Matrox™ **PowerStream Plus**

User Guide

20246-301-0100
2016.12.01

www.matrox.com/graphics

matrox®
Graphics for Professionals

Contents

1 About this user guide

Your Matrox user guide provides information on installing and using Matrox PowerStream Plus software. This guide also provides information on PowerStream features and options.

> **Note:** This guide describes all Matrox PowerStream Plus features and controls. However, the support and availability of some of the Matrox features and controls detailed in this document depends on your product and software version.

1.1 Using this guide

This guide assumes you're familiar with basic functions like click, right-click and double-click, and that you're familiar with the basics of the operating system you're using. Also, we use the following conventions:

- **Bold** for headings and for references to text that appears on-screen.
- *Italics* for emphasis, file names, paths, publication titles, and new terms.
- ***Bold Italics*** for emphasis.
- Keyboard keys in square brackets, with a plus sign separating keys that you press simultaneously. For example: press [Ctrl]+[Alt]+[Del] to start Windows Task Manager.
- Arrows ("→") to separate ordered directions. For example, "click **OK** → **Close** → **OK**" is the same as "click **OK**, then click **Close,** then click **OK**".
- Green for cross-references. If you're viewing online, click the green text to jump to what's being referenced.

1.2 More information

This guide assumes your Matrox product is properly connected. For more information on the connection setup of your product, see the user guide for your Matrox hardware.

Be sure to check for any last-minute release notes included with your product. Also, check the Matrox web site (www.matrox.com/graphics) for the latest Matrox software, technical support, and product information.

2 Matrox PowerStream Plus software

This section describes how to install Matrox PowerStream Plus software for *Windows® 10 (64-bit)*, *Windows® 8.1*, *Windows® Server® 2012*, *Windows® Server® 2012 R2*, *Windows® 7*, and *Windows® Server® 2008 R2*.

Matrox PowerStream software enables you to remotely control, manage, and configure your Maevex encoders and decoders from a controller system in your Maevex environment.

2.1 Before you begin

To get the most out of your product:

- Make sure you connect your product ***before*** configuring PowerStream software. For more information on the connection setup of your product, see the user guide for your Matrox hardware.
- Make sure all your devices are using the latest version of the Matrox Maevex firmware.
- Install the latest version of Matrox PowerStream Plus software.
- You may need administrator rights to install or uninstall certain software. For more information, see Windows documentation or contact your system administrator.
- To assign an initial IP address to your encoders and decoders, a DHCP (Dynamic Host Configuration Protocol) server is required.
- **Windows Server 2012, Windows Server 2012 R2, and Server 2008 R2** – Make sure the SSDP Discovery service, network discovery, and file sharing options are enabled.

2.1.1 Supported Matrox hardware

Matrox PowerStream Plus supports the following Matrox hardware:

- Maevex 6100 encoders
- Maevex 5150 encoders
- Maevex 5150 decoders

2.1.2 Obtaining Matrox PowerStream Plus

Matrox makes the latest PowerStream software available on the Matrox web site (www.matrox.com/maevexsw). Matrox provides 32-bit and 64-bit versions of the software. The installation is the same for the 32-bit and 64-bit versions.

2.2 Installing your software

To install the software for your Maevex product, run the installation program for your software package. Follow the on-screen instructions.

2.3 Accessing Matrox PowerStream Plus

Windows 10/8.1/7 – To access the main interface of PowerStream:

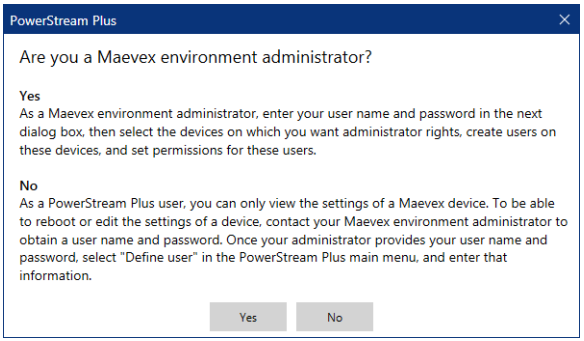
- Windows 10 – Click **Start** → **All apps*** → **Matrox PowerStream Plus*** → **Matrox PowerStream Plus**. (* Depending on your configuration of Windows, this part may not be necessary.)
- Windows 8.1 – From the **Start** screen, click **Matrox PowerStream Plus**.
- Windows 7 – Click **Start** → **All Programs** (or **Programs**) → **Matrox PowerStream Plus*** → **Matrox PowerStream Plus**. (* Depending on your version and configuration of Windows, this part may not be necessary.)

3 Getting started

This section describes the main menu and basic functions of Matrox PowerStream Plus software. It also provides an overview of your Maevex environment and devices.

3.1 Starting Matrox PowerStream Plus for the first time

When you install and start PowerStream Plus software for the first time, you'll be asked if you're a Maevex environment administrator.



- If you're a Maevex environment administrator, click **Yes**. You'll be prompted to enter your user name and device password.
- If you're not a Maevex environment administrator, click **No**. Contact your Maevex environment administrator to obtain a user name and device password. Once you've obtained a user name and password, go to the main menu, click **Define user**, and enter that information.

For more information, see "5.2.2 - Defining your Maevex 6100 Series users", page 19.

3.2 PowerStream main interface

A	**Main menu**	The PowerStream main menu contains options for managing users and passwords. For more information, see “3.3 - PowerStream main menu”, page 10.
B	**Device groups**	The Maevex devices (encoders and decoders) in your Maevex environment depicted as colored tiles and sorted into groups. For more information, see “3.6 - Understanding your Maevex devices”, page 12.
C	**Device tiles**	The Maevex devices (encoders and decoders) in your Maevex environment depicted as colored tiles. For more information, see “3.6 - Understanding your Maevex devices”, page 12.
D	**Information dashboard**	The dashboard provides information for a device (such as the device type, serial number, firmware version, name, IP address, date, time, IP address, and status). For more information, see “3.7 - Opening the information dashboard”, page 14.
E	**Device filtering**	The devices are filtered by status, permissions, and type. For more information, see “3.6.3 - Filtering your device tiles”, page 13.
F	**Basic functions**	These buttons provide the basic functions for PowerStream software. For more information, see “3.4 - PowerStream basic functions”, page 10.

3.3 PowerStream main menu

The main menu of PowerStream contains the following options.

Manual device discovery	PowerStream automatically detects and adds new devices to your Maevex environment. If devices aren't automatically detected, you can manually add devices to your Maevex environment. For more information, see "4.2 - Manual device discovery", page 17.
Maevex 5100 Series	▪ **Change password** – Change the password for your Maevex 5100 Series products. For more information, see "5.1.2.1 - Changing your Maevex 5100 Series device password", page 19.
Maevex 6100 Series	▪ **Change password** – Change the password for your Maevex 6100 Series products. For more information, see "5.2.1 - Changing your Maevex 6100 Series password", page 19. ▪ **Define user** – Specify the user name and password for your Maevex 6100 Series products. For more information, see "5.2.2 - Defining your Maevex 6100 Series users", page 19. ▪ **Manage users** – Manage the users for your Maevex 6100 Series products. For more information, see "5.2.3 - Managing your Maevex 6100 Series users", page 20.
About	Provides information specific to your PowerStream Plus software (such as the version).

3.4 PowerStream basic functions

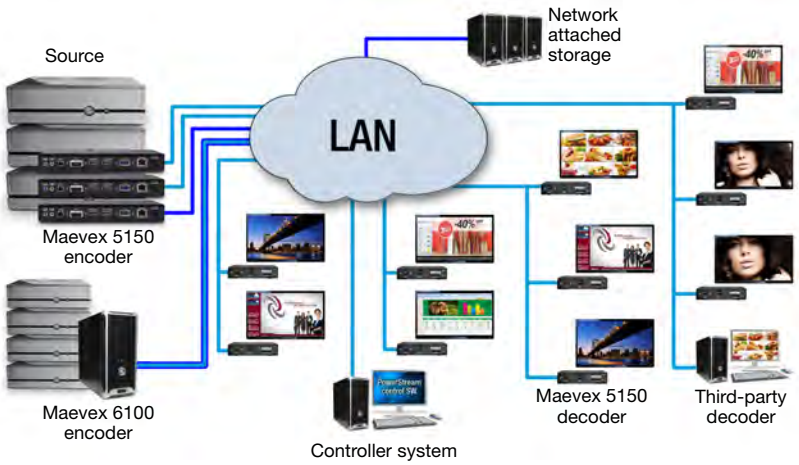
The following buttons provide basic functions for managing your PowerStream software.

Reboot	Click this to reboot your device. This keeps all your device settings, including the IP address and password. After rebooting a device already encoding or decoding, the device automatically restarts that process.
Apply / Cancel	Click **Apply** for your changes to take effect. Click **Cancel** to discard any changes that weren't applied.
Back	Click this to return to the Maevex environment.
Open settings	Select a device tile, then click this to see the settings for that device.
Multi-device settings	Select multiple device tiles of the same type (for example, only 5100 Series devices or only 6100 Series devices), then click this to see the settings for those devices.

3.5 Understanding your Maevex environment

Matrox Maevex devices work together to provide unicast (one-to-one) or multicast (one-to-many) streaming over an IP network. Using Matrox PowerStream Plus software, you can manage your entire Maevex network from a single system.

