# ADDENDUM

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| **Addendum No.** | C4690M |
| **Date** | March 8, 2011 |
| **Document Affected** | C4659M Endura® NET5400T Series Network Video Encoder Web Configuration and Operation Manual |
| **Document Update** | This addendum contains additional feature information regarding the NET5400 Series network video encoder web application. |

## Additions and Changes to Features in the Web Application

The following features have been added or changed in the NET5400T Series network video encoders.

### ELECTRONIC PTZ OPERATION FROM THE LIVE VIEW PAGE

When a camera that supports PTZ operations is connected to a NET5400T Series encoder, additional PTZ controls appear on the Live View page. Use these controls to zoom in or out on the scene or to reposition the camera up, down, right, or left. Additional controls let you refocus the lens and control the amount of light on the scene. These controls are available after you log on to the device.

**Zoom In:** Click and hold the button to zoom the lens in.

**Zoom Out:** Click and hold the button to zoom the lens out.

**Tilt Up:** Click and hold the button to tilt the camera up.

**Tilt Down:** Click and hold the button to tilt the camera down.

**Pan Left:** Click and hold the button to pan the camera left.

**Pan Right:** Click and hold the button to pan the camera right.

**Focus Near:** Click and hold the button to focus on an object near the camera.

**Focus Far:** Click and hold the button to focus on an object far away from the camera.

**Iris Close:** Click and hold the button to close the iris and darken the image.

**Iris Open:** Click and hold the button to open the iris and lighten the image.

### ACCESS TO CAMERA ON-SCREEN DISPLAY MENUS FROM THE ENCODER CONFIGURATION TAB

A camera's on-screen display (OSD) menus can be accessed directly from the Encoder Configuration tab on the Settings page. You must log on to the device before you can display OSD Configuration from the Settings page. Use the arrow keys on your keyboard to navigate through the menus. Press the Enter key on your keyboard to make a menu selection.

### CONFIGURATION AND OPERATION FOR PRESETS AND PATTERNS

Patterns and presets can be configured directly from the OSD for third-party cameras that support these features. Access the OSD from the Settings page of the web application for the encoder. You can run patterns or presets from the Live View page of the web application. You must log on to the device to configure or operate patterns and presets.

### SUPPORT FOR SNMP FROM THE NETWORK TAB

Signaling Network Management Protocol (SNMP) is an available option for network settings on the encoder. SNMP is an application layer protocol used to manage TCP/IP-based networks from a single workstation or several workstations. The encoder supports SNMP versions 2c and 3 and can be configured to send data using a trap. SNMP V2c and SNMP V3 configuration settings are independent of each other, but only one SNMP version can be active at a time.

## MODIFICATIONS TO THE USERS AND GROUPS SETTINGS TABS

The Users and Groups tab on the Settings page has been renamed; it is now called the Users tab. Use the Users tab to create and manage user accounts and to change the way the camera manages the users settings.

**General Settings:** Use the General Settings page to set user access levels. This access level is a predefined set of user permissions that allows the camera to be accessed without logging on. The permission levels are Operator, Viewer, and Disabled.

The General Settings page also allows you to change the way the device manages users and groups settings. These settings can be managed locally on the encoder or by using a centralized server to apply changes to multiple devices. General settings for users and groups include Standalone, Node, and Mixed settings. An example of a Mixed management mode would be using a Lightweight Directory Access Protocol (LDAP) server like Microsoft® Active Directory for authentication.

**Users:** User accounts are created to limit the permissions of individuals who are logged on to the camera. The Users page also contains four predefined access level settings that include Administrator, Manager, Operator, and Viewer permissions.

## ANALYTIC ALARM TRIGGERS AS EVENT SOURCE INPUTS

An analytic alarm trigger can be used as a source for an event handler on the encoder. Use the Events tab on the Settings page to create an event handler for an alarm trigger. The analytics source triggers when any configured behavior is detected. To use an analytic alarm trigger as an event source, you must select Analytics in the source's Type drop-down menu on the Events tab of the Settings page.

**PELCO**
by Schneider Electric

# NET5400T Series Network Video Encoder

**Web Configuration and Operation Guide**

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## LEGAL NOTICE

SOME PELCO EQUIPMENT CONTAINS, AND THE SOFTWARE ENABLES, AUDIO/VISUAL AND RECORDING CAPABILITIES, THE IMPROPER USE OF WHICH MAY SUBJECT YOU TO CIVIL AND CRIMINAL PENALTIES. APPLICABLE LAWS REGARDING THE USE OF SUCH CAPABILITIES VARY BETWEEN JURISDICTIONS AND MAY REQUIRE, AMONG OTHER THINGS, EXPRESS WRITTEN CONSENT FROM RECORDED SUBJECTS. YOU ARE SOLELY RESPONSIBLE FOR INSURING STRICT COMPLIANCE WITH SUCH LAWS AND FOR STRICT ADHERENCE TO ANY/ALL RIGHTS OF PRIVACY AND PERSONALTY. USE OF THIS EQUIPMENT AND/OR SOFTWARE FOR ILLEGAL SURVEILLANCE OR MONITORING SHALL BE DEEMED UNAUTHORIZED USE IN VIOLATION OF THE END USER SOFTWARE AGREEMENT AND RESULT IN THE IMMEDIATE TERMINATION OF YOUR LICENSE RIGHTS THEREUNDER.

## REGULATORY NOTICES

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

### RADIO AND TELEVISION INTERFERENCE

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You may also find helpful the following booklet, prepared by the FCC: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402.

Changes and Modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission's rules.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

## VIDEO QUALITY CAUTION

### FRAME RATE NOTICE REGARDING USER-SELECTED OPTIONS

Pelco systems are capable of providing high quality video for both live viewing and playback. However, the systems can be used in lower quality modes, which can degrade picture quality, to allow for a slower rate of data transfer and to reduce the amount of video data stored. The picture quality can be degraded by either lowering the resolution, reducing the picture rate, or both. A picture degraded by having a reduced resolution may result in an image that is less clear or even indiscernible. A picture degraded by reducing the picture rate has fewer frames per second, which can result in images that appear to jump or move more quickly than normal during playback. Lower frame rates may result in a key event not being recorded by the system.

Judgment as to the suitability of the products for users' purposes is solely the users' responsibility. Users shall determine the suitability of the products for their own intended application, picture rate and picture quality. In the event users intend to use the video for evidentiary purposes in a judicial proceeding or otherwise, users should consult with their attorney regarding any particular requirements for such use.

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This offer is valid for a period of three (3) years from the date of the distribution of this product by Pelco.

# Introduction

The NET5400T Series video encoder is a network-based multichannel encoder with a built-in, Web-based viewer for live streaming to a standard Web browser (Microsoft® Internet Explorer® or Mozilla® Firefox®). The encoder is built upon open standards and is part of an Endura® system for recording, managing, administering, and viewing video streams.

The encoder supports H.264 and MJPEG compression. It can generate two independently configurable H.264 streams, each up to 4CIF resolution (704 x 480 for NTSC, 704 x 576 for PAL) and 30/25 images per second (ips) in addition to an MJPEG stream for Web viewing.

The encoder includes 1-, 2-, and 4-channel units; some models support a full line of video analytics for object detection and activity detection. The 1- and 2-channel models include built-in Power over Ethernet (PoE), which supplies power to the encoder through the network. If PoE is not available, the encoder is prewired for 12 or 24 VAC, and can be powered from an optional external power supply or directly from an optional rack mount.

The NET5400T can be configured for one alarm input for each video channel and provides one relay output for the unit. When an alarm event is triggered, the unit can send a message to an operator, trigger a relay, and start recording video.

The unit also supports motion detection for each video channel. You can configure up to three motion zones, each with its own independent sensitivity and threshold settings. When the NET5400T detects activity in any of these areas, it can trigger an alarm event.

The video encoder supports one audio input for each video channel over the network. The system operator (security personnel) can see and hear activity in any target area in which a microphone is present.

The NET5400T supports control of remote peripherals such as pan/tilt/zoom (PTZ) cameras by way of Pelco D and Coaxitron® protocols.

## FEATURES

- Open standards-based architecture
- H.264 baseline, main, or high profile compression
- Dual-stream at up to 4CIF, 30/25 images per second (ips) per stream
- Integrated multizone video motion detection
- Integrated audio, alarm, and relay outputs
- Integrated Coaxitron and Pelco D PTZ protocols
- Support for Power over Ethernet (PoE or PoE+) on 1- and 2-channel models
- Support for multicast transmissions
- Support for Pelco and Object Video analytics at the edge

## BUILT-IN ANALYTICS

Designated NET5400T Series encoders are available with Pelco Analytic Suites or ObjectVideo® (OV) Suites. Analytics enhance the flexibility and performance of Pelco cameras connected to the encoder.

Pelco Analytic Suites are capable of running several analytics at the same time. Up to three behaviors can run without interfering with other encoder functions.

Pelco Analytic Suites are preloaded on the encoder and can be configured and enabled using a standard Web browser. The analytics are also compatible with third-party systems that support Pelco's Analytics API system. Refer to the specific product documentation for instructions on how to configure and enable Pelco analytics with the API.

# MODELS

NET5401T          One-channel H.264 encoder with Camera Sabotage
NET5401T-I        One-channel H.264 encoder with built-in Pelco Analytics Suite
NET5401T-OS       One-channel H.264 encoder with OV Security Suite
NET5401T-OSP      One-channel H.264 encoder with OV Security Suite Plus
NET5401T-OCP      One-channel H.264 encoder with OV Event Counting Security Suite
NET5402T          Two-channel H.264 encoder with Camera Sabotage
NET5402T-I        One-channel H.264 encoder with built-in Pelco Analytics Suite
NET5402T-OS       Two-channel H.264 encoder with OV Security Suite
NET5402T-OSP      Two-channel H.264 encoder with OV Security Suite Plus
NET5402T-OCP      Two-channel H.264 encoder with OV Event Counting Security Suite
NET5404T          Four-channel H.264 encoder with Camera Sabotage
NET5404T-I        Four-channel H.264 encoder with built-in Pelco Analytics Suite
NET5404T-OS       Four-channel H.264 encoder with OV Security Suite
NET5404T-OSP      Four-channel H.264 encoder with OV Security Suite Plus
NET5404T-OCP      Four-channel H.264 encoder with OV Event Counting Security Suite

# Operation

This section describes how to view live video on cameras connected to the NET5400T and how to configure the NET5400T. The following topics are covered in this section:

- Viewing live video and setting the primary and secondary stream for camera video
- Taking a snapshot while viewing live video
- Changing the view mode to view one or more video streams simultaneously
- Selecting cameras to display on the Live View page and disconnecting video
- Configuring system settings, network settings, audio video streams, users and groups, and events
- Generating system logs
- Restarting the encoder
- Restoring default settings on the encoder

## MINIMUM SYSTEM REQUIREMENTS FOR USING A WEB BROWSER

Network and processor bandwidth limitations might cause the video stream to pause or appear pixilated when an increased number of Web-interface users connect to the camera. Decrease the images per second (ips), resolution, compression, or bit rate settings of the Web interface video streams to compensate for network/processor limitations.

