decoder.

Note: This manual covers operations for the NLSS HD Decoders: the NLSS DC- 400, DC-400-2, DC-500, and the DC-500-1. The DC-400-2 and the DC-500 can accommodate two HD monitors.

The DC-500-1 does not support a VGA monitor, and requires a minimum resolution of 720p for running an LCD monitor.

Unless otherwise specified, all instructions apply to all decoders.

The NLSS HD Decoder can be installed with NLSS Gateways, as part of a complete NLSS Unified Security Suite. A gateway can push video to the decoder. See the *NLSS Unified Security Suite: User Manual*, which is available on the [NLSS web site](#).

The NLSS HD Decoder also can be installed without NLSS Gateways as part of an independent video system.

This document also refers to the API of the NLSS HD Decoder. This API enables software developers to write third party applications that can communicate with the decoder. For details, see the *NLSS HD Decoder: API Reference Manual* which is also available on the [NLSS web site](#).

MORE INFORMATION

For more information about the NLSS HD Decoder, including release notes, a list of supported devices, and standalone product documents, see the Decoder Documentation page on the NLSS Support web site: support.nlss.com

This website includes a knowledgebase with articles about the decoder.

Chapter 1: Introduction

The NLSS HD Decoder is an open, HD decoder. The device can simultaneously decode up to four high definition (HD) or standard definition (SD) video streams, and display those streams in up to four panes. The NLSS DC 400-2, DC-500, and DC-500-1 HD Decoders can display video on two HD monitors or televisions.

The NLSS HD Decoder is primarily intended for viewing live security cameras, but it is also suitable for other video applications.

- The decoder can independently display a variety of video sources.
- The decoder can be incorporated into an NLSS security system with NLSS Gateways. See the *NLSS Unified Security Suite User Manual* for instructions on operating a decoder with an NLSS Gateway.

The NLSS HD Decoder is configured and operated via NLSS Web Interface. The interface can be accessed from most browsers via a networked computer, or a mobile device with a Flash-enabled browser.

The decoder can be operated using a remote control with an on-screen interface displayed on a monitor attached to the decoder.

The decoder can be integrated with third party applications via the NLSS Decoder API.

1.1 KEY FEATURES

- Decodes live video streams from IP cameras, as well as other video encoders that use the RTSP, RTMP, and HTTP protocols.
- Decodes video streams from local files on the decoder's hard drive, in support of digital signage.
- Decodes up to four simultaneous HD or SD streams using any of these codecs:
 - Video codecs: H.264, MJPEG, MPEG4
 - Audio codecs: AAC, G.711, G.726
- The DC-500, DC-500-1, and the DC-400-2 support Dual Monitor Mode.
A decoded stream (at 1080p resolution) is output to two HD displays via an HDMI and a DVI-D cable.
The DC-400 outputs a stream to a single HD display via an HDMI port.
- This output stream can include one to four simultaneous input streams in pane configurations of 1x1, 1x2, 2x2, 3x3, and 4x4. The decoder maintains the aspect ratios of source streams.

- Supports the creation and display of custom channels, views, and sequences.
- Can be integrated with third party systems via the NLSS HD Decoder API, as documented in the *NLSS HD Decoder API Reference Manual*.
- Comes with the NLSS Discovery Utility, which automatically discovers all NLSS devices on the same LAN.
- The DC-500, and DC-500-1 includes a 500 GB hard disk drive for local storage of content
 - The DC-400 and DC-400-2 include a 250 GB hard disk drive.
- Can be configured and operated from most browsers:
 - The following browsers are able to display the NLSS Web Interface: FireFox (20.0+, Windows and Max OS X only), Internet Explorer (8.0+), Chrome, and Safari (3.0+).
 - The Flash 11.2 or later plug-in must be installed in your browser.

Note: The computer must be able to ping the decoder to access it.

- Can be operated from a remote control. A remote control with batteries is included with the DC-400-2, and is optional for the DC-400, DC-500, and DC-500-1.

1.2 EXAMPLE USE CASES

1.2.1 Retail Store

Retail stores and banks, for example, can display live video from public view security cameras, as a way of informing patrons that they are being recorded for security purposes.

1.2.2 Medium Sized Business

Medium size businesses such as resorts, casinos, and commercial construction sites can use the NLSS HD Decoder to monitor numerous cameras and access doors throughout their properties.

1.2.3 Digital Signage

The NLSS HD Decoder can display local media files (such as an animated logo or commercial), as well as RTSP streams for video sources outside the decoder itself.

Chapter 2: Installation

2.1 PACKING LIST

- DC-400-2, DC-500, or DC-500-1 Decoder
- Power supply; U.S. and EU power cords
- Remote Control and batteries (DC-400-2 only)
- Stand and VESA mount
- NLSS Discovery Utility (CD)
- *NLSS HD Decoder: Quick Start Guide*

2.2 SYSTEM REQUIREMENTS

For details on cameras, displays, file types, and codecs supported by the current version of the NLSS HD Decoder, see the *Supported Device List*. To find the current list, search for *Supported Device List* in the **Support > Knowledge Base** page of the NLSS web site: support.nlss.com

- **Network:** The NLSS HD Decoder requires a 100/1000 Mb Ethernet connection.
- **Display:** The NLSS HD Decoder can be attached to any monitor or television that has DVI-D or HDMI inputs.
- **Cameras and Discovery Protocols:** To be auto-discovered by the NLSS HD Decoder, IP cameras must be on the same sub-network and use one of the following discovery protocols:
 - Arecont
 - Axis
 - Bonjour Zero Config
 - Panasonic
 - Pelco
 - Sony
 - UPnP
- **Computer with Web Browser:** The interface can be accessed via a browser running on Windows, Linux, Macintosh or Android-based operating systems.

To access the web interface, a computer with a supported browser is required: Firefox (3.0 or above), Safari (3.0 or above), Internet Explorer (8.0 or above), Chrome (16.0) or above.

The computer must be able to ping the decoder to access it.

2.3 INSTALLATION

Complete the instructions the following order to install the NLSS HD Decoder:

- [Install the Security Certificate](#)
- [Install Cameras](#)
- [Install NLSS HD Decoder](#)

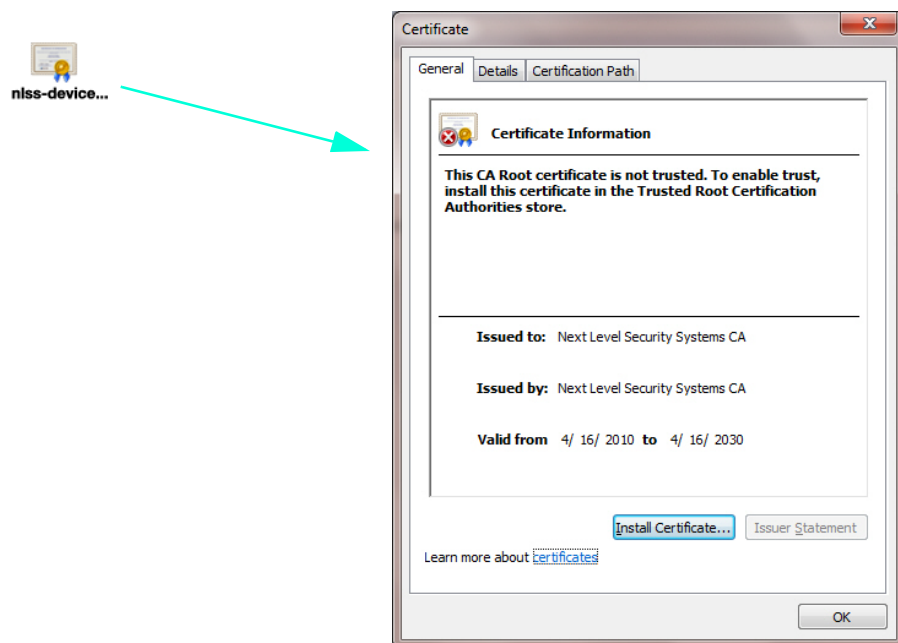
2.3.1 Install the Security Certificate

The NLSS HD Decoder uses the HTTPS protocol for security purposes. The NLSS CA certificate must be installed for your browser.

The following instructions only cover installation of the NLSS CA certificate for Internet Explorer (8.0 or above).

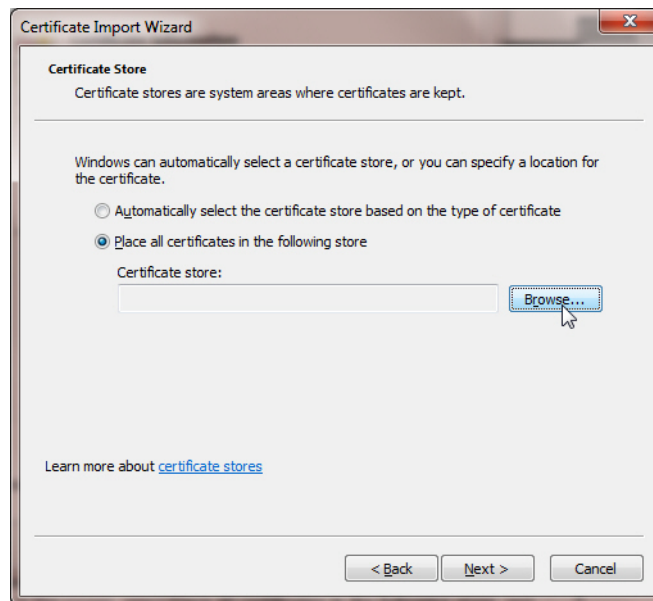
For other browsers, consult the browser's help for instructions on manually installing a CA certificate.

1. Open Internet Explorer.
2. Navigate to the Downloads page of the NLSS Support web site, support.nlss.com, to download NLSS CA certificates.
3. Click [Download NLSS Certificate](#).
4. Save the certificate file to your desktop.
5. Double-click the certificate file to open the Certificate dialog.

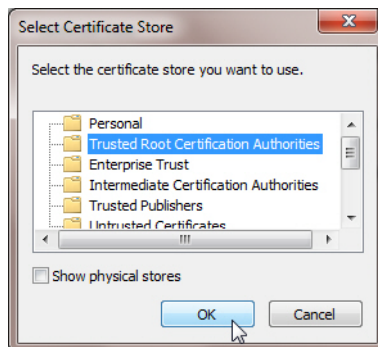


6. In the General tab of the Certificate dialog, select **Install Certificate**. The Certificate Import Wizard opens.
7. Click **Next** to display the Certificate Store dialog.

8. Select **Place all certificates in the following store.**

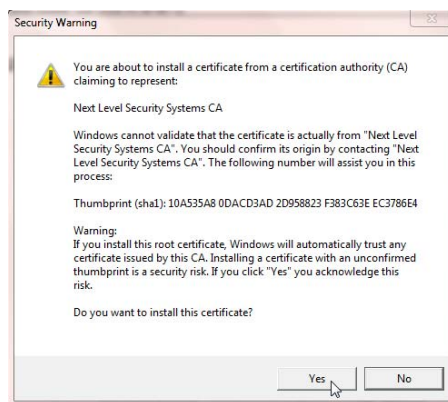


9. Click **Browse** to display the Select Certificate Store dialog. A list of certificate stores is displayed.
10. Select **Trusted Root Certificate Authorities**.
11. Click **OK**. The list is closed.



12. In the Certificate Store dialog, click **Next**.
13. Click **Finish** to close the Wizard.

14. If a Security Warning page displayed, click **Yes** to complete the Certificate installation.



2.3.2 Install Cameras

For ease of discovery, ensure the IP cameras are installed on the network and powered up before installing the NLSS HD Decoder on the same network.

Note: For best results, use the same password for all cameras that the decoder will discover. These settings are set changed locally at the camera, and then entered in the decoder to provide access. See [Set Global User Names and Passwords](#) for more information.

2.3.3 Install NLSS HD Decoder

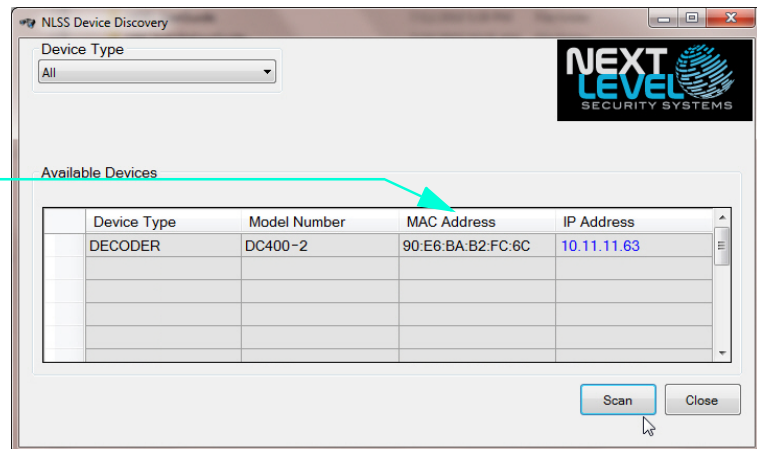
1. Using an HDMI or DVI-D cable, connect the NLSS HD Decoder to the HDMI or DVI-D port of a 1080p monitor.
 - Use the other video port to connect a second monitor to the NLSS HD DC-500, DC-500-1, or DC-400-2 Decoder.
2. Connect the NLSS HD Decoder to the network shared by your IP cameras.
3. Plug the power adapter into the NLSS HD Decoder and then into an AC outlet.
4. Turn on the decoder using the power switch on the front of the device.
5. Insert the supplied NLSS Discovery Utility CD into the disc drive of a computer *on the same network* as the Decoder.

Important: The NLSS Discovery Utility requires Windows, XP or a later, with Microsoft .NET 2.0 or above installed.

6. Copy the *Utility* file from the CD to the computer's hard drive.
7. Run the Utility. The Utility lists all the NLSS HD Decoders it discovers.
8. In the *Utility* screen, click **Scan** to find the NLSS HD Decoders on your network.

The Utility scans your network and finds all physically attached decoders. In the Utility list of discovered decoders, note the MAC address of the target decoder.

