EdgeVision

Multi-channel, Quality of Experience monitoring

Quick Start Guide

M928-9905-107

4 May 2016

grass valley

A BELDEN BRAND

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Title	EdgeVision Quick Start Guide
Part Number	M928-9905-107
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Safety Compliance

This equipment complies with the requirements of the following standards for safety of information technology equipment:

- CSA C22.2 No. 60950-1, 2007, 2nd Edition
- UL 60950-1, 2007, 2nd Edition
- EN 60950-1, 2nd Edition, (2006/95/EC—Low Voltage Directive)
- Safety for Information Technology Equipment

WARNING: An appropriately listed/certified mains supply power cord must be used for the connection of the equipment to the mains voltage at either 120V~ or 240V~.

CAUTION:

- **This equipment is meant to be installed in a restricted access location.**
- **These servicing instructions are for use by qualified service personnel only.**

To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel. Disconnect both power supply units before servicing. Servicing should be done in a static-free environment.

CAUTION: Battery handling

There is a danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. Before disposing of your Grass Valley equipment, please see "Disposal and Recycling Information", on page 57.

CAUTION: This equipment incorporates modules containing Class 1 lasers

These modules are certified by the manufacturer to comply with:

- EN 60950-1:2006+A11
- EN 60825-1:2007
- EN 60825-2:2004+A1

Electromagnetic Compatibility

This equipment has been tested for verification of compliance with U.S. Code of Federal Regulations (CFR): FCC Title 47, Part 15, Subpart B requirements for class A digital devices, Unintentional Radiators.

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

This equipment has been tested and found to comply with the requirements of the EMC directive 2004/108/CE:

Directive 2004/108/EC	Electromagnetic Compatibility
EN 5502: 2006/A2:2010	Conducted emissions, Class A
EN 55022: 2006/A2:2010	Radiated emissions, Class A
EN 61000-3-2:2006 A1|A2:2010	Harmonic current emission limits
EN 61000-3-3: 2008	Voltage fluctuation and flicker limitations
EN 61000-4-2: 2009	Electrostatic discharge immunity
EN 61000-4-3: 2006/A2:2010	Radiated electromagnetic field immunity—RF
EN 61000-4-4: 2004/A1:2010	EFT immunity
EN 61000-4-5: 2006	Surge immunity
EN 61000-4-6:2009	Conducted immunity
EN 61000-4-8: 2010	Power frequency magnetic field immunity
EN 61000-4-11: 2004	Voltage dips, short-interrupt and voltage variation immunity
ENV50204: 1995	Radiated EMF immunity—RF 900MHz pulsed

Table of Contents

Quick Start Guide

Overview

A television streaming device allows you to access a TV feed (using coaxial, composite, component, or S-video cables) via an Internet connection. Using a software interface, you can view up to four video streams on a computer and control any connected devices.

The EdgeVision is a set-top box signal streaming encoder and probing device. While a television streaming device can redirect a single input to a single computer, the EdgeVision system not only allows you to view up to four feeds simultaneously, but you can also switch to a single feed displayed in *EdgeVision Player*.

Rather than only displaying the video, *EdgeVision Player* also describes the behind-the-scenes aspects of the video feed. *EdgeVision Player* displays technical information about the feed, including any alarms or flags to direct your attention to possible conflicts or errors in the transmission.

Your primary references for deploying and operating your system are the *EdgeVision Installation Guide* and the *EdgeVision User Guide*. If you cannot find these documents after following the pre-installation instructions, please contact Grass Valley technical support (see "Contact Us", on page 59).

Pre-Installation Instructions

This document provides you with the basic procedure to install your EdgeVision device, configure it, and monitor the feeds on the device in *EdgeVision Player*. Once the basic setup is done, you can continue to customize the device configuration and decide which alarms or flags you wish to use to track the events on your feed.

See also

For more information about:

- accessing EdgeVision documentation, see page 54.
- deploying your system, see the *EdgeVision Installation Guide*.
- monitoring your feeds, see the *EdgeVision User Guide*.

IMPORTANT: Before installing and configuring your EdgeVision device, ensure the following items have been shipped with your EdgeVision package:

- EdgeVision device
- Grass Valley documentation (Quick Start Guide)
- Audio/Video connector cables
- Ground lug
- A/C Power cord(s)
- Infrared cables
- Plastic securing devices for the LED emitters of the infrared cables
- Four rubber pads (when used as a table-top device)
- A/C secure wire clips

IMPORTANT: Installation For Restricted-Access Location Only

To be installed in the field by trained personnel according to the instructions and warnings in the installation manual provided with the equipment.

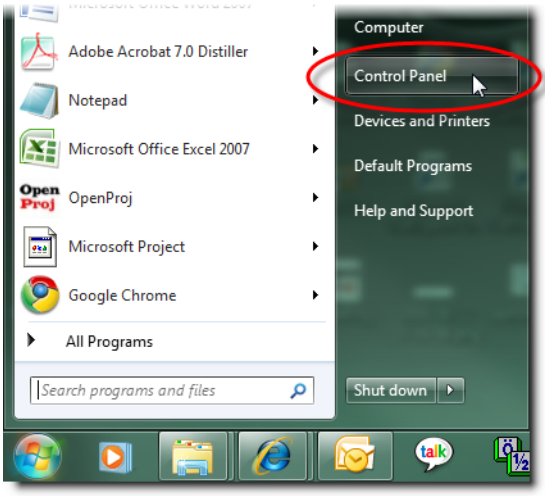
Task 1: Configuring TCP/IP Settings of a Client PC

You must use a client PC or laptop to configure your EdgeVision device. You must change the network settings on the PC or laptop to allow it to communicate with the device in its initial default state.

Note: You should take note of your PC's existing settings so you can reset them later.

To configure TCP/IP settings of a client PC running Windows 7

1. From the Windows 7 **Start** menu, click **Control Panel**:

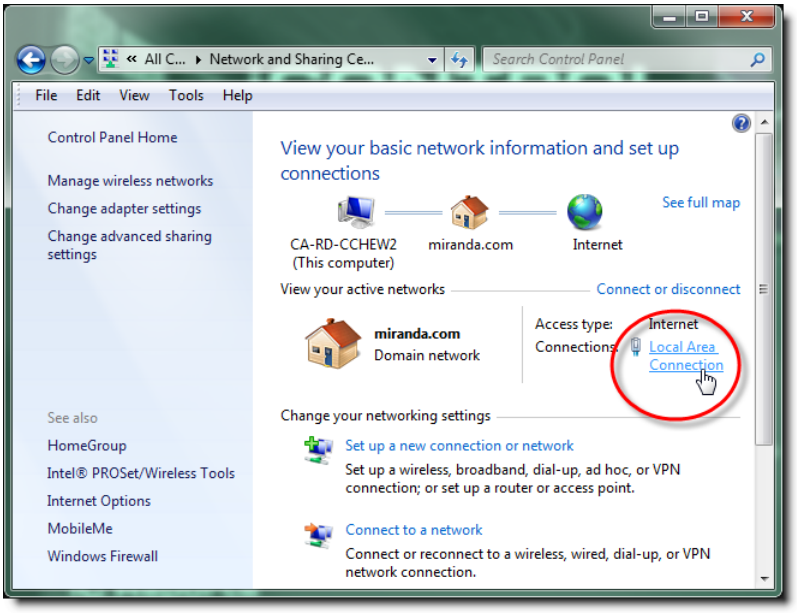


The Control Panel appears.

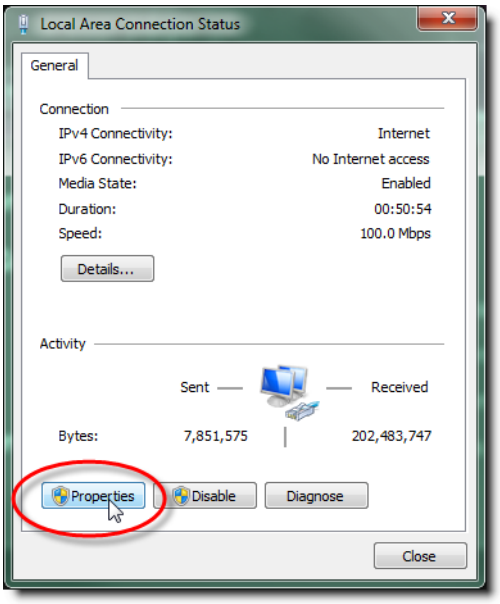
2. Click **Network and Sharing Center**:

The **Network and Sharing Center** appears.

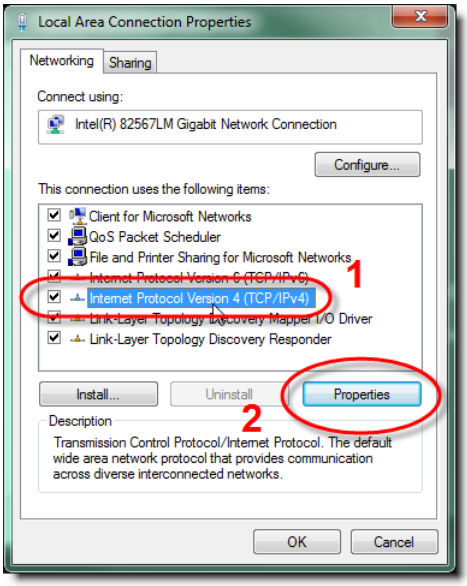
3. In the **Access type** area, click the link that corresponds to your LAN Internet connection (**Local Area Connection** in the example shown):



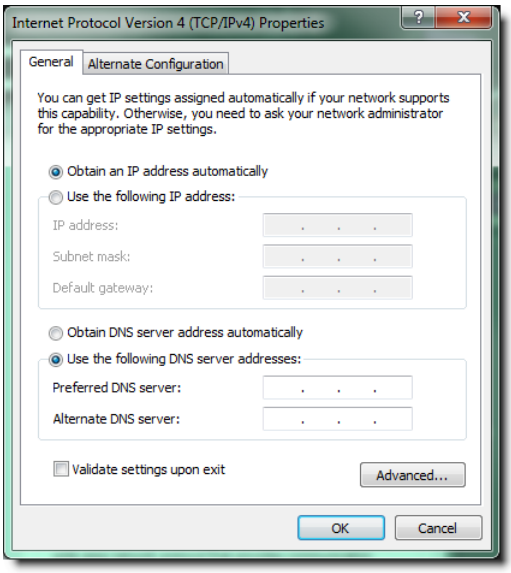
The **Local Area Connection Status** window appears:



4. Click **Properties**.
   The **Local Area Connection Properties** window appears:



5. Select **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.
   The **Internet Protocol Version 4 (TCP/IPv4) Properties** window appears:



6. Take note of the PC's current settings.
7. Click **Use the following IP address**.
8. The default IP address of each new EdgeVision device is `192.168.3.31`. On the client PC, type an address in the same range (e.g. `192.168.3.33`) in the **IP address** field.
9. The default subnet mask of each new EdgeVision Application Server is `255.255.255.0`. On the client PC, type `255.255.255.0` in the **Subnet mask** field.
10. Click **OK** to apply these settings.
11. In the **Local Area Connection Properties** window, click **OK**.
12. Close the **Network and Sharing Center** control panel.

> **Note:** Remember to return the PC to its original network settings once you have finished configuring the EdgeVision device.

Task 2: Physically Installing the EdgeVision device

In this task, you will be securing the physical EdgeVision device into a 19-inch rack. Once the device is securely in place, you will be able to connect it to a PC to configure it and then to an STB to begin monitoring feeds.

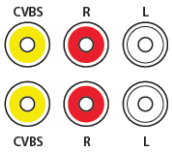
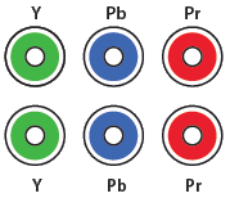
To install the EdgeVision device

1. Place and secure the EdgeVision device in a standard 19-inch rack.
2. To configure and operate the EdgeVision device, you must access it from a client PC or laptop via the Management port over an Ethernet connection.

Note: The EdgeVision device is shipped with its Management port configured to a standard setting. As you perform the configuration procedures, you will reconfigure the port to integrate the EdgeVision device into your network. During the initial configuration process, you may find it more convenient, or even necessary, to connect your client workstation directly to the Management port using a crossover cable or a direct Ethernet cable (not supplied).

Cable	Connector Type	Input Plug	Standard/Optional
	RJ-45		Not supplied

3. Decide how you will connect the Set-top Box(es) to the EdgeVision device (Video: composite, component, or HDMI; Audio: analog, S/PDIF, or HDMI) and attach the corresponding cables.

Cable	Connector Type	Input Plug	Standard/Optional
	CVBS cable Right/Left audio cables		Standard (3 metres)
	RCA		Standard (2 metres)
	HDMI For HDMI, make sure the signal does not have HDCP protection. If it does, the HDMI signal will not work with EdgeVision.		Optional (2 metres)

(*Continued*)

Cable	Connector Type	Input Plug	Standard/Optional
	S/PDIF		Optional (3 metres)

4. If you wish to monitor the video/audio signal via SDI, connect the SDI cable as follows:

Cable	Connector Type	Input Plug	Standard/Optional
	SDI Connector		Not supplied

5. If you are using an infrared remote with the device, connect the following cable:

Cable	Connector Type	Input Plug	Standard/Optional
	Infrared		Standard (2 m including the adhesive adapter)

6. Connect the power cords and plug the device into an electrical outlet (there is no power switch on the device).

IMPORTANT: Installation and Maintenance Regarding Power Cables

- The socket outlets to which the power supplies are connected must be readily accessible.
- The unit's power supply cords (2) must be disconnected before servicing and are used as main disconnect devices.

Cable	Connector Type	Input Plug	Standard/Optional
	Three-prong C-13 power cord		Standard

Task 3: Opening Required Ports on the Client PC

There are several ports on your client PC you will have to keep open depending on the client-side application you are using as well as the nature of that application's TCP/IP needs at any given time (for example, the type of media being streamed). It is unlikely you will want to disable your firewall and unblock all ports for obvious security reasons. The following table, therefore, lists the ports you should keep open, the applications that use them and specific activities:

Ports to keep unblocked

Protocol	Port	Activity
TCP	7000	EdgeVision upgrade application
TCP+UDP	4160, 8000-8010	*EdgeVision Player*, *EdgeVision Configurator*
(HTTP) TCP	80, 8080	*EdgeVision Admin*
(SSH) TCP	22	EdgeVisionupgrade application, Remote access
(RTSP) TCP	554	Used by *EdgeVision Player* (or third-party streaming player) to establish RTSP session[1]
TCP	5432	*EdgeVision Configurator*
(RMID) TCP+UDP	1098-1099	Communication between *EdgeVision Player*, *EdgeVision Configurator*, and EdgeVision unit
(RMI) TCP	32768-65535	Communication between *EdgeVision Player*, *EdgeVision Configurator*, and EdgeVision unit
(NTP) UDP	123	To sync with NTP server[2]
(RTP) UDP	[user-configurable]	To send unicast/multicast streams from the EdgeVision unit to client applications[1]
(RMI) TCP	1024-5000	Communication between the EdgeVision unit and clients[3]

Ports to keep unblocked (*Continued*)

Protocol	Port	Activity
(RMI) TCP	49152-65535	Communication between the EdgeVision unit and clients[4]

1. **[OPTIONAL]** You either open port TCP/554 to use RTSP or you can instead configure your EdgeVision unit to send unicast/multicast stream(s) to specific destination IP addresses and UDP ports (see the "Configuring Input-Level Feed Settings" section in the "Configuring Feeds and Alarms" chapter of the *EdgeVision Installation Guide*).
2. **[OPTIONAL]** This is only necessary when configuring an EdgeVision unit to synchronize time with a remote NTP server.
3. This range is valid when your client is running Windows XP Professional.
4. This range is valid when your client is running Windows 7.

Task 4: Updating EdgeVision Software

You can update the EdgeVision device's software using the EdgeVision home page. The software updates the device's operating system. The current version of the EdgeVision device appears in Firmware major/minor fields in the *EdgeVision Admin* page.

When you update the software, only the software is changed. Any configuration changes you made to the Network parameters using *EdgeVision Admin* are **NOT** lost when the software is updated. If a software update is interrupted, you should restart the device and begin the software update again.

To ensure that you have the latest software on your device, please contact Grass Valley Technical Support (see "Contact Us", on page 59).

> **Note:** To perform the update, you must use the IP address for the Management port only. If you connect to the device using the IP address for the Data port, the update will be halted and the following error message will appear:
>
> `ERROR: Must use Management IP address to do upgrade`

REQUIREMENT

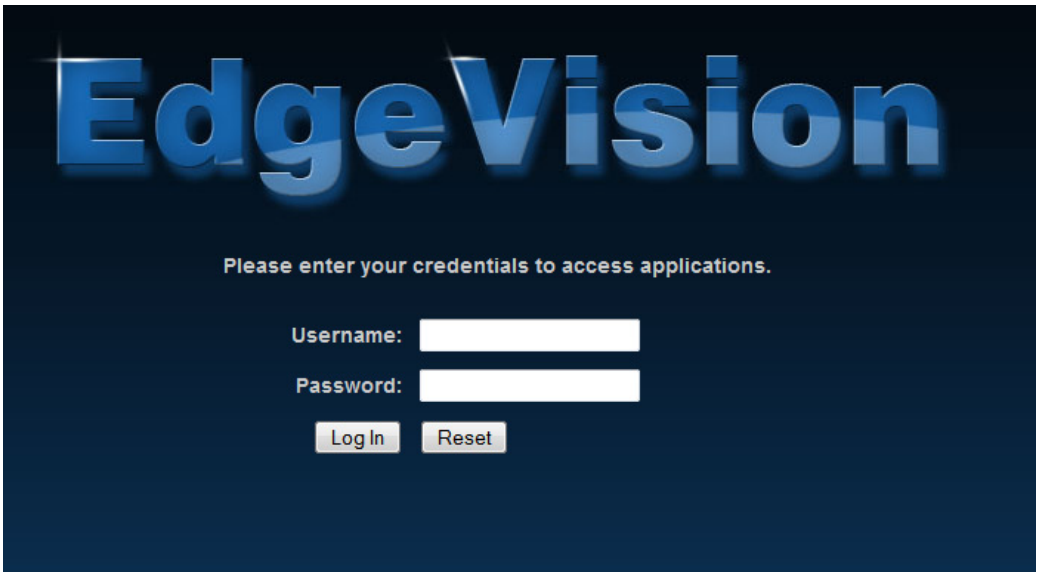
Before beginning this procedure, make sure you have unblocked all required ports on your client PC (see page 8).