The following minimum system requirements are needed to use a Web browser with the IP camera:

**Processor:** Intel® Core™ 2 Duo microprocessor, 2.6 GHz

**Operating system:** Microsoft® Windows® XP, Windows Vista®, or Mac® OS X 10.4

**Memory:** 2 GB RAM

**Network interface card:** 100 megabits (or greater)

**Monitor:** Minimum of 1024 x 768 resolution, 16- or 32-bit pixel color resolution

**Web browser:** Internet Explorer® 7.0 (or later); Internet Explorer 8.0 (or later) is recommended for configuring analytics

**Media Player:** QuickTime® 7.6.5 for Windows XP, Windows Vista, or QuickTime 7.6.4 for Mac OS X 10.4 (or later)

**NOTE:** This product is not compatible with QuickTime version 7.6.4 for Windows XP, Windows Vista. If you have this version installed on your PC, upgrade to QuickTime version 7.6.5.

Refer to the following sections for more information:
- *Compression Standards* on page 25
- *Available Camera Resolution* on page 26
- *Image Rate* on page 26
- *Bit Rate* on page 26

# ACCESSING THE ENCODER AND ITS CAMERAS

The first time you access the encoder, the live video page appears. By default, you are viewing the video as a public user and only have access to the single stream live view.

If, for security purposes, users should not be allowed to view video without first logging on to the camera, change the permissions for public users.

## LOGGING ON TO THE ENCODER

1. Open the Web browser.

2. Type the encoder's IP address in the browser address bar.

   **NOTE:** If you do not know the encoder's IP address, you can locate it using the Pelco Device Utility software.

3. Click the Login button in the navigation bar; a dialog box appears.

4. Enter your user ID and password.

   **NOTE:** If you are logging on to the encoder as the administrator for the first time, the default User ID and Password are **admin** (all lowercase). For security purposes, be sure to change the password after you log on for the first time.

5. Click Log In.

Refer to the following section for more information:

- *Editing a User* on page 31

# Live Video Page

The live video page allows you to manage the way you view live video and capture images. You can also view live video from this page and access menus on the navigation bar (based on user permissions).
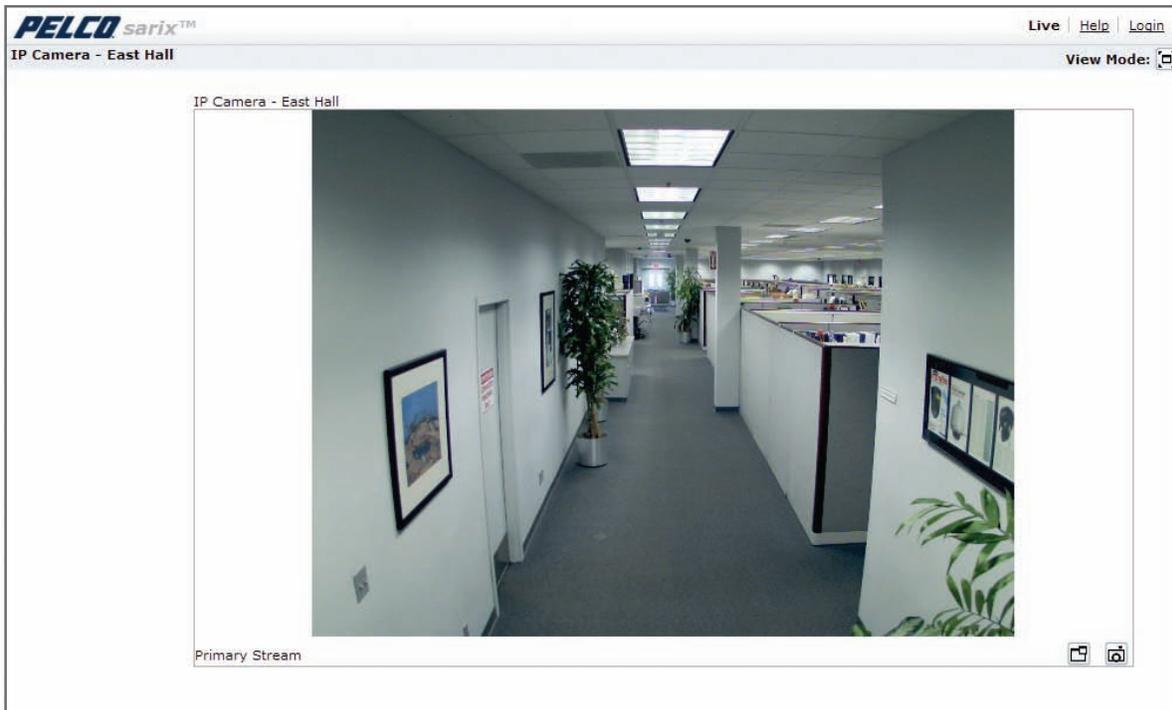


**Figure 1.** Live Video Page

Refer to the following sections for more information:

- *Live Video Page Icons* on page 12
- *Selecting a Stream* on page 13
- *Taking a Snapshot* on page 14
- *Displaying Video in the Multiscreen View* on page 14

# LIVE VIDEO PAGE ICONS

Viewable icons are based on user permissions.

**Show Device List:** Displays a list of viewable cameras connected to the encoder to which you are logged on.

**Disable Viewer:** Closes the live view window.

**1 x 1 Mode:** Displays a single video pane.

**2 x 2 Mode:** Displays 4 video panes in rows of two.

**3 x 3 Mode:** Displays 9 video panes in rows of three.

**4 x 4 Mode:** Displays 16 video panes in rows of four.

**Select Stream:** Selects the viewable video stream that is displayed in live view (primary or secondary) and selects unicast or multicast settings.

**Maximize Viewing Area:** Scales the image to the full size of the browser. To resize the video pane to normal view, click the Show Toolbar button in the upper-right corner of the window.

**Show Toolbar:** Returns the window to normal view. This option is only available after the window has been set to maximize the viewing area.

**Open Stream in New Window:** Opens the video in a scalable, independent window. Opening the video in a separate window allows you to view the video while other applications are running. This window can be minimized, maximized, or closed using the title bar buttons of the active window. The window can also be resized by dragging the lower-right corner of the window.

**Take a Snapshot:** Captures the image displayed in the video pane and then saves it as a JPEG file.

# SELECTING A STREAM

1.  Click the Select Stream button.

2.  Select one of the following stream options from the Select Stream page:

    **Primary Stream:** To select this stream, click the button next to Primary Stream.

    **Secondary Stream:** To select this stream, click the button next to Secondary Stream.

    **QuickView Stream:** To select this stream, click the button next to QuickView Stream.

    **Event Stream:** To select this stream, click the button next to Event Stream.

    **NOTE:** If the secondary stream has not been configured, only Primary Stream, Event Stream, and QuickView Stream are available.

3.  Select one of the following options to adjust the stream settings:

    **H.264 compression:** Select the video transmission type from the Transmission drop-down menu. Available settings include Unicast and Multicast.

    **JPEG compression:** Select the image rate for the stream from the Image Rate drop-down menu. The available settings for the primary and secondary streams depend on the Image Rate setting. The QuickView Stream has only two image rate settings: 2 ips and 1 ips.

4.  Click the View button to save the stream settings.

Refer to the following sections for more information:

## PRIMARY STREAM AND SECONDARY STREAM

The Primary Stream and Secondary Stream are video streams that include compression, resolution, image rate, and bit rate settings. The streams can be set up using a video preset setting, or they can be customized using the video configuration settings.

A video preset is a pre-defined video configuration that offers a good balance between video performance and bandwidth usage. For easy stream configuration, use the Video Preset page located in the drop-down menu of the A/V Streams Tab.

To customize the Primary Stream or Secondary Stream use the Video Configuration page located in the drop-down menu of the A/V Streams Tab. Configurable settings include the stream name, compression standard, resolution setting, image rate, and bit rate. The default names for the streams are Primary Stream and Secondary Stream; however, if these stream names have been changed, the new names will replace the default names (Primary Stream and Secondary Stream) on the Select Stream page.

## EVENT STREAM

The Event Stream displays a list of alerts triggered by a running behavior (analytic). The alert includes a screen capture, the profile that was triggered, and the zone where the alert was detected. For the Event Stream to work you must have a behavior profile running. To set up and run behaviors, use the Analytic Configuration page located in the drop-down menu of the Events Tab.

## UNICAST

A unicast transmission sends a separate video stream to each user that is requesting data. Although multiple users might request the same data from the encoder at the same time, duplicate video streams are transmitted to each user. Every unicast user that connects to the encoder consumes additional processing power, which limits the number of simultaneous users who can access the camera.

The encoder supports a minimum of 2 unicast streams for each camera input. Additional unicast streams are possible, but these may result in dropped packets when several 4-channel encoders are connected together in a daisy-chained network.

### MULTICAST

A multicast transmission sends data to multiple users at the same time using one transmission stream. Each multicast user that connects to the encoder consumes no additional processing power; therefore, multicast video streams can be sent to an unlimited number of simultaneous users. Multicast transmission is recommended if the network can accommodate it since processing overhead and network bandwidth consumption negatively affect unicast transmission.

# TAKING A SNAPSHOT

1. Click the "Take a Snapshot" button.

2. The File Download dialog box opens, and the following message appears: "Do you want to open or save this file?"

3. Select one of the following options:

   **Open:** Your computer's photo editing program opens and displays the screen image. This function is available only when using Microsoft® Internet Explorer® 7.0 (or later) or Mozilla® Firefox® 3.0 (or later).

   **Save:** The image is saved as a JPEG file on your computer.

   **Cancel:** The captured image is not saved or displayed and the dialog box closes.

**NOTE:** If you are using MJPEG, the captured image will be the size of the largest MJPEG stream. If you are using H.264, the image is captured using the QuickView Stream, which is approximately VGA resolution.

# DISPLAYING VIDEO IN THE MULTISCREEN VIEW

Cameras connected to the encoder to which you are logged on can be displayed in a multiscreen view. Use the 4-camera view mode button to display video from multiple cameras simultaneously.

The camera you are logged on to is the default display for the upper-left video pane in the multiscreen view. The device name for this camera is displayed in the gray area near the top of all pages.

To select video to display in the individual multiscreen panes:

1. Click the desired View Mode display button.

2. Click the Show Device List button above the selected video pane. A list of encoders and IP cameras on the network subnet appears in the video pane.

3. Click the name of the camera you want to view. The live video of the selected camera appears in the video pane.

4. Repeat steps 1 through 3 for the remaining video panes.

# Settings Page

Depending on user permissions, the Settings page allows you to manage encoder system settings, set up users and groups, and control the encoder and any cameras connected to it.