Locate your Decoder and note its MAC address



9. Enter the decoder's MAC address in your browser:

<https://nlss-dc400-macaddress.local>

where *macaddress* is the MAC address of the target decoder. The MAC address is found on a label on the Decoder.

For example, if the MAC address of the decoder is 90:E6:BA:B2:F7:C8, then the following URL is entered, with the colons removed from the MAC address:

<https://nlss-dc400-90e6bab2f7c8.local>

Note: The scan results of the NLSS Discovery Utility provides both the IP and MAC addresses of the decoder. The IP address can be used to navigate to the decoder, but some issues can occur:

- » If the NLSS CA certificate is not properly installed, a certificate error is displayed. If so, bypass the error and continue to the decoder.
- » If the decoder is installed on a network using DHCP, the IP address may change without warning. A bookmark to the decoder using an IP address becomes invalid. A static IP address can be set instead of DHCP. Verify the IP address configuration with the Network Administrator.

Since the decoder's MAC address does not change, bookmarking the URL with the MAC address is the recommended method.

10. Accept requests to install plug-ins and other options, if any.

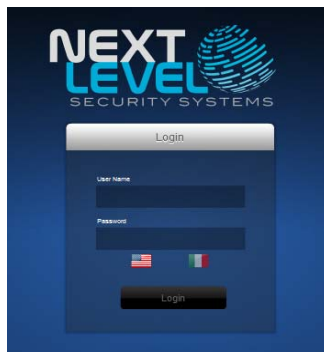
- Bypass certificate errors, if any.

Note: After the decoder is installed, any computer with Internet access can access the decoder via the web interface.

- » The computer must be able to see the decoder. Ping the IP address of the decoder from the computer to verify connectivity. In many networks, connectivity requires that the computer and decoder be on the same network
- » The computer must have a supported browser installed.

A specific operating system is not required to use the web interface, only a supported browser.

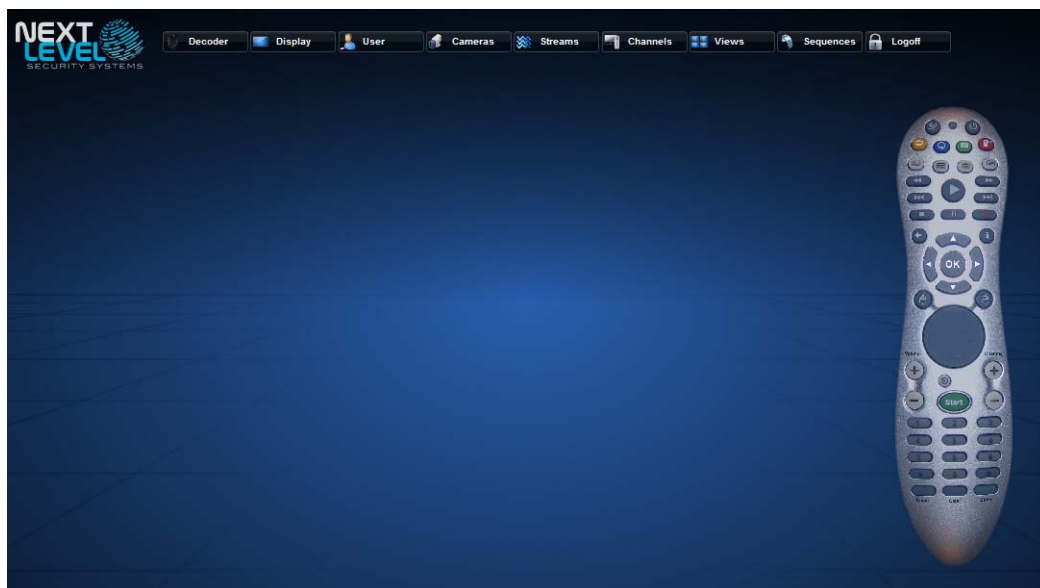
The decoder's NLSS Web Interface login screen is displayed.



11. Log into the NLSS HD Decoder using the default username and password:

- **User Name: superuser**
- **Pass: superuser**

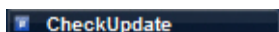
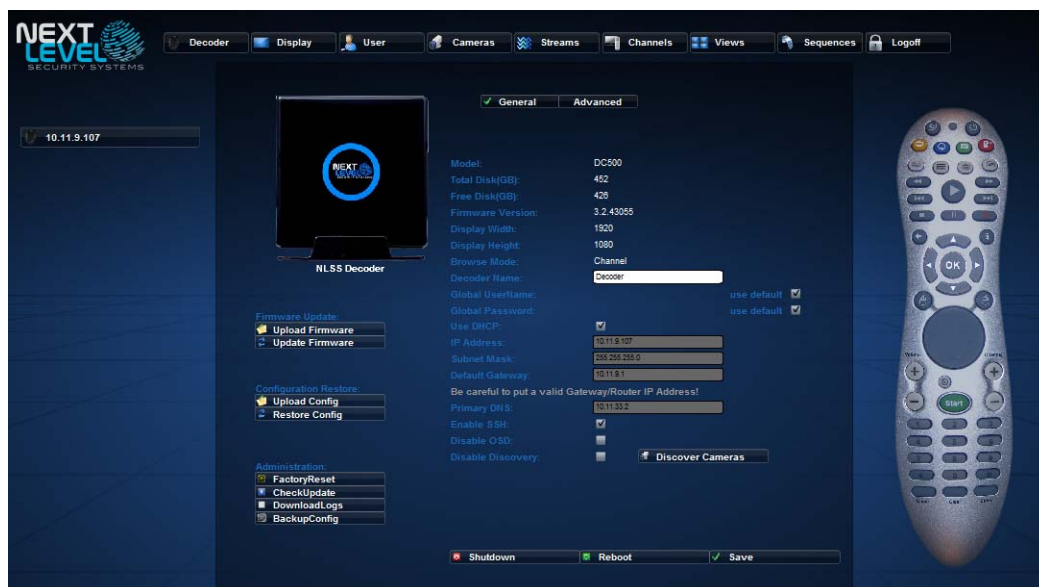
A blank NLSS Decoder Web Interface home page is displayed. The options are selected using the menu at the top of the page, and the remote on the right.



12. After logging into the NLSS HD Decoder for the first time:

- a. Customize the default passwords for the Superuser, Admin, and Operator. See [Configure and Manage Users](#) for instructions.
- b. Select **Decoder** in the Main Menu to display the Decoder page.
The **General** tab is displayed.

Important: If the network is not using DHCP, then a *link-local* address is assigned to the decoder (169.254.x.x) when it is connected to the network. A static IP address must be entered in the **IP Address** field for the Decoder to communicate outside the local network.



- c. Click **Check Update**, under **Administration**, to inquire if new firmware is available for the decoder.
If an update is available, update the firmware to the latest version. See [Upload and Update Firmware](#) for instructions.
- d. Set the **Global Password** to match the global password, if one has been set for all of the cameras. See [Set Global User Names and Passwords](#) for instructions.
- e. Click **Advanced** to open the **Advanced** tab.
- f. Set the time and date. Time can either be set manually, or via an NTP server.
 - » **NTP**: check this box to set the time using an NTP server.
 - » **NTP Server**: enter the URL or IP address of the NTP server that the decoder will use. Check with the network administrator for this address.
 - » **Timezone**: select the timezone in which the decoder is located. This field must be set whether setting the time via an NTP server or manually.
 - » **Date**: if NTP is not selected, manually set the time using the *MM/DD/YYYY* format.
 - » **Time**: if NTP is not selected, use the 24 hour clock for setting in the *HH:MM:SS* format. For example, instead of entering 2:00:00 pm, enter 14:00:00.

After completing the installation, the decoder can be configured and placed into operation:

- Discover all compatible cameras on the network.
- List these cameras in the Cameras menu of the NLSS Web Interface.
- Create a separate channel for each camera the decoder can read, and create a 1x1 View for each Channel.
- Create one channel containing the NLSS logo video, and display this Channel on an attached monitor.

WARRANTY REGISTRATION

Thank you for purchasing the NLSS HD Decoder.

In order to activate the warranty for the new Decoder, the device must be registered by going to <https://support.nlss.com>, and clicking the [Warranty Info/Registration](#) link.

For customer support:

- Send an email to: support@nlss.com
- -or-
- Call 760-444-1410, and select option 2.

Chapter 3: Configuration and Operation via a Browser

After installing the NLSS HD Decoder, use a supported web browser to configure and operate the device.

See [Key Features](#) for a list of supported browsers.

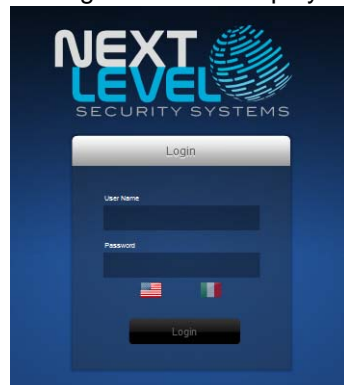
3.1 LOGGING IN

These log in instructions presume installation is complete.

Note: If this is the first time the NLSS HD Decoder is being accessed via the NLSS Web Interface, refer to [Installation](#) for the steps to complete installation.

1. Enter the decoder's URL in a supported browser. This URL can use either the decoder's MAC address or numerical IP address. See [Install NLSS HD Decoder](#).

The login screen is displayed for the decoder's NLSS Web Interface.



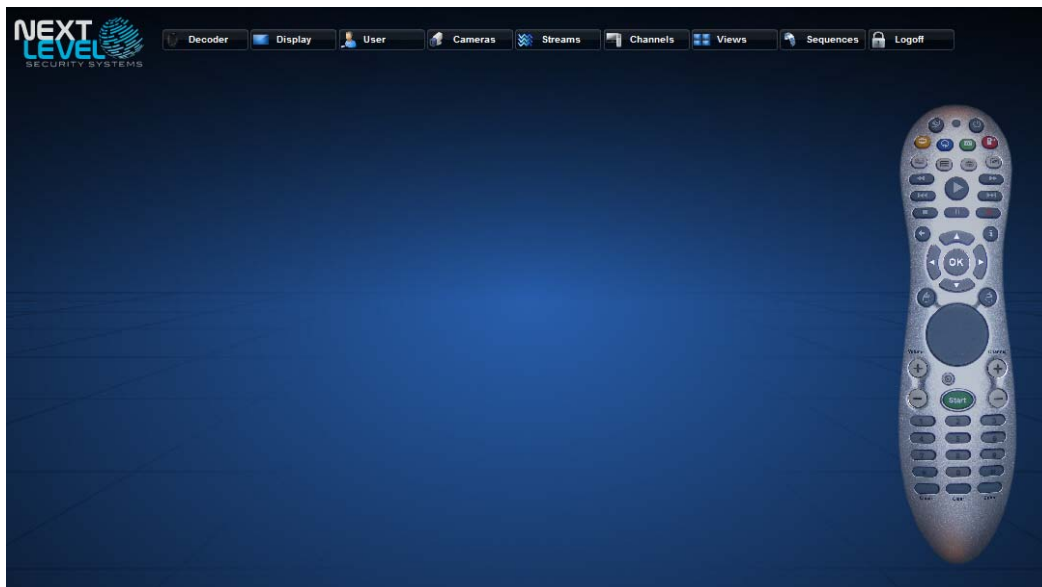
Note: If the login screen is not displayed, verify the correct MAC address or IP address is entered in the URL. See [Install NLSS HD Decoder](#) for instructions on running the NLSS Scan Utility to discover the decoder's IP and MAC addresses.

If the URL is correct, ping the decoder to ensure network visibility.

2. In the NLSS Web Interface login screen, access the NLSS HD Decoder using a configured user name and password. If the default user names and passwords have not been changed, use the following:
 - **User Name:** superuser
 - **Password:** superuser

3.2 ABOUT THE NLSS WEB INTERFACE

After you log in, the decoder's Main Menu is displayed with configuration and operations options.



Note: The decoder also can be operated from the remote control. See the remote control diagrams in [Remote Control Operation](#) in [Chapter 4: Operation with Peripheral Controls](#) for more information.

The NLSS Web Interface provides a series of menus:

- **Decoder:** Provides hardware-related options for this NLSS HD Decoder. See [Configure the Decoder](#) for more information.
- **Display:** shows the current feed that has been Set Active in the decoder. See [Display](#) for more information.
- **User:** Lists the authorized users of this decoder. These users can be managed from this pane. See [Configure and Manage Users](#) for instructions.
- **Cameras:** Lists all IP cameras discovered on the LAN, and allows some configuration. See [Configure and Manage Cameras](#) for instructions.
- **Streams:** Lists all the non-camera video streams that have been configured on this decoder. Streams can be added, removed, and configured from this pane. See [Configure and Manage Streams](#) for instructions.
- **Channels:** Lists all the channels configured for this decoder. Channels can be added, removed, configured, and displayed from this screen. See [Configure and Display Channels](#) for instructions.
- **Views:** Lists all the views configured for this decoder. Views can be added, removed, configured, and displayed from this screen. See [Configure and Display Views](#) for instructions.

- **Sequences:** Lists all the sequences configured for this decoder. Sequences can be added, removed, configured, and displayed from this screen. See [Configure and Display Sequences](#) for instructions.
- **Logoff:** Ends the NLSS Web Interface session with this decoder. The decoder can be controlled with the remote control after a user has logged off. See [Remote Control Operation](#) for instructions.

3.2.1 Search

With the exceptions of the Decoder, Display, and Logoff menus, all menus include a **Search** field.



In any menu with a search field, entering a text expression in the search field filters out all items in the list with names that do *not* contain your expression.

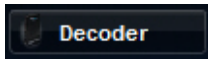
Example:

If the names of all cameras on the second floor of the North Tower include the unique term *NT_Floor2*, then searching for this term in the Cameras menu updates the list of cameras to show *only* those on the 2nd floor of the North Tower.

Search provides filtering to simplify navigation of a list in an extensive system containing hundreds of cameras. This feature is especially useful if each camera is configured according to a naming convention that identifies its location, type, etc.