To upgrade the software on the device

1. Open the EdgeVision home page in a Web browser (using the IP address for the Management port).

> **Note:** If you are performing this quick-start workflow in the context of a new installation, then the *Access Control* functionality is, by default, disabled. However, if for some reason you are performing this procedure in a context in which Access Control is enabled, then you will need to log on to EdgeVision with a valid user profile.

If the *Access Control* feature of your EdgeVision device is enabled, you will be prompted for a valid user name and password. If this is the case, type your user name and password, and then click **Log In**.



The EdgeVision home page appears.

2. Click the **EdgeVision upgrade** link at the bottom of the page.

   The browser prompts you to save an executable file to your hard drive (`EdgeVision Updater-windows32-online.exe`). This file is an online installer, which will download the EdgeVision updater application, and install it. Some browsers may allow you to run the file directly. Depending on your browser's security features, warnings may appear, which you may safely dismiss.

3. Unless your browser let you run the file (and you chose to do so), navigate to the location were you saved the installer file and open it.

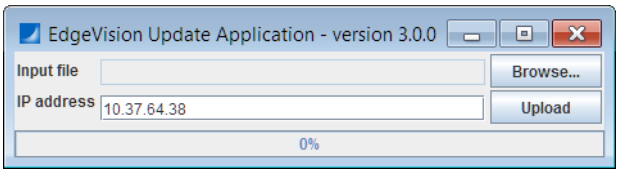
More security warnings or prompts may appear, which you may safely dismiss or accept.

A window appears, showing the download and installation progress.

At the end of the installation process:

- If you have Windows 7, or Windows XP, shortcuts are added to your desktop and to the Start menu (under **All Programs**).
- If you have Windows 8.1, or Windows 8, XEdit will appear on your desktop, in the Apps view with all the other applications on your PC (Windows 8.1), or in your Start screen (Windows 8).

Once the installation has completed, the **EdgeVision Update Application** window appears.



4. Using the **Browse** button, select the file that contains the updated software (all EdgeVision software files use a `.os` extension).

   The selected file appears in the **Input file** field.

5. Type the IP address for the device that you wish to update in the **IP address** field.

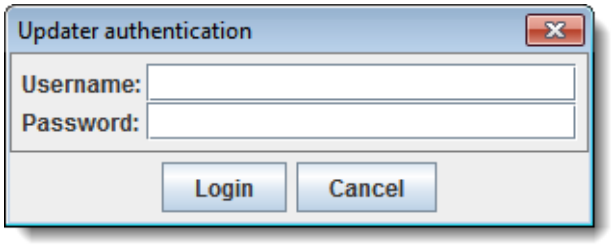
   The IP address for the current device appears in this field by default.

6. Click **Upload** when done.

   If the *Access Control* feature on your EdgeVision device is ***disabled***, then at this point the file is uploaded and the device reboots itself automatically, installing the software that you have selected.

   If, however, the *Access Control* feature is ***enabled***, then at this point you will see the **Updater authentication** window. If this is the case, perform the following sub-steps:

   a) In the **Updater authentication** window, type your user name and password.

   b) Click **Login**.

      The file is uploaded and the device reboots itself automatically, installing the software that you have selected.

7. When you are ready to continue, click **Yes**.

Once the device restarts and the software has been updated, the EdgeVision page reloads. If any sessions of *EdgeVision Configurator* or *EdgeVision Player* are running, you should shut them down and restart them.

Note: While the upgrade is in progress, the EdgeVision device will stop its normal operations and reboot in upgrade mode, which means that it will stop doing its normal operations (e.g. no streaming, no IR control, etc.) until the upgrade is completed. When the upgrade is complete, the device restarts again in normal mode.

Task 5: Defining the Network Parameters

Now that the cables are connected and the device is operational, you can connect your PC to the device and use *EdgeVision Admin* to configure its network parameters so you can access it on the network.

Note: Before you connect to the device, make sure you wait until the device's startup sequence is complete. The startup sequence is complete when the Ch1 through Ch4 LEDs on the front of the device are lit (either green or red).

IMPORTANT:

- To be able to configure network parameters for your device, you must connect to the device using the **Management port** IP address. You will not be able to launch *EdgeVision Admin* using the **Data port** IP address.
- If you enable DHCP on your EdgeVision device, the EdgeVision will attempt to renew the lease on the assigned IP address roughly half-way through the lease period (determined by the DHCP server). Normally, this occurs transparently with no discernible effect on the EdgeVision device.

  If, however, the EdgeVision device **fails** to renew the lease on the DHCP-assigned IP address for whatever reason, the DHCP server will eventually assign a new and different IP address to your EdgeVision. In this case, the EdgeVision device will restart and you will not be able to reach the EdgeVision page, *EdgeVision Configurator*, nor *EdgeVision Player* using the former IP address.

  If a connectivity issue occurs and DHCP is enabled, this may be the cause. Grass Valley recommends performing the procedure "Retrieving the DHCP-Assigned IP Address of an EdgeVision Device" section in the "Configuring your EdgeVision Device" chapter of the *EdgeVision Installation Guide*.

REQUIREMENT

Before beginning this procedure, make sure you have unblocked all required ports on your client PC (see page 8).

To define the network parameters on the EdgeVision device

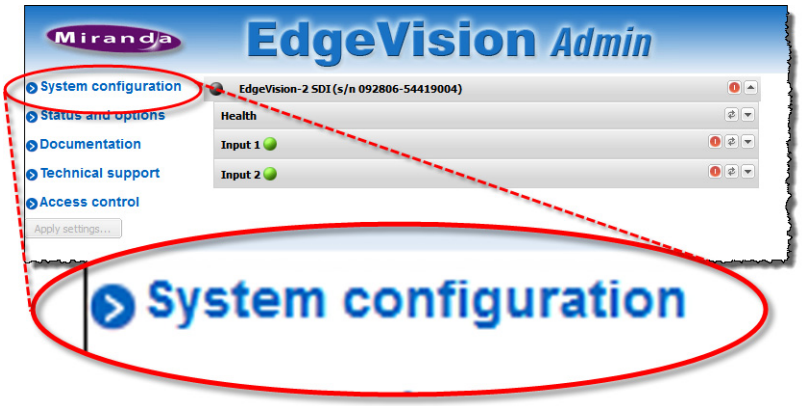
1. Open the EdgeVision page in a web browser (using the device's Management port IP address).

   The EdgeVision home page appears.

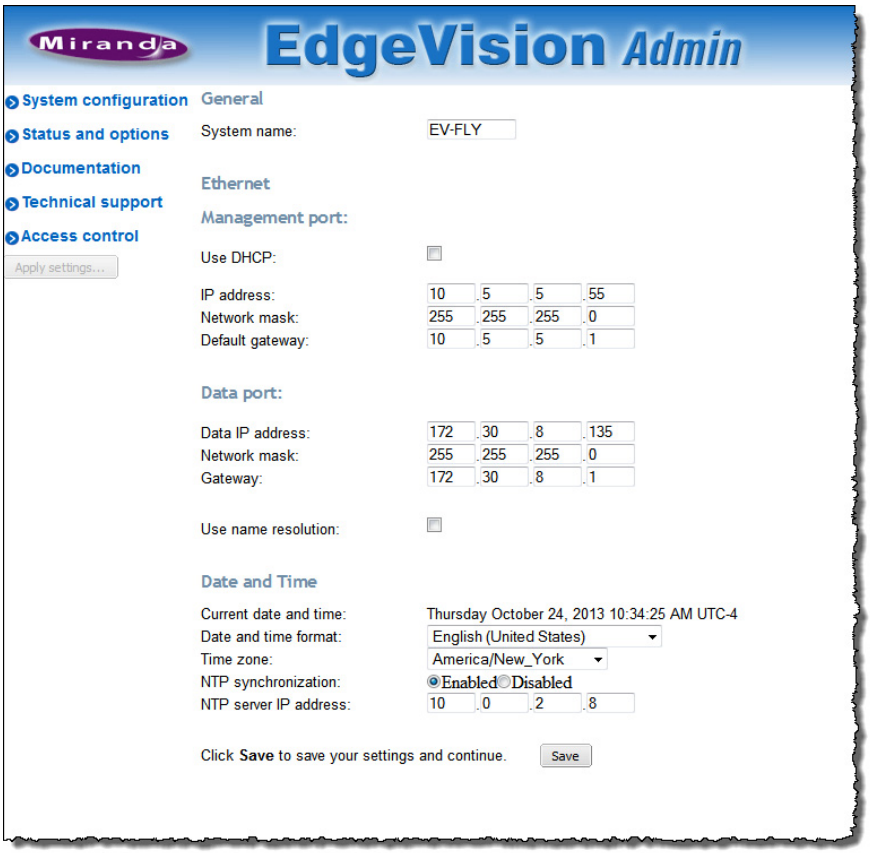
2. Click **EdgeVision Admin**.

   The EdgeVision Admin page appears.

3. In EdgeVision Admin, click **System configuration**.



   The *System configuration* page appears.



4. In the **System name** field, type the name of the device as it will appear on the network, *EdgeVision Configurator*, and *EdgeVision Player*.

Notes

- If you intend to enable DHCP, make sure the system name you choose for each EdgeVision is unique among all EdgeVisions. Later, you may need to identify your EdgeVision with its system name (see the "Retrieving the DHCP-Assigned IP Address of an EdgeVision Device" section in the "Configuring your EdgeVision Device" chapter of the *EdgeVision Installation Guide*.).
- For a system name, you can use up to eight ASCII characters (no brackets, spaces, or tildes allowed).

5. Configure the Ethernet parameters in the **Ethernet** section as follows:

IMPORTANT: Only enable DHCP if your device is connected to a DHCP server

If you intend to enable DHCP for your **Management** port, make sure the EdgeVision device is connected to a DHCP server before you click **Apply settings**. If the EdgeVision device is not connected to a DHCP server, your EdgeVision will revert to the manually-assigned network settings.

Ethernet parameters

Parameter	Definition
--- Management port parameters (general)[1] ---	
IP address	The management IP address allows the EdgeVision system to communicate with *EdgeVision Configurator* and *EdgeVision Player*, as well as being the address to forward audio/video streams generated by EdgeVision. The device remote control, configuration, and alarm collection features also use this address. **Default value**: `192.168.3.31`
Network mask	• Specify the range of IP addresses that reside on the current management IP address. **Default value**: `255.255.255.0`
Default gateway	• Specify the IP address to use when a device from outside your network attempt to connect to the EdgeVision system via the management IP address. **Default value**: `192.168.3.1`
Use DHCP[2]	When this is selected, the IP parameters—**IP address**, **Network mask** and **Default gateway**—remain available but are used as fallback settings in case DHCP fails.
*--- Management port parameters visible only when DHCP **enabled** ---*	
Lookup IP address	• Specify the IP address of an external host with a lookup service (e.g. an Application Server), so that the IP address assigned to the EdgeVision through DHCP can be retrieved. This is a mandatory parameter. You will not be able to apply network settings with DHCP enabled if a lookup IP address is not indicated.
IP address	The management IP address allows the EdgeVision system to communicate with *EdgeVision Configurator* and *EdgeVision Player*, as well as being the address to forward audio/video streams generated by EdgeVision. The device remote control, configuration, and alarm collection features also use this address.
Network mask	• Specify the range of IP addresses that reside on the current management IP address.
Default gateway	• Specify the IP address to use when a device from outside your network attempt to connect to the EdgeVision system via the management IP address.
--- Data port parameters ---	
Data IP address	• Type the IP address for the port that will stream the data to the Data Ethernet port. The data port connects the EdgeVision device to the IP network to transport IP video/MPEG data, but you can also configure it to forward of the audio/video streams generated by EdgeVision. **Default value**: `192.168.2.32`
Network mask	• Specify the range of IP addresses that reside on the current Data IP address. **Default value**: `255.255.255.0`

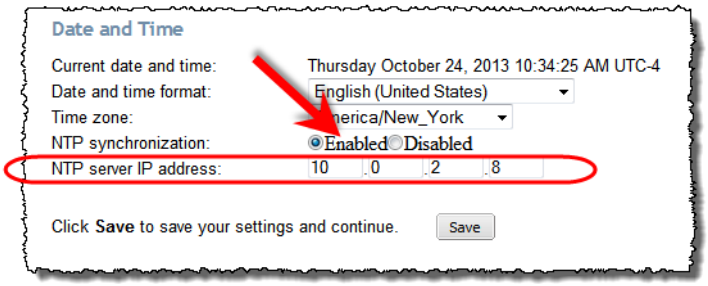
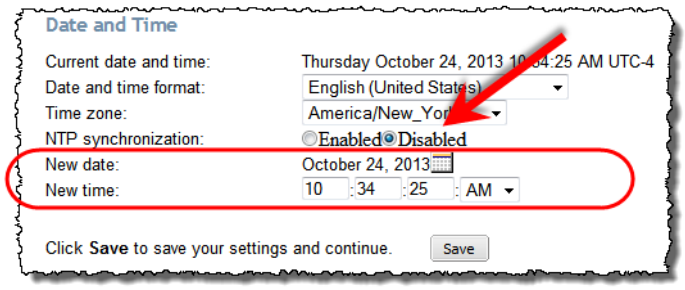
Ethernet parameters (*Continued*)

Parameter	Definition
Gateway	• Specify the IP address to use when a device from outside your network attempt to connect to the EdgeVision system via the data IP address. **Default value**: `192.168.2.6`
Use name resolution	• Select the **Use name resolution** check box if you want to launch *EdgeVision Player* using the DATA Ethernet port.

1. If DHCP is **enabled**, these parameters are used only in the case of DHCP failure.
2. Dynamic Host Configuration Protocol (IETF, RFC2131)

6. Configure the synchronization parameters in the **Date and Time** section as follows:

Synchronization (Date and Time) parameters

Parameter	Definition
Date and time format	• Select the format in which EdgeVision displays the date and time.
Time zone	• Select the time zone where the EdgeVision device resides. The time zone determines how the time is calculated.
NTP synchronization	The Network Time Protocol (NTP) is a protocol to synchronize the device clock over the data network. • If you ***enable*** this feature, the clock time is synchronized with the NTP server. Enter the IP address in the **NTP server IP address** field.  • If you ***disable*** this feature, you must set the time manually in the **New Date** and **New Time** fields. 

Synchronization (Date and Time) parameters (*Continued*)

Parameter	Definition
*--- If NTP synchronization is **enabled** ---*	
NTP server IP address	• Enter the IP address for the NTP server that synchronizes the clock on this device. This field only appears if you enable the **NTP synchronization** feature.
*--- If NTP synchronization is **disabled** ---*	
New date	• Enter the current date for the device. This field only appears if you disable the **NTP synchronization** feature.
New time	• Enter the current time for the device. This field only appears if you disable the **NTP synchronization** feature.

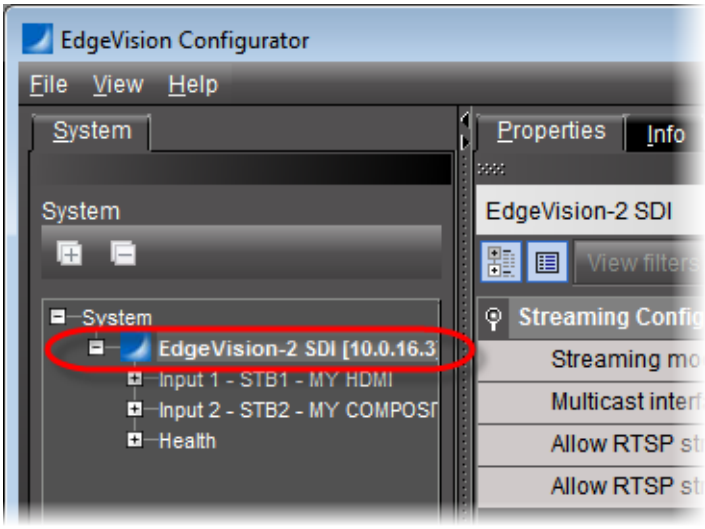
7. Click **Save** when done.
8. If you are ready to activate these changes on the device, click **Apply settings**.
   The device reboots itself and uses the settings you have just saved.

> **Note:** If you apply the changes and reboot the device, you may need to change the URL for *EdgeVision Admin* to the new frame IP address. You should also relaunch the *EdgeVision Configurator* and *EdgeVision Player* applications.