**NOTE:** The Settings menu might not be available if the user does not have permission to access this feature.

## ACCESSING THE CONFIGURATION MENUS

1. Log on to the encoder.

2. Click the Settings link in the navigation bar located in the upper-right corner of the page; a list of menu tabs appears.

3. Place the mouse pointer over a tab to display a list of submenus.

Refer to the following sections for more information:

# System Tab

Use the System tab to change the device name, configure the time settings, and display system information. You can also use the System tab to generate a system log, to reboot the encoder, or to restore the encoder's factory default settings.

### General Settings

The General Settings page includes programmable fields for the device name, time server, and text overlay settings. The device name is the user-friendly description of the encoder and cameras displayed in the gray area near the top of screen.The time server is an external server that uses Network Time Protocol (NTP) to synchronize the camera date and time settings.

You can also use the General Settings page to configure the Simple Mail Transfer Protocol (SMTP) server to send an email notification when an event handler is activated.

**NOTE:** Consult your network administrator for information on configuring email notification on your local network.

### Information Settings

The System Information page fields are read-only and include the firmware version, hardware version, model number, and serial number of the system. This information is typically required by Pelco Product Support for troubleshooting purposes.

## CHANGING THE DEVICE NAME

1. Click the System tab.

2. Click the Device Name box and highlight the text.

3. Type a user-friendly name into the Device Name box (2 to 64 characters). A user-friendly name makes it easier to recognize the device on the network. Examples of user-friendly names are Front Door, Lobby, or Parking Lot.

4. Click Save to save the new device name, or click Reset to restore to the previously saved device name.

## CONFIGURING THE TIME SETTINGS

If the encoder is connected to a Dynamic Host Configuration Protocol (DHCP) network that has time server properties configured, the encoder will synchronize automatically with the time server. If the DHCP network's time server properties are not configured or the network does not have a time server, you need to configure the DHCP settings manually.

Click the System tab.
1. Select General from the drop-down menu.

2. Type the IP address of the time server in the Time Server field. The time server is an external server that uses Network Time Protocol (NTP) to synchronize the encoder date and time settings.

3. Select the Time Zone option. Select the continent and the region that are closest to the encoder's location from the Time Zone drop-down menus.

    **NOTE:** If your location observes a form of daylight saving time, the system will automatically change the time on the associated dates.

4. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## GENERATING A SYSTEM LOG

1. Click the System tab.

2. Click the Generate System Log button to create a system log that can be used by Pelco Product Support for troubleshooting. Contact Pelco Product Support at 1-800-289-9100 (USA and Canada) or +1-559-292-1981 (international).

## REBOOTING THE ENCODER

1. Click the System tab.

2. Click the Reboot Encoder button to restart the encoder. Rebooting the encoder does not change the configured settings.

## RESTORING ALL DEFAULT SETTINGS

This process cannot be undone; all user and custom settings will be lost.

1. Click the System tab.

2. Click the Restore All Encoder Defaults button to restore the factory default settings.

**NOTE:** If the encoder is not connected to a Dynamic Host Configuration Protocol (DHCP) network, the IP address settings for the encoder will be lost and the server will not recognize the encoder. DHCP On is the default setting for the encoder IP address.

Refer to the following sections for more information:

# Network Tab

Use the Network tab to change the encoder's general network settings, select the Secure Sockets Layer (SSL) settings, enable Secure Shell (SSH), and configure 802.1x port security settings.

### General Network Settings

The General Network page includes programmable and read-only fields for network communication settings. Available settings include the Hardware Address, Hostname, IP Address, Subnet Mask, Gateway, and DNS Servers.

You can also enable or disable the Dynamic Host Configuration Protocol (DHCP) server from the General Network page. DHCP automatically assigns an IP address to the device if there is a DHCP server on the network. If DHCP is set to On, the IP address, subnet mask, gateway, and DNS server settings are read-only text. If DHCP is set to Off, these settings must be manually changed. The default encoder setting for DHCP is On.

### SSL Settings

To ensure security on the Internet, all Web browsers provide several security levels that can be adjusted for sites that use SSL technology to transmit data. SSL encrypts communications, making it difficult for unauthorized users to intercept and view user names and passwords.

SSL requires signed certificates to determine if the Web browser accessing the encoder has the required authentication. The encoder can generate a certificate signing request (CSR) that can be sent to a certificate authority for a signature (for example, VeriSign®), or it can generate a self-signed certificate using the Generate Self-Signed Certificate option.

### SSH Settings

SSH is a user-enabled protocol that allows Pelco Product Support to log on to and service the encoder for advanced troubleshooting purposes. From this page, users with the appropriate permissions can enable or disable SSH access to the encoder.

### 802.1x

802.1x is a port security that authenticates devices that want to establish a point-to-point access through a wired or wireless port using Extensible Authentication Protocol (EAP). This port-based authentication method prevents unauthorized access to a Local Area Network (LAN) through a physical port. For example, when a device is connected to a network port, the network switch will ask the device for authentication. If the credential is accepted when the device sends a credential to the network switch, the network switch will open the port for normal use. If authentication fails, the device is prevented from accessing information on the port.

Refer to the following sections for more information:

- *Changing the Hostname* on page 18
- *Turning On DHCP* on page 19
- *Turning Off DHCP* on page 19
- *Selecting the Secure Sockets Layer Mode* on page 20
- *Generating a Certificate Request* on page 21
- *Generating a Self-Signed Certificate* on page 21
- *Enabling Secure Shell* on page 22
- *Configuring the 802.1x Port Security Settings* on page 22

## CHANGING THE HOSTNAME

1. Place your mouse pointer over the Network tab.

2. Select General from the drop-down menu.

3. Click in the Hostname box and highlight the text.

4. Type a user-friendly name into the Hostname box (1 to 21 characters) using any combination of alphanumeric characters. A user-friendly name makes it easier to recognize the device on the network.

5. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

# TURNING ON DHCP

The default Dynamic Host Configuration Protocol (DHCP) setting for the encoder is DHCP On. If the DHCP option is set to Off, complete the following steps to reset it to On.

1. Place your mouse pointer over the Network tab.

2. Select General from the drop-down menu.

3. Select the On option for DHCP.

4. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

**NOTE:** If the encoder is not connected to a DHCP server but DHCP is set to On, the default IP address 192.168.0.20 on subnet mask 255.255.255.0 is automatically assigned to the encoder. After the first encoder is connected and assigned the default IP address, the system will automatically look for other encoders on the auto IP address system and assign IP addresses in sequential order as required. For example, if three encoders are connected to a network without a DHCP server, the first encoder will be assigned address 192.168.0.20, the second encoder will be assigned address 192.168.0.21, and the third encoder will be assigned address 192.168.0.22.

# TURNING OFF DHCP

⚠ **WARNING:** Contact your network administrator to avoid any network conflicts before setting or changing the IP address of the device.

1. Place your mouse pointer over the Network tab.

2. Select General from the drop-down menu.

3. Select the Off option for the Dynamic Host Configuration Protocol (DHCP).

4. Change the following network settings as required:

   **IP Address:** The address of the encoder connected to the network.

   **Subnet Mask:** The address that determines the IP network that the encoder is connected to (relative to its address).

   **Gateway:** The router that accesses other networks.

   **DNS Servers:** The addresses of the dedicated servers that translate the names for Web sites and hostnames into numeric IP addresses.

5. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

# SELECTING THE SECURE SOCKETS LAYER MODE
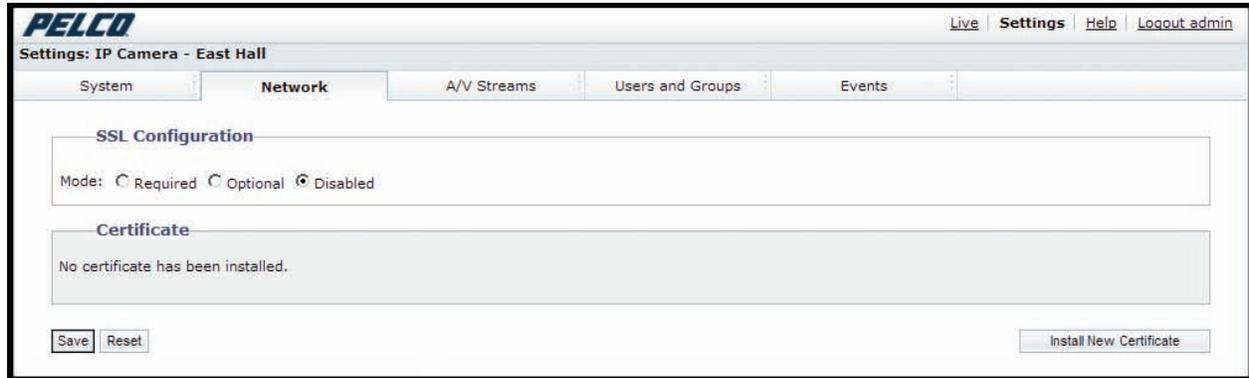


**Figure 2.** SSL Configuration Page

1. Place your mouse pointer over the Network tab.

2. Select SSL from the drop-down menu.

3. Select one of the following modes:

    **Required:** A signed Secure Sockets Layer (SSL) certificate must be installed, and a secure URL that begins with the protocol name "https:" must be used to access the encoder. Sensitive data is always encrypted during transmission. A URL that begins with the "http:" protocol rather than the "https:" protocol will be redirected to the secure URL automatically.

    **Optional:** A signed SSL certificate must be installed, but a secure URL that begins with the protocol name "https:" is optional when accessing the encoder. You can also access the encoder using a standard URL with the "http:" protocol, but sensitive data is not encrypted during transmission. To ensure that sensitive data is encrypted, you must use a secure URL with the "https:" protocol.

    **Disabled (default):** Turns off access to the Web client through SSL. Sensitive data will not be encrypted during transmission.

**NOTE:** If the SSL mode is set to disabled, you cannot access the encoder using a URL that begins with an "https:" protocol. Your Web browser displays an error message if you do not type the encoder URL correctly.

Refer to the following sections for more information:
- *Generating a Certificate Request* on page 21
- *Generating a Self-Signed Certificate* on page 21

## GENERATING A CERTIFICATE REQUEST

1. Place your mouse pointer over the Network tab.

2. Select SSL from the drop-down menu.

3. Click the Install Certificate button located at the bottom of the SSL Configuration page. The Select Certificate Install Method option buttons appear on the page.

4. Select Generate Certificate Request, and then click Next. The Certificate Request Form opens.

5. Fill in all of the fields, and then click Generate Request. The following progress message appears on the page: "Generating certificate signing request, please wait."

6. Send the CSR, which looks like an encrypted block of undecipherable text, to a third-party certificate authority of your choice for a signature.

7. After you receive the signed certificate, click the Install Certificate button to upload the signed certificate to the device.

8. After the certificate is uploaded, select the desired mode.

9. Click Save.

**NOTE:** Depending on the third-party certificate authority that signed your certificate, you might need to renew your certificate after a specified amount of time. Consult the certificate authority for more details.