3.3 CONFIGURE THE DECODER

Each NLSS HD Decoder can be configured the Decoder page in the NLSS Web Interface session.



- Click **Decoder** from the Main Menu to display the decoder configuration options and parameters.



The Decoder page is displayed with two tabs: **General** and **Advanced**.

Three buttons are available on both tabs: **Shutdown**, **Reboot**, **Save**.



3.3.1 Reboot

If the decoder needs to be rebooted, those actions can be done from the Decoder page.



- Click **Decoder** in the Main Menu.



- Click **Reboot**.

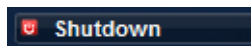
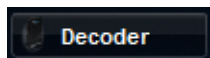
The decoder reboots after confirmation. A status message is displayed in the lower left corner denoting that the decoder is being rebooted.



Important: If any parameters are changed on the Decoder page and a reboot is needed, a prompt is displayed to immediately reboot the decoder after **Save** is clicked. A manual reboot is not needed. A reboot is needed when these settings are changed: IP Address/DHCP, Dual Monitor (DC_400-2 only), or Orientation.

3.3.2 Shut Down

If the decoder needs to be shut down, use the Web Interface to properly power off the unit.



1. Click **Decoder** in the Main Menu.
2. Click **Shut Down**.

The decoder reboots or shuts down after confirmation.

Important: Do not use the power button on the decoder or a remote to shut down the unit.

3.3.3 General Tab

When **Decoder** is selected in the Decoder menu, options and a list of parameters are displayed. Some fields are read-only, while others can be edited.



- If a parameter is changed, click **Save** to keep your changes.

Important: The decoder *reboots* automatically, a confirmation warning is accepted.

- **Model:** This decoder model.
- **Total Disk (GB):** The total space (used and free) of the hard drive of the decoder.
- **Free Disk (GB):** The free disk space on the hard drive of the decoder.
- **Firmware Version:** The version number of the currently installed firmware.
- **Display Width:** The width (in pixels) of the display for the output stream. The default setting is 1920 pixels.
- **Display Height:** The height (in pixels) of the display for the output stream. The default setting is 1080 pixels.
- **Browse Mode:** shows the current output for the Decoder: Channel, View, or Sequence.
- **Decoder Name:** An editable name assigned this decoder.
- **Global User Name/Password:** If **use default** is checked, the decoder connects to the IP cameras using the camera's factory default user name and password. See [Appendix A: Camera and Video Support Specifications](#) for more information.
If the factory default user name or password has been changed on a camera, complete one of the following steps to allow the decoder to connect to the camera:
 - Select a custom override for this specific camera. See [Customize the Camera's User Name and Password](#) for instructions.
 - Configure all source cameras to use the same username and/or password. See [Set Global User Names and Passwords](#) for instructions.
- **Use DHCP:** Checked if DHCP is used to provide an IP address to the decoder.
- **IP Address:** If DHCP is disabled, the decoder's static Internet address is entered.
- **Subnet Mask:** If DHCP is disabled, the subnet mask is entered for selected decoder.

- **Default Gateway:** If DHCP must be disabled, the IP address is entered for the network gateway or router.

Note: The Default Gateway is a network device, not an NLSS Gateway.

- **Primary DNS:** If DHCP must be disabled, this field sets the IP address for the network's DNS server.
- **Enable SSH:** When SSH is enabled, qualified technical support staff can remotely access and troubleshoot the decoder using its SSH username and password. When finished, SSH can be disabled to prevent further access.

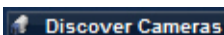
Note: Only superusers have permission to enable SSH.

When SSH is disabled, no one can log into the decoder via SSH, even if the correct SSH user name and password are entered.

- **Disable OSD:** If left unchecked, information on a video stream is displayed as an On-Screen Display overlay for a few seconds whenever a channel is switched. This field is unchecked by default.
If checked, the On-Screen Display information is not displayed.
- **Disable Discovery:** If checked, the decoder cannot discover any cameras when it is restarted.

Note: If the decoder discovered cameras before **Disable Discovery** was checked, any or all of these cameras can be deleted via the Cameras Menu. Those cameras are *not* re-discovered as long as Disable Discovery remains selected.

When a decoder is rebooted, camera discovery runs if Disable Discovery is not checked.



- **Discover Cameras:** Click **Discover Cameras** to locate the supported cameras on the same network as the decoder. This option is not impacted if Disable Discovery is selected.
- **Dual Monitor Mode:** This mode applies only to the DC-500 and the DC-400-2.
Two monitors can be attached to the decoder, one to the HDMI port, and one to the DVI-D port. The arrangement of the display can be configured with two monitors attached to the decoder. The drop-down menu provides five options.
 - **Single Monitor:** one monitor is attached to the decoder, using either the HDMI or the DVI-D port.
 - **Dual Horizontal:** the current view is spread across two monitors that are installed in a side-by-side configuration.
 - **Dual Horizontal Swap:** exchanges the streams between side-by-side monitors.
 - **Dual Vertical:** the current view is spread across two monitors that are installed with one monitor above the other.
 - **Dual Vertical Swap:** exchanges the streams between monitors that are installed with one monitor above the other.
 - **Clone:** sends the same view to both monitors.

3.3.3.1 EDITING FIELDS

- [Change the Name of the Decoder](#)
- [Set Global User Names and Passwords](#)
- [Customize Network Settings](#)

3.3.3.1.1 Change the Name of the Decoder

1. Enter a new name in the **Decoder Name** field on the Decoder page.



2. Click **Save** to record your changes.

3.3.3.1.2 Set Global User Names and Passwords

The decoder locates the IP cameras on the network the first time it runs. The decoder can access the output of these cameras' only if the decoder has the correct user names and passwords to access the cameras.

Note: If any camera uses unsupported drivers or codecs, then the decoder can connect to these cameras by treating them as remote RTSP streams rather than cameras. See [Convert a Camera to a Stream](#) for instructions.

Each manufacturer generally uses the same user name and password for their entire line of cameras.

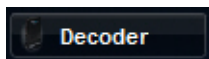
If the factory default user names and passwords have been changed on any cameras, then the decoder cannot access their configurations or video streams, even though it detects the camera on the network.

The cameras can be configured to use custom user names and/or passwords that override global values. See [Customize the Camera's User Name and Password](#) for instructions.

Another option is to configure all cameras to use the same global user name and/or password.

Important: The global user name and password overwrite the individual camera passwords. Configure global settings before configuring individual camera settings.

1. Manually configure the camera hardware to use the same user name and password.
2. Open the *Decoder* page in NLSS Decoder Web Interface.
3. De-select **Use Default** for the **Global User Name** parameter.
4. Enter the new user name from Step 1 in the **Global User Name** field.



Global UserName:	<input type="text" value="RobsCustomPass"/>	use default <input type="checkbox"/>
Global Password:	<input type="password" value="*****"/>	use default <input type="checkbox"/>

Note: Depending on the installation, a custom global user name can be used with a factory default password, or vice versa.

5. Repeat Step 5 for the **Global Password** parameter.



6. Click **Save** to keep the changes.

3.3.3.1.3 Customize Network Settings

The IP Address, Subnet Mask, Default Gateway, and Primary DNS are configured automatically when DHCP is enabled.

If DHCP is disabled, then these parameters must be manually entered. The network administrator can provide these parameters.

Note: The Default Gateway is the gateway for the network, not an NLSS Gateway.

3.3.3.2 CHANGING DECODER SETTINGS

Besides the fields, the Decoder page also contains a series of options for updating, backing up, and restoring the decoder:

Firmware Update

- [Upload and Update Firmware](#)

Configuration Restore

- [Upload Config and Restore Config](#)

Administration

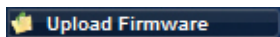
- [Factory Reset](#)
- [Check Update](#)
- [Download Logs](#)
- [Backup Config](#)

3.3.3.2.1 Upload and Update Firmware

The decoder's firmware can be updated manually. Firmware updates can be downloaded to a separate machine and manually applied to the decoder.

Note: To automatically update the decoder use [Check Update](#).

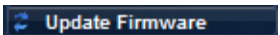
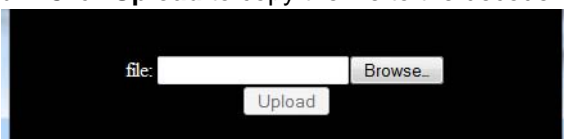
1. Contact an NLSS authorized representative to get the latest decoder firmware file.
2. Copy the decoder firmware file to a drive on the same network as the decoder.
3. Open the *Decoder* page in NLSS Decoder Web Interface.



4. Click **Upload Firmware** under Firmware Update.

The File Upload dialog is displayed.

- a. Click **Browse** to locate the new firmware file.
- b. Click **Upload** to copy the file to the decoder.

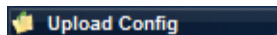


5. Click **Update Firmware** to install the new firmware using the local firmware file just uploaded to the decoder.
6. Click **Yes** in the confirmation pop-up.

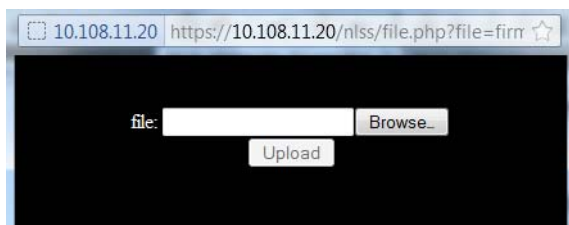
3.3.3.2.2 Upload Config and Restore Config

If a Decoder is replaced or a Factory Reset is run, configuration settings can be restored using the *config.zip* file created in [Backup Config](#).

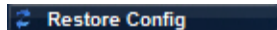
First, upload the *config.zip* file created in [Backup Config](#), then restore the configuration from these settings.



1. Click **Upload Config** under Configuration Restore in the Decoder page.



2. **Browse** to the *config.zip* file using the file upload dialog.
3. Click **Upload** to load the configuration backup file to the decoder.



4. Click **Restore Config**.
5. Click **Yes** in the confirmation pop-up.

Important: Any configuration changes made since the *config.zip* file was created are overwritten.

6. Click **Yes** in the confirmation pop-up to allow the decoder to reboot and apply the changes.

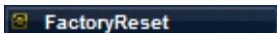
3.3.3.2.3 Factory Reset

The NLSS HD Decoder can be restored to its factory state. The **Factory Reset** option deletes all files and configurations that the decoder recorded since it left the factory.

Note: Firmware updates applied since the decoder was installed are kept.

Important: After doing a Factory Reset, the decoder must be installed on the network as though it was being installed for the first time. See [Install NLSS HD Decoder](#) for instructions.

To restore a decoder to its factory state:

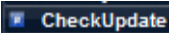


1. Click **Factory Reset** under Administration on the Decoder page.
2. Click **Yes** in the confirmation pop-up.

The decoder is rebooted during the reset process.

3.3.3.2.4 Check Update

Check Update checks with NLSS for a newer version of the firmware, and automatically downloads it, if a newer version is available.



- Click **Check Update** under Administration on the Decoder page.

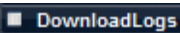
This option automatically updates the decoder's firmware.

Note: If a newer version of the firmware is not available, then Check Update exits without make changes.

If new firmware is available, it is installed after confirming the update. The decoder automatically reboots after the installation is complete. This process may take a few minutes.

3.3.3.2.5 Download Logs

When contacting NLSS or its authorized representatives for support, a technician might request the decoder's logs to help with troubleshooting.



1. Select **Download Logs** in the Decoder page's Administration button list.
2. Select **Save File** when prompted to open the *logs* file.

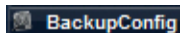
A zipped *logs* folder is saved to the *Downloads* directory for the browser. The folder contains a series of text and log files. Each time a System Log is created, a new file is created with the name of: ***logs.zip***.

3. The file can be sent to the support technician via e-mail, FTP, etc.

3.3.3.2.6 Backup Config

Configurations of cameras, streams, views, and other items can be backed up on the NLSS HD Decoder.

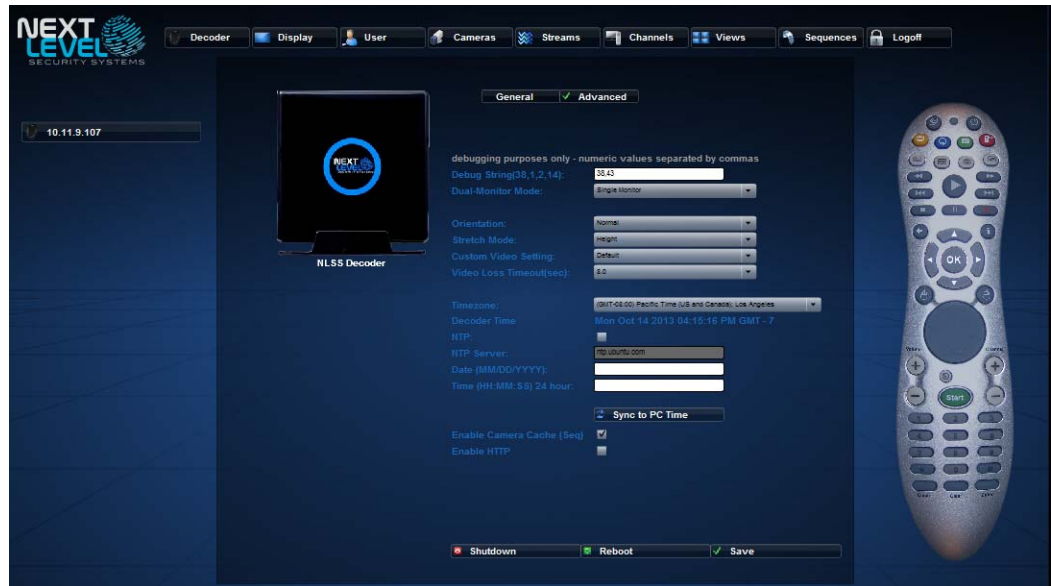
A backup is also needed before running a **Factory Reset**, or **Upload Config and Restore Config**.