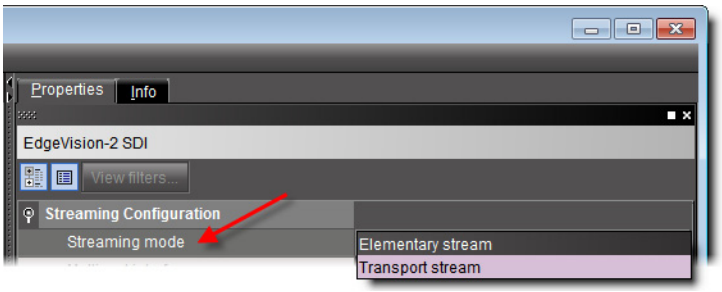
Task 6: Configuring Device-Level Feed Settings

To configure device-level feed settings

1. In *EdgeVision Configurator*, select the device from the **System** list.

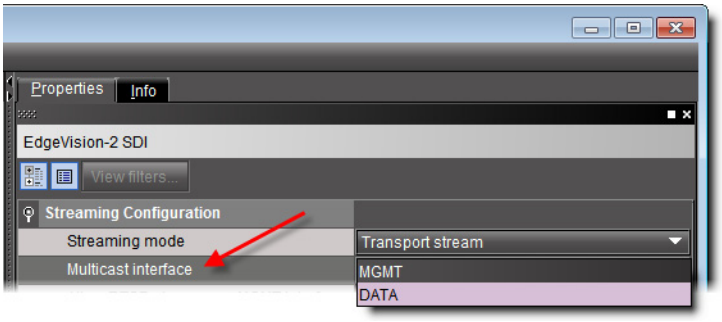


2. In the right pane, on the **Properties** tab, configure the streaming mode.



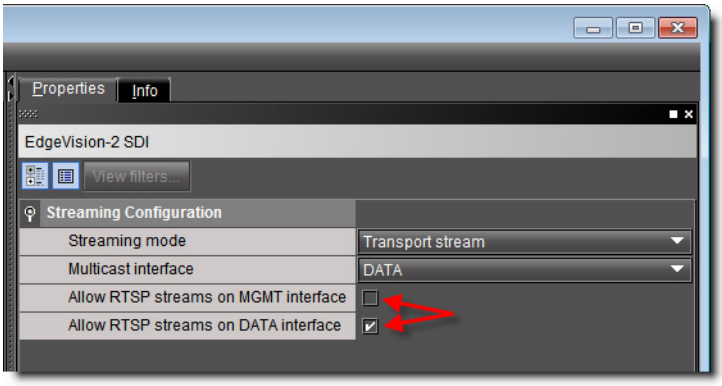
The *Streaming mode* parameter allows you to specify if the feed is an *Elementary stream* (ES) or *Transport stream* (TS), as defined by the MPEG communication protocol.

3. Specify a multicast interface.



The *Multicast interface* parameter allows you to select between the DATA and MGMT Ethernet ports when assigning a port for multicast streaming.

4. Specify on which of the ETH-MGMT and ETH-DATA ports you would like to allow streaming through RTSP sessions.



Note: You may select one, both, or neither of these ports, as desired.

Task 7: Configuring Input-Level Feed Settings

Input-level configuration generally involves specifying the selected input STB's name and model. However, depending on how you configured the *Streaming mode* parameter in

"Configuring Device-Level Feed Settings" on page 17, input-level configuration may additionally involve inputting Transport stream destinations.

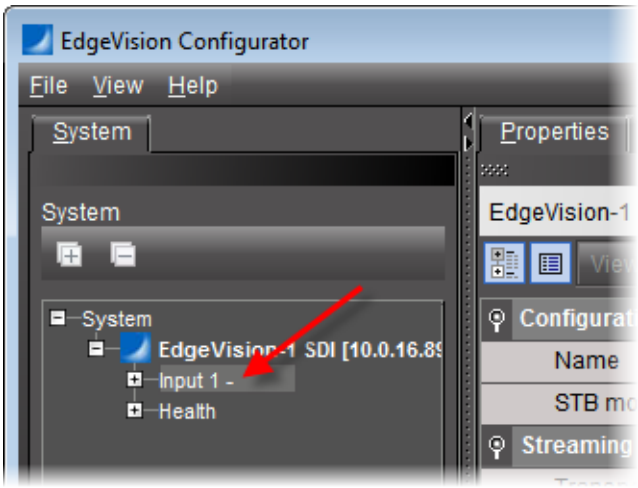
REQUIREMENTS

Make sure you meet the following conditions before beginning this procedure:

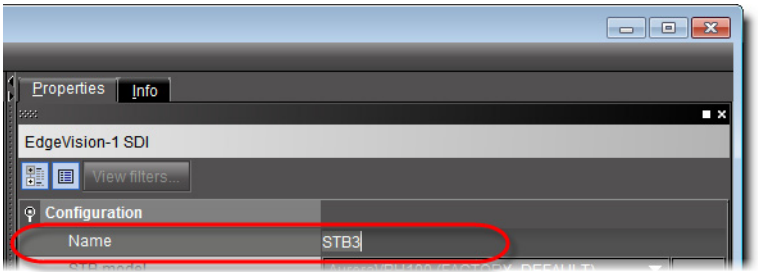
- You have opened *EdgeVision Configurator*.
- Your device-level settings are configured (see page 17).

To configure input-level feed settings

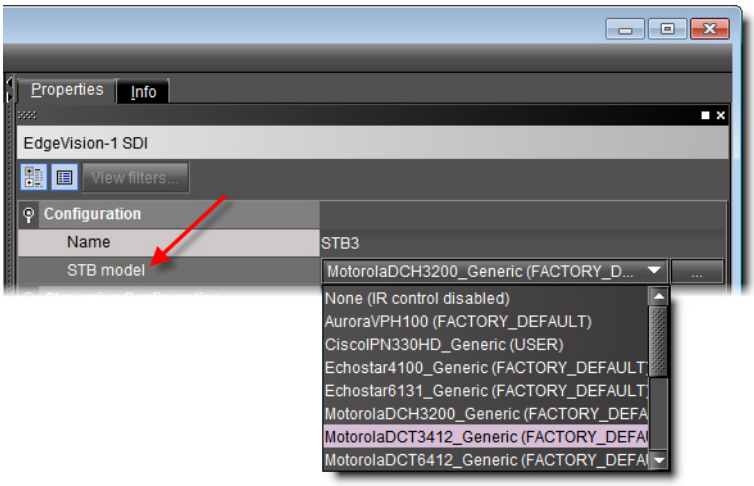
1. In *EdgeVision Configurator*, select the desired feed input in the **System** list.



2. Type a name for the input.



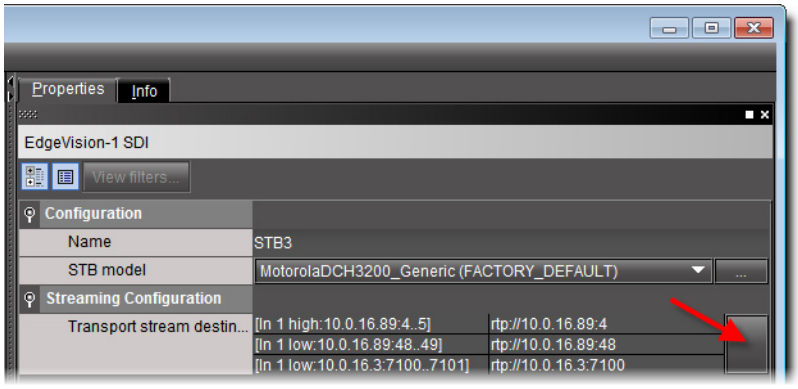
3. Select this input's STB model.



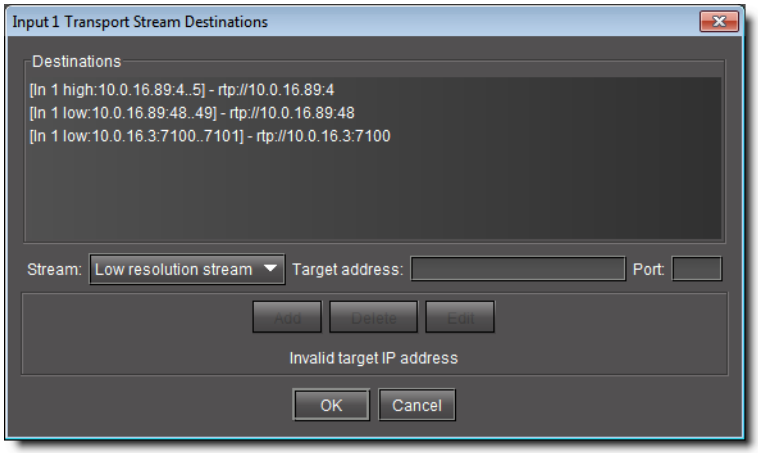
Note: If the STB model you would like to select is not in the list, you can switch to *IR Learning* mode to have EdgeVision learn the infrared (IR) codes manually. To do this, you must have the `EDGEVISION-OPT-IR-LEARNING` Optional infrared remote control learning kit. Additionally, you must also have enabled the *IR learning* option (see the "Viewing the Status and Configuring the Options" section of the "Configuring your EdgeVision Device" chapter of the *EdgeVision Installation Guide*.

4. If the *Streaming mode* parameter for this device is set to `Transport stream`, perform the following sub-steps for each Transport stream destination you would like to configure:

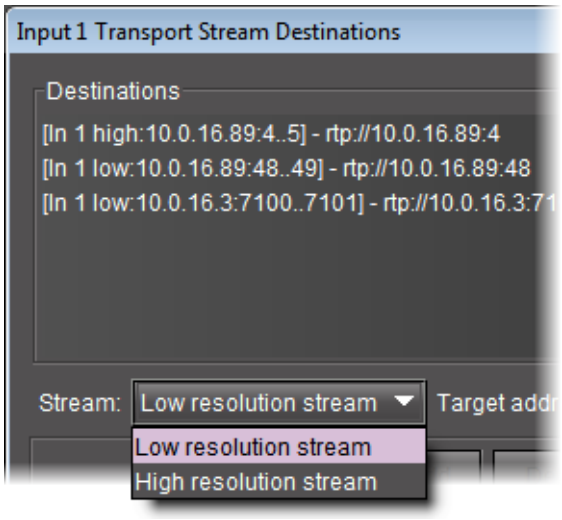
   a) Click the **Transport stream destinations** button.



   The **Input N Transport Stream Destinations** window appears.

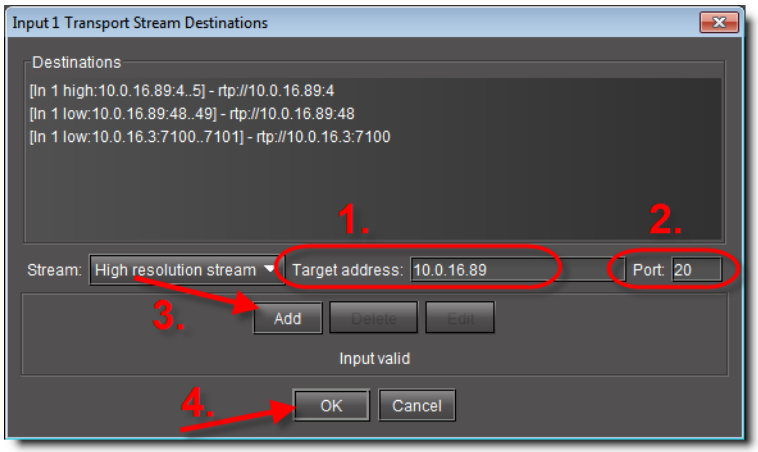


   b) Specify the resolution of the feed you would like to stream to this destination.



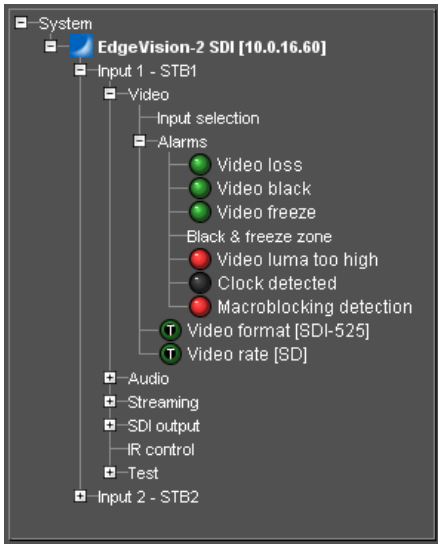
c) Type an IP address and port number for the destination.

d) Click **Add** and then click **OK**.



Task 8: Selecting a Video Input

The Video Encoder settings allow you to define the type of video signal that passes through this Input as well as ensure that the video feed is valid and operational. These settings are used by the Video alarms to monitor the quality of the video signal.



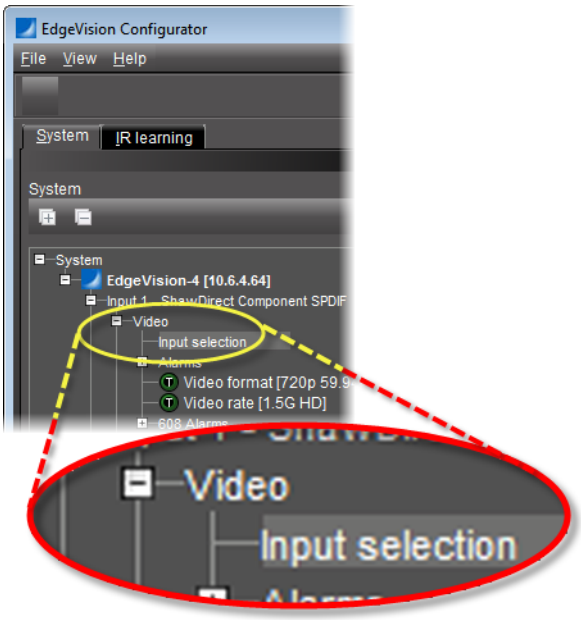
REQUIREMENT

Before beginning this procedure, make sure *EdgeVision Configurator* is open.

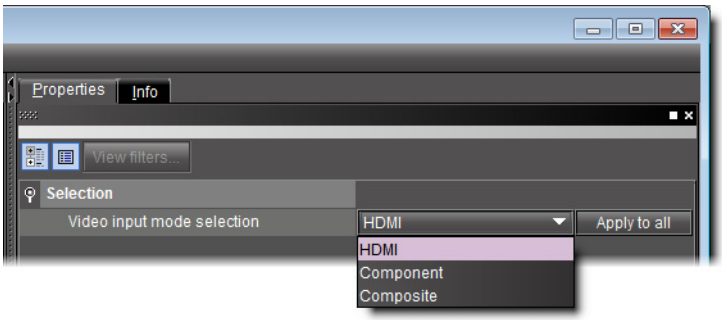
To select the video input

1. In *EdgeVision Configurator*, in the **System** list, navigate to:

   `System | <EdgeVision device> | <desired input> | Video | Input selection`



2. In the right pane, on the **Properties** tab, select a video input mode.



Choose from among **HDMI**, **Component**, and **Composite**.

The parameters for that protocol will appear in the **Video format** and the **Video rate** fields in both *EdgeVision Configurator* and *EdgeVision Player*.

Task 9: Selecting an Audio Input

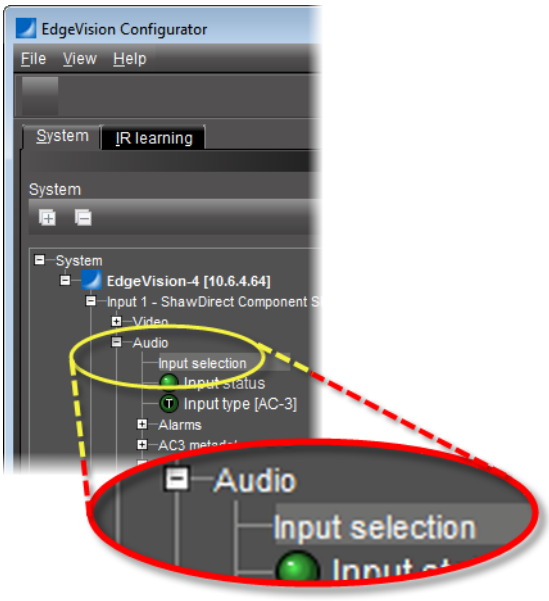
REQUIREMENT

Before beginning this procedure, make sure *EdgeVision Configurator* is open.

To select the audio input

1. In *EdgeVision Configurator*, in the **System** list, navigate to:

   `System | <EdgeVision device> | <desired input> | Audio | Input selection`



2. In the right pane, on the **Properties** tab, select an audio input mode. Your choices are:
   - **HDMI (AC3/PCM)**: a High-Definition Multimedia Interface is a compact audio/video interface for transmitting uncompressed digital data.

- **S/PDIF (AC3/PCM)**: the Sony/Philips Digital Interconnect Format is a layer protocol that carries digital audio signals
- **Analog**: the audio is split into the two main channels of left and right

Task 10: Configuring Loudness Measurement

Note: Throughout this procedure, if you would like to assign a parameter's set value to all audio inputs of your EdgeVision, click **Apply to all** in the row corresponding to that parameter.

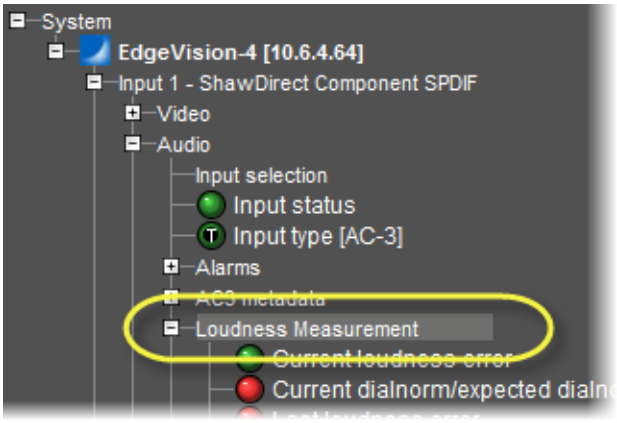
REQUIREMENT

Before beginning this procedure, make sure *EdgeVision Configurator* is open.