## GENERATING A SELF-SIGNED CERTIFICATE

1. Place your mouse pointer over the Network tab.

2. Select SSL from the drop-down menu.

3. Click the Install Certificate button located at the bottom of the SSL Configuration page. The Select Certificate Install Method option buttons appear on the page.

4. Select the "Generate Self-signed Certificate" option, and then click Next. The "Self-signed Certificate Information Form" opens.

5. Fill in all of the fields, and then click Generate Request. The following progress message appears on the page: "Your changes are being applied. This process might take up to 3 minutes." After three minutes, the certificate is uploaded to the device.

6. After the certificate is uploaded, select the desired mode.

7. Click Save.

**NOTE:** Self-signed certificates are valid for one year. The certificate's expiration date is listed in the Installed Certificate information section. If the certificate has expired and you attempt to access the encoder using a secure URL, the Web browser displays a message. Repeat this procedure to generate and upload a new certificate.

# ENABLING SECURE SHELL
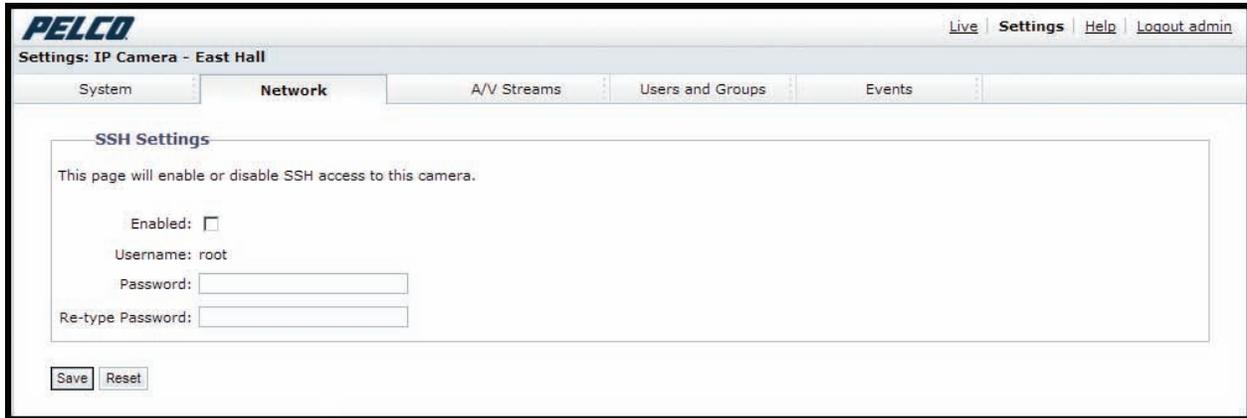


**Figure 3.** SSH Settings Page

1. Place your mouse pointer over the Network tab.

2. Select SSH from the drop-down menu.

3. Select the Enabled check box.

**NOTE:** The username is always root and cannot be changed. The username and password are required when accessing the encoder through a third-party SSH client.

4. Click in the Password box and type a password (4 to 16 alphanumeric characters). Passwords are case-sensitive.

5. Click in the Re-type Password box and retype your password.

6. Click the Save button to save the password and enable SSH, or click the Reset button to clear all of the information you entered without saving it.

# CONFIGURING THE 802.1X PORT SECURITY SETTINGS

⚠ **WARNING:** To prevent network conflicts, contact your network administrator before configuring the 802.1x port security settings.

1. Place your mouse pointer over the Network tab.

2. Select 802.1x from the drop-down menu.

3. Select the On option for the 802.1x Port Security. The default setting for 802.1x is Off.

4. Select the Extensible Authentication Protocol (EAP) method from the Protocol drop-down menu. Supported EAP methods include EAP-MD5, EAP-PEAP, EAP-TLS, and EAP-TTLS.

5. Connect the PC to a 802.1x secured switch with like authentication protocols.

6. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

# A/V Streams Tab

Use the A/V Streams tab to configure the video and audio streams for the encoder. The A/V Streams tab includes a Video Presets page, a Video Configuration page, and an Audio Configuration page.

## Video Presets

The Video Preset page includes three fully-configured video presets, which include primary and secondary video stream settings for easy setup. These presets may also be used as a starting point for a custom video configuration. These preset configurations vary depending on encoder model.

## Video Configuration

The Video Configuration page allows you to customize the compression, resolution, image rate, and bit rate of the video streams. The default names for the streams are Primary Stream and Secondary Stream. Although each stream can be configured independently, the settings of one stream can limit the options available to the other stream, depending on the processing power used.

**NOTE:** Always configure the primary stream before the secondary stream. The primary stream should always be the most resource-intensive of the streams.

## Audio Configuration

The Audio Configuration page allows you to setup an external audio device. The default setting for Audio is disabled, which means that no audio is transmitted from the encoder. When enabled, audio is transmitted from the encoder to the PC. Based on your system configuration, images and audio may not be synchronized.

**NOTE:** Improper use of audio/visual recording equipment may subject you to civil and criminal penalties. Applicable laws regarding the use of such capabilities vary between jurisdictions and may require, among other things, express written consent from the recorded subjects. You are solely responsible for insuring strict compliance with such laws and for strict adherence to any/all rights of privacy and personalty.

Refer to the following sections for more information:

# SELECTING A VIDEO PRESET CONFIGURATION



**Figure 4.** Select Video Preset Configuration Page

1. Place your mouse pointer over the A/V Streams tab.

2. Select the Video Preset option from the drop-down menu.

3. Click the button next to the video preset stream configuration (High, Medium, or Low) that you want to select.

4. Click the Save button to save the settings, or click the Reset button to clear your selection without saving it.

# CONFIGURING A CUSTOM VIDEO STREAM CONFIGURATION



**Figure 5.** Custom Video Stream Configuration Page

1. Place your mouse pointer over the A/V Streams tab.

2. Select Video Configuration from the drop-down menu.

3. Click both of the Clear buttons to delete the primary and secondary streams settings.

4. *Optional:* In the Primary Stream section, type a user-friendly name in the Name box (2 to 64 characters). A user-friendly name makes it easier to recognize the stream (for example, Live and Recording).

5. Configure the Compression Standard, Resolution, Image Rate, and Bit Rate settings for the primary stream.

   **NOTE:** The compression standard, resolution, image rate, and bit rate settings are dependent on each other. You must first decide the priority setting before you configure a stream. For example, if you want an image rate of 30 ips, set the image rate before you configure the other settings.

6. Repeat steps 3 through 5 for the Secondary stream.

7. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## COMPRESSION STANDARDS

**JPEG:** A commonly used video compression scheme, also known as MJPEG. JPEG has the least impact on the encoder's processor, but it requires the most bandwidth.

**H264:** A version of MPEG-4 compression used in high-definition video players such as Blu-ray™ and HD-DVD. H.264 is the most processor-intensive, but it requires the least amount of bandwidth.

## AVAILABLE CAMERA RESOLUTION

Available camera resolutions depend on the capabilities of the cameras that are attached to the encoder. Refer to the documentation that accompanied the cameras for more information on camera resolution.

## IMAGE RATE

The image rate is the number of images per second (ips) available for the video stream configuration.  Available image rates are 30, 25, 24, 15, 12.5, 12, 10, 8, 7.5, 6, 5, 4, 3, 2.5, 2, and 1.

**NOTE:** The maximum image rate setting might not be obtainable due to the programmed compression standard and the resolution of the stream.

## BIT RATE

The bit rate is the quality of the video stream (rendered in kilobits per second). The higher the value, the higher the video quality and bandwidth required.

**NOTE:** When you change any of the video stream configuration settings, the encoder automatically adjusts the bit rate. If you manually reduce the bit rate lower than the encoder's automatic setting, the image quality might be reduced and the stream selection options might be limited.

## I-FRAME INTERVAL

The I-frame interval configures the number of partial frames that occur between full frames in the video stream. For example, in a scene where a door opens and a person walks through, only the movements of the door and the person are stored by the video encoder. The stationary background that occurs in the previous partial frames is not encoded, because no changes occurred in that part of the scene. The stationary background is only encoded in the full frames. Partial frames improve video compression rates by reducing the size of the video. As the I-frame interval increases, the number of partial frames increases between full frames. Higher values are only recommended on networks with high reliability. This setting is only available with H.264.

## QUALITY OF SERVICE FOR DIFFERENTIATED SERVICES CODE POINT

Quality of Service (QoS) for  Differentiated Services Code Point (DSCP) is a code that allows the network to prioritize the transmission of different types of data. This setting is only available with H.264.

**NOTES:**

- If you are not familiar with DSCP, contact your network administrator before changing this setting.
- Your network must be configured to use QoS. If you are unsure if your network is QoS-aware, contact your network administrator.

## ENDURA SIGNING

Enabling the Endura Signing feature allows an Endura® system to authenticate video from an Endura recorded stream. This setting is only available with H.264.

## RATE CONTROL

The rate control setting determines the bit rate and quality of each frame in the video stream. There might be a trade-off between image quality and the resources required for video storage when selecting a rate control setting.

**CBR:** The constant bit rate (CBR) streams video at a fixed number of bits per second. CBR uses the full capacity of the bit rate setting for scenes with or without motion. Video is always streamed at the user bit rate setting.

## PROFILE

The profile defines the subset of bit stream features in an H.264 stream, including color reproduction and additional video compression. It is important that the selected profile is compatible with the recording device so that a stream can be decoded and viewed.

**Baseline:** A simple profile with a low compression ratio. A baseline profile is compatible with more recorders but uses more bits to compress quality video than the other profiles. This profile supports I-frames and P-frames. Use the baseline profile in applications with limited scene changes; for example, an indoor scene with a single, unchanging primary light source and minimal motion.

**Main:** An intermediate profile with a medium compression ratio. Main is the default profile setting. This profile is compatible with most recorders and uses fewer bits to compress video than the baseline profile; however, it uses more bits than the high profile. The main profile supports I-frames, P-frames, and B-frames.

**High:** A complex profile with a high compression ratio. This is the primary profile for high-definition television applications; for example this is the profile adopted for Blu-ray and HD-DVD. The high profile supports I-frames, P-frames, and B-frames.

## GOP STRUCTURE

The group of pictures (GOP) structure is the sequence in which frames are placed within a video stream. The GOP structure always includes intra-coded frames (I-frames) and predictive coded frames (P-frames), but it can also include bi-directionally predictive coded frames (B-frames).

Each GOP structure starts with an I-frame: an image of the complete scene that is used as the reference frame in the structure. P-frames record data changes that are different than the previous frame. This allows the video encoder to save space since the data of the I-frame is not duplicated. B-frames not only capture data changes from the previous frame, but they also capture the data changes from the frame after the B-frame. B-frames are more compressed than P-frames and require more processing power to be decoded.

The encoder can be configured to use one of the following GOP structures:

**IP:** A compression that uses only I-frames and P-frames to provide low latency and a high level of decoder support. This GOP structure is compatible with more recorders and decoders than IBBrBP.