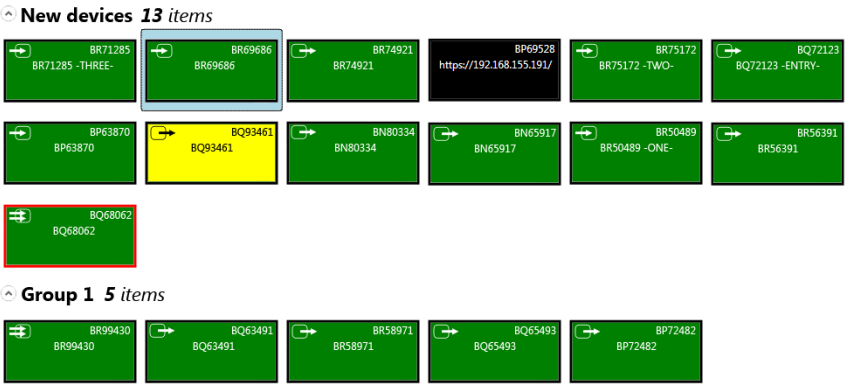
A Matrox Maevex environment can be made up of the following elements connected to a network:



Source	A video source connected to the input of an encoder. A controller system can be used as a source.
Maevex 6100 encoder	An encoder with multiple input support that can generate multiple streams and recordings. An encoder can stream to one or more decoders.
Maevex 5150 encoder	An encoder with single input support that can generate a single stream or recording. An encoder can stream to one or more decoders.
Maevex 5150 decoder	A decoder is needed for each stream from an encoder in your environment.
Third-party decoder	Third-party video players (such as VideoLAN® VLC media player) can also be used to decode the signal from an encoder.
Network attached storage (NAS)	A NAS device is needed to record a file encoded by a Maevex encoder.
Controller system	A system connected to the network and running Matrox PowerStream. A controller system can be used as a source.

3.6 Understanding your Maevex devices

In PowerStream, the Maevex devices (encoders and decoders) in your Maevex environment are depicted as colored tiles and sorted into groups.



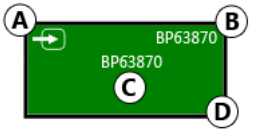
3.6.1 Device groups

When PowerStream is started for the first time, or whenever a new device is detected, the device or devices are added to the **New devices** group. These devices can then be sorted into *groups*.

Managing your device groups

- To collapse or expand the tile list under a group, click the arrow (⌃ / ⌄).
- To create a new tile group, right-click a tile, select **Move to group** → **Create a new device group**, then enter a new **Name**. The tile used to create the new group moves to that new group.
- To reorder your groups, right-click next to the group name, then select a location for that group in the group list.
- To rename a group, click the group name, then enter a new name for the group.
- To remove a group, move all the tiles out of a group.

3.6.2 Device tiles



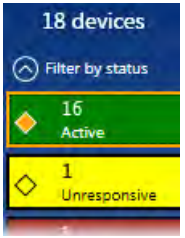
The tile provides the following information about your device.

A	Device type identified by icon: ▪ – Maevex 6100 encoder ▪ – Maevex 5150 encoder ▪ – Maevex 5150 decoder
B	Device serial number.
C	Device name, device serial number, or IP address, depending on the status of the Maevex device.
D	Device status (tile color and border color). For more information, see "3.8 - Understanding the status of your devices", page 14.

Managing your device tiles

- To reorder your tiles, drag a tile to a new location.
- To move a tile to a different group, drag the tile to a new group. You can also right-click the tile, and select a group.
- To access the settings of a device, select a device, then click **Open settings**.
- To rename a device, click **Open settings**, then enter a new **Name** for that device.
- To delete a device, click the **Delete** ( ) icon.

3.6.3 Filtering your device tiles

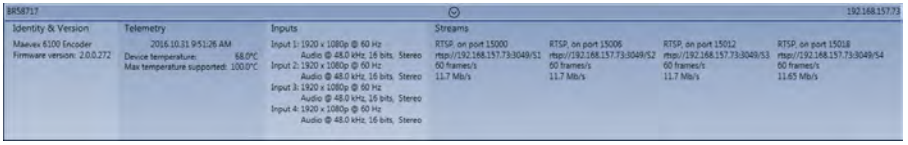


You can filter your devices by *status*, *permissions*, and *device type*. The number at the top indicates the total number of devices. The number in the colored tiles indicate the number of devices with that status.

To filter your devices, click the appropriate tile. You can select multiple tiles to view devices with a different status. While filtering is in effect, at least one tile is highlighted.

3.7 Opening the information dashboard

To see the current status and information of a device, select the device, then click the (⌄) at the bottom of the PowerStream main interface. This opens an information dashboard.



The dashboard provides information for a device (such as the device type, serial number, firmware version, name, IP address, date, time, IP address, and status).

3.8 Understanding the status of your devices

Depending on the status of a device, the color of the tile changes:

Active (Green)	Device is active and working properly.
Unresponsive (Yellow)	Device is unresponsive.
Error detected (Red)	An error has been detected with your device. The status and information of the device can't be updated by PowerStream. To fix this, try rebooting your device.
Detected (Light grey)	Device is present on the network but isn't initialized. When a device is present on the network, the IP address appears on the tile.
Lost (Dark grey)	Device was once detected, but can no longer be detected by PowerStream. When a device is no longer detected, the tile lists the last known IP address of that device.
Undetected (Black)	Device can't be detected by PowerStream. When a device is no longer detected, the tile lists the last known IP address of that device. To remove the tile of a device that's no longer needed, select the tile and click the **Delete** (⊗) icon.

Depending on the write accesses to a device, the color of the tile border changes.

View only (Red border)	Device can be accessed, and the settings of the device can be viewed but not modified. To modify the settings, you need a valid password and user name, depending on your Maevex product. Maevex 5100 Series devices must all use the same password. Maevex 6100 Series devices must be configured with your user name and password. For more information, see "5 - Managing users and passwords", page 18.
Unknown (Grey border)	Device can be accessed but no password was created. You're prompted for a password when you click **Apply**. Once a password is provided, the status becomes **View only**.
Modify settings (Black border)	Device can be accessed and the settings can be modified. A valid password is provided.

4 Adding devices to your environment

PowerStream automatically detects and adds new devices to your Maevex environment. If devices aren't detected, PowerStream can scan one or more specific IP addresses or a range of IP addresses for Maevex devices.

4.1 Network discovery

Note: When the IP address or the method of assigning an IP address to an encoder or a decoder changes, you need to reboot the device for the changes to take effect.

4.1.1 Dynamic IP addressing

PowerStream automatically detects all the Maevex products in the same subnet as your controller system through the UPnP (Universal Plug and Play) protocol.

4.1.2 Static IP addressing

Once PowerStream has detected an encoder or a decoder, you can manually assign a static IP address to your device through the **Network** settings of your Maevex product.

You must specify the following:

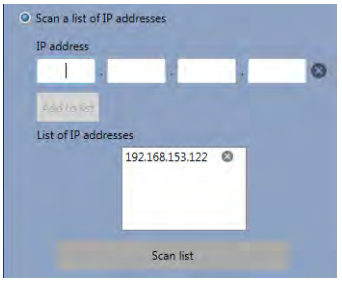
IPv4 address	An IP address between 192.168.0.0 and 192.168.255.255 (recommended). Also, we recommend you assign an IP address within the subnet of your network.
IPv4 netmask	The subnet mask defining group of IP addresses in your subnet. By default, the subnet mask is 255.255.255.0.
IPv4 gateway	The gateway is often the same as your IP address, but the last byte may be 0 or 1.

For more information on assigning a static IP address, contact your network administrator.

4.2 Manual device discovery

If PowerStream doesn't automatically detect the encoders and decoders on the same subnet as your controller system, you can add them manually.

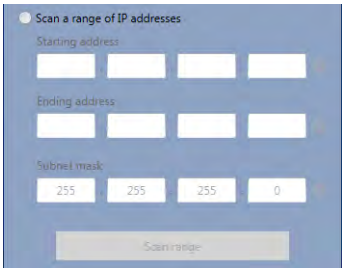
4.2.1 Scanning one or more IP addresses



1. From the PowerStream menu, select **Manual Device Discovery**.
2. Select **Scan a list of IP addresses**.
3. Enter the IP address of the device you want to add.
4. Click **Add to scan list**.
5. Repeat steps 3 and 4 for all the addresses you want to add to the list.
6. When you're done, click **Scan list**.

If a new device is found at an IP address provided, that device is added to the **New devices** group.

4.2.2 Scanning a range of IP addresses



1. From the PowerStream menu, select **Manual Device Discovery**.
2. Select **Scan a range of IP addresses**.
3. Enter the starting and ending IP addresses of the range you want to scan.
4. Enter the subnet mask to use when scanning for IP addresses. For more information on the subnet mask to use, contact your network administrator.
5. Click **Scan range**. If the starting or ending addresses are invalid, the **Scan range** button is disabled.

If a new device is found, that device is added to the **New devices** group.

5 Managing users and passwords

In a Maevex environment, your Matrox PowerStream Plus software, Maevex encoder, and Maevex decoder use passwords for secure communication.

5.1 Maevex 5100 Series

To manage your Maevex 5150 encoder and decoder, PowerStream Plus uses two types of passwords: “Environment password” and “Device password”.

5.1.1 Environment password

A Maevex environment has a single password that allows PowerStream to access the encoders and decoders in that environment. An environment password is case-sensitive and can be between 6 and 8 alphanumeric characters long.

When you start PowerStream for the first time, you need to provide the environment password.

- In a ***new environment***, the environment password is used for all the encoders and decoders detected by PowerStream.
- In an ***established environment***, use the password already entered for that environment.

5.1.1.1 Changing your environment password

If an encoder or a decoder in your environment is listed as **View only**, you need to update the device password to the environment password. To change the password for one device, click the **Change Password** icon ( ) in the upper margin of the device tile.

If all the encoders and decoders in your environment are listed as **View only**, you need to change your environment password. To change the password for all your devices, open the **Settings** panel, then click **Change Password**.

For ***active*** encoders and decoders, changing the environment password also updates the device password to the new environment password.

5.1.2 Device password

Each device has a unique password. When a new encoder or decoder is added to the environment, the device password needs to be updated to match the environment password.

If the environment password doesn’t match a device password, that device is listed as **View only**. Also, you won’t be able to access the settings of that device.