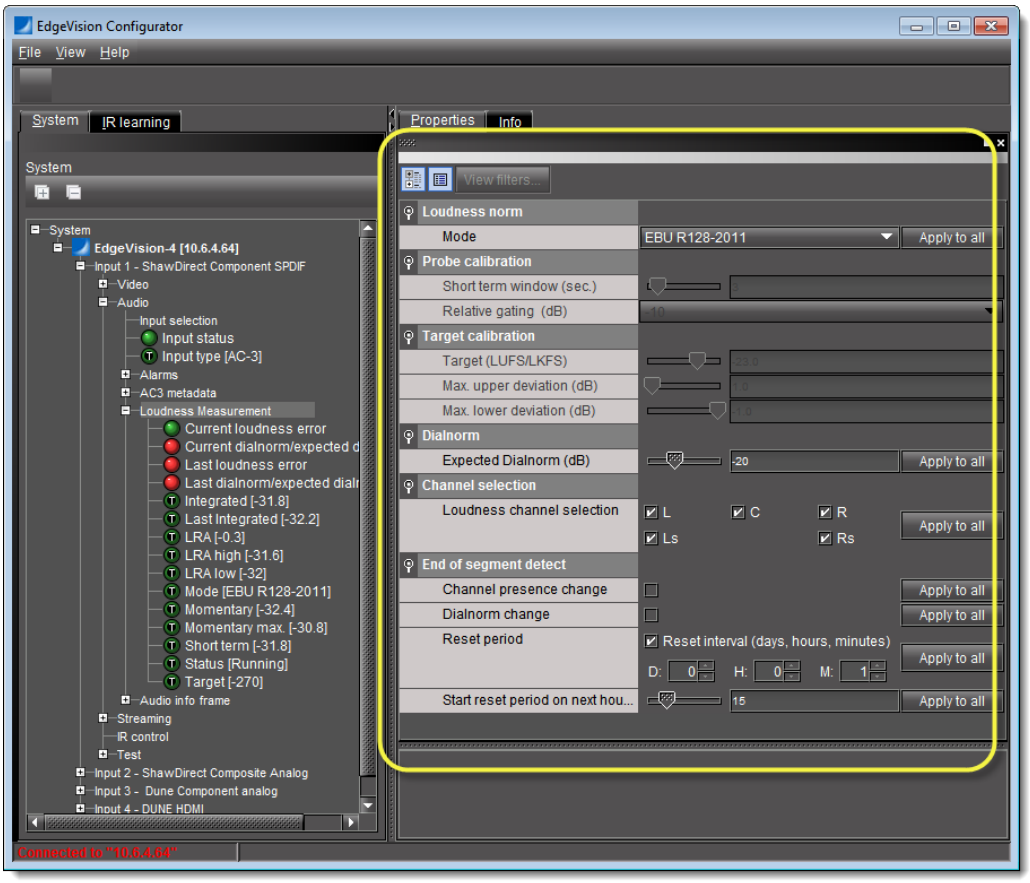
To configure loudness measurement settings

1. In *EdgeVision Configurator*, on the left pane, select **Loudness Measurement** at the following location:

   `System | <desired EdgeVision device> | <desired input port> | Audio | Loudness Measurement`



The right pane is populated with the current loudness measurement settings.



2. On the right pane, configure your loudness measurement parameters according to your needs (see "Loudness Measurement Configuration Window", on page 26).

See also

For more information about:

- the *End-of-segment* parameter, see the “End-of-Segment Detection” section in the “Configuring Feeds and Alarms” chapter of the *EdgeVision Installation Guide*.
- loudness measurement in EdgeVision, see the “Loudness Measurement” section in the “Configuring Feeds and Alarms” chapter of the *EdgeVision Installation Guide*.
- the AC3 (also known as Dolby Digital) audio format and how EdgeVision supports it, see the “Dolby AC3” section of the “Configuring Feeds and Alarms” chapter of the *EdgeVision Installation Guide*.

Loudness Measurement Configuration Window

EdgeVision Configurator allows you to configure loudness measurement settings in the **Loudness Measurement** window.

Note: As described in the procedure "Configuring Loudness Measurement" on page 25, you must make sure you select **Loudness Measurement** (and not the alarms or statuses within it) in order to see currently configured loudness measurement settings.

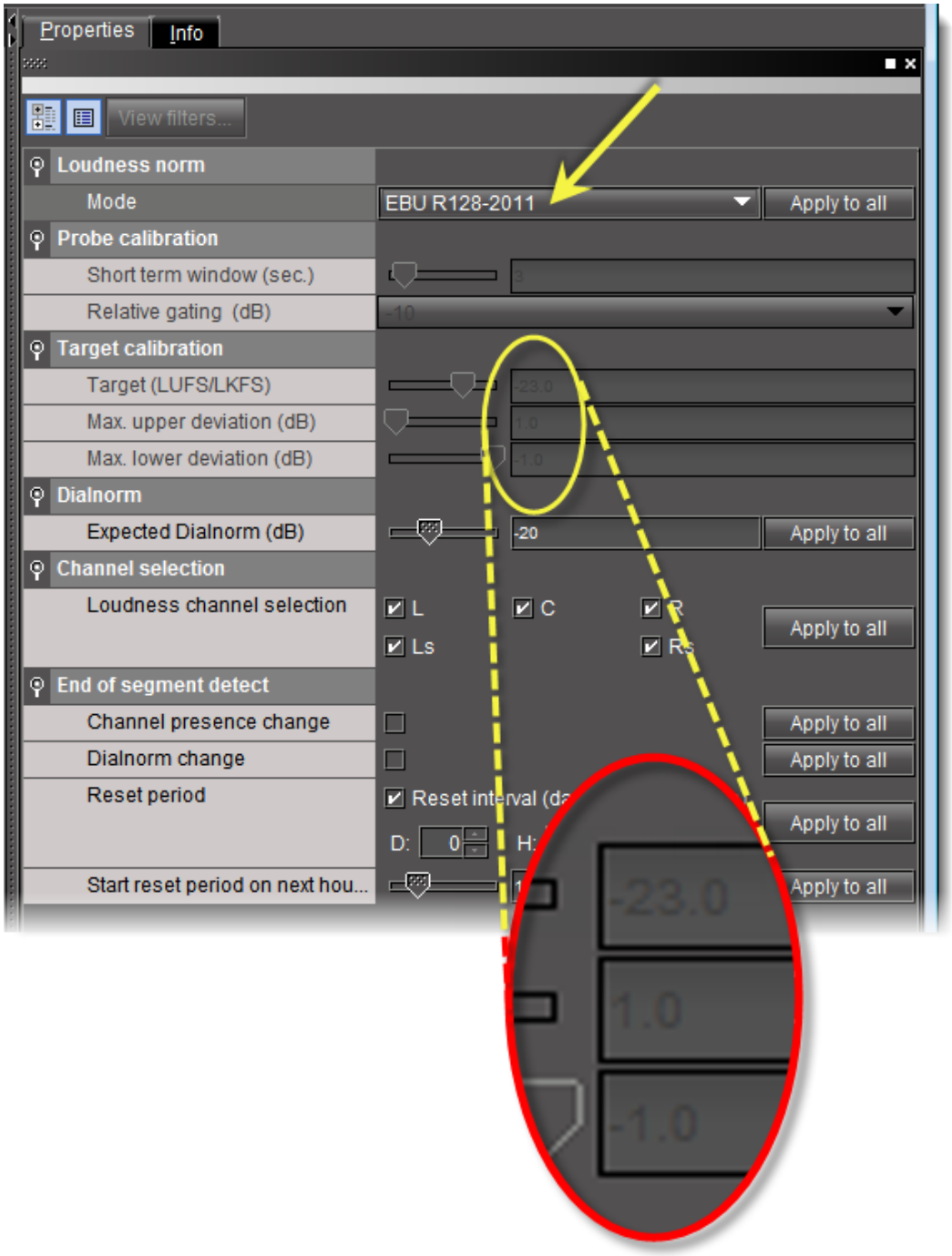


*Figure 1-1 Loudness Measurement parameters — **EBU R120-2011** mode chosen to measure loudness*

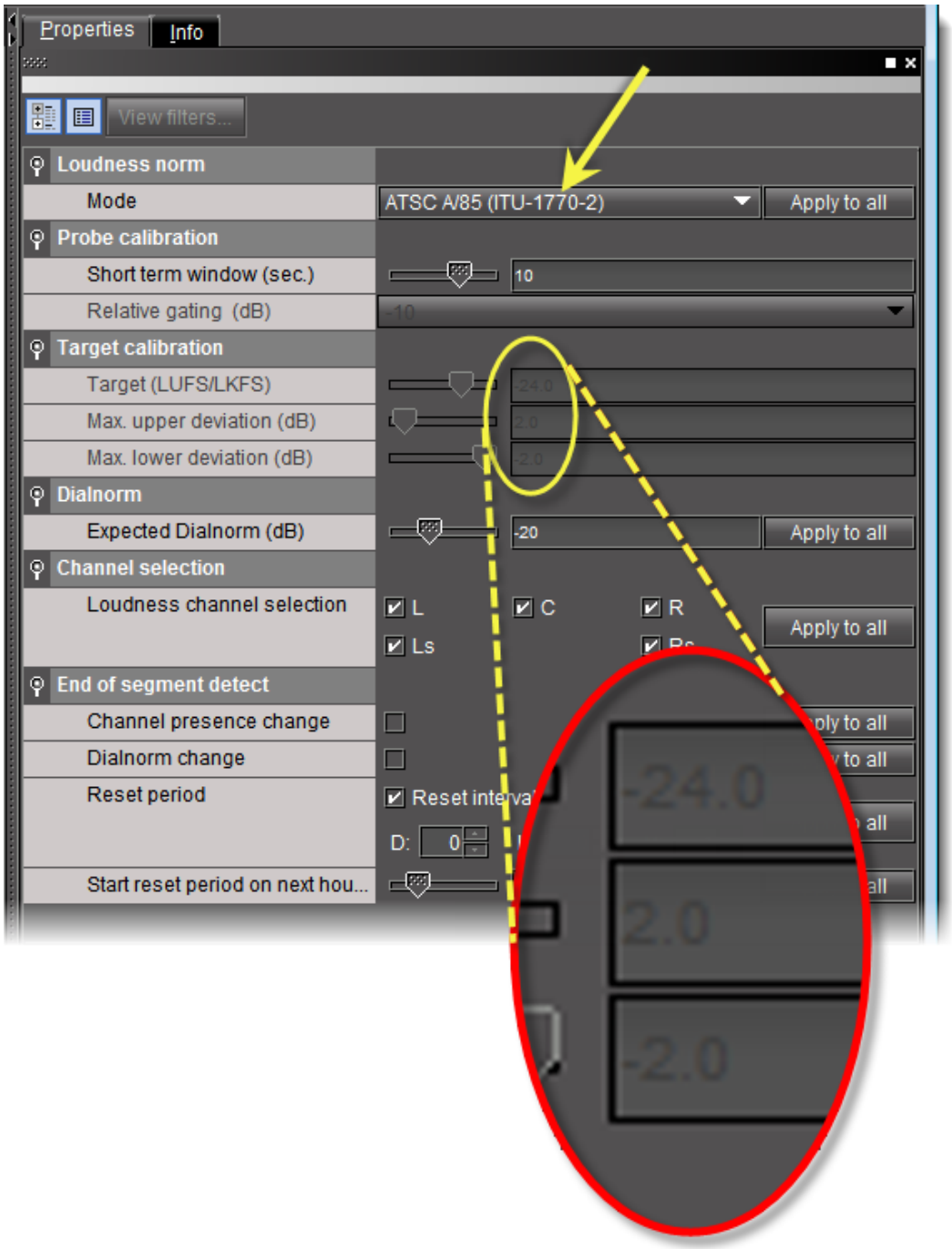


*Figure 1-2 Loudness Measurement parameters — **ATSC A/85 (ITU-1770-2)** mode chosen to measure loudness*

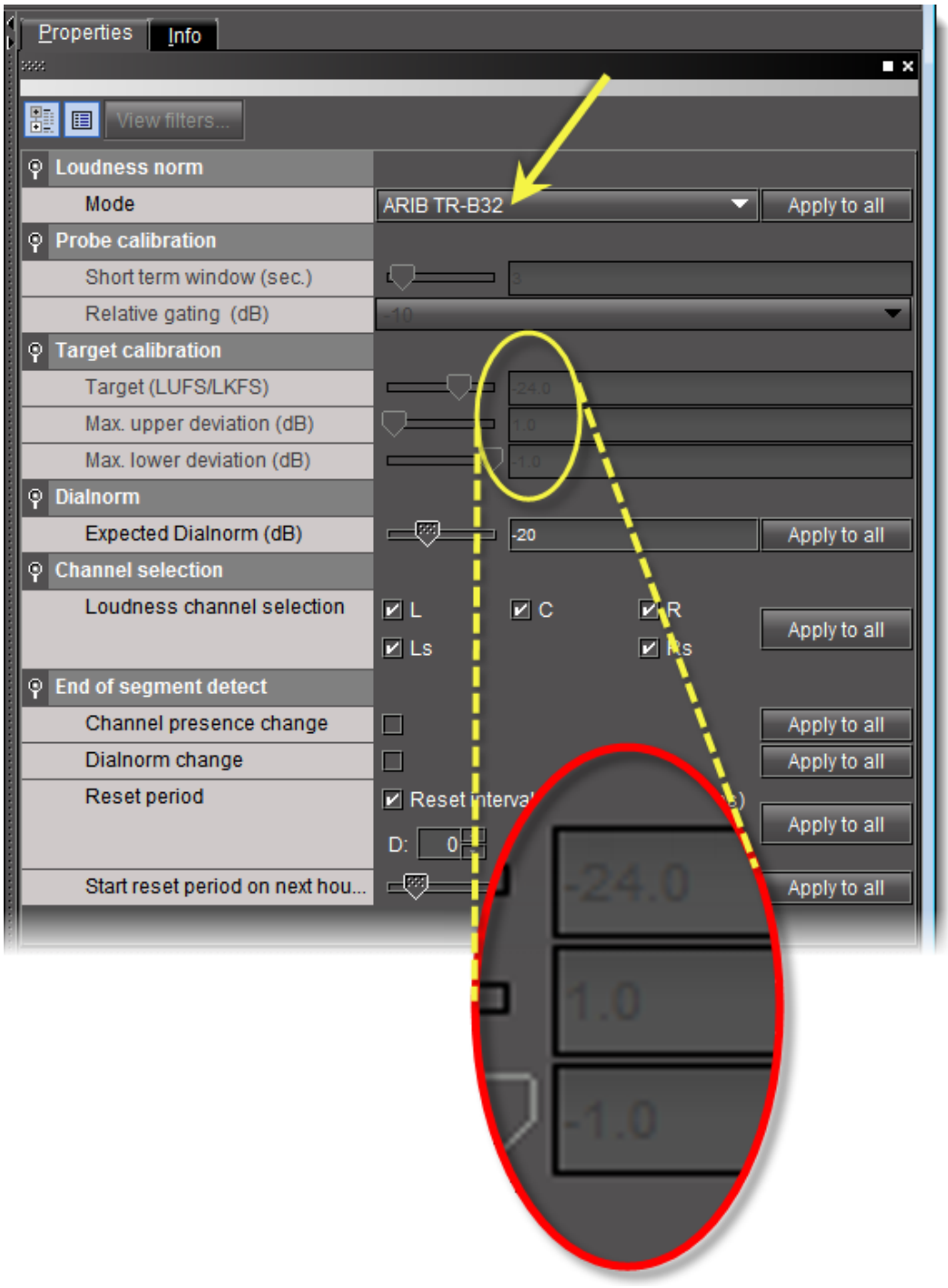


*Figure 1-3 Loudness Measurement parameters — **ARIB TR-B32** mode chosen to measure loudness*