**IBBrBP:** A compression that provides the highest quality image at a given bit rate, but it also increases the latency of the video and requires more processing power for decoders.

## ADVANCED SHARPENING

The Advanced Sharpening setting enhances picture detail by sharpening the edges in the picture. When this mode is enabled, there is a trade-off between image quality and the resources required for processing power. The maximum camera resolution and image rate will not be available, but the edges of the image seem sharper. Only use this setting if you cannot achieve the sharpness level you want by adjusting the digital processing settings of the camera. The default setting for Advanced Sharpening is Off.

# SELECTING THE AUDIO CONFIGURATION SETTINGS

To use audio with the encoder you must have an audio device connected to the accessory port located on the back of the encoder. Once the device is connected, audio can only be enabled through the primary stream.

Audio and video may not be synced when viewing and listening to the primary stream through a Web browser. You may experience a three-second delay in video when viewing the primary stream with audio.

**NOTE:** Improper use of audio/visual recording equipment may subject you to civil and criminal penalties. Applicable laws regarding the use of such capabilities vary between jurisdictions and may require, among other things, express written consent from the recorded subjects. You are solely responsible for insuring strict compliance with such laws and for strict adherence to any/all rights of privacy and personalty.
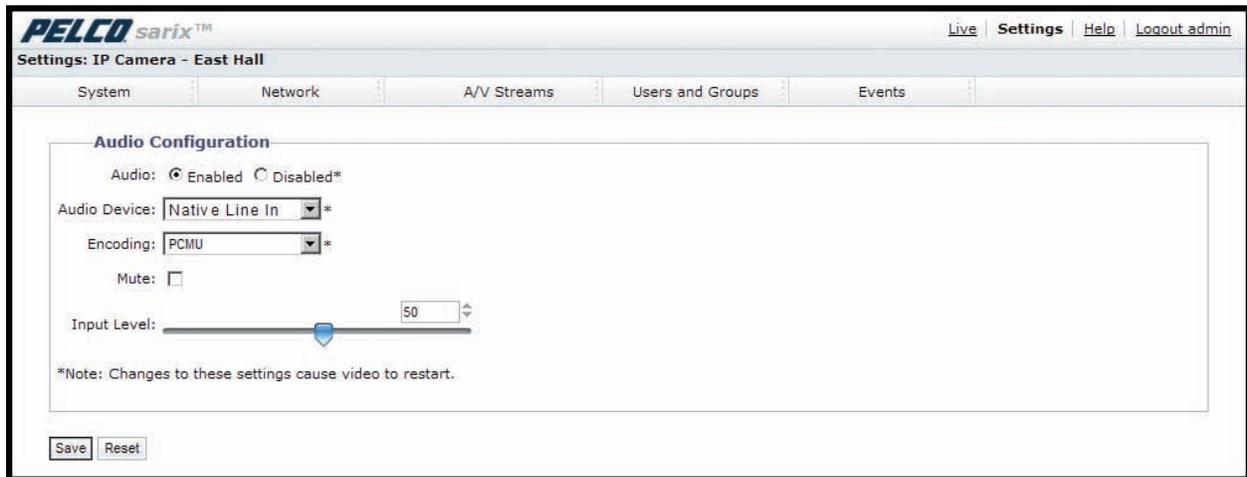


**Figure 6.** Audio Configuration Page

1. Place your mouse pointer over the A/V Streams tab.

2. Select the Audio Configuration option from the drop-down menu.

3. Select the Enabled option in the Audio section.

4. Select the audio device setting from the Audio Device drop-down box.

   **Native Line In:** Enables audio from a microphone connected to the audio-in connector.

5. Select the encoding method from the Encoding drop-down box.

6. Set the sensitivity of the input level by moving the Input Level slider. Move the slider to the right to increase the sensitivity level; move it to the left to decrease the sensitivity level. For example, if the encoder is installed in a noisy environment or the connected microphone has a built-in line amplifier, set the sensitivity to a low setting. The setting range is 0 to 100.

   **NOTE:** *Do not use* the mute button on an audio device, as it will override the audio software settings. To mute the audio device, select the Mute option located on the Audio Configuration page.

7. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

# Users and Groups Tab

Use the Users and Groups tab to create and manage user accounts, group permissions, and to change the way the encoder manages the users and groups settings.

## Users

User accounts can be created and added to groups to limit the permissions given to individuals logged on to the encoder. Use the features on the Users page to create, modify, or delete user accounts.

**NOTE:** The only defined user that cannot be deleted is admin; however, the administrator password can be changed. For security purposes, it is important that you change your password after you log on to the device for the first time.
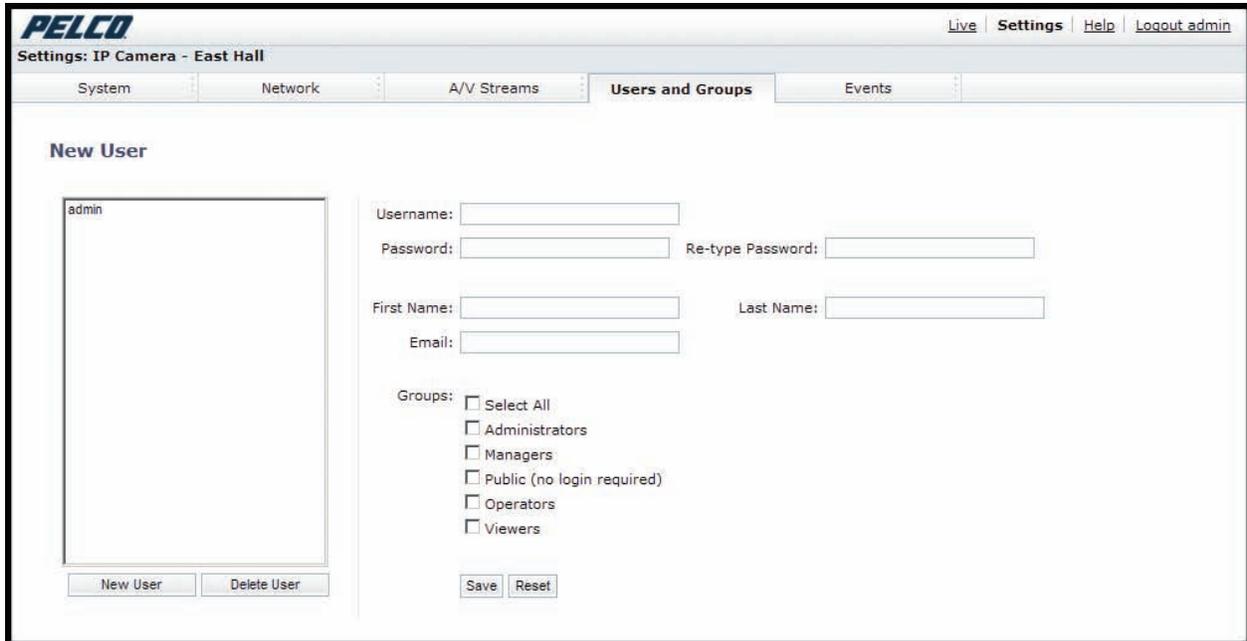


**Figure 7.** User Page

## Groups

Groups can be created to assign permissions to users within each group. Use the features on the Groups page to create, modify, and delete groups and permissions. Multiple permissions can be assigned to each group.



**Figure 8.** Group Page

Refer to the following sections for more information.

## CREATING A NEW USER

1. Place your mouse pointer over the Users and Groups tab.

2. Select Users from the drop-down menu.

3. Click in the Username box and type a user name (2 to 23 alphanumeric characters). User names are not case-sensitive and are saved in lowercase characters.

4. Click in the Password box and type a password (4 to 16 alphanumeric characters). Passwords are case-sensitive.

5. Click in the Retype Password box and retype your password.

6. Click in the First Name box and type the user's first name (1 to 32 alphanumeric characters).

7. Click in the Last Name box and type the user's last name (1 to 32 alphanumeric characters).

8. Click in the Email box and type the user's email address.

9. Select the appropriate check boxes to choose the groups you want to assign to the user. The Users page includes default accounts for the following groups:

   **Select All:** Selects all group definitions.

   **Administrators:** This is the only defined group that cannot be deleted. This group has access to all permissions.

   **Managers:** This defined group can be modified or deleted. This group has access to all permissions *except* the restore factory defaults permission.

   **Public:** This defined group can be modified or deleted. The default permission for this group is single stream view.

   **Operators:** This defined group can be modified or deleted. The default permissions for this group are single stream view, stream selection, and multistream view.

   **Viewers:** This defined group can be modified or deleted. The default permissions for this group are single stream view and multistream view.

10. Click the Save button to save the settings and create a new user. The new user profile appears in the box on the left side of the page. Click the Reset button to clear all of the information you entered without saving it.

## EDITING A USER

1. Place your mouse pointer over the Users and Groups tab.

2. Select Users from the drop-down menu.

3. Click the user profile that you want to edit from the box on the left side of the page.

4. Double-click in each of the text boxes to highlight the text. Type the new information in each text box.

   **NOTE:** The username cannot be modified; this text box is read-only.

5. Select or clear the appropriate check boxes from the groups list.

6. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## DELETING A USER

1. Place your mouse pointer over the Users and Groups tab.

2. Select Users from the drop-down menu.

3. Click the user profile that you want to delete from the defined users section located in the box on the left side of the page.

4. Click the Delete User button. A dialog box appears with the message "Are you sure you want to delete the user?"

5. Click OK. The user profile is deleted from the defined user profiles section.

**NOTE:** The "admin" user cannot be deleted.

## CREATING A NEW GROUP

1. Place your mouse pointer over the Users and Groups tab.

2. Select Groups from the drop-down menu.

3. Click in the Group Name box and type a name for the group you are creating (2 to 23 alphanumeric characters).

4. Click in the Description box and type a description for the group you are creating (2 to 23 alphanumeric characters).

5. Select the appropriate check boxes to choose the permissions you want to assign to this group.

6. Click the Save button to save the settings and create a new group; the new group profile appears in the box on the left side of the page. Click the Reset button to clear all of the information you entered without saving it.

## EDITING A GROUP

1. Place your mouse pointer over the Users and Groups tab.

2. Select Groups from the drop-down menu.

3. Click the group profile that you want to edit from the box on the left side of the page.

4. Double-click in each of the text boxes to highlight the text. Type the new information in each text box.

5. Select or clear the appropriate check boxes from the groups list.

6. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## DELETING A GROUP

1. Place your mouse pointer over the Users and Groups tab.

2. Select Groups from the drop-down menu.

3. Click the group profile that you want to delete from the defined group section located in the box on the left side of the page.

4. Click the Delete Group button. A dialog box appears with the message "Are you sure you want to delete the group?"

5. Click OK. The group profile is deleted from the defined group profile section.

   **NOTES:**

   • If a user has only one group assigned and that group is deleted, the user will lose all permissions. An administrator will have to assign a new group to that user to establish permissions.

   • The Administrators and Public groups cannot be deleted.