1. Click **Backup Config** in the Decoder page's Administration button list.
A dialog requests a location to save the *config.zip* file containing the configurations.
2. Save the *config.zip* file to the desired location.

3.3.4 Advanced Tab

The Advanced tab provides additional configuration settings available.



- **Debug String:** used by technicians and support personnel to determine the cause of a problem.
- **Orientation:** from the drop-down menu, select an orientation for the monitor attached to the decoder. The correct orientation is when *up* in the video stream corresponds to the physical top of your monitor in its intended position:
 - **Normal:** for monitors positioned horizontally, with no rotation.
 - **Rotate Right:** for monitors rotated counterclockwise into a vertical position. When the monitor is rotated left, the video stream is rotated right to compensate.
 - **Rotate Left:** for monitors rotated clockwise into a vertical position. When the monitor is rotated right, the video stream is rotated left to compensate.
 - **Flip:** for monitors rotated 180-degrees.
- **Stretch Mode:** adjusts the height of the video in the display to fill the screen.
- **Custom Video Settings:** identify the type of monitor attached to the decoder. By default, the decoder detects the type of monitor. If it does not detect the monitor, select a model from the drop-down list.
- **Video Loss Timeout (sec):** the length of time the decoder waits before indicating a signal is lost, from 0.5 to 8 seconds.
- **NTP:** check this box to set the time on the decoder using an NTP server.
- **NTP Server:** URL or IP address of the NTP server from which the decoder gets its time setting. Check with the network administrator for this address.
- **Timezone:** select the timezone in which the decoder is located. This field must be set whether setting the time via an NTP server or manually.
- **Date:** if NTP is not selected, manually set the time using the *MM/DD/YYYY* format.

- **Time:** if NTP is not selected, use the 24 hour clock for setting in the *HH:MM:SS* format. For example, instead of entering 2:00:00 pm, 14:00:00 is entered.
- **Enable Camera Cache:** allows the decoder to cache cameras' video during sequences to improve decoder response times. This setting is selected by default.

Note: Disable the Camera Cache option if running a sequence with an older DC-400 Decoder, and the performance issues occur. Degraded performance can be indicated by network connectivity problems, or video artifacts (stray pixels) appear as a result of network packet loss.

- **Enable HTTP:** allows a simplified URL to be entered to access the decoder. For example, instead of entering *https://11.12.14.150*, only *11.12.14.150* needs to be entered, and the browser is redirected to the decoder.

By default, the decoder is enabled to use HTTPS.

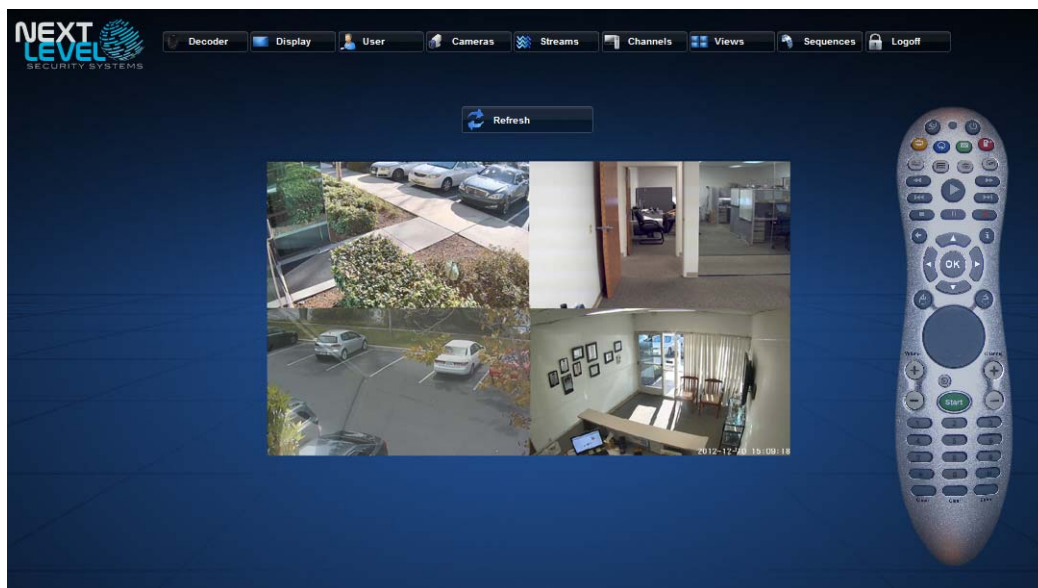
Note: This option must be enabled to allow *NextMobile™ (Next Level Mobile Application)* to access the decoder. This app allows Display, Channel, View, or Sequence video to be set to active.

3.4 DISPLAY

The Display page shows the current feed from the decoder. This feed can be a camera, stream, channel, view or sequence. Each of these features is discussed later in this chapter.



- Click **Refresh** to refresh the video on the page. This button has no effect on the external displays.



3.5 CONFIGURE AND MANAGE USERS

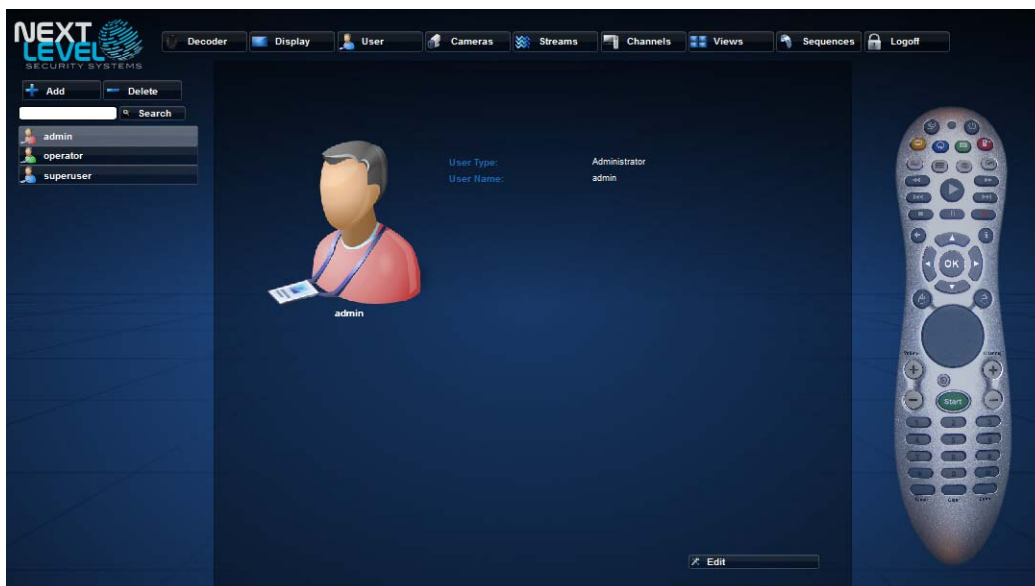
Users of the decoder are managed from the *User* page.



1. Click **User** in the Main Menu.

This list can be searched.

2. Select a user from the list or [Add a New User](#).



User Name, Password, and Type can be edited on the User page. User accounts also can be added, edited, or deleted.

By default, the NLSS HD Decoder includes three user types: *SuperUser*, *Administrator*, and *Operator* account.

Each user type has specific abilities:

- *SuperUser*: Has full control over the decoder.
 - Default User Name: **superuser**
 - Default Password: **superuser**

Note: The default SuperUser cannot be deleted, but the name and password can be edited.

- *Administrator*: Can run all operations except add, delete, and edit users.
 - Default User Name: **admin**
 - Default Password: **admin**
- *Operator*: Has read-only access to most menus. Can display any Channel, View, and Sequence that is already configured. Can only add, delete, or edit the numbers and names of existing channels, and the names of existing Views and Sequences.
 - Default User Name: **operator**
 - Default Password: **operator**

3.5.1 User Parameters

When you select a specific user from the User menu, the following parameters are displayed:

- **User Name:** The login name for this user.
- **User Type:** Must be SuperUser, Administrator, or Operator.
- **User Password:** (in Edit mode only) The login password for this user.

3.5.2 User Actions

Only a SuperUser can add, delete, or edit user accounts.

- [Add a New User](#)
- [Delete a User](#)
- [Edit User Parameters](#)

3.5.2.1 ADD A NEW USER



1. Click **Add** above the list of users to display the Add/Edit User screen.
2. Enter a **User Name** in Add User fields.

A dark blue form with white text and input fields. It contains four fields: "User Name" with the value "NewUser", "User Password", "Confirm User Password", and "User Type" with a dropdown menu showing "Operator".

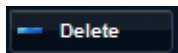
3. Enter a **User Password** twice.
4. Select the **Type** of user from the drop-down menu.



5. Click **Save** to keep your changes.
 - Click **Cancel** to discard the changes.

3.5.2.2 DELETE A USER

1. Select a user in the Users list.
2. Click **Delete** above the list.
3. Click **Yes** in the confirmation pop-up.



Note: Users are backed up in the *config.zip* file if one is accidentally deleted.

3.5.2.3 EDIT USER PARAMETERS

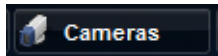
1. Select a user in the Users list.
2. Click **Edit** in the lower right corner of the Users page.
3. Edit the **User Parameters**.
4. Click **Save** to keep your changes.
 - Click **Cancel** to discard the changes.



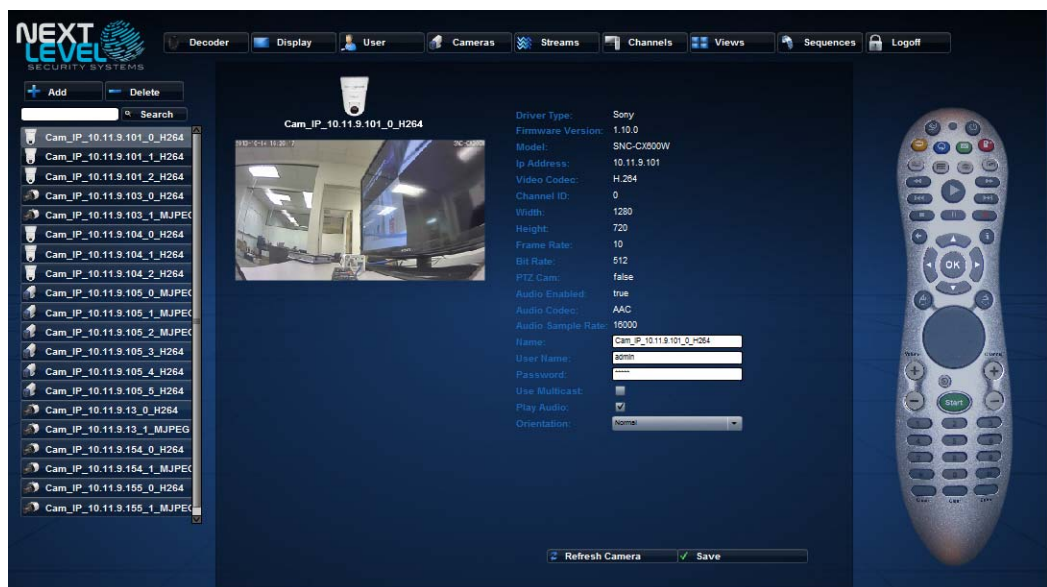
3.6 CONFIGURE AND MANAGE CAMERAS

Upon installation, the NLSS HD Decoder searches for IP cameras on the same network, and connects to the cameras that it discovers. Undiscovered cameras located on other sub-networks can be added manually.

Note: The decoder does not change any settings on the cameras. The cameras provide the decoder with most of the parameters needed for configuration.



1. Click **Cameras** in the Main Menu.
The *Cameras* page opens with a searchable list of discovered cameras.
 - Cameras can be added and deleted from the list.
 2. Select camera from the list to display its settings.
The camera's parameters, and a thumbnail of the camera's video are displayed.
 3. Most settings are gathered from the camera and are read-only. See [Editing Cameras Settings](#) for editable parameters.
- If the decoder sees a camera, but cannot read its configuration or video stream, then the camera's name is preceded by **XX** in the Cameras Menu.



If a camera is on the network and functioning, and the decoder cannot access it:

- The user names and/or passwords of the camera may have been changed from the default settings. Two options are available:
 - **Set Global User Names and Passwords**
 - *or* –
 - **Customize the Camera's User Name and Password.**
- The camera may use unknown drivers or unsupported codecs. Update the camera's driver and/or codec. Consult the camera vendor or the camera's documentation for more information.
- Set up the camera's video as a remote RTSP stream. See **Convert a Camera to a Stream** for instructions.

The instructions in this section assume that the NLSS HD Decoder discovered and fully configured at least one IP camera.

For details on cameras, RTSP streams, file types, and codecs supported by the current version of the NLSS HD Decoder, see the *Supported Device List*.

To see the current list, search for *Supported Device List* in the **Support > Knowledge Base** page of the NLSS web site: support.nlss.com

3.6.1 Camera Parameters

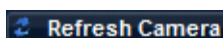
When a camera is selected from the Camera list, a series of parameters are displayed. The read-only parameters are provided by the camera and are edited through the camera interface, where applicable.

3.6.1.1 PARAMETERS FROM THE CAMERA

The camera provides following read-only values:

- **Driver Type:** The manufacturer of the camera's driver.
- **Firmware Version:** The version number of the driver used by the camera.
- **Model:** The model number of the camera.
- **IP Address:** The IP address of the camera.
- **Video Codec:** The video codec used by the camera. The following video codecs are supported: H.264, MJPEG, and MPEG4.
- **Channel ID:** The output channel of the camera. This field is not the same as the *Channels* used by the decoder. Some cameras can output simultaneously to multiple channels. This parameter indicates to which channel these parameters refer.
If a camera has multiple channels, the camera is listed multiple times, with one instance for each channel.
- **Width:** The pixel width of the video stream output from the camera.
- **Height:** The pixel height of the video stream output from the camera.
- **Frame Rate:** The frame rate of the video coming from the camera.