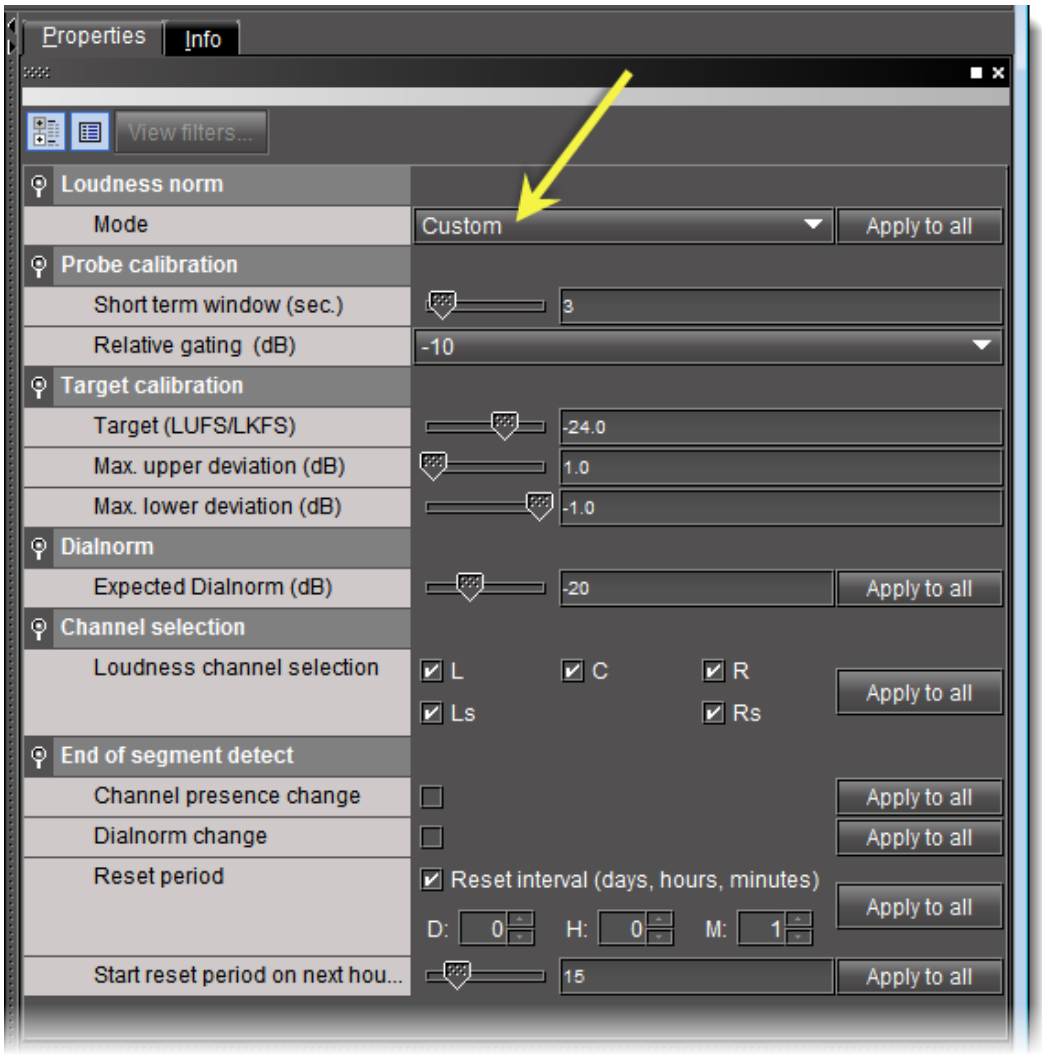
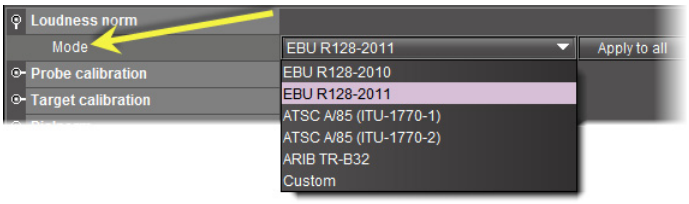
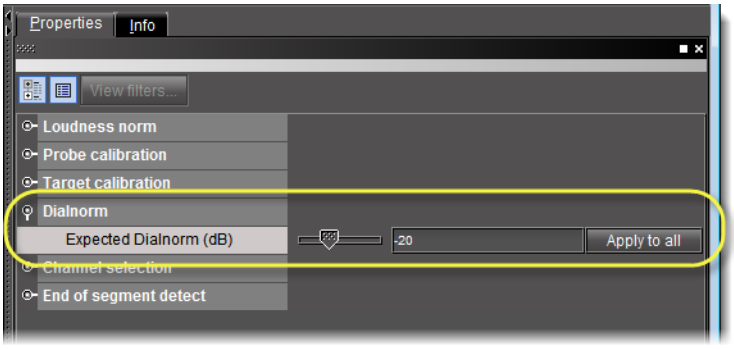
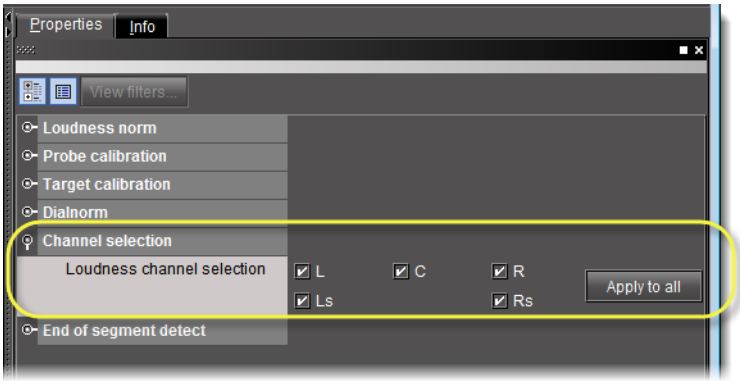
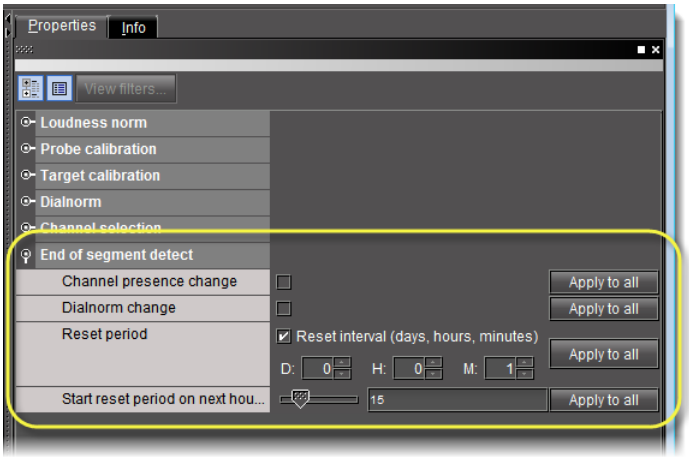
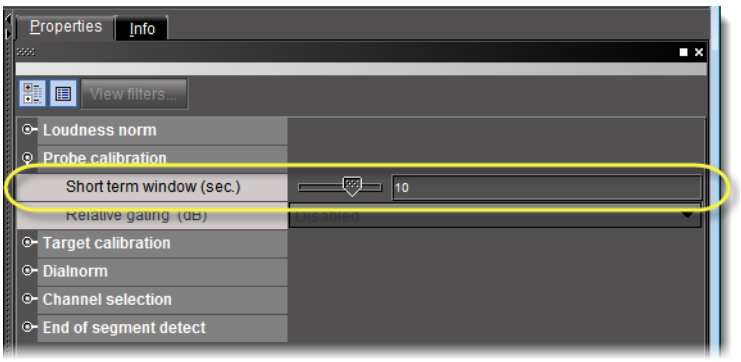


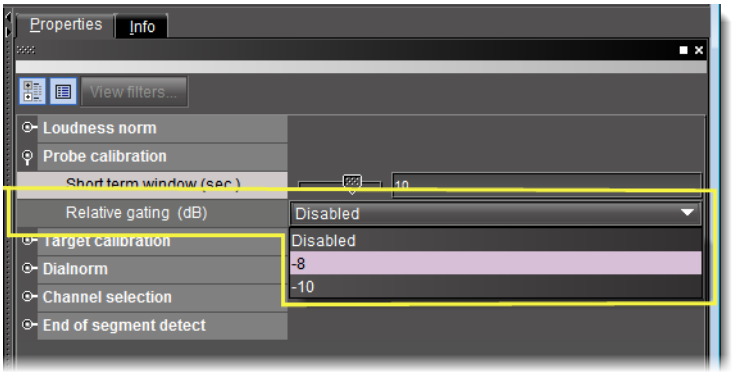
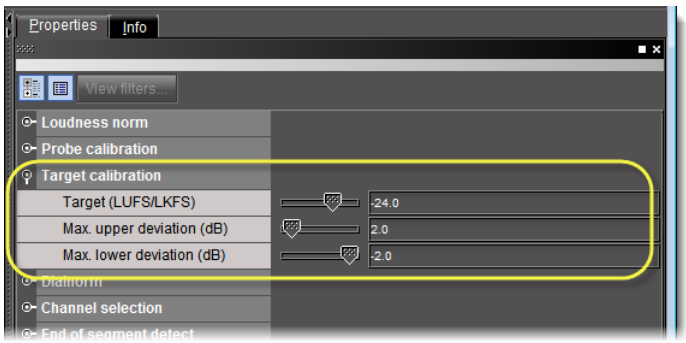
*Figure 1-4 Loudness Measurement parameters — **Custom** mode chosen to measure loudness*

To do this...	...do this...
*--- Tasks relevant to **ALL** loudness modes ---*	
Set the loudness mode.	In the **Loudness norm > Mode** area, select one of the following options: • **EBU R128-2010** • **EBU R128-2011** • **ATSC A/85 (ITU-1770-1)** • **ATSC A/85 (ITU-1770-2)** • **ARIB TR-B32** • **Custom** 
Set the expected dialog normalization level (*dialnorm*), given the chosen loudness mode.	In the **Dialnorm** area, use the slider to set the expected dialnorm value for the Integrated (segment-length) time scale. 
Set the EBU channel number and selection.	In the **Channel selection** area, select and clear, as required, the channels you would like to include in the loudness measurement. 

(*Continued*)

To do this...	...do this...
Set the end-of-segment detection parameters.	In the **End of segment detect** area, select or clear, as required, the check boxes indicating: • the triggers for resetting the automatic integrated loudness measurement • the reset time period ending the segment detection activity • the start reset period countdown timer 
*--- Loudness mode set to, **ATSC A/85 (ITU-1770-1)** or **ATSC A/85 (ITU-1770-2)** or **Custom** ---*	
Set the short-term window parameter for the probe	In the **Probe calibration** area, use the slider to set the short-term window. 

(*Continued*)

To do this...	...do this...
*--- Loudness mode set to **Custom** ---*	
Set the probe's relative gating level.	In the **Probe calibration** area, select the relative gating level. 
Calibrate the target.	1. In the **Target calibration** area, use the slider to set the absolute target level (LUFS/LKFS). 2. Use the slider to set the upper deviation threshold for loudness (dB). 3. Use the slider to set the lower deviation threshold for loudness (dB). 

See also

For more information about:

- loudness measurement, see the "Loudness Measurement" section in the "Configuring Feeds and Alarms" chapter of the *EdgeVision Installation Guide*.
- AC3 (Dolby Digital) audio format, see the "Dolby AC3" section in the "Configuring Feeds and Alarms" chapter of the *EdgeVision Installation Guide*.

Task 11: Configuring Decoding and Forwarding Settings

Streaming Video

EdgeVision provides video encoding and streaming of selected Inputs and uses H.264 for video compression. Two independent video encoders are available for each EdgeVision input,

one generating a lower resolution bit rate and a second generating a higher resolution and bit rate stream.

Streaming video contains a sequence of images that are compressed, sent over an IP network and displayed in a player. *EdgeVision Player* decompresses the images and plays the video.

The streaming video encoder settings allow you to define the resolution, bitrate, encoding (multiplexing) method (VBR or CBR), and stream quality for the streaming video feed.

See also

For more information about video streaming considerations, see the "Configuration Considerations when Streaming Video" section in the "Configuring Feeds and Alarms" chapter of the *EdgeVision Installation Guide*.

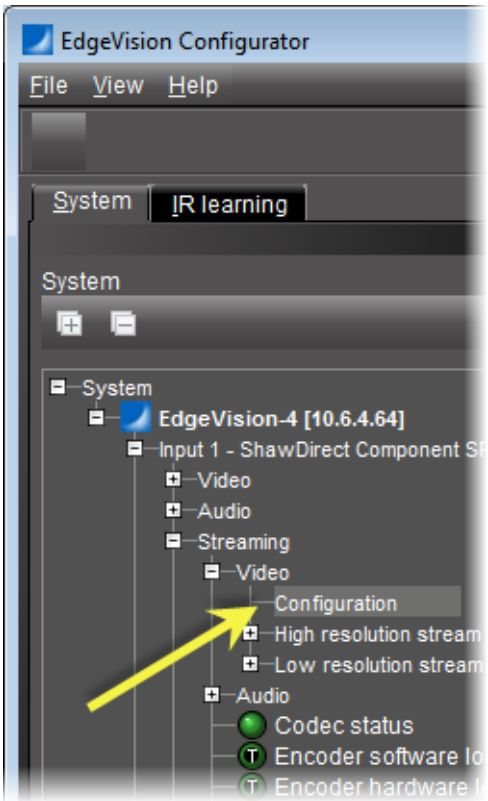
REQUIREMENT

Before beginning this procedure, make sure *EdgeVision Configurator* is open.

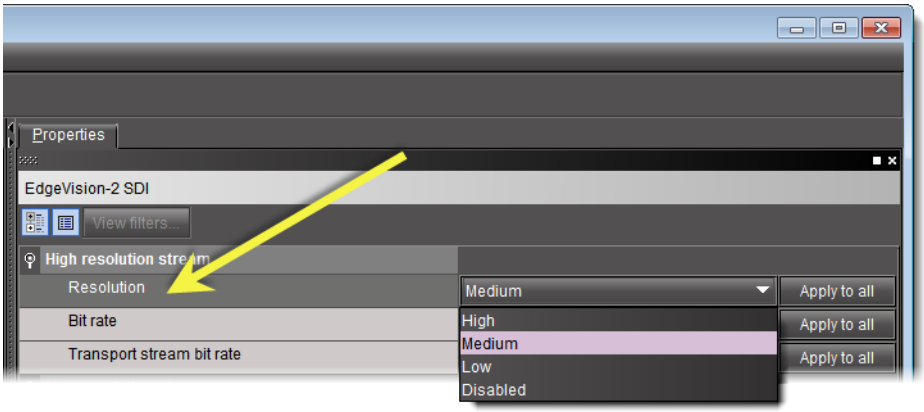
To define an Input's streaming video encoder settings

1. In *EdgeVision Configurator*, in the **System** list, navigate to:

   `System | <EdgeVision device> | <desired input> | Streaming | Video | Configuration`



2. In the right pane, on the **Properties** tab, select the encoder level for a high resolution stream.

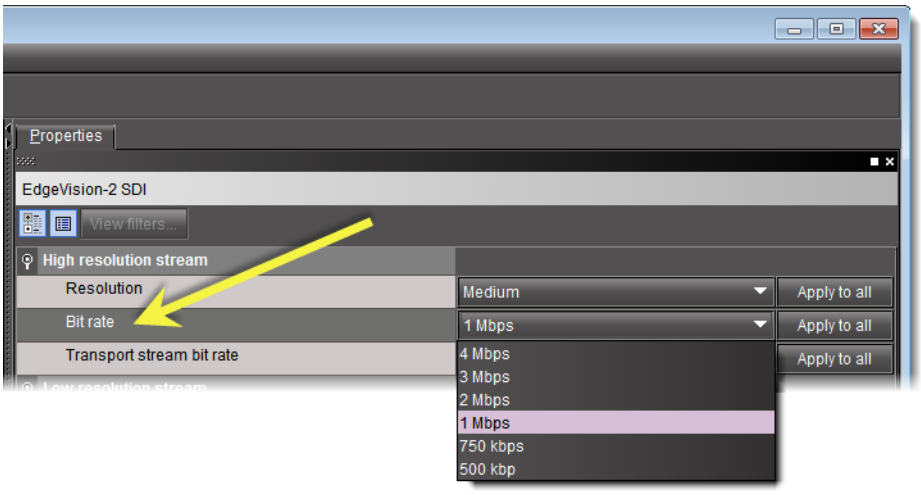


High resolution stream options

Input Format	Resolution
1080p, 1080i	**High**: 1920 × 1080 **Medium**: 1440 × 800 **Low**: 960 × 540
720p	**High**: 1280 × 720 **Medium**: 864 × 720 **Low**: 960 × 540
480i	**High**: 720 × 480 **Medium**: 544 × 480 **Low**: 352 × 480
576i	**High**: 720 × 576 **Medium**: 544 × 576 **Low**: 352 × 576

The high resolution stream setting performs advanced monitoring of the quality of the video signal.

3. Select the targeted bit rate for the high resolution stream.

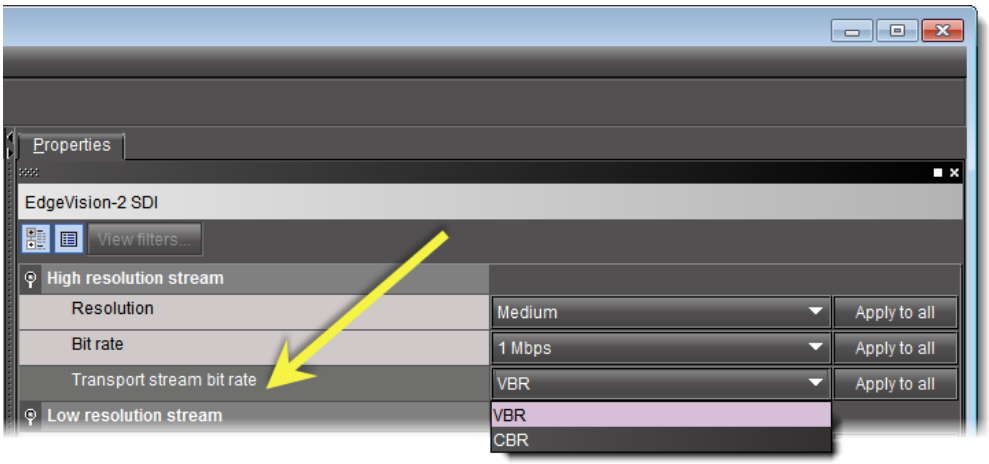


IMPORTANT: Some targeted bit rates may not be achievable

In most cases, the configured bit rate will be respected. However, there are some extreme cases where it is impossible to achieve the target.

For example, you may have a high resolution 1080p stream at 1920 × 1080 with a configured bit rate of 500kbps. . In this case, the encoder may not be able to compress the stream to fit so low a bit rate. The bit rate is a target, not an absolute.

4. Select the high resolution stream multiplexing mode.

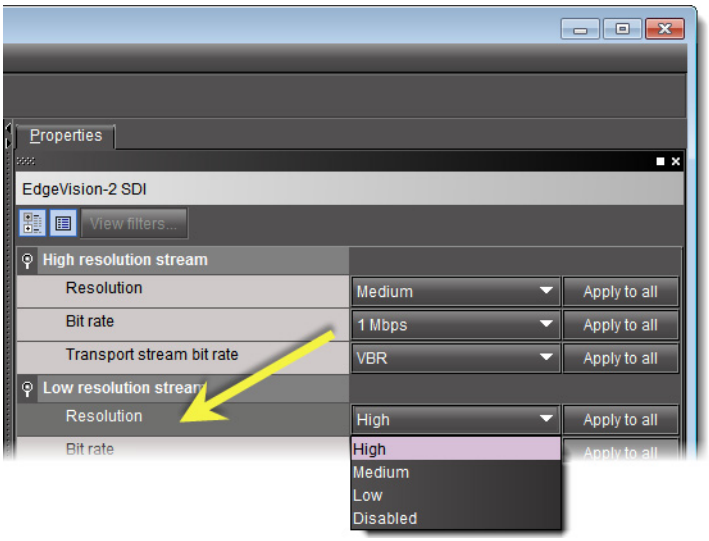


High resolution TS stream multiplexing mode

Multiplexing mode	Description
VBR (default)	**variable bit rate:** The TS output stream's bit rate varies to the degree that it varies in the Elementary stream (ES) input. VBR streams can be bursty and may overflow the input buffer of certain hardware decoders.
CBR	**constant bit rate:** In EdgeVision's conversion from VBR to CBR, the resulting CBR stream spreads out payload packets, separating them with null (*filler*) packets. The addition of null packets increases the overall required bandwidth but eliminates the peak data bursts sometimes seen in VBR streams.[1]

1. Grass Valley recommends selecting the **VBR** default unless and until you observe aberrant behavior in the output stream of a hardware decoder downstream of your EdgeVision device (described in the "Configuration Considerations when Streaming Video" section in the "Configuring Feeds and Alarms" chapter of the *EdgeVision Installation Guide*).