5.1.2.1 Changing your Maevex 5100 Series device password

If the status of a device is **View only**, you need to update its password to match the environment password.

To update a device password, select the device tile and click the **Change Password** ( ) icon on the tile. If a device doesn't have a password (for example, new devices or devices reset to factory default), you must enable **Update devices that have no password**. If a device has a password, you need to enable **Update devices that have an existing password** and provide the current device password for the change to take effect.

After the device password is changed, the status of the device is updated to **Modify settings**. For more information, see "3.8 - Understanding the status of your devices", page 14.

5.2 Maevex 6100 Series

To access or modify the settings of your Maevex 6100 Series device, you need to define a user name for a device, and the device password for that user must match the password used in PowerStream. Your Maevex environment administrator creates an environment password and assigns that password to the Maevex 6100 Series devices. The Maevex environment administrator can then add users to a device and give them permissions for a given device.

> **Note:** To obtain a user name and device password (or if you've forgotten your user name or device password) contact your Maevex environment administrator. For more information, see "5.2.2 - Defining your Maevex 6100 Series users", page 19.

5.2.1 Changing your Maevex 6100 Series password

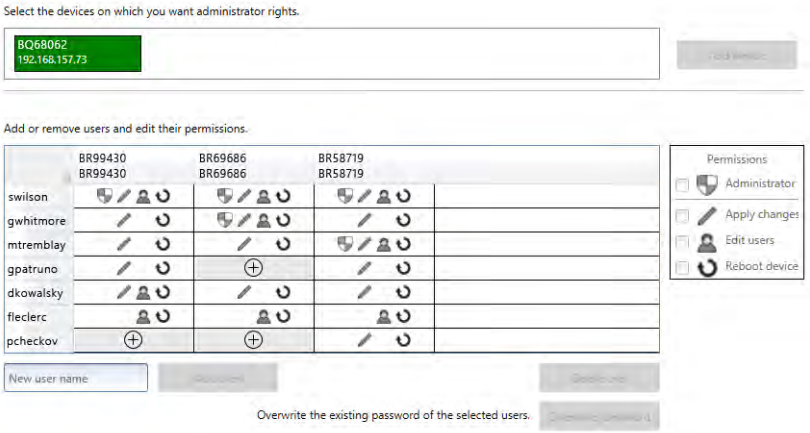
If the status of a device is **View only**, you need to change the device password to match the environment password. To update a device password, click **Change Password** from the PowerStream main menu.

After the device password is changed, the status of the device is updated to **Modify settings**. For more information, see "3.8 - Understanding the status of your devices", page 14.

5.2.2 Defining your Maevex 6100 Series users

To obtain a user name and device password, contact your Maevex environment administrator. Once you've obtained a user name and password, click **Define user**, then enter that information.

5.2.3 Managing your Maevex 6100 Series users



5.2.3.1 Adding yourself as a device administrator

To add yourself as an administrator on a device:

1. Click **Manage users**.
2. Select the devices to which to add yourself as an administrator, then click **Add user**.
3. When you're done, click **Apply**.

5.2.3.2 Adding users

To add a user to a device:

1. Enter a **New user name**, then click **Add user**.
2. Click the **Add** (⊕) icon for each device you want to add a user to, then select the permissions (**Administrator**, **Apply changes**, **Edit users**, and **Reboot devices**) for each user.
3. When you're done, click **Apply**.
4. This creates a **Summary of the created users** and generates a device password. To close the dialog box, click **OK**.
5. Repeat step 2 to step 4 for each user you want to add.

5.2.3.3 Deleting users

To delete a user from a device:

1. Select the user you want to delete, then click **Delete user**.
2. When you're done, click **Apply**.

5.2.3.4 Overwriting a password

To overwrite the existing password of a user:

1. Select the user whose password you want to overwrite, then click **Overwrite password**.
2. Enter the new password, confirm the password entered, then click **Change**. (We recommend you take note of the new password.)
3. When you're done, click **Apply**.

6 Maevex 6100 encoder settings

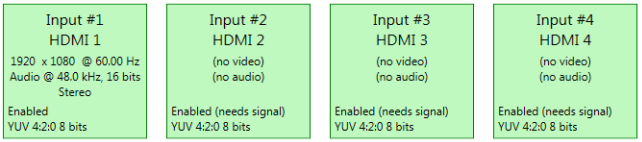
This enables you to view, configure, and manage settings specific to a Maevex 6100 encoder.

6.1 Process overview

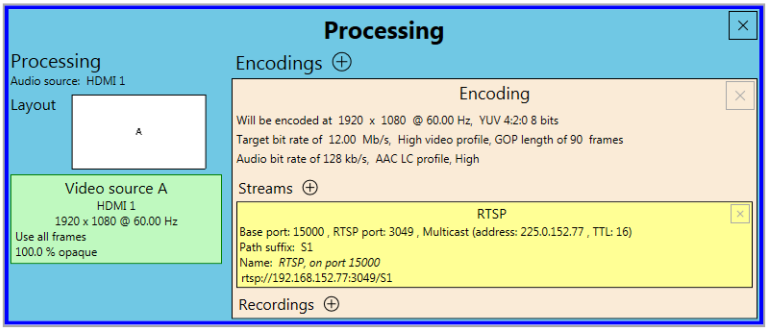
1	**Inputs**	Enable the input signal to be captured and used as a source.
2	**Processing**	Specify one or more inputs as a source that are encoded to output a stream or record a file. You can add or remove processes. An encoder must have at least one process.
3	**Sources**	Add one or more sources to be able to generate an encoding.
4	**Encoding**	Define how the source is encoded to create a stream or a recording. By default, an encoding is created to use one stream. You can add or remove encoding processes.
5	**Stream**	Configure the settings of a stream. An encoding must have at least one stream. You can add or remove streams with different protocols. Only one stream with a particular protocol is supported for each encoding. To have multiple streams with the same protocol, the streams must be the output of separate encodings. These encodings may be generated from the same processing.
6	**Recording**	Configure a recording to a network attached storage (NAS) device. You can add or remove recordings.

6.2 Processing

Inputs



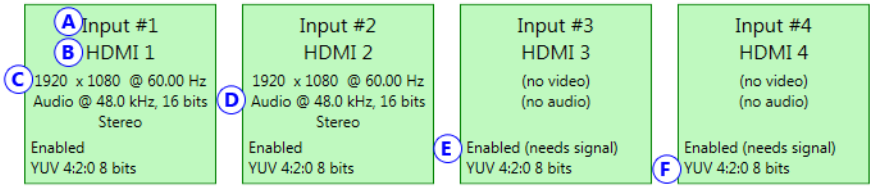
Processings ⊕



Note: To view and edit the settings of a processing element, click that element. The information appears on the right side of the panel.

6.2.1 Inputs

An input box contains the following information about the video and audio signal detected by your encoder.



A	**Input number**	Identifies the input (**Input #1**, **Input #2**, **Input #3**, and **Input #4**).
B	**Input name**	Lists the name of the input, as specified by the user.
C	**Video signal**	Detects the resolution and refresh rate of the video signal. If no signal is detected, this reads as **(no video)**.

D	**Audio signal**	Detects the audio signal. If no signal is detected, this reads as **(no audio)**.
E	**Status**	Indicates if the input is enabled or disabled for capture.
F	**Pixel format**	Defines the quality of the image captured.

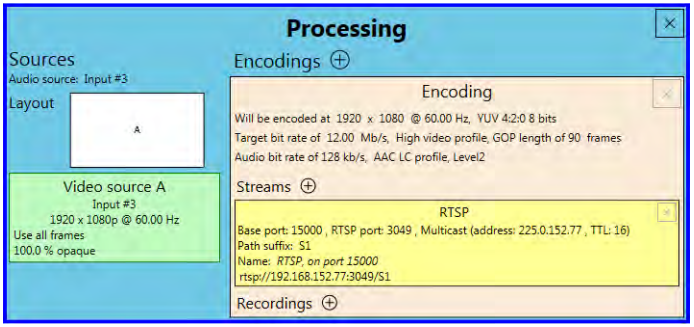
You can configure the following settings for each input.

Enable input	To use an input as a source, you need to enable it. Inputs are enabled by default.
Input name	Enter a name for each input.
Pixel format	The pixel format defines the quality of the image captured. YUV refers to the color format used to receive each block of bits in the video signal. The format is followed by the pixel depth used for each color in the image format. A higher YUV format and pixel depth provides a higher quality image and requires more resources to process.

6.2.2 Processings

Note: Depending on your configuration (for example, if you're using a single source layout), certain settings may be unavailable.

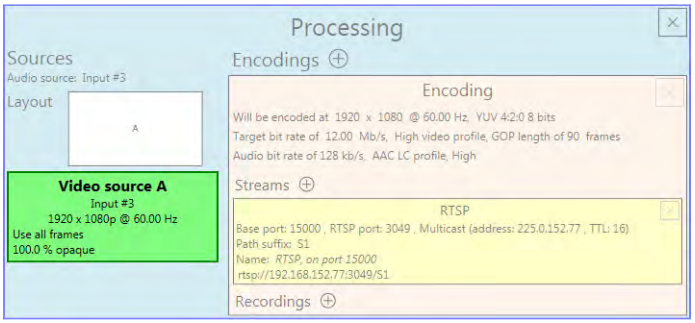
Select a processing to configure its source.



Audio source	The source of the audio signal to use.
Layout	The layout (picture in picture or picture by picture) and the number of sources to use.