- **Bit Rate:** The bit rate of the video stream coming from the camera.
- **PTZ Cam:** Indicates if this camera is capable of pan, tilt, and zoom movements.
- **Audio Enabled:** If the selected camera is capable of audio, this parameter is set to **true**, and the Audio Codec and Audio Sample Rate parameters are displayed.
- **Audio Codec:** The codec used by the audio track in the stream from the camera.
- **Audio Sample Rate:** The sampling rate of the audio track in the stream from the camera. The decoder supports the following audio codecs:
 - AAC
 - G711 A-law and U-law
 - G726 (40, 32, 24, and 16-kHz sampling rates)



Note: If any of the read-only parameters are changed directly on a camera, click **Refresh Camera** to update these parameters in the NLSS Web Interface.

3.6.1.2 PARAMETERS CONFIGURED FROM THE DECODER

The last six parameters are set by the decoder and are editable.

- **Name:** An unique name given to the camera.
- **User Name:** The user name required by the camera to unlock it for streaming.
- **Password:** The password required by the camera to unlock it for streaming.

Note: The User Name and Password must match those settings configured directly on the camera. These fields do not change those settings on the camera.

- **Use Multicast:** Check the box to allow the decoder to accept multicast from this camera. If the box is not checked, unicast is used.
- **Play Audio:** Check the box to allow the decoder to play the camera's audio, if it is available. If the box is not checked, the camera's audio is muted on the decoder, regardless of audio capability of the camera.
- **Orientation:** Select an orientation for the camera from the drop-down list.

Some cameras rotate the output signals. The decoder cannot automatically determine the rotation of the source stream. This setting sets the decoder to adjust the output for proper viewing.

 - **Normal:** The decoder does not rotate the camera stream.
 - **Rotate Right:** The decoder rotates the video stream 90-degrees clockwise.
 - **Rotate Left:** The decoder rotates the video stream 90-degrees counter-clockwise.
 - **Flip:** The decoder rotates the video stream 180-degrees.

3.6.2 Editing Cameras Settings

- [Change A Camera's Name](#)
- [Customize the Camera's User Name and Password](#)
- [Setting Multicast or Unicast](#)
- [Enable / Disable Audio](#)
- [Refresh a Camera](#)
- [Delete a Camera](#)

3.6.2.1 CHANGE A CAMERA'S NAME

Camera naming is flexible.

1. Select a camera in the Cameras page.
2. Enter a new **Name**.
3. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.




3.6.2.2 CUSTOMIZE THE CAMERA'S USER NAME AND PASSWORD

Changing the user name or password on the cameras page overrides the Global Username and Global Password set in the Decoder page. See [Set Global User Names and Passwords](#) for more information.

Important: If the global user name or password are changed, that entry overwrites the user name and password setting on this page. Configure global user names and passwords before configuring those parameters on the Cameras page.

1. Select a camera to display its parameters.
2. Enter the **User Name** and **Password** required to unlock the camera.



3. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

3.6.2.3 SETTING MULTICAST OR UNICAST

A multicast camera simultaneously sends the same stream to multiple users. A unicast camera sends a separate stream to each user.

1. Select a camera.
2. Check **Use Multicast** to allow the decoder to accept multicast from the camera.
 - Uncheck the box to enable unicast.

Note: The camera must support multicast in order to use it.



3. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

3.6.2.4 ENABLE / DISABLE AUDIO

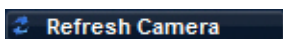
The following instructions apply to audio-capable cameras only:

1. Select a camera.
2. Check **Play Audio** to enable camera's audio in the decoder.
Uncheck the box to disable audio.



3. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

3.6.2.5 REFRESH A CAMERA



If any parameters are changed locally on a camera, click **Refresh Camera** to update the information in the Cameras screen.

3.6.2.6 ADDING A CAMERA

Cameras not located in the same sub-network as the decoder can be manually added.



1. Click **Add** above the Cameras list.
The New Camera dialog is displayed.

The New Camera dialog box is displayed. It contains the following fields:

- Camera Name: New Camera
- Driver Type: ONVIF
- Model:
- IP Address: 0.0.0.0
- User Name: Factory Default
- Password:
- Confirm Password:

2. Enter a **Camera Name**. Create a name descriptive of the camera's physical or network location, or purpose.
3. Select a **Driver Type**.
The Driver Type is dependent on the camera's manufacturer. The standard ONVIF driver can be selected, if the camera supports it.
4. Enter the **Model**. This field is optional.
5. Enter the camera's IP Address.
6. Enter the **User Name**.
If a manufacturer is selected for the Driver Type, check the camera's documentation for the default setting.
If ONVIF is selected, or the user name was changed for the camera, enter the settings entered on the camera. Default manufacturer settings do not apply to ONVIF.
7. Enter and confirm the **Password**.

Ensure the password matches the entry configured directly on the camera, or the manufacturer's default password, if the setting has not changed.

Important: User Name and Password settings are configured on the camera, and *not* from this interface. The settings entered here must match what is configured directly on the camera.



8. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

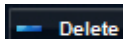
3.6.2.7 DELETE A CAMERA

If a camera is deleted from the decoder list, then the channel and 1x1 View associated with the camera are deleted automatically.

Important: If that 1x1 View is used, then its place in the Sequence remains, with an error message. Manually remove the orphan View from the Sequence.

In 1x2 and 2x2 Views, the pane containing the deleted channel shows the NLSS logo animation instead. A different channel can be assigned to that pane.

To delete a camera:



1. Select a camera from the Cameras list.
2. Click **Delete** above the list of discovered cameras.
3. Click **Yes** in the confirmation pop-up.

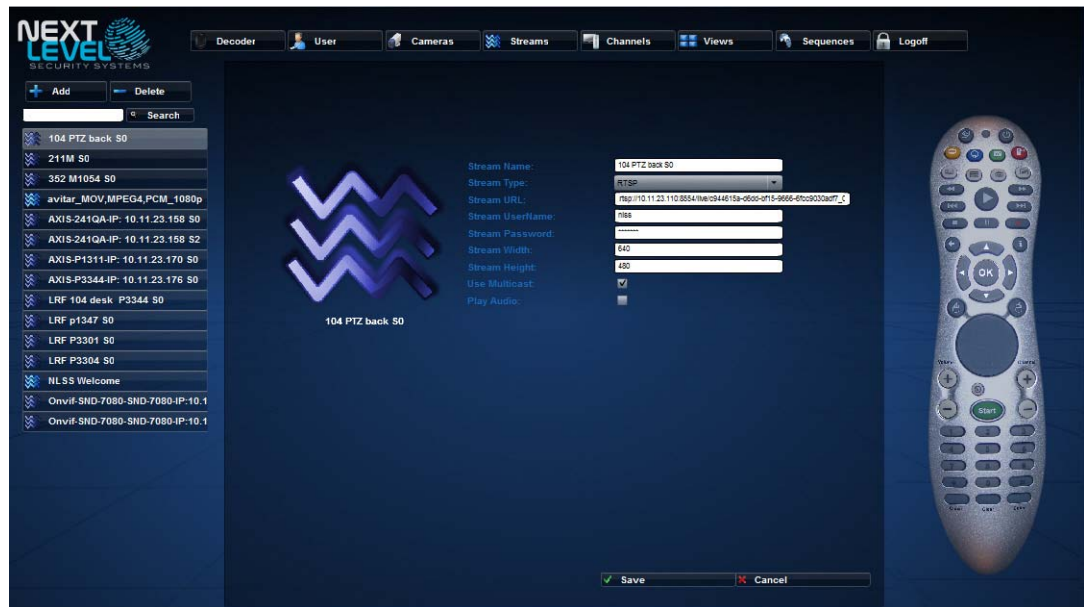
After a camera has been deleted, the decoder might re-discover it unless it is physically disconnected from the network.

The camera is also stored in the *config.zip* backup file.

3.7 CONFIGURE AND MANAGE STREAMS

Video streams are listed in the Streams page. Stream types include local video files, remote RTSP, HTTP, RTMP, and HTTP Stream Source.

1. Click **Streams** in the Main Menu.
2. Select a stream from the list or **Add a Stream**.



When the decoder is installed, a single file stream with the NLSS logo animation is automatically added to the Streams list. New streams can be added, and existing streams can be edited and deleted from this page.

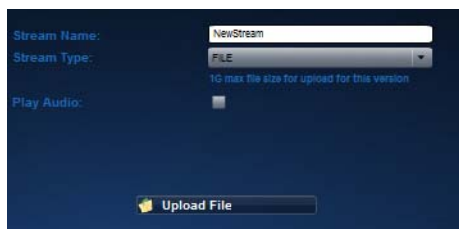
3.7.1 Stream Types

When adding or editing a selection, the parameters are dependent on the **Stream Type** that is selected from the drop-down list:

- **RTSP:** Select this option for remote streams using to Real-Time Streaming Protocol.
- **HTTP:** Select this option for to access camera that is pushed HTTP.
- **RTMP:** Select this option for remote streams that adhere to the Real-Time Media Protocol.
- **File:** Select this option to play video files (such as logo animations) uploaded to the decoder's internal hard drive. See [File Formats](#) in [Appendix A: Camera and Video Support Specifications](#) for more information on files that can be uploaded.
- **HTTP_STREAM:** Select this option to access a video file being pushed from a web server or NLSS Gateway, as opposed to uploading the file to the decoder.
See the *NLSS Unified Security Suite User Manual* for more information on pushing video from an NLSS Gateway.

3.7.2 Stream Parameters

The parameters displayed in the Streams page depend on the type of stream selected. All fields are editable. The parameters for RTSP, RTMP and HTTP streams are the same.

The screenshot shows the 'Files' configuration page. It has a dark blue background. At the top, 'Stream Name:' is followed by a text box containing 'NewStream'. Below it, 'Stream Type:' is followed by a dropdown menu set to 'FILE'. A small note below the dropdown says '10 max file size for upload for this version'. Further down, 'Play Audio:' is followed by an unchecked checkbox. At the bottom, there is a button with a folder icon and the text 'Upload File'.

Files

The screenshot shows the 'Streams' configuration page. It has a dark blue background. 'Stream Name:' is followed by a text box containing '104 PTZ 0808 S0'. 'Stream Type:' is followed by a dropdown menu set to 'RTSP'. 'Stream URL:' is followed by a text box containing 'rtsp://10.11.23.110:8554/live/c944615a-6600-b7f5-9666-6fc9030a7f_c'. Below this are text boxes for 'Stream UserName:' (containing 'niss') and 'Stream Password:' (containing 'password'). 'Stream Width:' is followed by a text box containing '640'. 'Stream Height:' is followed by a text box containing '480'. 'Use Multicast:' is followed by a checked checkbox. 'Play Audio:' is followed by an unchecked checkbox.

Streams

3.7.2.0.1 Fields for all streams

- **Stream Name:** An unique name assigned to the stream.

Note: When adding an RTSP stream from a camera, include the manufacturers name in the Stream name to activate PTZ capabilities. Supported vendors are Axis, Sony, Panasonic, and ONVIF supported cameras.

- **Play Audio:** Check to enable the audio stream from the camera.

Note: Audio takes extra bandwidth. If audio is not needed, disable this parameter to save bandwidth.

3.7.2.0.2 Fields for Internet-based streams

- **Stream URL:** The URL of a local or remote source of the stream.

Note: The URL may require a port number, depending on the video stream source.

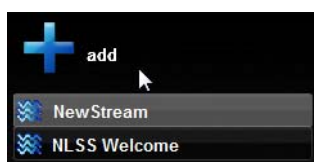
- **Stream UserName:** The user name for logging into the source of the stream.
- **Stream Password:** The password for logging into the source of the stream.
- **Stream Width:** The width (in pixels) of the source video stream.
- **Stream Height:** The height (in pixels) of the source video stream.
- **Use Multicast:** Check the box to allow the decoder to accept multicast from this camera. If the box is not checked, unicast is used.

3.7.3 Stream Actions

- [Add a Stream](#)
- [Delete a Stream](#)
- [Edit a Stream](#)
- [Convert a Camera to a Stream](#)
- [Setting Multicast or Unicast](#)

3.7.3.1 ADD A STREAM

1. Click **Add** above the stream list.



2. Select a **Stream Type** from the drop-down list.
3. Enter the [Stream Parameters](#).



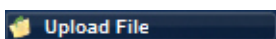
4. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

3.7.3.2 UPLOAD A FILE

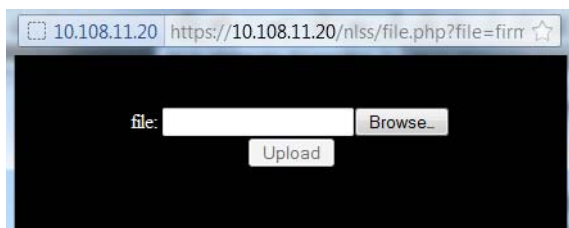


1. Click **Add** above the stream list.

2. Enter a **Stream Name**.



3. Click **Upload File**.



See [File Formats](#) in [Appendix A: Camera and Video Support Specifications](#) for more information on types of files that can be uploaded.

4. **Browse** to a video file on a computer or network location.
5. **Upload** it to the decoder's hard drive.
6. Check **Play Audio** if the file has audio that needs to be played with the video.



7. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

3.7.3.3 EDIT A STREAM

1. Select a stream.
2. Edit the [Stream Parameters](#).



3. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

3.7.3.4 CONVERT A CAMERA TO A STREAM

If the decoder cannot read a camera's parameters or a video stream, then that camera can be configured as an RTSP stream.



1. Click **Add** above the stream list.
2. Enter the [Stream Parameters](#) for the camera. See [Stream Parameters](#) for more information.

Note that the **Stream URL** requires an IP address, a port number and a string, in the following format:

`rtsp://IPaddress:port/string`

- where *IPaddress* is the IP address of the camera
- *port* is the standard RTSP port of 554
- *string* depends on the camera manufacturer (refer to [Camera and Video Support Specifications](#)).

See [Appendix A: Camera and Video Support Specifications](#) for more information on RTSP syntax for specific cameras.



3. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

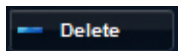
3.7.3.5 SETTING MULTICAST OR UNICAST

A multicast camera simultaneously sends the same stream to multiple users. A unicast camera sends a separate stream to each user.