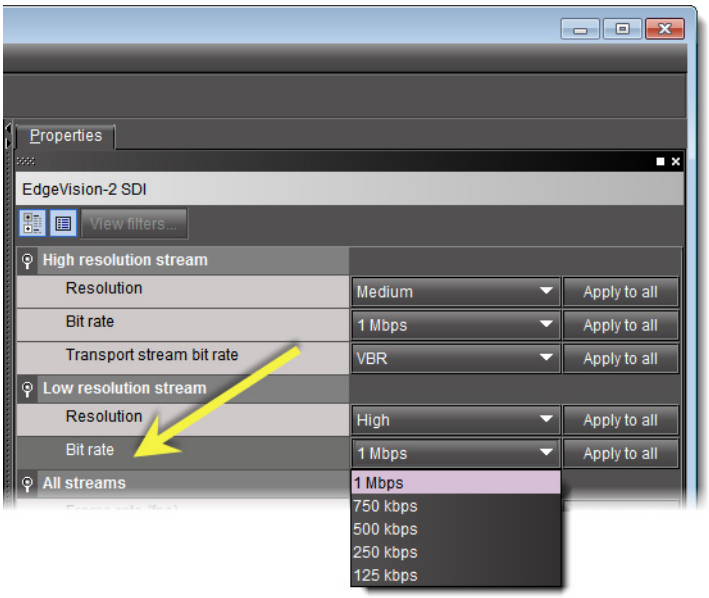
5. Select the encoder level for a low resolution stream.



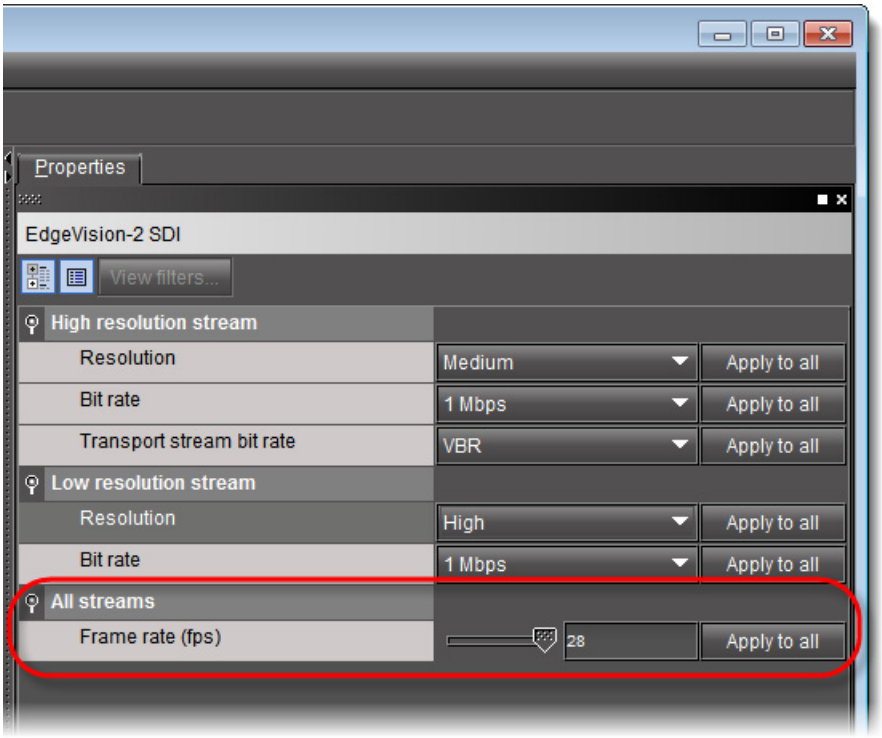
Low resolution stream options

Interlace Level	Resolution
1080p, 1080i, 720p	**High**: 480 × 272 **Medium**: 480 × 272 **Low**: 256 × 144
480i	**High**: 352 × 240 **Medium**: 352 × 240 **Low**: 176 × 120
576i	**High**: 352 × 288 **Medium**: 352 × 288 **Low**: 176 × 144

6. Select the targeted bit rate for the low resolution stream.



7. Use the **Frame rate** slider to set the frame rate for the video feed.



Configuring Audio Output Settings

The following flowchart represents the workflow of user tasks required to successfully configure EdgeVision's audio processing. The boxes representing user tasks are color-coded

pink and are hotspots that link to a procedure. If you are reading a printout of this manual, you can navigate to the appropriate procedures by consulting Table 1-1.

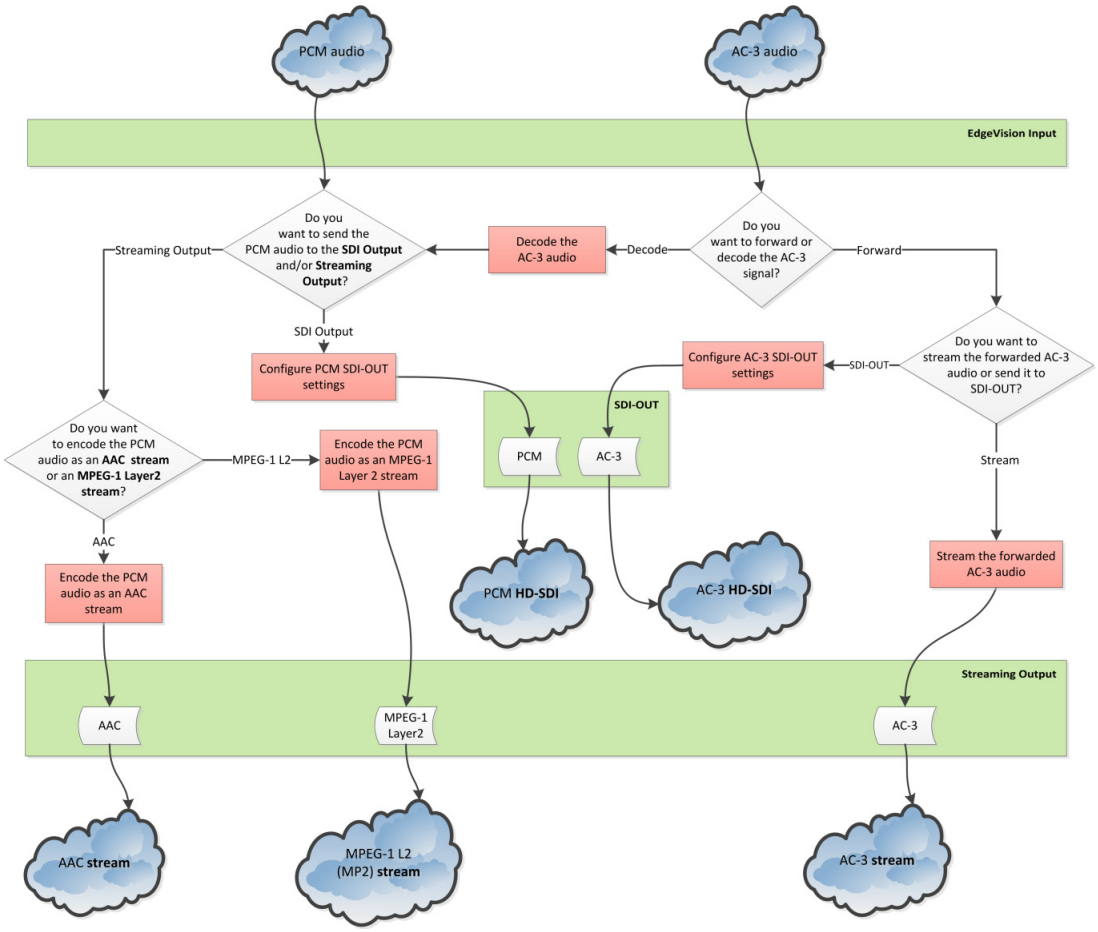


Figure 1-5 EdgeVision audio processing workflow and signal flow (see Table 1-1)

The following table is a list (**NOT** in any sequential order) of the user tasks referenced in the workflow/signal flow of Figure 1-5.

Table 1-1: EdgeVision audio processing user tasks (see Figure 1-5)

Task[1]	**Procedure*f***	**Additional instructions for the procedure**
Decode the AC3 audio	"Decoding AC3 Audio" on page 44	
Configure PCM SDI-OUT settings	"Configuring the SDI Output" on page 47	
Encode the PCM audio as an MPEG-1 Layer 2 stream	"Configuring Encoding Settings for PCM Audio" on page 40	Encoding format: **MPEG-1 L-2**
Encode the PCM audio as an AAC stream	"Configuring Encoding Settings for PCM Audio" on page 40	Encoding format: **AAC-LC**

Table 1-1: EdgeVision audio processing user tasks (see Figure 1-5) (*Continued*)

Task[1]	Procedure*f*	Additional instructions for the procedure
Configure AC3 SDI-OUT settings	"Forwarding AC3 Audio" on page 42	• Perform the sub-steps of step 3. • **DO NOT** perform the sub-steps of step 4.
Stream the forwarded AC3 audio	"Forwarding AC3 Audio" on page 42	• **DO NOT** perform the sub-steps of step 3. • Perform the sub-steps of step 4.

1. This list of tasks is not necessarily sequentially ordered. Consult Figure 1-5 for the supported context.

Configuring Encoding Settings for PCM Audio

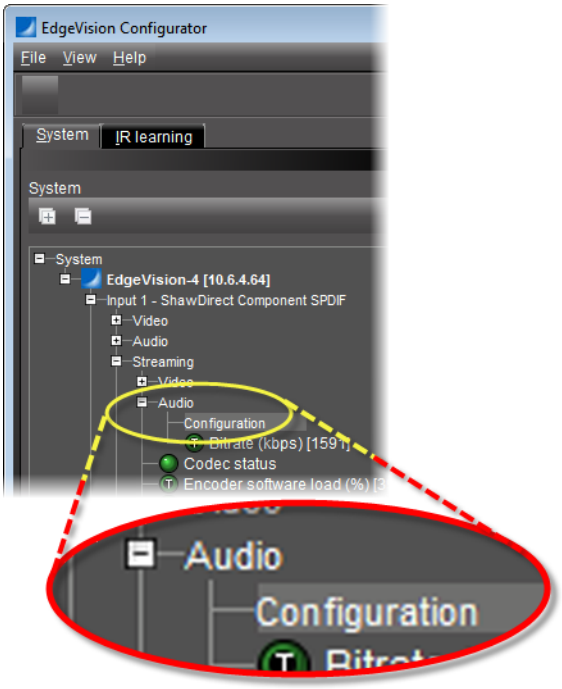
REQUIREMENT

Before beginning this procedure, make sure *EdgeVision Configurator* is open.

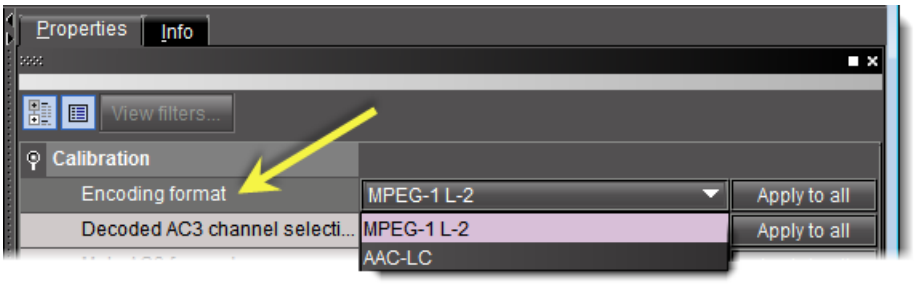
To configure encoding settings for PCM audio

1. In *EdgeVision Configurator*, in the **System** list, navigate to:

   `System | <EdgeVision device> | <desired input> | Streaming | Audio | Configuration`



2. In the right pane, on the **Properties** tab, select an encoding format.

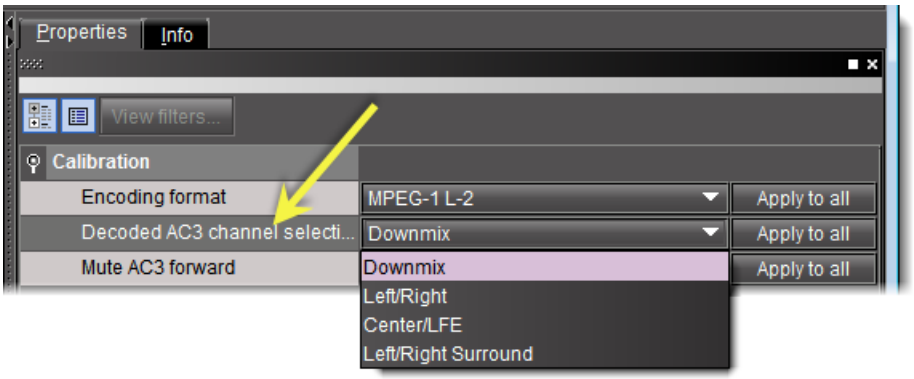


Note: The *Encoding format* parameter is only applicable if you are **NOT** forwarding AC3 audio.

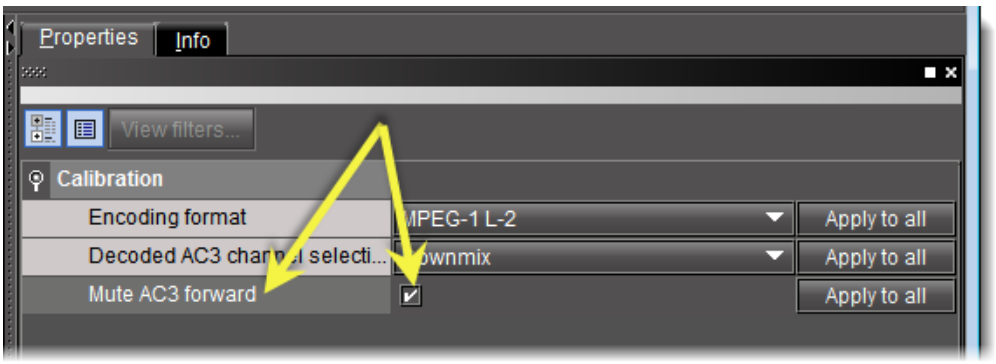
Encoding format options

Encoding format	Description
MPEG-1 L-2 (aka MP2)	A lossy audio compression format which is the standard format for audio broadcasting.
AAC-LC	The standardized, lossy compression and encoding scheme for digital audio. AAC ensures a higher quality sound than MP3 with similar bit rates.

3. Select either the downmix output or an AC3 channel pairing to stream.



4. Select or clear, according to your needs, the **Mute AC3 forward** check box.



Processing AC3 Audio

EdgeVision can take an AC3 audio input and output either a forwarded (undecoded) AC3 or else output a decoded AC3 audio. Other output options include outputting a forwarded AC3 stream or a forwarded AC3 over HD-SDI output. Additionally, you may choose the outputted encoding format (for decoded audio) as well as being able to map the outputted channel lineup (please see the graphical representation of the audio processing options in see Figure 1-5, on page 39).

Forwarding AC3 Audio

You can forward AC3 audio to an SDI-OUT port or to a streaming output with no decoding of the AC3 audio by performing the following procedure.

> **Note:** If you are in *AC3 forward* mode, the decoded AC3 channel line-up settings for the SDI-OUT are ignored.

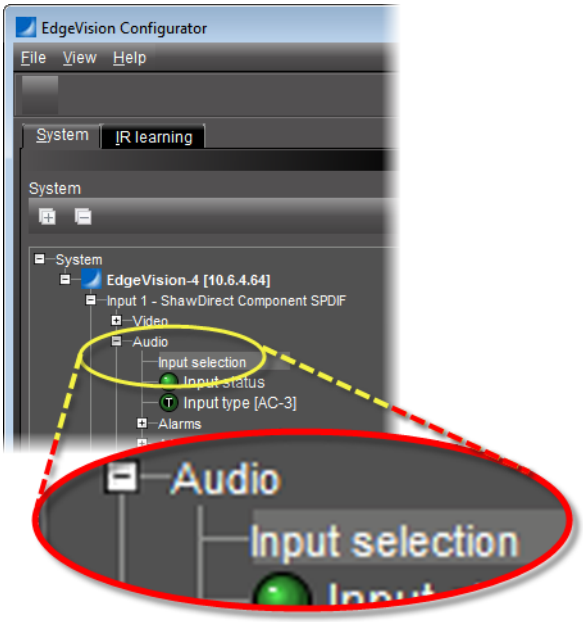
REQUIREMENT

Before beginning this procedure, make sure you have opened *EdgeVision Configurator*.

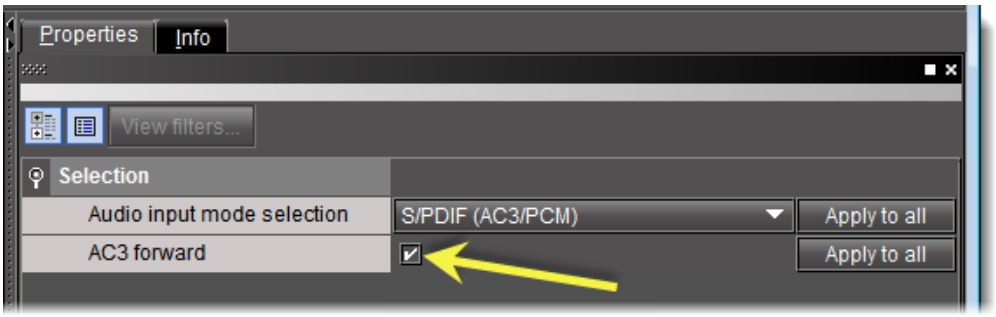
To forward AC3 audio

1. In *EdgeVision Configurator*, in the **System** list, navigate to and select:

   `System | <EdgeVision device> | <desired input> | Audio | Input selection`



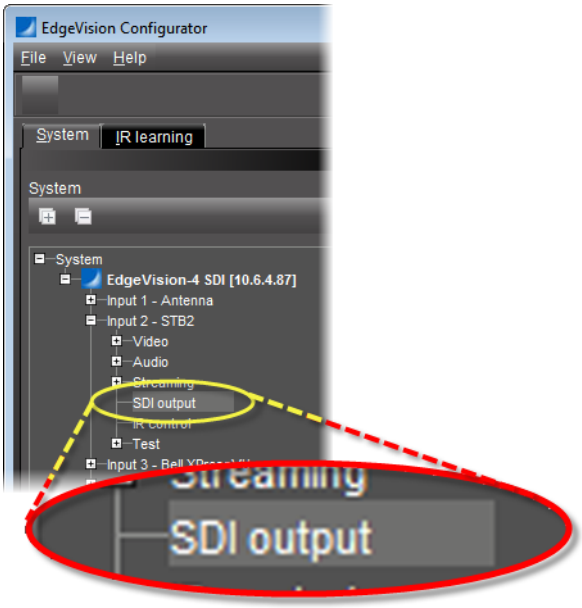
2. On the right pane, on the **Properties** tab, select **AC3 forward**.