Frame size	The width and height, in pixels, of the source. If the layout of your sources uses a height or width that's smaller than your frame size, black borders may appear on both sides, or on the top and bottom, of the frame. The width ranges from 64 to 4096 and must be a multiple of 16. The height ranges from 64 to 4096 and must be an even number.
Frame rate	The frame rate, in FPS (frames per second), for the source.
Background color	The background color for your source. If the layout of your sources uses less height or width than your frame size, the borders will use the background color. If no video is captured for your source, the background color is shown instead.
Pixel format	The pixel format to define the quality of your image, and the pixel depth for each color in the image format. A higher YUV format and pixel depth provides a higher quality image and requires more resources to process. Only certain pixel formats may be available.

6.2.3 Source



Note: Depending on your configuration (for example, if you're using a single source layout), certain settings may be unavailable.

Input	Select the input to use for your source.
Capture rate	Select the frame rate for video capture. Reducing the frame rate also reduces the frame rate of the stream or recording.

Scaling	Select how to scale your video: ▪ **Unscaled from top left** – The video is unscaled and positioned in the top left corner of the display area. If the display resolution of the video is bigger than the display area, the video will be cropped. ▪ **Unscaled centered** – The video is unscaled and centered in the display area. If the display resolution of the video is bigger than the display area, the video will be cropped. ▪ **Stretched to all edges** – The video is stretched to fit the entire display area without respecting the aspect ratio of the original video. If the aspect ratio of the video and the display area don't match, the video may be distorted. ▪ **Scaled to all edges** – The video is scaled to fit the entire display area while respecting the aspect ratio of the original video. The video is centered in the display area. If the aspect ratio of the video and the display area don't match, the video will be cropped. ▪ **Scaled to nearest edge** – The video is scaled to fit to the display area while respecting the aspect ratio of the original video. The video is centered in the display area. If the aspect ratio of the video and the display area, black borders will appear on both sides of the video or above and below. The video isn't cropped.
Pivot	Change the orientation of your source: ▪ **0 degrees** – No pivot is applied. ▪ **90 degrees clockwise** – The source is rotated 90 degrees clockwise. ▪ **180 degrees** – The source is rotated 180 degrees. ▪ **90 degrees clockwise** – The source is rotated 90 degrees counterclockwise.
Flip	Select the plane along which the source is flipped: ▪ **None** – No flip is applied. ▪ **Vertically** – The source is flipped along the vertical plane. The top becomes the bottom. ▪ **Horizontally** – The source is flipped along the horizontal plane. The right side becomes the left. ▪ **On both axes** – The source is flipped along the vertical plane and the horizontal plane. This is visually similar to rotating 180 degrees.

6.2.3.1 Image appearance

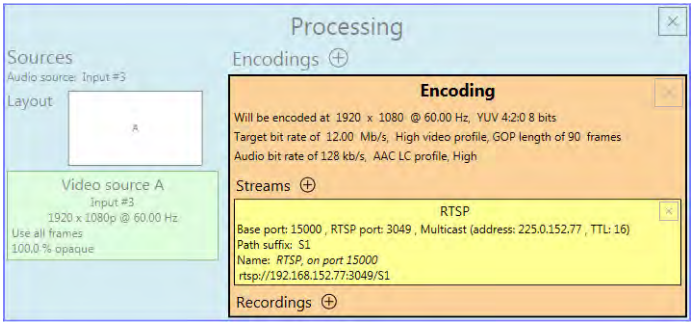
This enables you to adjust the color settings of your video output.

Opacity	Increase or decrease how opaque the source video appears. The default is 100%.

Brightness	Increase or decrease how light or dark the colors appear. The default is 500.
Contrast	Change the difference in brightness between the lightest and darkest colors. The default is 500.
Hue	Increase or decrease the tint or tone of colors. The default is 0.
Saturation	Increase or decrease the depth of the colors. The default is 500.

6.2.4 Encoding

These settings determine how your processor encodes, transmits, or records the video and audio signals.



6.2.4.1 Include

Select the signals to include (**Audio only**, **Video only**, or **Audio and video**) in your encoding.

6.2.4.2 Force encoding size

Enable this to have PowerStream increase or reduce the captured video size before it's encoded.

Frame size	Specify the width and height, in pixels, of the video up to the width and height of the original video input. If your video source uses a different size, your encoder scales the video to the specified size (image may be distorted). The width ranges from 64 to 4096 and must be a multiple of 16. The height ranges from 64 to 4096 and must be an even number.

Scaling	Select how to scale your video: ▪ **Unscaled from top left** – The video is unscaled and positioned in the top left corner of the display area. If the display resolution of the video is bigger than the display area, the video will be cropped. ▪ **Unscaled centered** – The video is unscaled and centered in the display area. If the display resolution of the video is bigger than the display area, the video will be cropped. ▪ **Stretched to all edges** – The video is stretched to fit the entire display area without respecting the aspect ratio of the original video. If the aspect ratio of the video and the display area don't match, the video may be distorted. ▪ **Scaled to all edges** – The video is scaled to fit the entire display area while respecting the aspect ratio of the original video. The video is centered in the display area. If the aspect ratio of the video and the display area don't match, the video will be cropped. ▪ **Scaled to nearest edge** – The video is scaled to fit to the display area while respecting the aspect ratio of the original video. The video is centered in the display area. If the aspect ratio of the video and the display area, black borders will appear on both sides of the video or above and below. The video isn't cropped.
Pivot	Change the orientation of your source: ▪ **0 degrees** – No pivot is applied. ▪ **90 degrees clockwise** – The source is rotated 90 degrees clockwise. ▪ **180 degrees** – The source is rotated 180 degrees. ▪ **90 degrees clockwise** – The source is rotated 90 degrees counterclockwise.
Flip	Select the plane along which the source is flipped: ▪ **None** – No flip is applied. ▪ **Vertically** – The source is flipped along the vertical plane. The top becomes the bottom. ▪ **Horizontally** – The source is flipped along the horizontal plane. The right side becomes the left. ▪ **On both axes** – The source is flipped along the vertical plane and the horizontal plane. This is visually similar to rotating 180 degrees.

6.2.4.3 Force pixel format

The pixel format defines the quality of the image encoded. YUV refers to the color format used to receive each block of bits in the video signal. The format is followed by the pixel depth used for each color in the image format. A higher YUV format and pixel depth provides a higher quality image and requires more resources to process.

6.2.4.4 Encoding profile

Select an encoding profile for your signal. Changing the encoding profile may prevent your decoder from streaming.

Encoding profile	Select one of the following: ▪ **Baseline** ▪ **Main** ▪ **High** ▪ **High, 10-bit** ▪ **High, YUV 4:2:2** ▪ **High, YUV 4:4:4** ▪ **High, YUV 4:4:4 + Intra**

6.2.4.5 Encoding method

Select a lossless encoding or a user-defined encoding.

Note: The **Use lossless encoding** option is available only if an **Encoding profile** of **High, YUV 4:4:4** or higher is selected.

Target bit rate	The target bit rate, in Mb/s (Megabits per second), for encoding. The actual bandwidth used by your encoder varies according to your source and encoding method. The default is 15 Mb/s. The maximum bit rate is 18 Mb/s. A lower target bit rate may result in lower image quality. A higher target bit rate limit may result in lower performance, a higher bandwidth when streamed, and a larger file size when recorded.
Bit rate control	Select one of the following: ▪ **Use a variable bit rate** ▪ **Use a constant bit rate**
Maximum bit rate	The maximum bit rate for encoding. When encoding, the processor attempts to use the target bit rate but may use up to the maximum bit rate specified. The default is 22.5 Mb/s. The maximum bit rate is 120 Mb/s.

6.2.4.5.1 Estimated H.264 level

The estimated level of support for a profile required from the decoder.

6.2.4.5.2 Quantization parameters

The range used to compress the various frames in your GOP. A high maximum increases the level of compression of the frame and should decrease the bit rate but may decrease the image quality.

6.2.4.6 Encoding mode

Optimized for low latency	Reduces the delay between the time the video is captured on the encoder and the time it's shown on a monitor connected to a decoder.
Optimized for desktop	Provides a better image quality for static images (such as a computer desktop).
Favor image quality	Favors image quality over latency, but may require more delay.

6.2.4.7 Group of pictures (GOP)

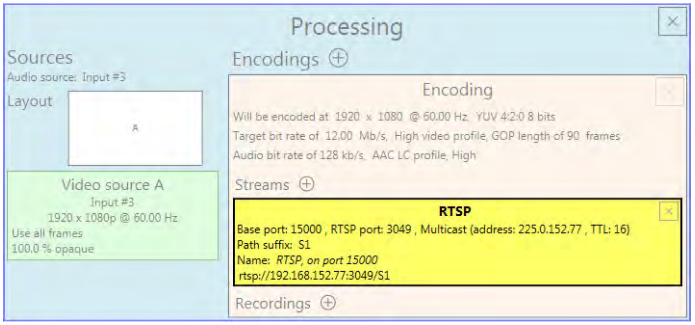
GOP length	The number of frames from one complete frame (I-frame) to another. A higher GOP length increases the compression level but may result in a lower quality image. The default is 90.
Insert P-frames every X frames	Enter the number of frames before a P-frame is inserted. All other frames are B-frames. A higher number of frames before inserting a P-frames increases the quality of the image but may result in a loss of performance. The minimum and default value is 1. The maximum value is 4.

6.2.5 Audio

Bit rate	Select the audio bit rate, in kbps, for your audio transmission (128, 192, or 256 kbps). A higher bit rate produces a sound quality closer to the source quality, but requires more bandwidth. The default is 128 kbps. The maximum value is 576 kbps.
AAC encoder	Select one of the following: ▪ **AAC LC** ▪ **AAC HEv1** ▪ **AAC HEv2**
AAC quality	Select one of the following: ▪ **Low** ▪ **Medium** ▪ **High**
Use temporal noise shaping	This reshapes the quantization noise over time to improve the quality of the audio signal. This option is enabled by default.
AAC format	Select one of the following: ▪ **ADTS** ▪ **No container format**

6.2.6 Streams

To add a stream (**RTP**, **RTSP**, or **MPEG2TS**), click the **Add** (⊕) icon.