# GENERAL SETTINGS FOR USERS AND GROUPS

The general settings for users and groups allow you to change the way the encoder manages the users and groups settings. These settings can be managed locally on the encoder, by using a centralized server to apply changes to users and groups, or by a mixed mode using both the encoder and the server to manage and verify the user and group settings.
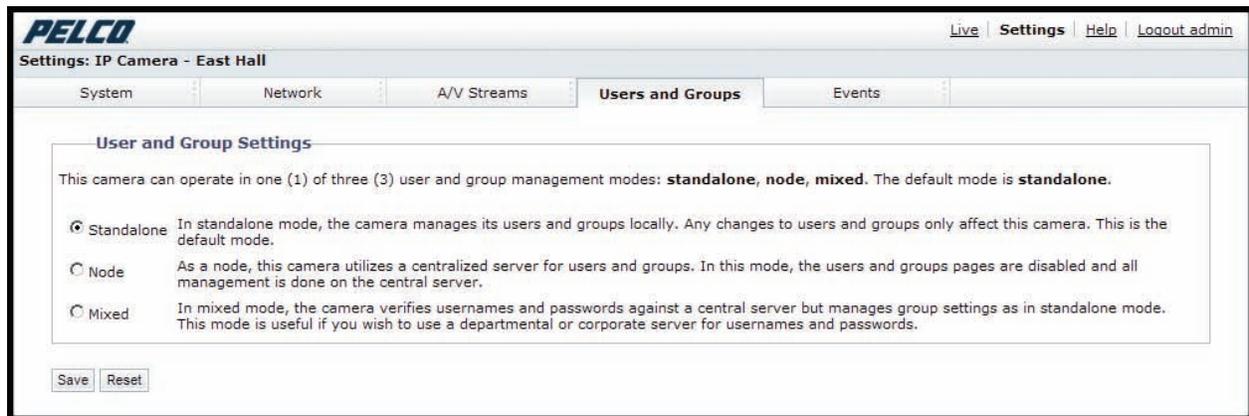


**Figure 9.** User and Group Settings Page

The available general settings for users and groups are as follows:

**Standalone:** The encoder manages its users and groups locally. Any changes to users and groups affect only the encoder that you are accessing. Standalone is the default setting.

**Node:** The encoder uses a centralized server for users and groups. In this mode, the users and groups pages are disabled and all management is done on the central server. Any changes to users and groups affect all cameras connected to the encoder on the central server.

**Mixed:** The encoder verifies user names and passwords against a central server but manages the group settings locally. This is useful if you want to use a departmental or corporate server for user names and passwords. In this mode, the settings on the users page are limited, and any changes to user names and passwords are done on the LDAP server. While changes to user names and passwords affect all encoders connected to the LDAP server, group permissions must be managed from each encoder individually.

**NOTE:** The Node and Mixed settings are advanced controls. Consult your network administrator to obtain the required information.

## SETTING THE ENCODER TO NODE

1. Place your mouse pointer over the Users and Groups tab.

2. Select General Settings from the drop-down menu.

3. Click the Node option button. The Server box appears.

4. Click in the Server box, and then type the name of the central server.

5. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## SETTING THE ENCODER TO MIXED

1. Place your mouse pointer over the Users and Groups tab.

2. Select General Settings from the drop-down menu.

3. Click the Mixed option button. The LDAP Server and Base DN boxes appear.

4. Click in the LDAP Server and Base DN boxes, and type the necessary information in each box.

5. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

# Events Tab

Use the Events tab to program camera events and configure analytics.

Events are activated by programmed event sources that tell the device how to react when an event occurs. Event handlers are the actions that the device takes when an event occurs. For example, a system source can be programmed to send email to an operator if the system shuts-down and restarts.

## Sources

The encoder supports one physical input alarm source, a system source, and a timer source. The Alarm source is the camera input for an external signaling device, such as a door contact or motion detector. The System source is activated when the encoder restarts. The Timer source is a user-defined event that activates an event after a specified amount of time. For example, the timer can be activated every 60 seconds to save an image to an SD card.

## Handlers

Depending on the model you purchased, the encoder supports several types of event handlers. For example, you can create an "Open/Close relay" handler,  a Send Email handler, a "Write JPEG to SD Card handler," and an "Upload JPEG to FTP Server handlers." The Send Email handler sends an email to a defined email address when an event is activated. The "Write JPEG to SD Card" saves a JPEG of the activated event to an SD card. The "Upload JPEG to FTP Server" saves a JPEG of the activated event to a defined FTP server.

## Analytic Configuration

Pelco Analytic Suites are offered on certain models of the NET5400T.

For each behavior, you can create several custom profiles that contain different camera settings. With these profiles, you can set up different scenarios for the behavior, which will automatically detect and trigger alarms when a specific activity is detected.

Based on the encoder model, the following analytic behaviors are available:

**Abandoned Object:** Detects objects placed in a defined zone and triggers an alarm if the object remains in the zone longer than the user-defined time allows.

**Adaptive Motion:** Detects and tracks objects that enter a scene and then triggers an alarm when the objects enter a user-defined zone. The objects are monitored until they exit the scene.

**Camera Sabotage:** Detects contrast changes in the field of view. An alarm is triggered if the lens is obstructed with spray paint, a cloth, or covered with a lens cap. Any unauthorized repositioning of the camera also triggers an alarm.

**Directional Motion:** Generates an alarm in a high traffic area when a person or object moves in a specified direction. For example, a camera is pointed at an exit door. If someone tries to enter through the exit door, an alarm triggers.

**Loitering Detection:** Identifies when people or vehicles remain in a defined zone longer than the user-defined time allows. This behavior is effective for real-time notification of suspicious behavior around ATMs, stairwells, and school grounds.

**Object Counting:** Counts the number of objects that enter a defined zone or cross a defined trip wire. This behavior can be used to count people at a store entrance/exit or inside a store where the traffic is light.

**Object Removal:** Triggers an alarm if an object is removed from a user-defined zone. This behavior is ideal for customers who want to detect the removal of high-value objects, such as a painting from a wall or a statue from a pedestal.

**Stopped Vehicle:** Detects vehicles stopped near a sensitive area longer than the user-defined time allows. This behavior is ideal for parking enforcement, suspicious parking, traffic lane breakdowns, and vehicles waiting at gates.

# SOURCES
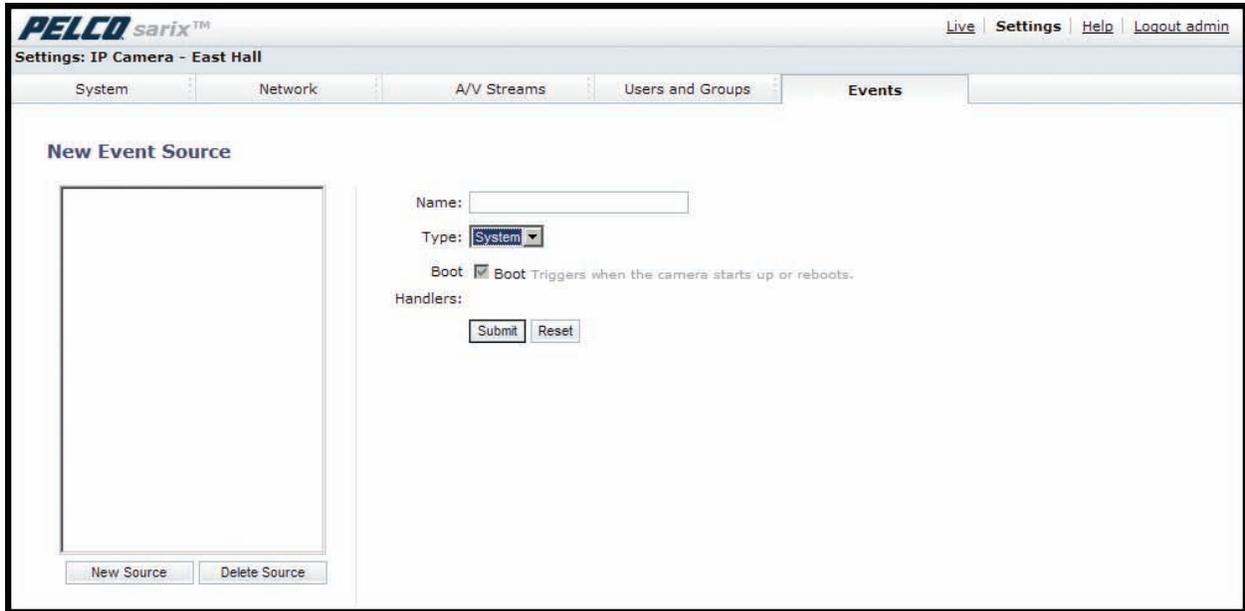


**Figure 10.** New Event Source Page

An event is a preprogrammed encoder function that is automatically activated by an event source. The encoder supports the following types of event sources:

**Alarm Source:** The encoder supports one alarm source. The sources are the encoder inputs for external signaling devices, such as door contacts or motion detectors.

**System Source:** A system source is activated when the encoder restarts.

**Timer Source:** A timer source is a user-defined event. The user can program the timer to activate an event after a specified amount of time. For example, the timer can be activated every 60 seconds to save an image to an SD card.

## CREATING AN ALARM EVENT SOURCE

1. Place your mouse pointer over the Events tab.

2. Select Sources from the drop-down menu.

3. Click in the Name box and type a user-friendly name (2 to 23 alphanumeric characters).

4. Select Alarm from the Type drop-down menu.

5. Move the Dwell Time slider to set the amount of time in seconds that the alarm is active. The dwell time range is 0.1 to 200 seconds; the default setting is 0.1.

6. Select either normal or reversed from the Polarity drop-down menu.

7. Select either true or false from the Supervised drop-down menu.

8. Click the Submit button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## CREATING A SYSTEM EVENT SOURCE

1.  Place your mouse pointer over the Events tab.

2.  Select Sources from the drop-down menu.

3.  Click in the Name box and type a user-friendly name (2 to 23 alphanumeric characters).

4.  Select System from the Type drop-down menu.

5.  Select the Boot check box to activate an event when the encoder reboots.

6.  Click the Submit button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## CREATING A TIMER EVENT SOURCE

1.  Place you mouse over the Events tab.

2.  Select Sources from the drop-down menu.

3.  Click in the Name box and type a user-friendly name (2 to 23 alphanumeric characters).

4.  Select Timer from the Type drop-down menu.

5.  Click in the Frequency box and type a number. Select seconds, minutes, hours, or days from the Frequency drop-down menu.