3. If you would like to forward the AC3 to an SDI output, perform the following sub-steps:

   a) On the left pane, navigate to and select:

   `System | <EdgeVision device> | <desired input> | SDI output`

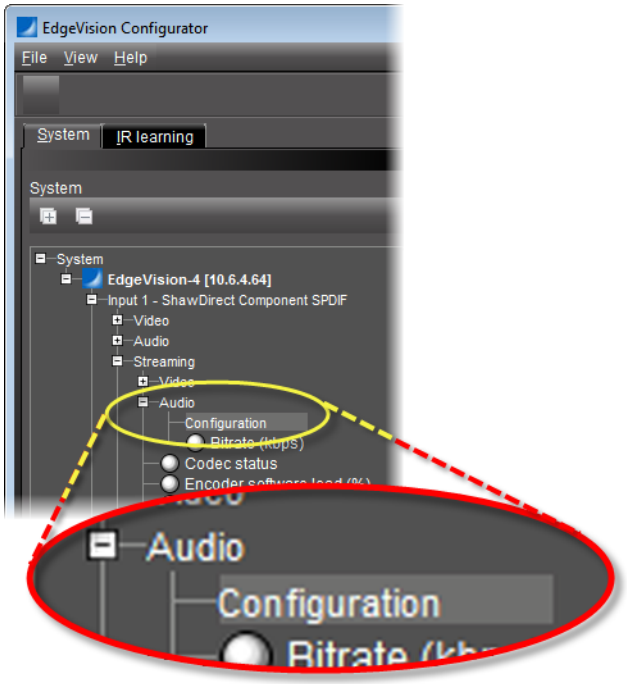


   b) On the right pane, on the **Properties** tab, select the **Enable SDI out** check box.

4. If you would like to forward the AC3 to a streaming output, perform the following sub-steps:

   a) On the left pane, navigate to and select:

   `System | <EdgeVision device> | <desired input> | Streaming | Audio | Configuration`



   b) On the right pane, on the **Properties** tab, clear the **Mute AC3 forward** check box.

Decoding AC3 Audio

Part of configuring your AC3 decoding settings involves configuring how EdgeVision re-encodes AC3 audio before output. Currently, only two channels can be streamed from an AC3 bit stream. You can choose from among three preset selections, one of the preset groupings of two of the AC3 channels, or you can choose to stream the downmix output. The list of available preset channel pairings for streaming are as follows:

- Downmix (could be **L_T/R_T** or **L_O/R_O**, depending on how you configured your downmix)

- Left / Right
- Center / LFE
- Left Surround / Right Surround

EdgeVision supports both MPEG-1 Layer 2 (also known as MP2) and AAC-LC audio compression.

REQUIREMENTS

Make sure you meet the following conditions before beginning this procedure:

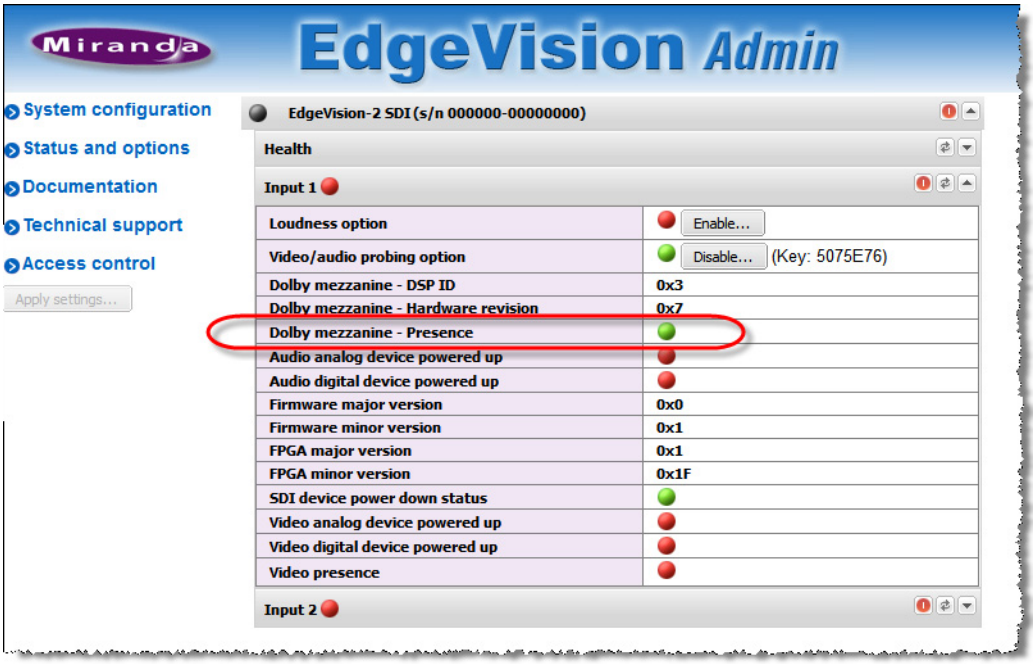
- You have purchased and enabled the *Video/audio probing* option. Contact Grass Valley Technical Support for more information (see "Contact Us", on page 59).
- The media player is feeding an AC3 signal to your EdgeVision (see the operating instructions for your media player).
- You have opened *EdgeVision Configurator*.

To decode AC3 audio

1. Open the EdgeVision page in a web browser (using the device's Management port IP address), and then click **EdgeVision Admin**.

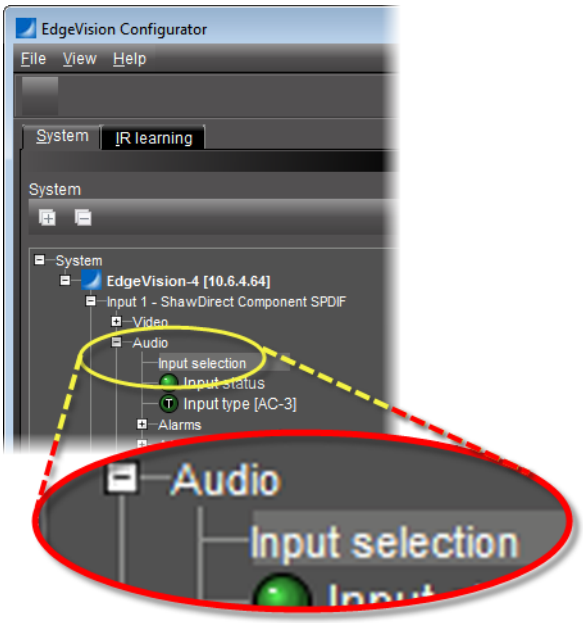
   EdgeVision Admin's *Status and options* page appears.

2. Verify the Dolby mezzanine card is present in your EdgeVision device under the appropriate input.

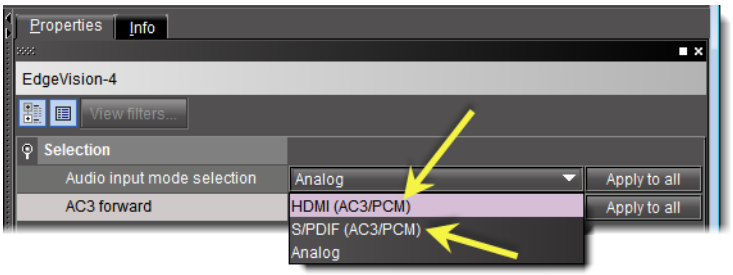


3. In *EdgeVision Configurator*, in the **System list**, navigate to:

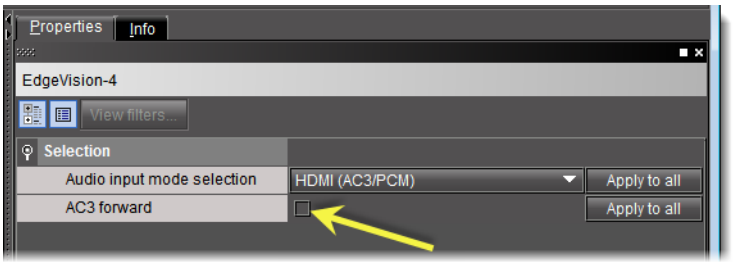
   `System | <EdgeVision device> | <desired input> | Audio | Input selection`



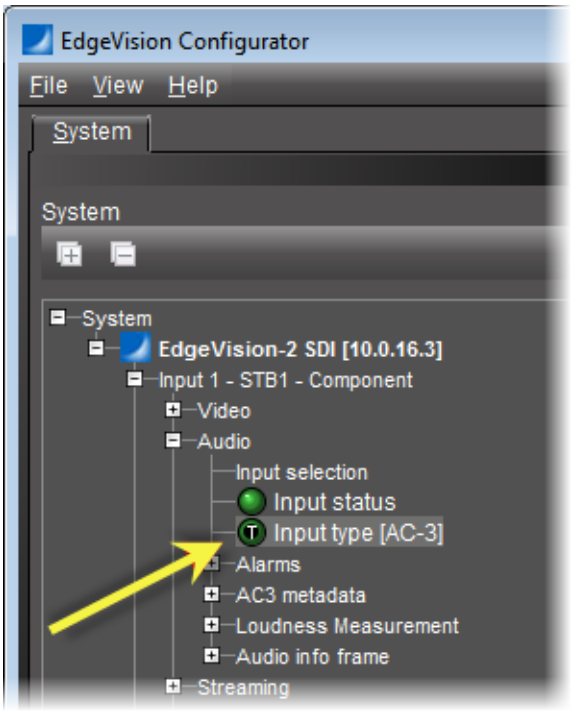
4. On the right pane, in the **Audio input mode selection** list, select one of the following two options, as required:
   - **HDMI (AC3/PCM)**
     OR,
   - **S/PDIF (AC3/PCM)**



5. Clear the **AC3 forward** check box.



6. Verify the input type indicates **AC3**.



IMPORTANT: In order to output the decoded AC3 audio from the EdgeVision unit, you must also configure audio encoding. Make sure you consult see Figure 1-5, on page 39 to situate the procedure you have just completed within the larger supported workflow.

Configuring the SDI Output

SDI (Serial Digital Interface) is the primary digital format connection standard in the professional broadcast industry for high-quality equipment. It carries everything (video, audio, and time code) over one cable with a bandwidth of nearly 1.5 gigabits per second, allowing for raw HD output in real time without compression. SDI is ideal for live feed productions and editing.

The SDI Output settings allow you to define the type of audio signal that is output for this Input feed, as well as ensure that the SDI output audio feed is valid. These settings are used by the SDI output alarms to monitor the quality of the SDI output.

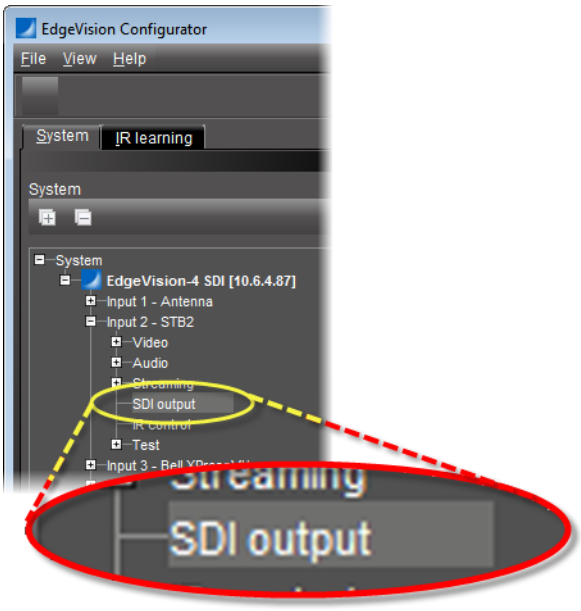
REQUIREMENT

Before beginning this procedure, make sure *EdgeVision Configurator* is open.

To configure the SDI Output settings

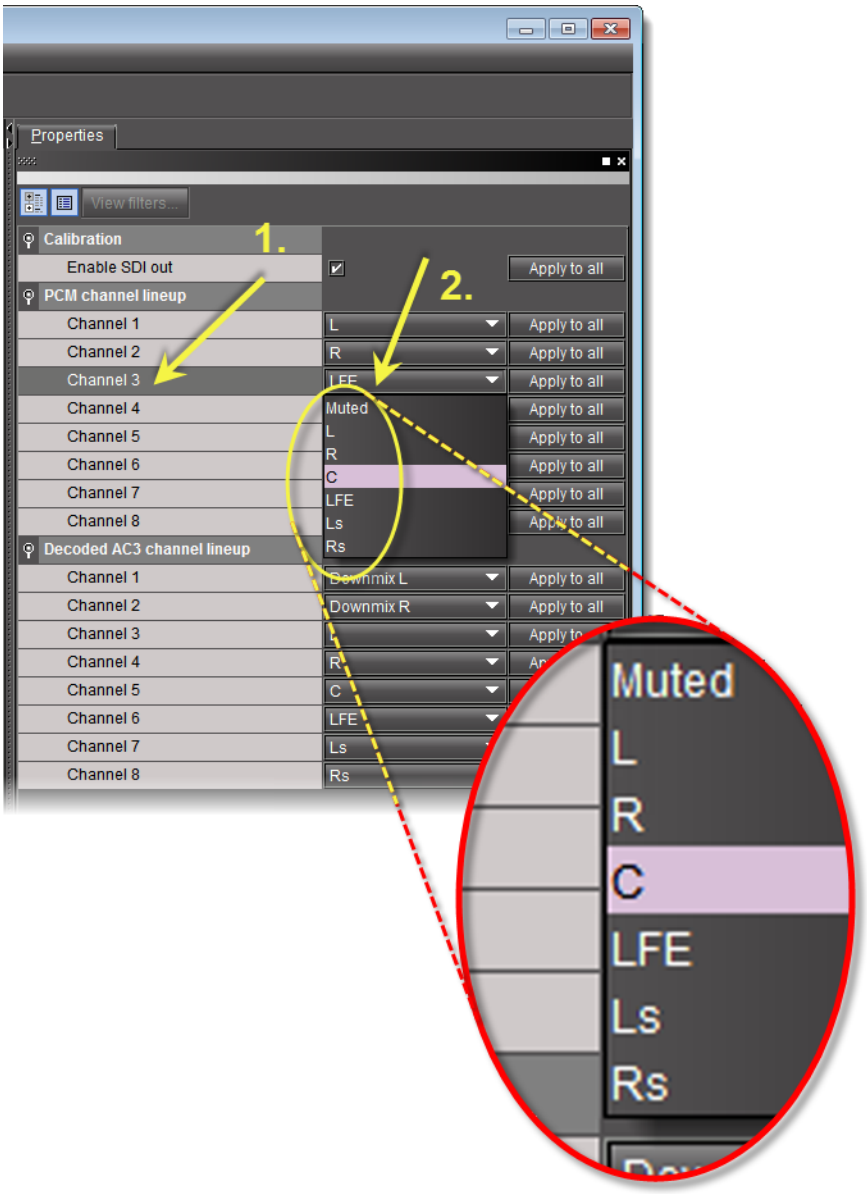
1. In *EdgeVision Configurator*, in the **System** list, navigate to:

   `System | <EdgeVision device> | <desired input> | SDI output`



2. In the right pane, on the **Properties** tab, select **Enable SDI out** to allow the feed to be output via the SDI output connector. Clear this box to prevent the feed from outputting via SDI.

3. Examine the channel lineup.
4. If you would like to change the channel lineup, select the desired channel assignment from the list on the first channel whose assignment you would like to change.



5. Repeat step 4 for each channel requiring an assignment change.

IMPORTANT: System behavior

- If your system is generating an audio test tone, the decoded channel line-up settings for the SDI-OUT are ignored.
- If you are in *AC3 forward* mode, the AC3 channel line-up settings for the SDI-OUT are ignored.

Task 12: Enabling and Disabling Fingerprinting in EdgeVision

IMPORTANT: Fingerprint channel ordering in EdgeVision is factory-set and uneditable

EdgeVision can generate fingerprinting for AC3 and PCM audio formats. AC3 as an audio format can be sourced from *S/PDIF* and *HDMI* inputs. PCM can be sourced from *analog*, *S/PDIF*, and *HDMI* (though in the case of *analog*, the input signal is converted to PCM by the EdgeVision device).