Note: To add an RTP stream, you need to create an SDP file. For more information, contact Matrox Technical Support.

Note: When applying settings to multiple devices, make sure static IP addresses and multicast addresses aren't being duplicated. For more information, contact your network administrator.

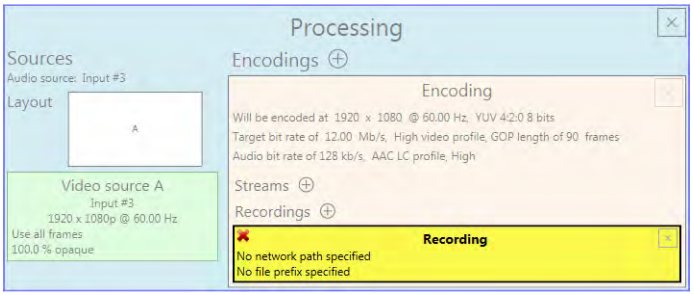
Note: Depending on the stream selected, certain options aren't available.

Enable stream	Enable or disable your stream.
Stream address	**RTSP only** – The URL (or stream address) of your RTSP stream.
Base port	The port number used to transmit your stream.
Name	Enter a name for your stream.
RTSP port	**RTSP only** – The RTSP port number used to transmit your stream.
Path suffix	**RTSP only** – Enter a suffix as part of your stream address. If you're using a media player to decode your stream, the media player may require this as part of the stream address to connect to a stream.

Time to live (TTL)	The number of hops or network nodes (such as network switches or routers) through which a multicast signal can travel. Once the TTL number is reached, the receiving network node prevents the signal broadcast further down the network. The value ranges from 1 to 255. The default is 16.
Routing scheme	▪ **Unicast** – **RTP and MPEG2TS only** – When selecting unicast, you need to specify the destination IP address of the stream. ▪ **Multicast** – Enter a **Multicast address**. Using multicast may require additional network configuration to support the transmission protocol (some network switches and routers can block multicast signals). For more information, contact your network administrator.

6.2.7 Recordings

Use this option to record your video files on a network attached storage (NAS) device. The video files created are encoded with an H.264 video and AAC audio codec.



> **Note:** When starting a recording manually or through a scheduled recording, it may take a few seconds for your encoder to actually record video. When scheduling a recording, we recommend you start the recording earlier than the actual time required.

6.2.7.1 Enable recording

Enable this to be able to record from your device.

If **Scheduled recording** is enabled, this option is unavailable.

6.2.7.2 File name prefix

The video file name is made up of two parts:

- **First part** – The name, which you enter.
- **Second part** – The timestamp of when the video file started, which your encoder defines.

The resulting file name is *Prefix[YYYY-MM-DD_HH-MM-SS].mp4*, where YYYY is the year, MM the month, DD the day, HH the hour (in a 24-hour format), MM the minutes, and SS the seconds.

A file name prefix can be up to 19 characters long.

6.2.7.3 Maximum file block duration

Enter the recording time for each video file recorded. Once the recording time for a file is reached, PowerStream creates a new file. A file can hold up to 8 hours of recording.

If the sampling rate (audio or video) changes, a new file is created, regardless of the file duration.

6.2.7.4 Network shared folder

Provide the path to the existing network shared folder where your video files will be stored.

If your network drive requires user identification, provide a user name and password. You can also use this to remove user names and passwords no longer required.

> **Note:** To make sure the network path is properly recognized by your device, we recommend you provide the full computer name or the IP address of the system where the shared folder is located. The full computer name is part of the Windows properties of the system. For example, the full computer name of networkserver may be *networkserver.domain.com*. For more information, contact your network administrator.

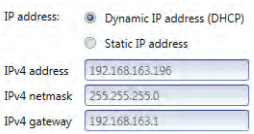
6.2.7.5 Scheduled recording

Enable this to schedule a date, time, and duration for your encoder to record a video file.

Start recording at	Enter the date and time to start recording.
Stop recording at	Enter the date and time to stop recording.

6.3 Network

This contains the network settings for the connection and IP address of your encoder.



6.3.1 IP address

Select how to assign an IP address to your encoder.

By default, **Dynamic IP address (DHCP)** is used. For information on manually assigning a static IP address, see "7.2 - Assigning an IP address", page 22.

6.4 Date and time

Use this to update the date, time, and time zone of your Maevex device. For more information on these settings, see "9 - Adjusting the date and time of your device", page 56.

6.5 Other

Process monitoring	By default, PowerStream monitors the processes of your Maevex devices. To disable this, enable **Disable device process monitoring**.
Logs	▪ **Download device logs** – Download the log files. This file contains information on your Maevex devices. This information is useful for troubleshooting purposes. ▪ **Erase device logs** – Erase the log files created for your Maevex devices.
Audits	Download the audit file. This file contains information on the user interactions with your Maevex devices. This information is useful for troubleshooting purposes.
Allow force reboot	Enable the **Enable reboot on LAN** option to force a reboot of your device over your LAN.

6.6 Managing your Maevex 6100 Series configurations

To save save, export, and edit your Maevex 6100 Series configurations, select a device, then click **Manage Configuration**.

6.6.1 Saving a configuration

To save a configuration:

1. Click **Manage Configuration**, then click **Save**.
2. Enter a **Name** and **Description** for your configuration, then click **Save**.

6.6.2 Selecting a configuration

To select a configuration:

1. Click **Manage Configuration**, then click **Select**.
2. From the list select the **Default** configuration or a **User Defined** configuration.
3. Choose how to affect the settings (**Processing**, **Network**, and **Date and time**).

4 When you're done, click **Select**.

6.6.3 Editing a saved configuration

6.6.3.1 Renaming

To rename a configuration:

1 Click **Manage Configuration**, then click **Edit**.

2 From the list, select a configuration, then click **Rename**.

3 Enter a new **Name** or **Description**, then click **Save** → **Close**.

6.6.3.2 Deleting

To delete a configuration:

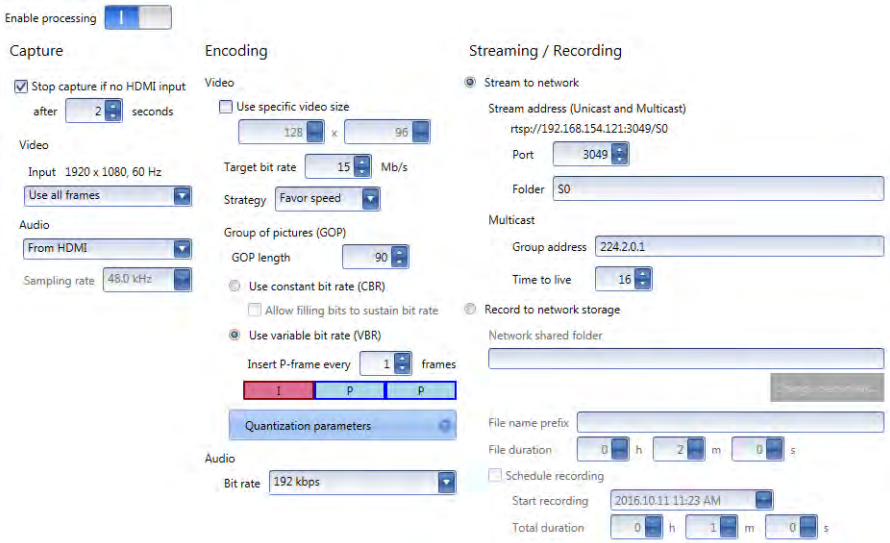
1 Click **Manage Configuration**, then click **Edit**.

2 From the list, select a configuration, then click **Delete**.

7 Maevex 5150 encoder settings

This enables you to view, configure, and manage settings specific to a Maevex 5150 encoder.

7.1 Processing



7.1.1 Enable processing

Click this to start or stop processing on your encoder.

7.1.2 Capture

These settings provide information for the video and audio signal received by your encoder and determine how these signals are processed for encoding.

7.1.2.1 Stop capture if no HDMI input

Enable this to stop capturing if a HDMI signal is no longer detected on the **HDMI In** connector of your encoder. When this feature is enabled, enter the minimum amount of time, in seconds, before the capture stops. Capture may take up to five (5) more seconds to stop once the HDMI signal is lost.

When capture stops, your encoder also stops streaming. The decoder connected to this encoder no longer receives a stream. The decoder can use the failsafe option (if enabled), or it can stop outputting to allow a monitor to enter power saving mode.

If this feature is disabled and the HDMI signal is lost, your encoder transmits a blank screen (blue) while no HDMI signal is received. The decoder connected to this encoder continues to receive a stream. In this case, the decoder can't use the failsafe option, so it will show a blank screen (blue), preventing a monitor from entering power saving mode.

Capture and streaming resume once the HDMI input is re-established.

7.1.2.2 Video

Input source display mode	The display mode received by the encoder. A display mode is a combination of display resolution and vertical refresh.
Capture rate	Select the frame rate for video capture. Reducing the frame rate also reduces the frame rate of the stream or recording. For interlaced input source display modes, your encoder captures all frames, regardless of the specified **Capture rate**.

7.1.2.3 Audio

Select the audio source to use for audio capture (**From HDMI** or **From analog input**). You can also disable audio capture. By default, audio capture is set to **From HDMI**.

If you select analog audio, you also need to select the **Sampling rate** used to receive audio. By default, the audio sampling rate is 48.0 kHz.

7.1.3 Encoding

These settings determine how your encoder compresses and transmits the video and audio signals.

7.1.3.1 Use specific video size

Enable this to have PowerStream reduce the size of the captured video before the video is encoded.

Specify the width and height, in pixels, of the video up to the width and height of the original video input. If your video source uses a different size, your encoder scales the video to the specified size (image may be distorted).

The width ranges from 128 to 1920 and must be a multiple of 16. The height ranges from 96 to 1200 and must be an even number.