1. Select a camera.
2. Check **Use Multicast** to allow the decoder to accept multicast for this stream.
 - Uncheck the box to enable unicast.

3.7.3.6 DELETE A STREAM

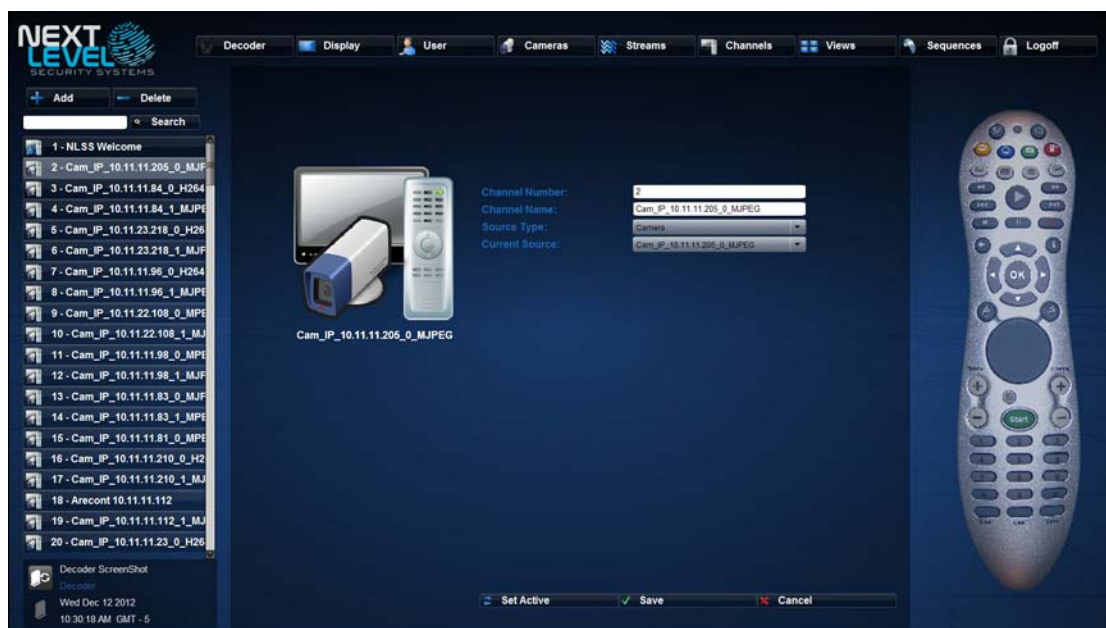
1. Select a stream.
2. Click **Delete** above the streams list.
3. Click **Yes** in the confirmation pop-up window.



3.8 CONFIGURE AND DISPLAY CHANNELS

When the NLSS HD Decoder is installed, channels are automatically created for the NLSS Welcome Animation and all IP cameras that the decoder discovered. Channel assignments can be added and edited from the NLSS Web Interface. Cameras and streams must be assigned a channel before they can be displayed on the monitor attached to the decoder.

1. Click **Channels** from the Main Menu.
2. Select a channel or **Add a Channel**.



3.8.1 Channel Parameters

Four editable parameters are included with each channel.

- **Channel Number:** A unique number assigned to the current channel. Do not repeat channel numbers in the system.
- **Channel Name:** An editable name for this channel.
- **Source Type:** A drop-down menu that marks the channel as either a **Camera** or a **Stream**.
- **Current Source:** A drop-down menu to associate this channel with a selected camera or stream. The source must already be added to the decoder to be included in this list.

3.8.2 Channel Actions

- [Add a Channel](#)
- [Delete a Channel](#)
- [Edit a Channel](#)
- [Display a Channel on a Monitor](#)

3.8.2.1 ADD A CHANNEL



1. Click **Add** above the Channels list.
2. Enter the [Channel Parameters](#) for the new channel.



3. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

3.8.2.2 EDIT A CHANNEL

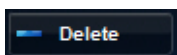
1. Select a channel.
2. Edit the [Channel Parameters](#).



3. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

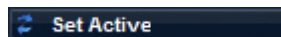
3.8.2.3 DELETE A CHANNEL

1. Select a channel.
2. Click **Delete** above the channels list.
3. Click **Yes** in the confirmation pop-up.



3.8.2.4 DISPLAY A CHANNEL ON A MONITOR

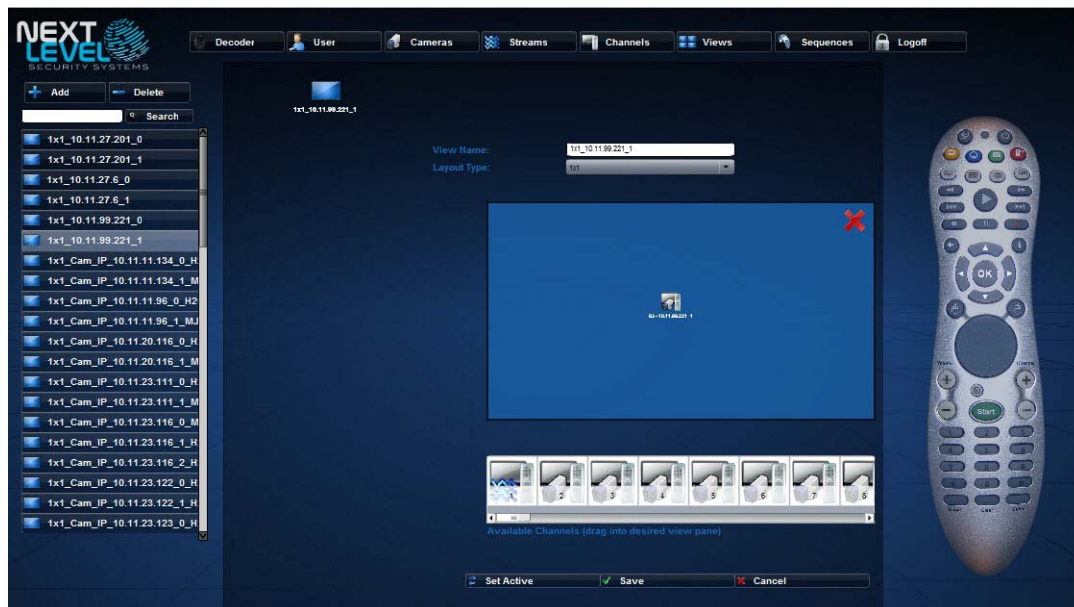
1. Select a channel.
2. Click **Set Active** at the bottom of the screen to display the camera or stream associated with the channel.



3.9 CONFIGURE AND DISPLAY VIEWS

A *View* is an arrangement of panes, each containing channels that can be displayed on the same monitor at the same time. A channel must be assigned to a camera or stream before being added to a View.

1. Click **Views** in the Main Menu.
2. Select a view from the list or **Add a View**.



Views are based on *panes*. A pane is the area displaying video from a channel. The view consists of one or more panes in the following layout (# of rows x # of panes per row):

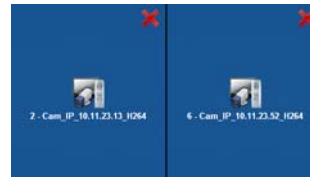
- 1x1
- 1x2 H (horizontal)
- 1x2 V (vertical)
- 1x4 H (horizontal)
- 2x2
- 2x4
- 3x3
- 4x4

Below are some examples:

1x1 (single pane)



1x2 H (two panes arranged horizontally)



1x2 V (two panes arranged vertically)

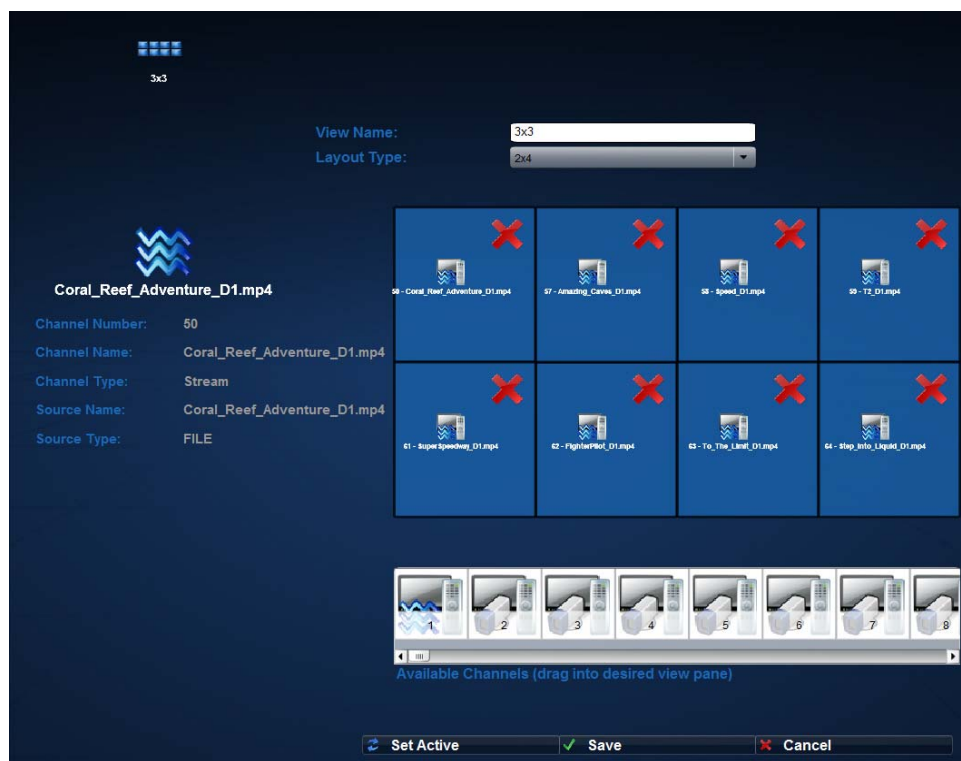


2x2 (4 panes in a 2x2 arrangement)



3.9.1 View Parameters

When a View is selected from the View Menu, the parameters are displayed.



- **View Name:** An unique name for the view.
- **Layout Type:** Select a layout from this drop-down menu. The *Panes* graphic reflects the selection.
- **Panes:** (graphic) In conjunction with the *Available Channels* graphical list, the *Panes* graphic allows channels to be associated with panes.
- **Available Channels:** (graphic) In conjunction with the *Panes* graphic, the *Available Channels* graphic allows channels to be selected for a pane:
 - To add a channel to a pane, drag the channel from the *Available Channels* list to the target pane in the *Panes* graphic.
 - To remove a channel from a pane, select the red **X** in a pane, or drag a new channel to the same pane. New channels overwrite old channels.
 - To display information about a channel and its camera or stream, click the channel in the *Panes* or *Available Channels* graphic.

Note: The quality of the video is impacted by resolution, frame rate, and bit rate of the channel assigned to a pane, plus the available bandwidth. Keep the combined bit rate of all cameras in a view to 10 Mbps or less.

See [Appendix B: Decoder System Performance](#) for more information.

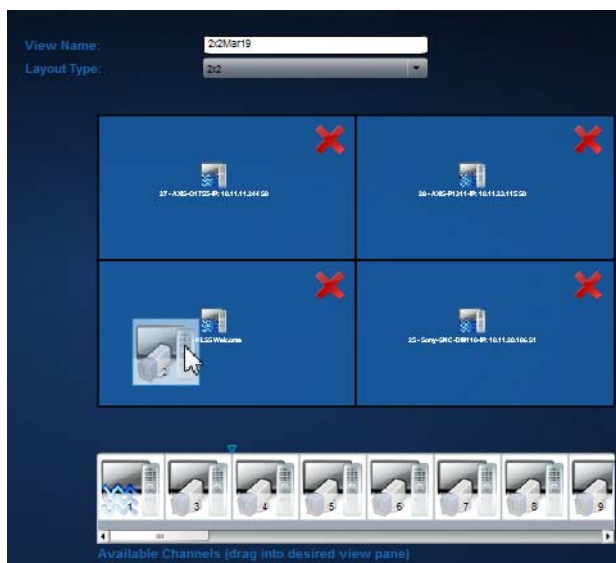
3.9.2 View Actions

- [Add a View](#)
- [Delete a View](#)
- [Display a View on a Monitor](#)
- [Display a View on a Monitor](#)

3.9.2.1 ADD A VIEW



1. Click **Add** above the View list.
2. Enter the **View Name** and **Layout Type** in the [View Parameters](#) for the new View.
3. Drag an **Available Channel** into a Pane.



4. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

3.9.2.2 CONFIGURE A VIEW

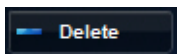
1. Select a view.
2. Edit the [View Parameters](#).



3. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

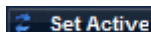
3.9.2.3 DELETE A VIEW

1. Select a view.
2. Click **Delete** above the Views list.
3. Click **Yes** in the confirmation pop-up.



3.9.2.4 DISPLAY A VIEW ON A MONITOR

1. Select a view.



2. Click **Set Active** to display the View on a monitor attached to the decoder.

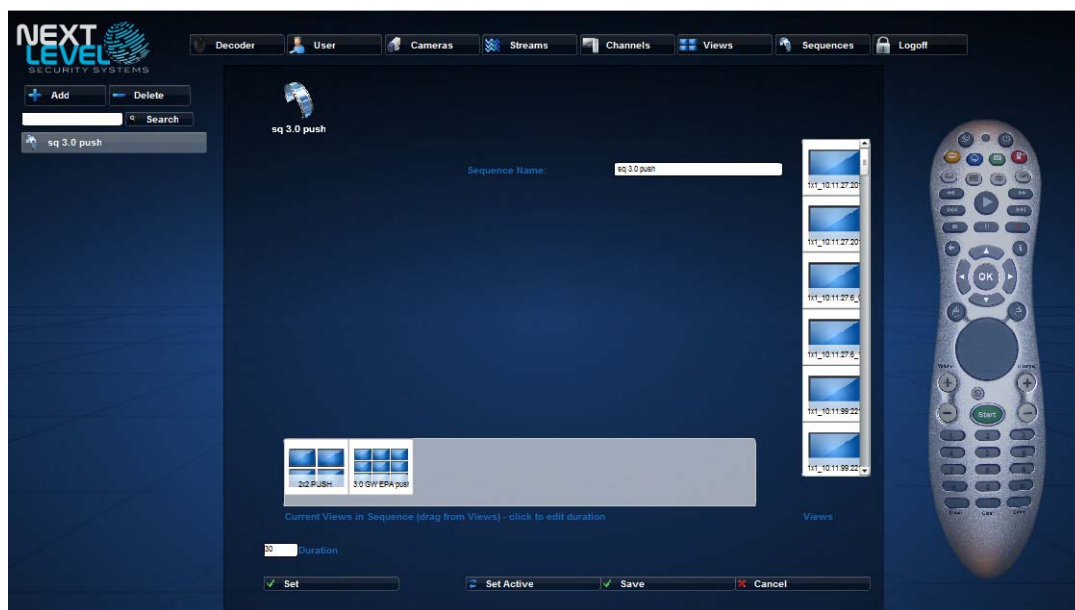
Note: The quality of the video is impacted by resolution, frame rate, and bit rate of the channel assigned to a pane, plus the available bandwidth. See [Appendix B: Decoder System Performance](#) for more information.