In either audio format (PCM or AC3), when the fingerprinting feature is enabled, audio fingerprints are generated according to the following channel order:

- **Fingerprint channel 1—>Left channel**
- **Fingerprint channel 2—>Right channel**
- **Fingerprint channel 3—>LFE channel**
- **Fingerprint channel 4—>Center channel**
- **Fingerprint channel 5—>Left surround channel**
- **Fingerprint channel 6—> Right surround channel**

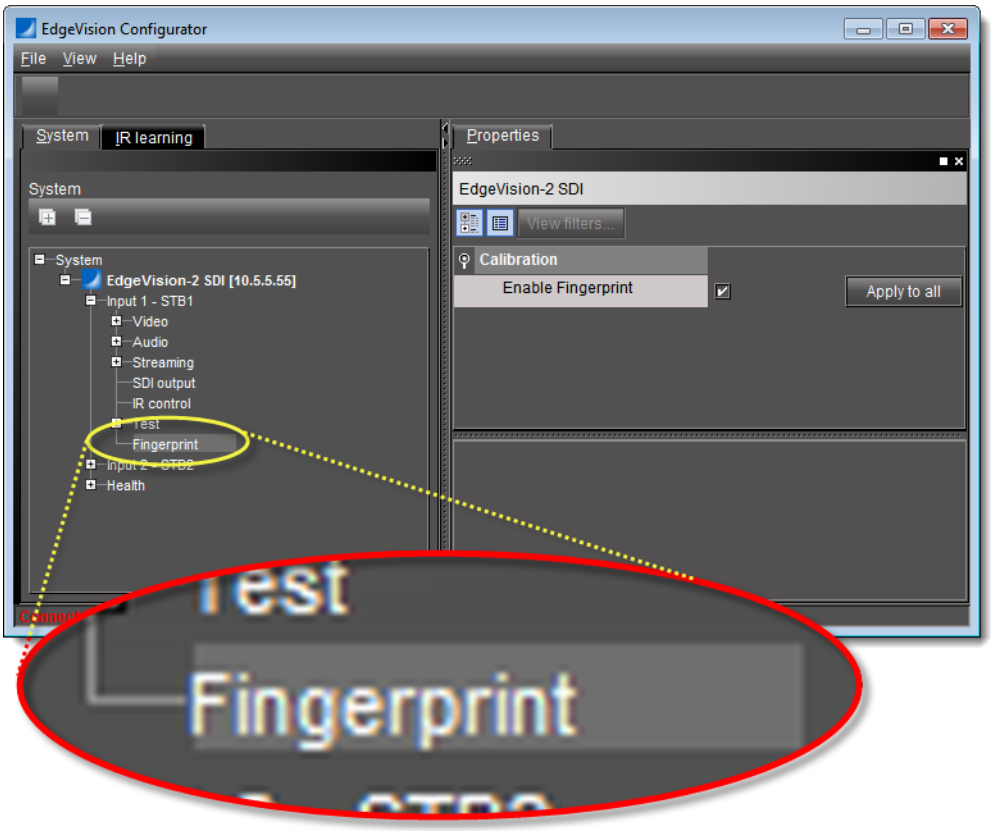
Exclusively in the case where the audio format is AC3, the downmix channels, additionally, have fingerprints generated, as follows:

- **Fingerprint channel 7—>Left Downmix**
- **Fingerprint channel 8—>Right Downmix**

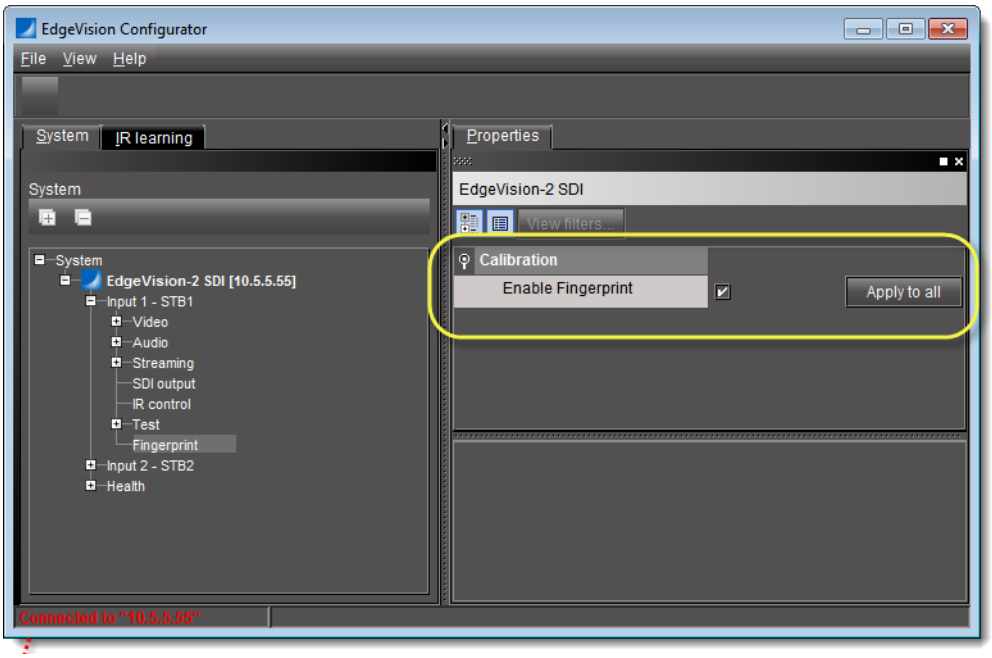
It is important to take note of the ordering of fingerprint channels from streams leaving the EdgeVision device so that you may later create audio signature comparison groups properly in iControl.

To enable or disable fingerprinting

1. In *EdgeVision Configurator*, on the **System** tab, expand the collapsed logical groupings down to the input level for the input whose fingerprinting you would like to enable or disable.
2. Select **Fingerprint**.



In the **Properties** pane, on the right, you can enable or disable fingerprinting as required.



In iControl's *Audio Video Fingerprint Analyzer*, fingerprint-generating EdgeVision devices appear as in the following screen captures:

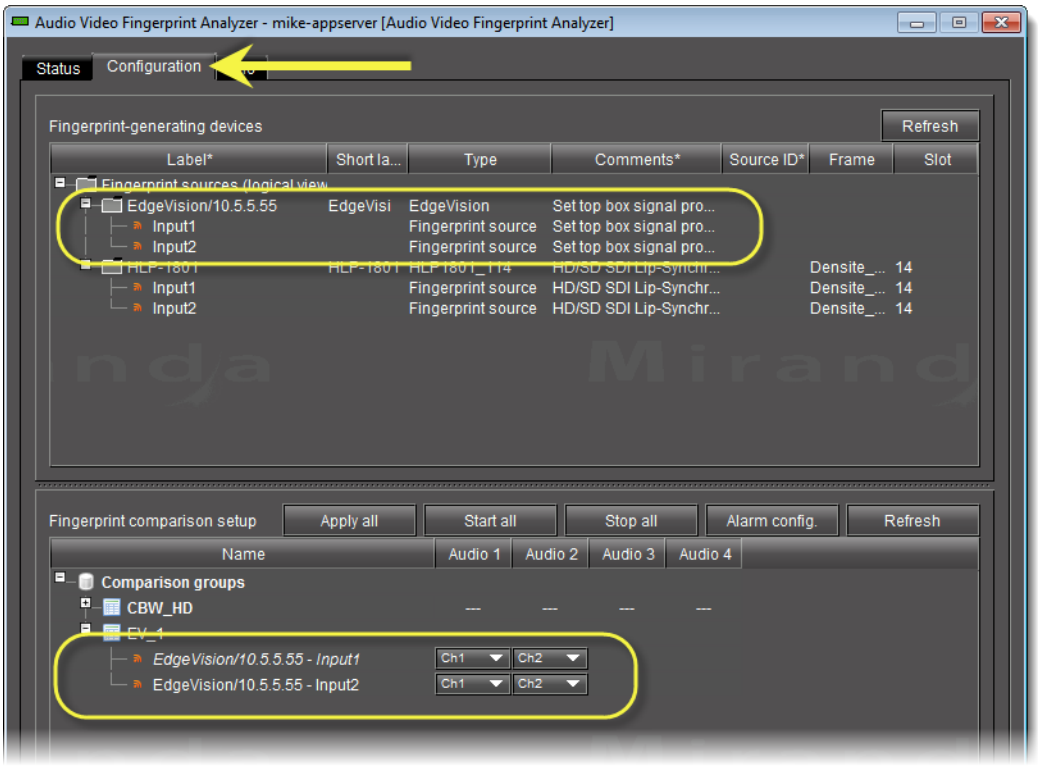


Figure 1-6: EdgeVision-generated Fingerprint sources as seen from Configuration tab of iControl's Audio Video Fingerprint Analyzer

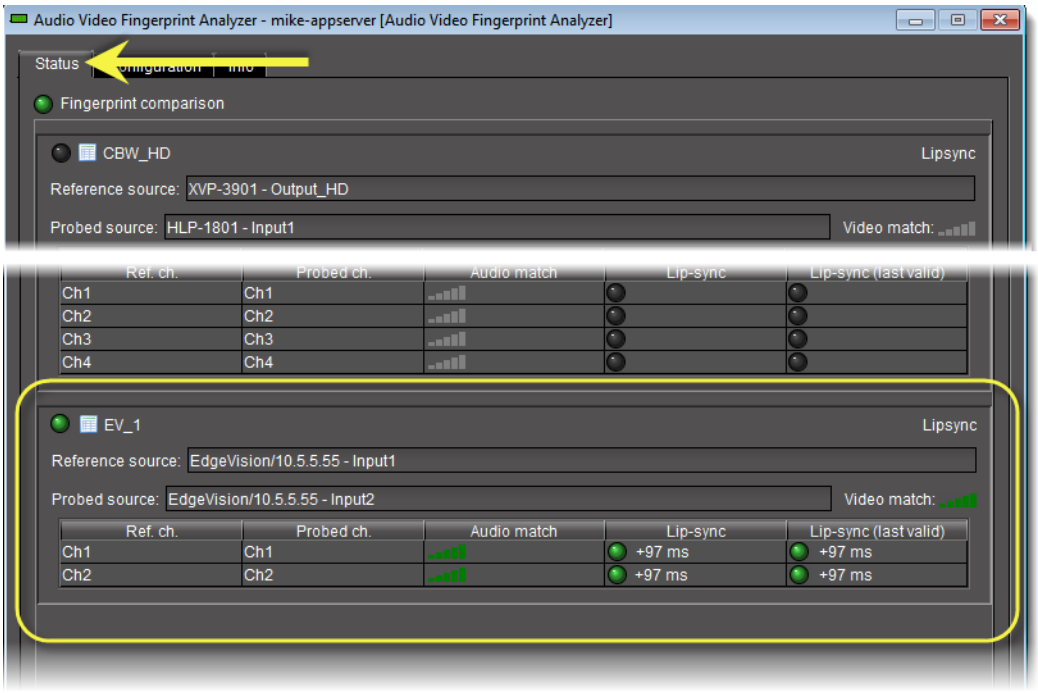


Figure 1-7: EdgeVision-generated Fingerprint analysis as seen from Status tab of iControl's Audio Video Fingerprint Analyzer

See also

For more information, see the "Fingerprint Comparison and Analysis" chapter of the *iControl User Guide*.

Task 13: Previewing the Feeds in the EdgeVision Player

Once you have the STB connected to the EdgeVision device and you've configured it using *EdgeVision Configurator*, you can now launch *EdgeVision Player* and view the streams on the device. If you have other EdgeVision devices configured on your network, you can also view them on the same *EdgeVision Player* using their IP address.

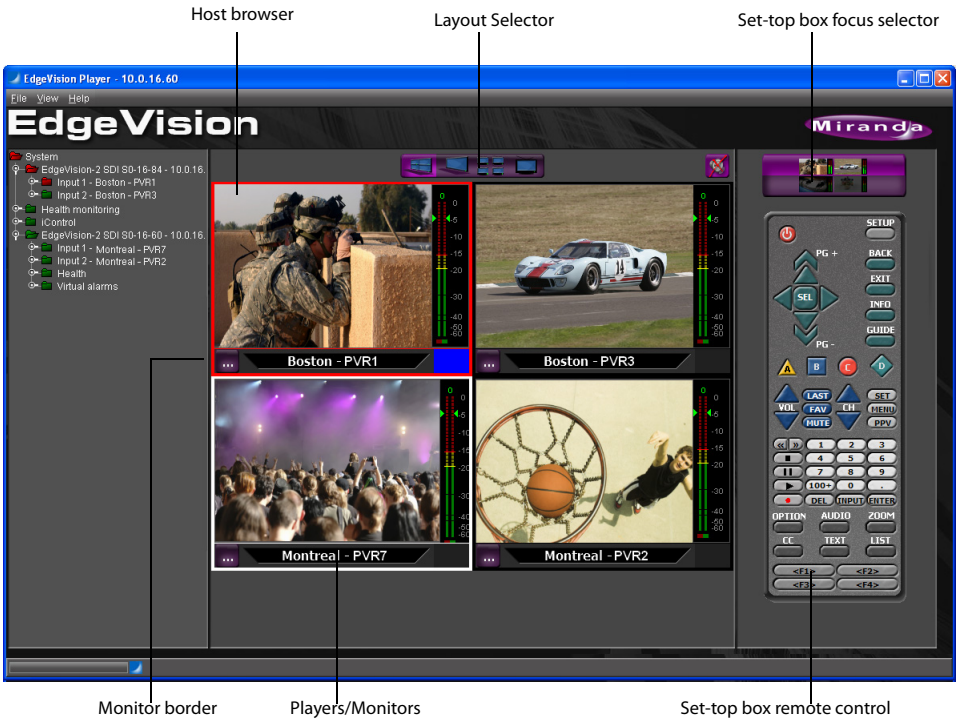
To launch the Player and preview the feeds

1. Open the EdgeVision page in a Web browser (using the device's Management port IP address).

   The EdgeVision home page appears.

2. Click **EdgeVision Player**.

   The *EdgeVision Player* page appears.



EdgeVision Player is divided into three main areas:

- **Host browser panel**: by default, it displays all the inputs on the device to which you are connected (You can use the **Add host** command on the **File** menu to add other hosts).
- **View panel**: displays up to four media feeds from the input devices. The monitor border color indicates the current alarm state for the feed.
- **Remote panel**: displays a remote device for the currently selected feed (as indicated by the blue square) that allows you to affect the feed, but it also represents the broadcaster.

EdgeVision Player allows you to monitor the feeds, but you can also use the alarms to monitor the current feed status, as well as change the feeds that appear on the View panel.

3. To view a feed, drag the Input feed (from the System folder) to one of the four preview screens. A blue square appears in the bottom right of the preview screen for the currently selected feed.
4. Use the Set-top box remote control to affect the feed (change channels, change the volume, etc.).

Task 14: Locating EdgeVision Documentation on the Device

The EdgeVision package comes with a full set of documentation that explains how to fully install, configure, and monitor the feeds on your EdgeVision system. This documentation resides on the EdgeVision device in PDF format and includes the following:

- *Quick Start Guide*: provides a quick-start procedure to get your EdgeVision running (this is the document you are currently reading).
- *Installation Guide*: explains how to install your device, configure it's network parameters, configure the device parameters, and configure the alarms and flags.
- *User Guide*: explains how to use *EdgeVision Player* to view the feeds and read the alarms

To connect to an EdgeVision device and access the Documentation page

1. Open the EdgeVision page in a web browser (using the device's Management port IP address).

   The EdgeVision home page appears.

2. Click **EdgeVision Admin**.

   The *EdgeVision Admin* page appears.

3. Click **Documentation**.

   The list of available documentation appears in PDF format.

4. To view a document, click a link and the PDF will appear in its own tab in the web browser. You can then click **Save a Copy** to save a copy of it on your PC or laptop.

   Note: Depending on your browser's settings, the PDF file may open within (or outside) a browser window, or your browser download manager may prompt you for a location where to save the file.

   You can also right-click the link and select **Save Link As** to save a local copy of the document.

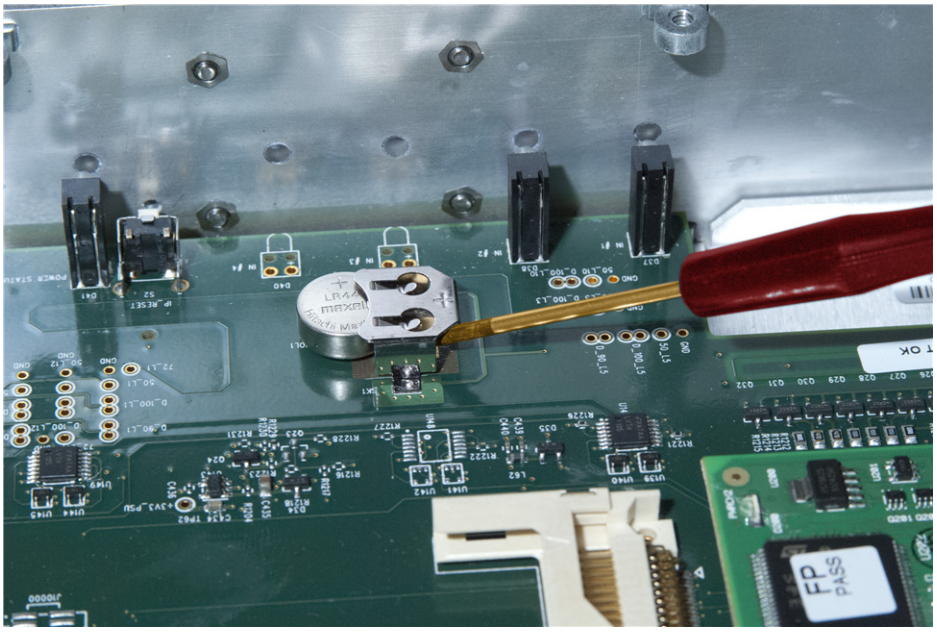
Disposal and Recycling Information

Your Grass Valley equipment comes with at least one silver-oxide button battery ($Zn\text{-}Ag_20$) located on the main printed circuit board. The batteries are used for backup and should not need to be replaced during the lifetime of the equipment.

Before disposing of your Grass Valley equipment, please perform the following procedure to safely remove the battery:

To remove the battery

1. Make sure the AC adapter is unplugged from the power outlet.
2. Remove the protective cover from your equipment.
3. Gently remove the battery from its casing using a blunt instrument for leverage such as a screwdriver if necessary.



4. Dispose of the battery and equipment according to your local environmental laws and guidelines.

WARNING: Be careful not to short-circuit the batteries by adhering to the appropriate safe handling practices. Do not dispose of batteries in a fire as they may explode. Batteries may explode if damaged or overheated. Do not dispose of batteries as household waste. Do not dismantle, open or shred batteries. Keep batteries out of the reach of children. In the event of a battery leak, do not allow battery liquid to come in contact with skin or eyes. Seek medical help immediately in case of ingestion, inhalation, skin or eye contact, or suspected exposure to the contents of an opened battery.

See also

For more information about recycling, please contact Grass Valley Technologies Partnership (see "Contact Us", on page 59).

Contact Us

Grass Valley Technical Support

For technical assistance, contact our international support center, at 1-800-547-8949 (US and Canada) or +1 530 478 4148.

To obtain a local phone number for the support center nearest you, please consult the *Contact Us* section of Grass Valley's website (`www.grassvalley.com`).

An online form for e-mail contact is also available from the website.

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