7.1.3.2 Target bit rate

The bit rate in Mb/s (Megabits per second) at which your encoder should transmit the streaming signal. The actual bandwidth used by your encoder varies according to your source and encoding method.

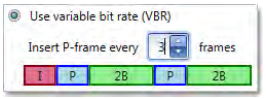
The default is 15 Mb/s. The maximum bit rate is 25 Mb/s. A lower target bit rate may result in lower image quality. A higher target bit rate limit may result in lower performance.

7.1.3.3 Strategy

To determine the proper compression method, select if you want to favor speed or quality.

Favor speed	Minimizes the bandwidth required. This is the default setting.
Favor quality	Maximizes the quality of the image transmitted.

7.1.3.4 Group of pictures (GOP)

GOP length	The number of frames from one complete frame (I-frame) to another. A higher GOP length increases the compression level but may result in a lower quality image. The default is 90.
Use constant bit rate (CBR)	Enable this to limit the bit rate used to the target bit rate. Using a constant bit rate may result in dropped frames if the complexity of the source is high. When using constant bit rate, your actual bit rate may be lower than the target bit rate. Enable **Allow filling bits to sustain bit rate** to maintain the target bit rate even if the simplicity of the source image would reduce the bit rate.
Use variable bit rate (VBR)	Enable this to use a variable bit rate. When using a variable bit rate, the actual bit rate may be significantly different from the target bit rate. Using a variable bit rate may result in a high bit rate if the complexity of the source is high.  In **Insert P-frame every X frames**, enter the number of frames before a P-frame is inserted. All other frames are B-frames. A higher number of frames before inserting a P-frames increases the quality of the image but may result in a loss of performance. The minimum and default value is 1. The maximum value is 6. When selecting the number of P-frames, a preview of the GOP format is shown.
Quantization parameters (For advanced users)	The range used to compress the various frames in your GOP. A high maximum increases the level of compression of the frame and should decrease the bit rate but may decrease the image quality. We recommend increasing the maximum values from I-frames to B-frames. The default values are between 10 and 36 for I-frames, 10 and 40 for P-frames, and 10 and 44 for B-frames. 

7.1.3.5 Audio bit rate

Select the audio bit rate, in kbps, for your audio transmission (96, 128, 192, or 256 kbps). A higher bit rate produces a sound quality closer to the source quality, but requires more bandwidth. The default is 192 kbps.

7.1.4 Streaming/Recording

These settings determine if the stream is transmitted on the network or saved to a file.

7.1.4.1 Stream to network

Enable this option to transmit the stream of your encoder on the network.

7.1.4.1.1 Stream address (Unicast and Multicast)

The URL of the stream for this encoder. This stream address is used for unicast and multicast connections. For more information, see "10.3 - Configuring multicast routing", page 63.

Port	The port number used to transmit your stream. The default is 8554. For more information, see your network administrator.
Folder	Enter a subfolder as part of your stream address. If you're using a media player to decode your stream, the media player may require this to connect to a stream.

7.1.4.1.2 Multicast

Note: When applying settings to multiple devices, make sure static IP addresses and multicast addresses aren't being duplicated. For more information, contact your network administrator.

Group address	The IP address used to transmit the multicast stream. The IP address and corresponding port are transmitted by the encoder to a decoder requesting a multicast stream and any network switches or routers between the encoder and any connected decoder. To ensure that each decoder in that group receives a single stream, each encoder should have a unique multicast group address. IP addresses may range from 224.0.0.0 to 239.255.255.255. We recommend using an IP address between 224.2.0.1 and 224.2.255.255. The default is 224.2.0.1.
Time to live (TTL)	The number of network nodes (such as network switches or routers) through which a multicast signal can travel. Once the TTL number is reached, the receiving network node prevents the signal broadcast further down the network. The value ranges from 1 to 255. The default is 16.

Note: Multicast may require additional network configuration to support the transmission protocol (some network switches and routers can block multicast signals). For more information, see your network administrator.

7.1.4.2 Record to network storage

Use this to record your capture to video files on a network drive. The video files created are encoded with an H.264 video and AAC audio codec.

> **Note:** When starting a recording manually or through a scheduled recording, it may take a few seconds before your encoder actually starts recording the video. When scheduling a recording, we recommend you start the recording earlier than the actual time required.

7.1.4.2.1 Network shared folder

Provide the path to the existing network shared folder where your video files will be stored.

> **Note:** To make sure the network path is properly recognized by your device, we recommend you provide the full computer name or the IP address of the system where the shared folder is located. The full computer name is part of the Windows properties of the system. For example, the full computer name of 'networkserver' may be *networkserver.domain.com*. For more information, see your network administrator.

If your network drive requires user identification, click **Change credentials** to provide a user name and password. You can also use this to remove user names and passwords that are no longer required.

7.1.4.2.2 File name prefix

The video file name is made up of two parts:

- **First part** – The name of the file, which you enter.
- **Second part** – The timestamp of when the video file started, which your encoder defines.

The resulting file name is *Prefix[YYYY-MM-DD_HH-MM-SS].mp4*, where YYYY is the year, MM the month, DD the day, HH the hour (in a 24-hour format), MM the minutes, and SS the seconds.

7.1.4.2.3 File duration

Enter the recording time for each video file recorded. Once the recording time for a file is reached, the encoder creates a new file.

If the sampling rate (audio or video) changes, a new file is created, regardless of the file duration.

7.1.4.2.4 Schedule recording

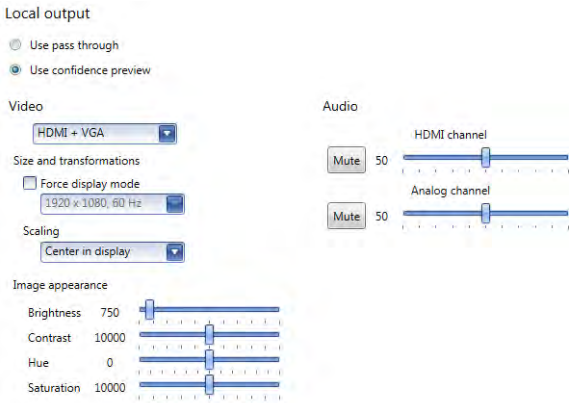
Enable this to schedule a date, time, and duration for your video recording.

Start recording	Enter the date and time to start recording.
Total duration	Enter the length of time to record video files.

When the recording starts, the encoder is listed as **Recording** for the total duration of the recording. When the recording ends, the encoder changes back to **Ready**.

7.2 Local output (for encoder)

This tab contains the local output settings of your encoder.



7.2.1 Selecting an output method

7.2.1.1 Use pass through

Output the video and audio signals of your source directly to your monitor and audio output device. You can use this option to see how your source video looks at the preferred display mode for your monitor and without transformations by the encoder.

While this is enabled:

- The source uses the EDID of the DVI or HDMI digital monitor connected to the **HDMI OUT** connector of your encoder to determine which display mode to use. If no EDID is detected, the source may disable its video output and capture is impossible.
- The encoder must support the display mode used by the source for capture, encoding, streaming, or recording to work.
- The output settings (such as **Size and transformations** and **Image appearance**) for your encoder have no effect and are disabled.
- If capture isn't working on your encoder, the source video still plays on your monitor.
- No analog video signal is received, so there's no video output on the VGA connector (analog video output).

- If the HDMI output device connected to your encoder doesn't support audio output, your HDMI source may disable its audio output. Because no audio is received at input, there's no audio for the encoder and all decoders connected to this encoder.

7.2.1.2 Use confidence preview (default)

Output the video signal as it's captured and transformed using the **Capture** and **Local output** (video and audio) settings of the encoder to your monitor and audio output device. Use confidence preview if no monitor is connected to your encoder. You can use this option to see the transformations configured through the output settings of your encoder.

While this is enabled:

- No monitor needs to be connected to your encoder. The source uses the EDID of the encoder to determine which display mode to use. The preferred display mode of the encoder is 1920 × 1080 @ 60 Hz.
- The output settings (such as **Size and transformation** and **Image appearance**) are used to output the video to the monitors.
- The transformations are done directly to the display mode received from the source, which may be different from the display mode of the encoded stream. For more information, see "7.1.3 - Encoding", page 37.
- Your encoder can output to a DVI or HDMI digital monitor connected to the **HDMI Out** connector, to an analog monitor connected to the **VGA** connector, or to both.
- Your encoder outputs the same display mode to both the **HDMI Out** and **VGA** connector.
- For its output display mode, you can force a display mode, or you can let the encoder use the EDID of the monitor detected to determine which display mode to use. For more information, see "7.2.2.2.1 - Force display mode", page 43.

7.2.2 Video

7.2.2.1 Video output type

Select the video type for your output (**HDMI + VGA**, **HDMI**, **VGA**, or **No outputs**). By default, video output is set to **HDMI + VGA**.

Selecting **No outputs** or **VGA** disables HDMI audio.

7.2.2.2 Size and transformations

This defines how the local output displays video.

7.2.2.2.1 Force display mode

When this option is enabled, the encoder uses the selected display mode for your monitor. The display mode is the combination of display resolution and refresh rate. Depending on your monitor and the display mode selected, black borders may appear above and below, on each side of, or around your video.

When this option is disabled:

- If a DVI or HDMI monitor is connected to the **HDMI Out** connector of your encoder, the encoder uses the EDID of that monitor to output. Each monitor has a preferred display mode defined in its EDID. If your device supports that display mode, both the encoder and the monitor use that mode. If the encoder doesn't support that display mode, the encoder selects a display mode that both devices support. For more information, see your monitor documentation or contact your monitor manufacturer.
- If no monitor is connected to the **HDMI Out** connector, or if **Video output type** is set to **VGA**, the encoder uses its preferred display mode of 1920 × 1080 @ 60 Hz. If your analog monitor doesn't support 1920 × 1080 @ 60 Hz, we recommend you enable **Force a display mode** and select a display mode your analog monitor supports.