3.10 CONFIGURE AND DISPLAY SEQUENCES

A sequence consists of two or more views, displayed consecutively in a series. Multiple views can be monitored automatically. Only existing views can be added to a sequence.

3.10.1 Sequence Parameters

Each sequence has three editable parameters.



- **Sequence Name:** A unique name that identifies the sequence.
- **Views:** A list of existing views that can be added to the sequence. Click on a view to preview it.
- **Current Views in Sequence:** A list of views used in this sequence. Views can be added, removed, and reordered in the sequence.
 - Click on a view in the *Current Views* list to display its name and duration.
- **Duration:** Enter a value (in seconds), and click **Set**, to define how long each view is displayed before switching to the next view in the sequence.
Setting a duration of zero (0) seconds allows video clips to run to completion, regardless of their length.

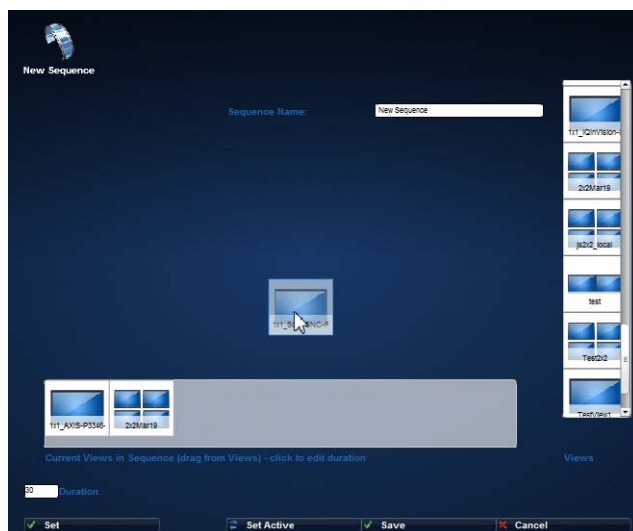
3.10.2 Sequence Actions

- [Adding and Editing a New Sequence](#)
- [Adding and Editing a New Sequence](#)
- [Display a Sequence on a Monitor](#)
- [Delete a Sequence](#)

3.10.2.1 ADDING AND EDITING A NEW SEQUENCE



1. Click **Add**.
 - Select a sequence from the list to edit an existing list.
2. Enter a **Sequence Name**.
3. Edit the [Sequence Parameters](#).
 - To add a view to the selected sequence, drag the view from the **Views** list to the **Current Views in Sequence** list.
 - Drag-and-drop the views into the desired order within the list.
 - To remove a view from the sequence, drag the view out of the list to any blank area on the screen.



Note: The decoder does not support displaying 3x3 or 4x4 views in a sequence, whether the view is configured on the decoder or an NLSS Gateway.
NLSS recommends that the total number of cameras from all views added to a sequence be no more than 19.

4. Set the length of time each view is displayed.
 - Enter a time, in seconds, in **Duration**.
 - If a different time is needed for a view, select the view in Current Views. See [Changing a View's Duration](#).



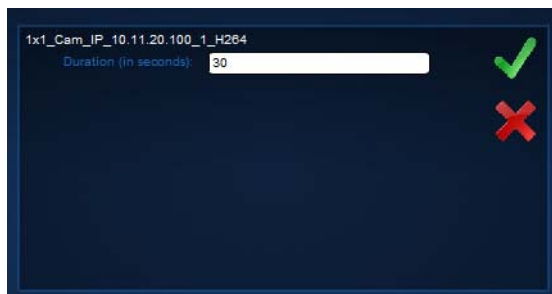
5. Click **Save** to keep changes.
 - Click **Cancel** to discard the changes.

3.10.2.2 CHANGING A VIEW'S DURATION

After a view is added to a sequence, its duration can be set to be different than the default duration set for the sequence.

1. Click on a view in the **Current Views in the Sequence** list.

The view's details pane is displayed, showing the view's name and duration.



2. Enter the **Duration**, in seconds.



3. Click **Save** to keep the setting and close the dialog.

– Click **Cancel** (X) to discard the change.

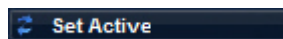


4. Click **Save** to push changes to the decoder.

– Click **Cancel** to discard the changes.

3.10.2.3 DISPLAY A SEQUENCE ON A MONITOR

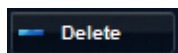
1. Select a sequence.



2. Click **Set Active** to display the sequence on a monitor attached to the decoder.

3.10.2.4 DELETE A SEQUENCE

1. Select a sequence.



2. Click **Delete**.

3. Click **Yes** in the confirmation pop-up.

Chapter 4: Operation with Peripheral Controls

After a decoder is configured from the NLSS Web Interface, it can be operated with supported peripheral devices:

- [Remote Control Operation](#) (included with the DC-400-2, optional with the DC-500)
- [Axis T8311 Joystick](#)
- [Keypad](#)

The joystick and keypad are purchased separately.

Important: See the *NLSS HD Decoder Version 3.1 Supported Devices Technical Bulletin* for a list of devices that operate with the decoder. Access this document from the NLSS Knowledge Base at support.nlss.com.

Note: Selecting a channel, view, or sequence from a peripheral device does not set that item as active. See [Chapter 3: Configuration and Operation via a Browser](#) for instructions to enable Set Active through the Web Interface.

4.1 JOYSTICK, KEYPADS, REMOTE CONTROL

The NLSS HD Decoder supports USB Joystick, for Pan, Tilt, Zoom (PTZ) control and USB keypads and a Remote Control for channel, view, and sequence selection.

Device	Vendor	Model
Remote Control	NLSS	DC-400--2 Remote
Joystick	Axis	T8311
Remote Control	CE Compass / Ortek	VRC--1100
Keypad	Connectland	CL--USB--NUMSPC
Keypad	Genovation	MicroPad 630
Keypad	Targus	AKP10

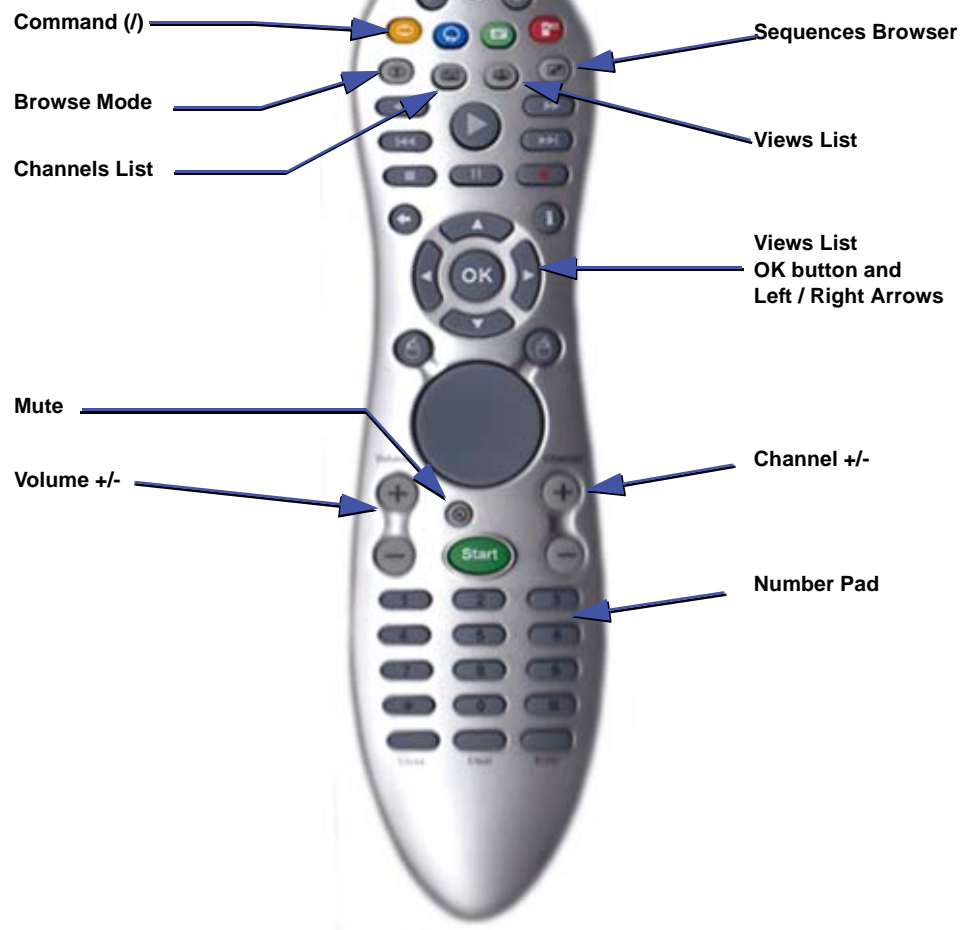
4.2 REMOTE CONTROL OPERATION

Channels must be configured via the NLSS Web Interface, before they can be displayed with the remote control.

The remote control model depends on the decoder model. The remote control is optional with the DC-500, and is included with the DC-400-2.

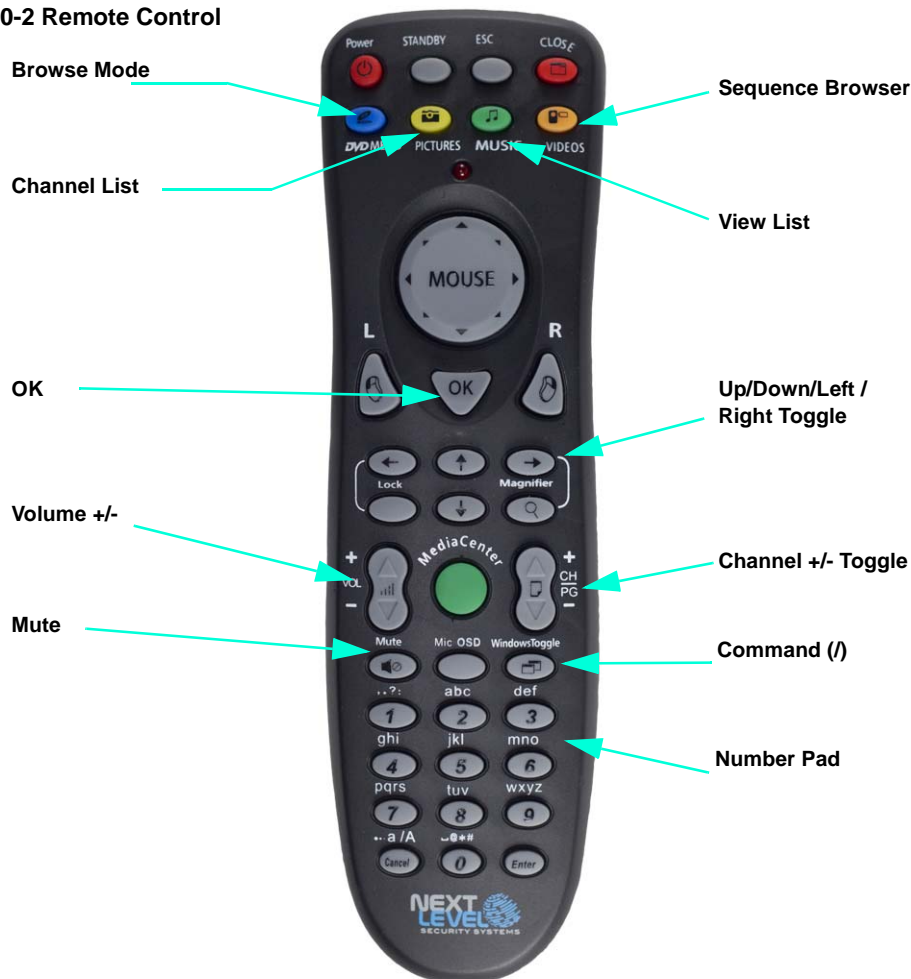
If a remote control is not available, use the on screen remote in the Web Interface to access these functions.

DC-400/500 Remote Control



DC-400-2 remote control is also displayed in the NLSS Web Interface

DC-400-2 Remote Control



4.2.1 Display a Channel

Use the remote control to display existing channels on the monitor attached to the decoder. Three options are available for selecting channels.

- Change channels by using the **Channel +/-** button.
- Enter a channel number with the **Number Pad**, and press **OK**.
- Press the **Channels** button to display the Channels List on an attached monitor.
 - Use the **Left and Right Arrow** buttons to select a channel in the list.
 - Press **OK** button to display the selected channel.
 - Press the **Channels** button again to close the menu.

4.2.2 Display a View

A view can be displayed from the View Mode or the View List.

4.2.2.1 BROWSE MODE

Browse Mode activates a toggle through the views configured on the decoder.

1. Press the **Browse Mode** button.
2. Press the **Channel +/-** button to toggle between views on the monitor.
3. Press the **Browse Mode** button again to close the View Mode.