6.  Click the Submit button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## EDITING AN EVENT SOURCE

1.  Place your mouse pointer over the Events tab.

2.  Select Sources from the drop-down menu.

3.  Click the source profile that you want to delete from the defined source box located on the left side of the page.

4.  Make any necessary changes to the available fields.

5.  Click the Submit button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## DELETING AN EVENT SOURCE

1.  Place your mouse pointer over the Events tab.

2.  Select Sources from the drop-down menu.

3.  Click the source profile that you want to delete from the defined source box located on the left side of the page.

4.  Click the Delete Source button. A dialog box appears with the message "Are you sure you want to delete the source?"

5.  Click OK. The source profile is deleted from the defined source box.

# HANDLERS



**Figure 11.** New Event Handler Page

Event handlers are the actions that the encoder takes when an event occurs. The encoder supports the following event handlers:

**Send Email:** Sends an email to a defined email address when an event is activated. The Simple Mail Transfer Protocol (SMTP) server must be configured to accept the encoder's IP address.

**Write JPEG to SD Card:** Saves a JPEG of the activated event to an SD card. An SD card must be installed in the device for this handler to function.

**NOTE:** The SD card must be formatted as FAT32. Other formats are not compatible with the encoder.

**Upload JPEG to FTP Server:** Saves a JPEG of the activated event to a defined FTP server.

**Open/Close Relay:** Opens or closes the relay after an alarm is received.

## CREATING AN EVENT HANDLER: SEND EMAIL

**NOTE:** To use email notification, the encoder must be connected to a local area network (LAN) that maintains an SMTP mail server. Consult your network administrator for information on configuring email notification on your local network.

1. Configure the SMTP server to send email.

2. Place your mouse pointer over the Events tab.

3. Select Handler from the drop-down menu.

4. Click in the Name box and type a user-friendly name (2 to 23 alphanumeric characters).

5. Select Send Email from the Type drop-down menu.

6. Click in the text boxes (To, From, Subject, and Message), and then type the necessary information in each text box.

7. Select the JPEG Snapshot box if you want to send a JPEG as an attachment.

8. Select the Attach Raw Event Data box if you want the email to include extra data about the event. For example, select this box if the event is triggered by an alarm and you want to receive data about the state, time, or type of alarm.

9. If you do not want the handler activated every time an event occurs, set filters for the handler.
   a. Select the day(s) of the week on which you want emails to be sent.
   b. Type times in the Start and End boxes for the days you have selected. Use time values in 24-hour notation (for example, use 0800 for 8:00 a.m., 1600 for 4:00 p.m.).

10. Select one or more event sources to send an email when those event sources are activated.

11. Click the Submit button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

Refer to the following sections for more information:
- *System Tab* on page 16
- *Example: Setting Filters in an Event Handler* on page 40

## CREATING AN EVENT HANDLER: WRITE JPEG TO SD CARD

1. Install an SD card in the SD card slot located on the back of the encoder.

   **NOTE:** The SD card must be formatted as FAT32. Other formats are not compatible with the encoder.

2. Place your mouse pointer over the Events tab.

3. Select Handlers from the drop-down menu.

4. Click in the Name box and type a user-friendly name (2 to 23 alphanumeric characters).

5. Select "Write JPEG to SD Card" in the Type drop-down menu.

6. The JPEG files saved to the SD card will be given file names that correspond to the date and time of the event. Select a time standard from the "File name" drop-down menu.

7. Click in the Size limit box and type a number. Select Kilobytes, Megabytes, or Gigabytes from the Size Limit drop-down menu.

   **NOTE:** Do not select a size limit that is larger than the amount of memory on the SD card. For example, if the SD card is 2 MB, do not exceed 2 MB in the Size Limit box.

8. If you do not want the handler activated every time an event occurs, set filters for the handler.
   a. Select the day(s) of the week on which you want JPEGs saved to the SD card.
   b. Type times in the Start and End boxes for the days you have selected. Use time values in 24-hour notation (for example, use 0800 for 8:00 a.m., 1600 for 4:00 p.m.).

9. Select one or more sources to save a JPEG to the SD card when those event sources are activated.

10. Click the Submit button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

Refer to the following section for more information:
- *Example: Setting Filters in an Event Handler* on page 40

## CREATING AN EVENT HANDLER: UPLOAD JPEG TO FTP SERVER

1. Place your mouse pointer over the Events tab.

2. Select Handlers from the drop-down menu.

3. Click in the Name box and type a user-friendly name (2 to 23 alphanumeric characters).

4. Select "Upload JPEG to FTP Server" in the Type drop-down menu.

5. Click in the Server box and type the server address (1 to 32 alphanumeric characters).

6. Click in the Username box and type the user's name (1 to 32 alphanumeric characters).

7. Click in the Password box and type a password (4 to 16 alphanumeric characters).

8. Click in the Base Path box and type the base path (1 to 32 alphanumeric characters).

9. The JPEG files uploaded to the FTP server will be given file names that correspond to the date and time of the event. Select a time standard from the "File name" drop-down menu.

10. If you do not want the handler activated every time an event occurs, set filters for the handler.
    a. Select the day(s) of the week on which you want JPEGs saved to the FTP server.
    b. Type times in the Start and End boxes for the days you have selected. Use time values in 24-hour notation (for example, use 0800 for 8:00 a.m., 1600 for 4:00 p.m.).

11. Select one or more sources to save a JPEG to the FTP server when those event sources are activated.

12. Click the Submit button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

Refer to the following section for more information:

• *Example: Setting Filters in an Event Handler* on page 40

## CREATING AN EVENT HANDLER: OPEN/CLOSE RELAY

1. Place your mouse pointer over the Events tab.

2. Select Handlers from the drop-down menu.

3. Click in the Name box and type a user-friendly name (2 to 23 alphanumeric characters).

4. Select Open/Close Relay in the Type drop-down menu.

5. Move the On Time slider to set the amount of time that the relay will remain open. The time range is 0.1 to 200 seconds; the default setting is 0.1.

6. Move the Off Time slider to set the amount of time that the relay will remain closed. The time range is 0.1 to 200 seconds; the default setting is 0.1.

7. Click in the Pulse Count box and type a number.

8. If you do not want the handler activated every time an event occurs, set filters for the handler.
    a. Select the day(s) of the week on which you want the relay opened/closed.
    b. Type times in the Start and End boxes for the days you have selected. Use time values in 24-hour notation (for example, use 0800 for 8:00 a.m., 1600 for 4:00 p.m.).

9. Select one or more event sources to open/close the relay when those event sources are activated.

10. Click the Submit button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

Refer to the following section for more information:

• *Example: Setting Filters in an Event Handler* on page 40

## EDITING AN EVENT HANDLER

1. Place your mouse pointer over the Events tab.

2. Select Handlers from the drop-down menu.

3. Click the handler profile that you want to delete from the defined handler box located on the left side of the page.

4. Make any necessary changes to the available fields.

5. Click the Submit button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## DELETING AN EVENT HANDLER

1. Place your mouse pointer over the Events tab.

2. Select Handlers from the drop-down menu.

3. Click the handler profile that you want to delete from the defined handler box located on the left side of the page.

4. Click the Delete Handler button. A dialog box appears with the message "Are you sure you want to delete the handler?"

5. Click OK. The handler profile is deleted from the defined handler box.

## EXAMPLE: SETTING FILTERS IN AN EVENT HANDLER

If you do not want a handler activated every time an event occurs, use the filter fields to limit handlers. For example, you only want a handler activated when an event occurs after business hours. Your business is open Monday through Saturday, 8:00 a.m. to 6:00 p.m., and it is closed on Sunday.

1. Create a handler for Monday through Saturday:

   a.  Select the day filter fields Monday through Saturday.

   b.  Type **0000** in the Start box and **0800** in the End box.

   c.  Click the plus (+) button to add another time range. Type **1800** in the second Start box and type **2400** in the second End box.

   d.  Select the source(s) that activates the handler.

   e.  Click the Submit button to save the handler.

2. Create a second handler for Sunday:

   a.  Select Sunday from the day filter fields.

   b.  Do not set a Start time or End time as this is a 24-hour event.

   c.  Select the source(s) that activates the handler.

   d.  Click the Submit button to save the second handler.

# ANALYTIC CONFIGURATION

**NOTES:**

- This section explains how to configure and enable Pelco analytics using a Web browser.
- For information on how to receive analytic alerts for ObjectVideo Suites, refer to the ObjectVideo Web Console User Guide or the ObjectVideo Web Console User Guide-Abridged. Both are available on the resource disc supplied with the encoder.
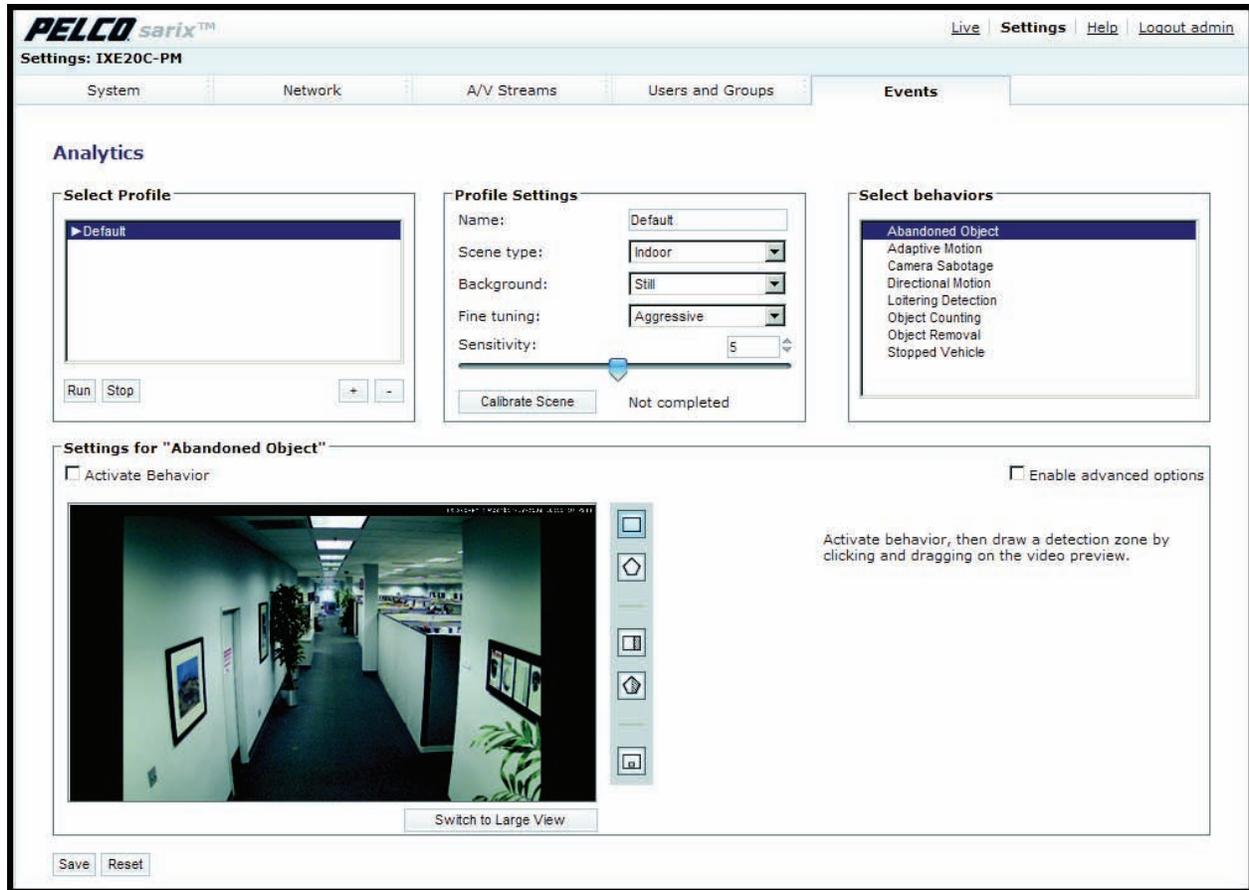


**Figure 12.** Analytic Configuration Page

To configure an analytic behavior using a standard Web browser, you must create a profile, select the behavior for the profile, and then create the zones to be monitored by the behavior.