This option is disabled by default.

7.2.2.2.2 Scaling

Select how the video appears in your display area.

Center in display	The video appears in the center of the display area. If the video resolution is smaller than the output resolution, the video isn't scaled. If the video resolution is larger than the output resolution, the video is scaled as if it was set to **Fit in display**. Black borders may appear around your video. By default, scaling is set to **Center in display**. 
Stretch to display	The video is scaled to fit the entire display area. If the display area has a different aspect ratio than the display area, the image may be distorted. 
Fit in display	The video is scaled to fit the display area without distorting the image. If the display area has a different aspect ratio than the display area, black borders appear either above and below or on each side of your video. 

7.2.2.3 Image appearance

This enables you to adjust the color settings of your video output.

Brightness	Increase or decrease how light or dark the colors appear. The default is 750.
Contrast	Change the difference in brightness between the lightest and darkest colors. The default is 10000.
Hue	Increase or decrease the tint or tone of colors. The default is 0.
Saturation	Increase or decrease the depth of the colors. The default is 10000.

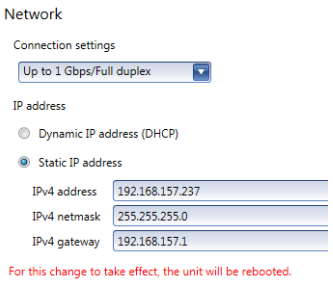
7.2.3 Audio

The volume for the **HDMI channel** and **Analog channel** of your device. The default is 50.

Click **Mute** to disable audio output.

7.3 Network

This contains the network settings for the connection and IP address of your device.



7.3.1 Connection settings

Select the link speed and duplex mode used by your device. The connection settings you select depend on your network configuration. For more information, see your network administrator.

Up to 1 Gbps / Full duplex	Device establishes the maximum link speed and the duplex mode to use on your network. This is the default setting.
100 Mbps / Full duplex	Device uses a link speed of 100 Mbps (Megabits per second) and a full-duplex mode. Some network configurations only support this setting.
100 Mbps / Half duplex	Device uses a link speed of 100 Mbps (Megabits per second) and a half-duplex mode. Some network configurations support only this setting.

7.3.2 IP address

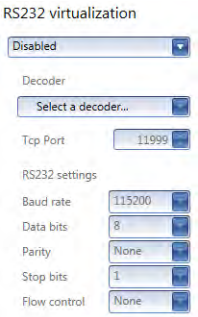
> **Note:** When the IP address or the method of assigning an IP address to a device changes, you need to reboot the device for the changes to take effect.

Select how to assign an IP address to your device.

By default, **Use a dynamic IP address (DHCP)** is used. For information on manually assigning a static IP address, see "4.1 - Network discovery", page 16.

7.4 RS232

Enable this to virtualize an RS232 (or serial) connection.



7.4.1 Enabling RS232 virtualization

To enable RS232 virtualization, select the type of RS232 connection to use.

Disabled	Disable RS232 to close the TCP port used for virtualization.
Relayed serial over IP	In a relayed connection, the RS232 controller must be connected to your encoder to send commands to an RS232 device that's connected to a decoder. The RS232 connection is independent of any other connection between an encoder and a decoder. When using this option, the RS232 settings of your encoder are sent to the decoder. To establish a relayed connection, the encoder and the decoder must both use **Relayed serial over IP**.
Direct serial over IP	In a direct connection, an RS232 controller can send commands directly to the RS232 device connected to your encoder. The RS232 controller isn't physically connected to a device. Any encoder that uses direct serial over IP receives the RS232 commands through an opened TCP port (for example, from a telnet session) and sends these commands to the RS232 device connected to it.

7.4.2 Configuring RS232

For more information on the RS232 settings to use, see the documentation for your RS232 devices.

Select decoder	If **Relayed serial over IP** is selected, select the decoder that's connected to the RS232 device you want to communicate with. The RS232 connection is virtualized only between your encoder and this decoder. This setting is unavailable if **Direct serial over IP** is selected.
TCP port	If **Direct serial over IP** is selected, select which port will receive the RS232 commands. (Make sure the port number is available and not used by another service on your network.) This setting is unavailable if **Relayed serial over IP** is selected.
RS232 settings	If **Relayed serial over IP** is selected, the following settings are used by the encoder and the selected decoder. If **Direct serial over IP** is selected, the following settings are used only for the device connected to your encoder. ▪ **Baud rate** – The speed, in bits per seconds (or baud), used for the RS232 connection. The default is 9600. ▪ **Data bits** – The number of bits per block of data transmitted. The default is 8. ▪ **Parity** – The type of parity bits (**None**, **Odd**, or **Even**) used for the data transmitted. The default is **None**. ▪ **Stop bits** – The number of bits used to identify the end of a data block. The default is 1. ▪ **Flow control** – The signal type (**None** or **RTS/CTS**) used to pause and resume data transmission. The default is **None**.

7.5 Date and time

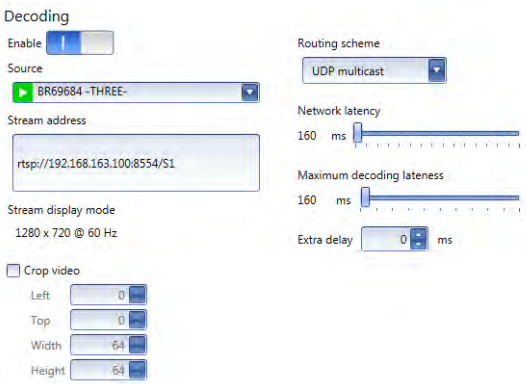
Use this to update the date, time, and time zone of your Maevex device. For more information on these settings, see "9 - Adjusting the date and time of your device", page 56.

8 Maevex 5150 decoder settings

This enables you to view, configure, and manage settings specific to a Maevex 5150 decoder.

8.1 Decoding

These settings define how the streaming signal is processed by your decoder.



8.1.1 Enable decoding

Click this to start or stop decoding the streaming signal. This button is disabled until a **Stream address** is entered. If the **Stream address** is invalid, or if the stream isn't transmitted, clicking **Enable** results in an error.

When you start decoding, it may take a few seconds before the video appears on your monitor.

8.1.2 Source

Select an encoder to use as a source. The icon next to the encoder name represents its current status. You can only select encoders listed as **Ready** ( ), **Awaiting connection** ( ), **Recording** ( ), or **Encoding** ( ).

When a stream is selected, PowerStream uses the current URL as the stream address. When the source is set to **Manual**, PowerStream uses the URL in **Stream address** to connect to a stream. If a stream isn't compatible with your device, an ( ) icon appears.

To connect to a stream outside the subnet and not listed as a source, you need to manually enter the stream address for the encoder stream.

8.1.3 Stream address

This is the URL of the stream to be decoded. When you select a **Source**, PowerStream automatically adds the stream address.

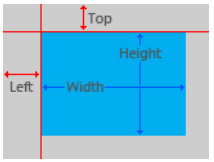
This control is disabled when the decoder is decoding.

8.1.4 Stream display mode

This is the display mode of the stream received by the decoder. A display mode is a combination of display resolution and vertical refresh rate.

8.1.5 Crop video

Enable this to define which area of the video is visible after decoding. To define the video area, adjust the following:



Left	The number of pixels removed from the left side of the original video area. The value must be an even number. The default is 0.
Top	The number of pixels removed from the top of the original video area. The default is 0.
Width	The width, in pixels, of the resulting video area. The value must be an even number. The default is 64.
Height	The height, in pixels, of the resulting video area. The default is 64.

8.1.6 Routing scheme

Select the type of signal received by your decoder:

> **Note:** When applying settings to multiple devices, make sure static IP addresses and multicast addresses aren't being duplicated. For more information, contact your network administrator.

UDP unicast	A stream is created for each decoder connected to an encoder. No additional network configuration is required, because unicast establishes a direct connection between an encoder and a decoder. Since each decoder connected to an encoder increases the bandwidth used by that encoder, unicast may use more bandwidth. This is the default.

UDP multicast	A single stream is created by the encoder and all decoders connected to the same multicast group as the encoder receive that stream. When transmitting to multiple decoders, an encoder that's properly configured for multicast transmission uses less bandwidth. For more information, see "10.3 - Configuring multicast routing", page 63.

Note: The stream address for the encoder is the same, regardless of the routing scheme.

8.1.7 Network latency

Network latency is the number of milliseconds (ms) before your decoder discards an improperly received frame and moves on to the next frame. With slow networks or high-traffic networks, a high network latency is recommended to reduce the possibility of dropping frames.

Latency and lateness are the delay between the time a frame is received and the time it's ready to be shown.

The default is 160 ms.

8.1.8 Maximum decoding lateness

Maximum decoding lateness is the number of milliseconds (ms) your decoder has to decode a frame before it discards that frame. Lateness varies depending on how difficult a frame is to decode. When setting this value, consider that a stream with only audio is easier to decode than one with only video, and a stream with only video is easier to decode than one with both video and audio.

Latency and lateness are the delay between the time a frame is received and the time it's ready to be shown.

The default is 160 ms.

8.1.9 Extra delay

Extra delay is the number of milliseconds (ms) between the moment a frame is ready to be shown and the moment it's actually shown on screen. For example, extra delay enables you to configure multiple decoders connected to the same encoder to display a video at the same time regardless of their location.

The maximum value is 60000 ms. The default is 0 ms.

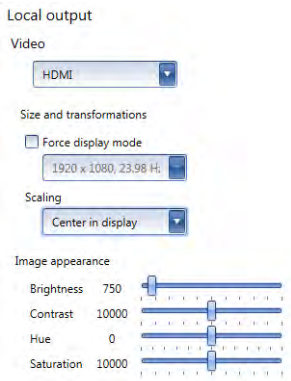
8.2 Local output (for decoder)

Decoders use the local output settings to output to a monitor.