4.2.2.2 VIEWS LIST

A view can be selected from an on-screen View List.

1. Press the **Views List** button to display the Views List on an attached monitor.
2. Use the **Left/Right Arrow** buttons to select a view in the list.
3. Press **OK** to display the selected View.
4. Press the **View List** button again to close the menu.

4.2.2.3 DISPLAYING A VIEW PANE FULL SCREEN

A pane in a view can be selected and displayed full screen on an attached monitor. This feature is helpful when adjusting a PTZ camera.

1. Use the **Arrow** (toggle) buttons to select a view in the pane.
The selected pane is highlighted by a blue boundary.
2. Press **OK**.
The pane is now displayed full screen.
3. Press **OK** again to return to the view.

4.2.3 Display a Sequence

1. Press the **Sequences** button to display a configured sequences.
2. Press the **Sequences** button again to display a different sequence.

To cancel sequences, select any channel or view from their respective menus.

4.2.4 Adjust Audio

- Change volume with the **Volume +/-** buttons.
- Toggle sound on/off with the **Mute** button.

4.3 AXIS T8311 JOYSTICK

The joystick can be used alone, or in conjunction with a [Keypad](#), to change channels and move a PTZ (pan-tilt-zoom) camera.

The joystick cannot be used to display views and sequences, or to adjust volume. The keypad handles those functions.



4.3.1 Attach the Joystick

A joystick can be added and removed at any time. The decoder recognizes the device in about five seconds.

- Plug the Axis T8311 joystick into an open USB slot on the NLSS HD Decoder.

4.3.2 Display a Channel

Each channel corresponds to a video stream from a camera.

- Change channels by using the **L** and **R** buttons.

4.3.3 Control a Pan, Tilt Zoom Camera

The joystick can control a live PTZ camera. The joystick cannot control PTZ functions for a stream, even if the source is PTZ capable.

1. Open the NLSS HD Decoder Web Interface.
See [Chapter 3: Configuration and Operation via a Browser](#) for more information.
2. Click **Cameras** in the main menu.
3. Select a camera from the Cameras list.

If the camera is PTZ enabled, it can be moved using the joystick or by using presets.

4.3.3.1 MANUAL CONTROL

- To pan the camera, move the joystick left and right.
- To tilt the camera, move the joystick up and down.
- To zoom the camera, twist the joystick handle.

4.3.3.2 PRESETS

The J1 - J4 buttons call presets for live cameras. These presets must be configured on the source cameras before the joystick can call them.

1. Follow the instructions provided by the camera's manufacturer to log into the configuration menu of the desired camera.
2. In the camera's configuration menu, set up the first four camera presets according to the manufacturer's instructions.

Label these presets *exactly* as follows:

- **PRESET_1**
- **PRESET_2**
- **PRESET_3**
- **PRESET_4**

3. After presets are configured, move the camera to those presets by using the **J1 - J4** buttons.

For example, to move the camera to PRESET_1, press the **J1** button.

4.4 KEYPAD

A keypad can change the channels configured on the NLSS HD Decoder.

See [Configure and Display Channels](#) in [Chapter 3: Configuration and Operation via a Browser](#) for instructions on setting up channels.

Only certain keypads are supported by the system, although these keypads all use a standard design.

See the *NLSS HD Decoder Version 3.0 Supported Devices Technical Bulletin* for a list of supported keypads. This document is available from the NLSS Knowledge Base at support.nlss.com.



4.4.1 Attach a Keypad

A keypad can be added and removed at any time. The decoder recognizes the device in approximately five seconds.

- Plug the keypad into an open USB slot on the NLSS HD Decoder.

The forward slash key (*/*) acts as a command key that is pressed before entering a number to trigger an action.

4.4.2 Display Channel List

Three options are available to access a channel from a keypad.

- Change the channels using the **+** and **–** keys.
- Enter a channel number on the Number Pad, and press **Enter**.
- Use the keypad to navigate a Channels list:
 - a. To display a Channels list, enter **/1Enter**:
 - i. Turn on **Num Lock**.
 - ii. Press the **slash** key (**/**).
 - iii. Press the number **1**.
 - iv. Press **Enter**.
 - b. Turn off **Num Lock**.
 - c. Navigate the channels list using the **Arrow** keys (2, 4, 6, and 8 keys with NumLock off) to highlight a channel.
 - d. Press **Enter**.

4.4.3 Display View List

1. Turn on **Num Lock**.
2. Enter **/2Enter**:
 - a. Press the slash key (**/**).
 - b. Press the number **2**.
 - c. Press **Enter**.
3. Turn off **Num Lock**.
4. Use the **Arrow** keys to highlight a view in the Views list.
5. Press **Enter**.

4.4.4 Toggle Through Sequences

1. Turn on **Num Lock**.
2. To display a list of sequences, enter **/3Enter**:
 - a. Press the slash key (**/**).
 - b. Press the number **3**.
 - c. Press **Enter**.
3. Turn off **Num Lock**.
4. Use the **Arrow** keys to navigate the sequences list.
5. Highlight a sequence, and press **Enter**.

4.4.5 Display the Active State

The *Active View* is the view last *Set Active* on the decoder using the NLSS Web Interface. See [Display a View on a Monitor](#) in [Configuration and Operation via a Browser](#) for more information.

Even if the display is changed with a remote control, joystick, or keypad, channels, or sequences, the Active View remains the same in the decoder's memory.

1. Turn on **Num Lock**.
2. Type **/4Enter** on the keypad:
 - a. Press the slash key (**/**).
 - b. Press the number **4**.
 - c. Press **Enter** key.

4.4.6 Toggle Channel and Browse Mode

Toggles display between channel and view modes.

1. Turn on **Num Lock**.
2. Type **/5Enter** on the keypad:
 - a. Press the slash key (**/**).
 - b. Press the number **5**.
 - c. Press **Enter** key.
3. Press plus and minus keys (**+** and **-**) to change the view or the channel, based on the selected mode.

4.4.7 Displaying a View Pane Full Screen

When a view is displayed, a selected pane can be expanded to full screen.

1. Turn on **Num Lock**.
2. Use the **arrow** keys to select or highlight a view.
3. Press **Enter**.
4. Press **Enter** again to return to view.

Chapter 5: Contacting Support

Before contacting Support:

- Search the **NLSS Support Knowledgebase** for answers not found in the documentation: support.nlss.com
- If a call to NLSS Support is required to resolve an issue:
 - Gather **Decoder Information** from the NLSS Web Interface.
 - Download a **System Log**.
 - Create a **Configuration Backup**.

The technician asks for this information on the initial contact. This preparation simplifies troubleshooting and speeds up the resolution process.

See [Contact Information](#) for the telephone numbers and email addresses.

5.1 DECODER INFORMATION

Print this page and fill in the information below. This information is available in the NLSS Web Interface, from **General** tab in the *Decoder* page.

General tab:

- **NLSS Product:** _____
- **Serial Number:** _____
- **Firmware Version:** _____

Wired Network tab:

- **MAC Address:** _____

Note: If the **Available Firmware** field is flashing, a newer version of firmware is available for the decoder.

- » See [Check Update](#) in [Chapter 3: Configuration and Operation via a Browser](#) for instructions on updating the decoder via an Internet connection.
- » See [Upload and Update Firmware](#) in [Chapter 3: Configuration and Operation via a Browser](#) for instructions on updating the decoder if an Internet connection is not available or a manual update is preferred.

5.2 SYSTEM LOG

The System Logs provide information to aid the technician in locating and resolving the problem.

See [Download Logs](#) in [Configuration and Operation via a Browser](#) for more information.

5.3 CONFIGURATION BACKUP

The Configuration Backup collects configuration settings for decoder and related devices.

See [Backup Config](#) in [Configuration and Operation via a Browser](#) for more information.

5.4 CONTACT INFORMATION

- Before calling Support, search the **NLSS Support Knowledgebase** for answers not found in the documentation - support.nlss.com
- If assistance from NLSS Support is needed to resolve an issue:
 - Call: 1-760-444-1410
 - Email: support@nlss.com

Appendix A: Camera and Video Support Specifications

The NLSS HD Decoder supports some or all of the IP cameras from the manufacturers listed below.

This list includes the default user names, passwords, and RTSP syntax that each manufacturer typically uses for its IP cameras.

For exceptions and updates, refer to the documentation provided by the manufacturers of your cameras.

Manufacturer	Default User	Default Password	Example RTSP Syntax
Arecont Vision	admin	blank	rtsp://10.11.23.50:554/h264.sdp?res=half&x0=0&y0=0&x1=1920&y1=1200&qp=20&doublescan=0&bitrate=65535&ssn=20
Axis	root	Must be set	rtsp://10.11.22.103:554/mpeg4/media.amp rtsp://10.11.20.138:554/axis-media/media.amp
IQInvision	root	system	rtsp://10.11.22.110:554/PSIA/Streaming/channels/0
Panasonic	admin	12345	rtsp://10.11.20.112:554/MediaInput/mpeg4
Pelco	admin	blank	rtsp://10.11.23.114:554/stream1
Sony	admin	admin	rtsp://10.11.11.224:554/media/video1

A.1 IP CAMERAS

A complete list of supported IP cameras and encoders is provided in the knowledgebase on the NLSS Support website: <https://support.nlss.com/customer/portal/topics/439521-nlss-supported-devices/articles>

A.2 AUDIO CODECS ON IP SECURITY CAMERAS

The following audio codecs are supported:

- G.711
- G.726
- AAC (Advanced Audio Codec)

A.3 RTSP STREAMS

If an IP camera is not in the list above, and it supports RTSP, it can be displayed as a *Stream* on the NLSS HD Decoder.

To display an RTSP stream, the user must configure the RTSP syntax and provide the user, password, and video resolution of the IP Camera. Examples for some vendors are below.

Manufacturer	Default User	Default Password	Sample RTSP Syntax
Axis	root	Must be set	rtsp://10.11.22.103:554/mpeg4/media.amp rtsp://10.11.20.138:554/axis--?media/media.amp
IQInvision	root	system	rtsp://10.11.22.110:554/PSIA/Streaming/channels/0
Panasonic	admin	12345	rtsp://10.11.20.112:554/MediaInput/mpeg4
Pelco	admin	blank	rtsp://10.11.23.114:554/stream1 Sony
	admin	admin	rtsp://10.11.11.224:554/media/video1
Arecont Vision	admin	blank	rtsp://10.11.23.50:554/h264.sdp?res=half&x0=0&y0=0&x1=1920&y1=1200&qp=20&doublescan=0&bitrate=65535&ssn=20
Basler	admin	admin	rtsp://<ip_address>/h264
Hikvision	admin	12345	rtsp://<ip_address>
Honeywell	administrator	1234	rtsp://<ip_address>/mpeg4

A.4 HTTP STREAMS

The NLSS HD Decoder can stream MJPEG encoded video via HTTP *Server Push*. This is a common mechanism for some versions of IP Cameras to stream video. The syntax is vendor specific. See vendor documentation for example syntax.

A.5 FILE FORMATS

The NLSS HD Decoder can store files on the local hard disk and display them on the attached monitor. The following file formats are supported:

File / Container	Extension	Video Codec	Audio Codec
MPEG4	MP4	H.264	AAC
MPEG4	MP4	MP4	AAC
MPEG4	MP4	WMV	AAC
QuickTime	MOV	H.264	AAC
Flash	FLV	H.264	AAC
Flash	FLV	H.264	MP3
Flash	F4V	H.264	AAC
Matroska	MKV	H.264	AAC
WMV	WMV	WMV	AAC

The recommended bit rate for these files is between 4 Mbps and 10 Mbps. Note that if a file is placed in a multi-pane view, the total bit rate for all panes in that view is not to exceed 10 Mbps.

A.6 VIDEO DISPLAYS

The NLSS HD Decoder supports most HD displays. It has one HDMI output and one DVI output connection. The following display formats are supported.

Display	Resolution	Aspect Ratio
HDMI	1080p (1920x1080)	16:9
DVI	SXGA (1280x1024)	5:4
DVI	XGA (1024x768)	4:3

The following displays are supported with customized drivers.

Vendor	Resolution
AG Neovo	TX Touchscreen Series
LG	42LV2500
Coby	LEDTV3226
Matrox	Image Grabber

Appendix B: Decoder System Performance

NLSS Decoders can stream HD quality video from IP cameras, but certain thresholds must be kept in mind. The maximum performance settings in this appendix have been tested and should be followed.

If settings are exceed these recommendations, display issues may occur.

B.1 H.264 STREAM PERFORMANCE

The NLSS HD Media Decoder supports multiple pane views, as described under [Configure and Display Views](#) in [Chapter 3: Configuration and Operation via a Browser](#).

As s treams are added to a view, more processing power is required. The best performance is achieved with H.264 encoded video streams.

The specifications for the multiple pane views are provided in the table below. The parameters apply to each stream in the view.

View	Maximum Resolution	Maximum Frame Rate	Maximum Bit Rate
1 X 1	1080p	30 fps	8 Mbps
1 X 2	1080p	15 fps	4 Mbps
1 X 4	1080p	10 fps	2 Mbps
2 X 2	1080p	10 fps	2 Mbps
2 X 4	D1 (720x480)	5 fps	500 Kbps
3 X 3	D1 (720x480)	5 fps	500 Kbps
4 X 4	VGA	5 fps	500 Kbps

Note: If a camera or stream contains B-frames, the recommended number of back references is four (4) or less.

B.2 MPEG4 PERFORMANCE

The NLSS Decoders support hardware assist for MPEG4 encoded streams. MPEG4 IP Cameras typically support a maximum resolution of D1. The specifications for the view layouts are in the table below. The parameters apply to each stream in the view.

View	Maximum Resolution	Maximum Frame Rate	Maximum Bit Rate
1 X 1	D1(720x480)	30 fps	2 Mbps
1 X 2	D1(720x480)	30 fps	2 Mbps
2 X 2	D1(720x480)	30 fps	1 Mbps
3 X 3	D1(720x480)	5 fps	500 Kbps

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