**Profiles:** A profile extends the flexibility and power of a behavior. For each behavior, you can create several custom profiles that contain different settings. With these profiles, you can set up different scenarios for the behavior. Depending on the behavior, each profile might focus on a different zone, have different sensitivities, detect different object sizes, or trigger an alarm based on different types of motion.

**Behaviors:** A behavior analyzes objects within the camera's field of view and can be configured to detect and trigger alarms automatically when specific activity is detected. Available behaviors are based on the encoder model. Examples of behaviors include Camera Sabotage, which detects contrast changes in the field of view and triggers an alarm if the lens is obstructed or if the camera is repositioned; Adaptive Motion, which detects and tracks objects that enter a user-defined zone; and Object Counting, which counts the number of objects that enter a defined zone or cross a defined trip wire.

**Zone:** A zone is a defined boundary or area that is monitored by a configured behavior. A zone can be defined by a box, polygon, or tripwire, and it can also include the direction of motion. These attributes are determined by the parameters of the selected behavior.

## CREATING A NEW PROFILE

1.  Place your mouse pointer over the Events tab.

2.  Select Analytic Configuration from the drop-down menu.

3.  Click the plus button (+) located in the Select Profile section.

4.  Type a descriptive name for the profile in the Name box located in the Profile Settings section.

    **NOTE:** Consider naming profiles based on their function. A more descriptive name makes it easier to recognize and locate a profile.

5.  Select the Scene Type, Background, Fine Tuning, and Sensitivity settings from the drop-down menus located in the Profile Settings section.

6.  Click the Calibrate Scene button to calibrate the scene.

    **NOTE:** Set the perspective settings to reflect the camera's angle. This information will make the object sizes you set on the next tab more meaningful and help reduce the number of false alarms.

7.  Select the behavior for the profile from the "Select behaviors" section.

8.  Configure the settings for the behavior.

9.  Click the Save button to save the profile. The new profile name appears in the Select Profile section.

## REVISING A PROFILE

1.  Place your mouse pointer over the Events tab.

2.  Select Analytic Configuration from the drop-down menu.

3.  Select the profile name from the Select Profile section. The settings for the profile appear.

4.  Make the required changes to the profile settings.

5.  Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## DELETING A PROFILE

1.  Place your mouse pointer over the Events tab.

2.  Select Analytic Configuration from the drop-down menu.

3.  Select the profile name from the Select Profile section.

4.  Click the minus button (–) located in the Select Profile section.

5.  A dialog box opens and the following message appears: "Are you sure you want to delete the profile?"

6.  Click the OK button to delete the profile.

## CONFIGURING A BEHAVIOR

1. Place your mouse pointer over the Events tab.

2. Select Analytic Configuration from the drop-down menu.

3. Select a profile from the Select Profile section.

4. Select the behavior for the profile from the "Select behaviors" section.

5. Check the Activate Behavior box located in the "Settings for [behavior name]" section.

   If the encoder has enough resources, the behavior activates and a check mark appears to the left of the selected behavior(s), which is located in the "Select behaviors" section.

   If the encoder does not have enough resources, the following message and instructions appear: "The encoder does not have enough processing power to activate this behavior. To free up needed resources, turn off one of the other behaviors or reconfigure the video streams."

6. Set up the zones for the behavior.

7. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## DRAWING A ZONE

You can define up to 32 zones for each behavior. Each zone has a shape and direction. There are three types of drawing tools: Box, Polygon, and Line. If a box or polygon is drawn to define the zone, any motion against the alarmed direction will trigger an alarm. If a line (trip wire) is drawn to define the zone, any motion that crosses the line against the alarmed direction will trigger an alarm.

1. Place your mouse pointer over the Events tab.

2. Select Analytic Configuration from the drop-down menu.

3. Click a behavior located in the "Select behaviors" section.

4. Check the Activate Behavior box located in the "Settings for [behavior name]" section.  A check mark appears to the left of the selected behavior(s) located in the "Select behaviors" section.

5. Use the draw tools to define the zone.

6. Set the behavior-specific settings for the zone:

   **Name:** Enter a descriptive name for the zone. Consider naming zones based on their location.

   **Enable alarm:** Activates the alarm function. Select the check box to activate an alarm.

   **Direction:** If the alarm is enabled, this setting defines the direction in which you want to detect and count moving objects and people inside the defined zone. Direction settings include all directions (All, Up, Up-right, Right, Down-right, Down, Down-left, Left, and Up-left).

   **Alarm at:** Defines the number of objects required to enter the zone or cross the trip wire to trigger an alarm.

   **Alarm severity:** Defines the level of an alarm event. Settings include Minor, Normal, Major, and Critical

   **Dwell Time:** Defines the time in seconds that the alarm-triggered zone turns to normal status. The default setting is 30 seconds.

   **Reset count after alarm:** Rests the counter to zero after the count reaches the defined the number of objects required to trigger an alarm.

7. To draw another zone, repeat steps 5 and 6.

8. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

## ZONE DRAW TOOLS

**Box:** Tracks objects that move against the alarmed direction in a defined zone.

**Polygon:** Tracks objects that move against the alarmed direction in a defined zone.

**Line:** Tracks objects that cross a line (trip wire) against the alarmed direction.

**Exclude Zone Box Tool:** Ignores objects inside a defined zone.

**Exclude Zone Polygon Tool:** Ignores objects inside a defined zone.

**Object Size Filter:** Sets the minimum and maximum object size for a zone.

### Drawing a Box

1.  Hold down the left mouse button.

2.  Drag the mouse diagonally across the area you want to define with a box.

3.  A color-coded box appears to the right of the preview pane in the "Zone list." The Zone box is the same color as the box drawn in the preview pane.

4.  To resize the box, click and drag one or more of the points until the box is the desired shape and size.

5.  To move the box, click inside the box and drag it to the desired location.

### Drawing a Polygon

A polygon is drawn with six points.

1.  To define the first point of the polygon, click anywhere in the preview pane while holding down the left mouse button.

2.  Drag the mouse across the preview pane, and then release the mouse button to define the second point of the polygon.

3.  Click the second point and drag the mouse across the preview pane. Release the mouse button to define the third point of the polygon

4.  Repeat this process to define points four through five.

5.  To define the sixth point and to close the polygon, you must double-click the first point again.

6.  To resize the polygon, click and drag one or more of the points until the polygon is the desired shape and size.

7.  To move the polygon, click inside the polygon and drag it to the desired location.

### Drawing a Line (Trip Wire)

A line is drawn with two points.

1.  To define the first point of the line, click anywhere in the preview pane while holding down the left mouse button.

2.  Drag the mouse across the preview pane, and then release the mouse button to define the second point of the line.

3.  A color-coded box appears to the right of the preview pane in the "Zone list." The Zone box is the same color as the line drawn in the preview pane.

4.  To resize the line, click and drag one of the points of the line unitil it is the desired length.

5.  To move the line, click the line and drag it to the desired location.

## DELETING A ZONE

1. Place your mouse pointer over the Events tab.

2. Select Analytic Configuration from the drop-down menu.

3. Click the behavior located in the "Select behaviors" section that you want to modify.

4. The settings for the behavior are displayed in the "Settings for [behavior name]" section.

5. In the "Zone list" area of the page, click the check box next to the zone you want to delete.

6. Click the Save button to save the settings, or click the Reset button to clear all of the information you entered without saving it.

# Help Menu

The Help menu provides links to the most recent documentation for Pelco Product Support. Click the Help hyperlink in the navigation bar to access this information.

# Logout Menu

To log off, click the Logout button in the navigation bar. A login dialog box appears.

# PRODUCT WARRANTY AND RETURN INFORMATION

## WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship **for a period of one year** after the date of shipment.

Exceptions to this warranty are as noted below:

- Five years:
  - Fiber optic products
  - Unshielded Twisted Pair (UTP) transmission products
  - CC3701H-2, CC3701H-2X, CC3751H-2, CC3651H-2X, MC3651H-2, and MC3651H-2X camera models
- Three years:
  - Pelco-designed fixed network cameras and network dome cameras with Sarix™ technology.
  - Pelco-branded fixed camera models (CCC1390H Series, C10DN Series, C10CH Series, and IP3701H Series)
  - EH1500 Series enclosures
  - Spectra® IV products (including Spectra IV IP)
  - Camclosure® Series (IS, ICS, IP) integrated camera systems
  - DX Series digital video recorders (except DX9000 Series which is covered for a period of one year), DVR5100 Series digital video recorders, Digital Sentry® Series hardware products, DVX Series digital video recorders, and NVR300 Series network video recorders
  - Endura® Series distributed network-based video products
  - Genex® Series products (multiplexers, server, and keyboard)
  - PMCL200/300/400 Series LCD monitors
  - PMCL5xx Series FHD monitors
- Two years:
  - Standard varifocal, fixed focal, and motorized zoom lenses
  - DF5/DF8 Series fixed dome products
  - Legacy® Series integrated positioning systems
  - Spectra III™, Spectra Mini, Spectra Mini IP, Esprit®, ExSite®, and PS20 scanners, including when used in continuous motion applications.
  - Esprit Ti and TI2500 Series thermal imaging products
  - Esprit and WW5700 Series window wiper (excluding wiper blades).
  - CM6700/CM6800/CM9700 Series matrix
  - Digital Light Processing (DLP®) displays (except lamp and color wheel). The lamp and color wheel will be covered for a period of 90 days. The air filter is not covered under warranty.
  - Intelli-M® eIDC controllers
- One year:
  - Video cassette recorders (VCRs), except video heads. Video heads will be covered for a period of six months.

- Six months:
  - All pan and tilts, scanners, or preset lenses used in continuous motion applications (preset scan, tour, and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to a Pelco designated location. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental, or consequential damages (including loss of use, loss of profit, and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, sales order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product that does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

## RETURNS

To expedite parts returned for repair or credit, please call Pelco at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair) and designated return location.

All merchandise returned for credit may be subject to a 20 percent restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid.

2-10-10

## REVISION HISTORY

| Manual # | Date | Comments |
|---|---|---|
| C4659M | 4/10 | Original version. |

**PELCO**

by **Schneider** Electric

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