Your decoder follows these guidelines:

- It uses the display mode of the video stream received by an encoder as its input.
- The display resolution of the video stream can be reduced by using the **Crop video** option in PowerStream.
- The **Output settings** (such as **Size and transformation** and **Image appearance**) are used to send the video signal to the monitor connected to the decoder.
- It can force a display mode, or it can use the EDID of the monitor detected to determine which display mode to use.

8.2.1 Video



8.2.1.1 Video output type

Select the video type for your output (**HDMI** or **No outputs**).

Selecting **No outputs** disables HDMI audio.

8.2.1.2 Size and transformations

This defines how the local output displays video.

8.2.1.2.1 Force display mode

Enable this option to have the decoder use the selected display mode to output the video signal. A display mode is the combination of display resolution and refresh rate.

If this option is disabled, your decoder uses the EDID of the digital monitor (DVI or HDMI) connected to its HDMI connector to determine which display mode to use to output the video signal. To determine the best display mode to use, each monitor has a preferred display mode defined in its EDID. If your decoder supports that display mode, both the decoder and the monitor use that mode. If the decoder doesn't support that display mode, the decoder selects a display mode that both the decoder and the monitor support. For more information, see your monitor documentation or contact your monitor manufacturer.

Depending on your monitor and the display mode used, black borders may appear (on the top and bottom of, on the right and left of, or around your video).

This option is disabled by default.

8.2.1.2.2 Scaling

Select how the video appears in your display area.

Center in display	The video appears in the center of the display area. If the video resolution is smaller than the output resolution, the video isn't scaled. If the video resolution is larger than the output resolution, the video is scaled as if it was set to **Fit in display.** Black borders may appear around your video. By default, scaling is set to **Center in display.** 
Stretch to display	The video is scaled to fit the entire display area. If the display area has a different aspect ratio than the display area, the image may be distorted. 
Fit in display	The video is scaled to fit the display area without distorting the image. If the display area has a different aspect ratio than the display area, black borders appear either above and below or on each side of your video. 

8.2.1.3 Image appearance

This enables you to adjust the color settings of your video output.

Brightness	Increase or decrease how light or dark the colors appear. The default is 750.
Contrast	Change the difference in brightness between the lightest and darkest colors. The default is 10000.
Hue	Increase or decrease the tint or tone of colors. The default is 0.
Saturation	Increase or decrease the depth of the colors. The default is 10000.

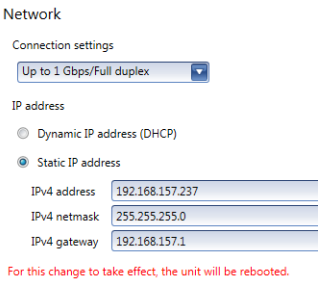
8.2.2 Audio

The volume for the **HDMI channel** and **Analog channel** of your device. The default is 50.

Click **Mute** to disable an audio output.

8.3 Network

This contains the network settings for the connection and IP address of your device.



8.3.1 Connection settings

Select the link speed and duplex mode used by your device. The connection settings selected depend on your network configuration. For more information, see your network administrator.

Up to 1 Gbps / Full duplex	Device establishes the maximum link speed and the duplex mode to use on your network. This is the default setting.
100 Mbps / Full duplex	Device uses a link speed of 100 Mbps (Megabits per second) and a full-duplex mode. Some network configurations only support this setting.
100 Mbps / Half duplex	Device uses a link speed of 100 Mbps (Megabits per second) and a half-duplex mode. Some network configurations support only this setting.

8.3.2 IP address

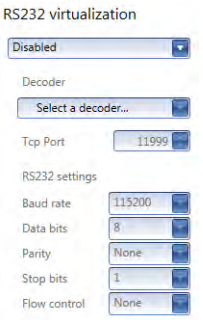
Note: When the IP address or the method of assigning an IP address to a device changes, you need to reboot the device for the changes to take effect.

Select how to assign an IP address to your device.

By default, **Use a dynamic IP address (DHCP)** is used. For information on manually assigning a static IP address, see “4.1 - Network discovery”, page 16.

8.4 RS232

Enable this to virtualize an RS232 (or serial) connection.



8.4.1 Enabling RS232 virtualization

To enable RS232 virtualization, select the type of RS232 connection to use.

Disabled	Disable RS232 to close the TCP port used for virtualization.
Relayed serial over IP	A relayed connection requires the RS232 controller to be connected to your 5150 encoder to send commands to an RS232 device connected to a decoder. The RS232 connection is independent of any other connection between an encoder and a decoder. When using relayed serial over IP, the RS232 settings of your encoder are sent to the decoder. To establish a relayed connection, the encoder and the decoder must both use relayed serial over IP. While using **Relayed serial over IP**, the **TCP port** setting is unavailable.
Direct serial over IP	A direct connection allows an RS232 controller to send commands directly to the RS232 device connected to your decoder. The RS232 controller isn't physically connected to a decoder. A decoder that uses direct serial over IP receives the RS232 commands through an opened **TCP port** (for example, from a telnet session) and sends these commands to the RS232 device connected to it. While using **Direct serial over IP**, select the **TCP port** that will receive the RS232 commands. When selecting a port, make sure the port number is available and not used by another service on your network.

8.4.2 Configuring RS232

For more information on the RS232 settings to use, see the documentation for your RS232 devices.

TCP port	While using **Direct serial over IP**, select which port will receive the RS232 commands. When selecting a port, make sure the port number is available and not used by another service on your network. While using **Relayed serial over IP**, this setting is unavailable.

RS232 settings	While using **Relayed serial over IP**, these settings are used by the 5150 encoder and the selected decoder. While using **Direct serial over IP**, these settings are used only for the device connected to your encoder. ▪ **Baud rate** – The speed in bits per seconds (or baud) used for the RS232 connection. The default is 9600. ▪ **Data bits** – The number of bits per block of data transmitted. The default is 8. ▪ **Parity** – The type of parity bits (**None**, **Odd**, or **Even**) used for the data transmitted. The default is None. ▪ **Stop bits** – The number of bits used to identify the end of a data block. The default is 1. ▪ **Flow control** – The signal type (**None** or **RTS/CTS**) used to pause and resume data transmission. The default is None.

8.5 Date and time

Use this to update the date, time, and time zone of your Maevex device. For more information on these settings, see "9 - Adjusting the date and time of your device", page 56.

8.6 Failsafe

This feature enables you to show an image or a video file stored on your decoder when the decoder isn't receiving a stream.

Local failsafe file	The name of your failsafe file.
Disable failsafe	This disables failsafe on your decoder. To delete an image or a video file currently on your decoder, enable **Remove failsafe file from decoder**. If your decoder doesn't have a failsafe file, this option is disabled.
Enable failsafe	This enables failsafe on your decoder. ▪ **Activate failsafe** – Adjust the amount of time, in seconds (up to 300), it will take to display the failsafe file on your decoder *after* the decoder stops receiving a stream. ▪ **Upload the failsafe file** – Browse to the video (mp4) or image (jpg) file you want to upload to your decoder. This failsafe file is stored on your decoder and appears when the decoder isn't receiving a stream. For more information, see "8.6.1 - Failsafe requirements", page 55.

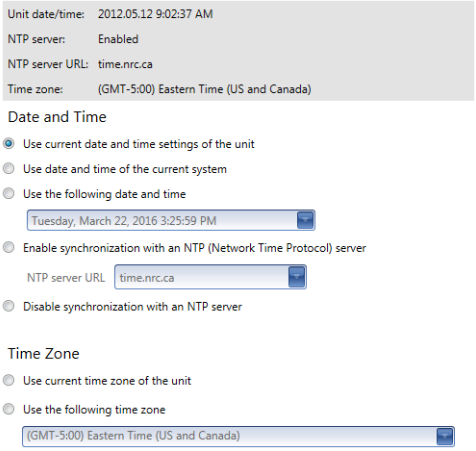
8.6.1 Failsafe requirements

The video or image files supported require the following:

- The width ranges from 128 to 1920 and must be a multiple of 16.
- The height ranges from 96 to 1200 and must be an even number.
- A video file must be encoded with the H.264 video codec and the AAC audio codec.
- A video file can only use mono or stereo audio format.
- The maximum size for the failsafe file is 3.4 GigaBytes.

9 Adjusting the date and time of your device

Use this to update the date, time, and time zone of your Maevex device.



The box at the top lists the current time settings. PowerStream updates this information every two (2) seconds.

Note: After applying new settings, it may take some time for the changes to take effect.

9.1 Setting the date and time

Select how to set the date and time for your device.

Use current date and time settings of the device	Keep the current date, time, and NTP (Network Time Protocol) synchronization settings for your devices. This is the default.
Use date and time of the current system	Use the date and time of your controller system to update your devices. This setting uses the time zone of the controller system. If your controller system and your device are using different time zones, the date and time will differ. This setting disables synchronization with an NTP server.
Use the following date and time	Use the date and time specified to update your devices. This setting doesn't use the time zone of your controller system. You can use the arrow keys to change the date and time specified. This setting disables synchronization with an NTP server.

Enable synchronization with an NTP server	Use an NTP server to update the date and time for your device at regular intervals. You must provide a server URL, even if one is already stored on your device. For more information on using NTP, contact your network administrator.
Disable synchronization with an NTP server	Stop using an NTP server to update the date and time for your device. Disabling NTP keeps the current date and time of the device, but it won't update the devices at regular intervals.

9.2 Setting the time zone

Select the time zone to use for your device. When using an NTP server, we recommend setting the time zone of your device.

Use current time zone of the device	Use the time zone currently set for your devices. This is the default.
Use the following time zone	Change the time zone for your devices to the one selected. Changing the time zone may adjust the date and time for a device.

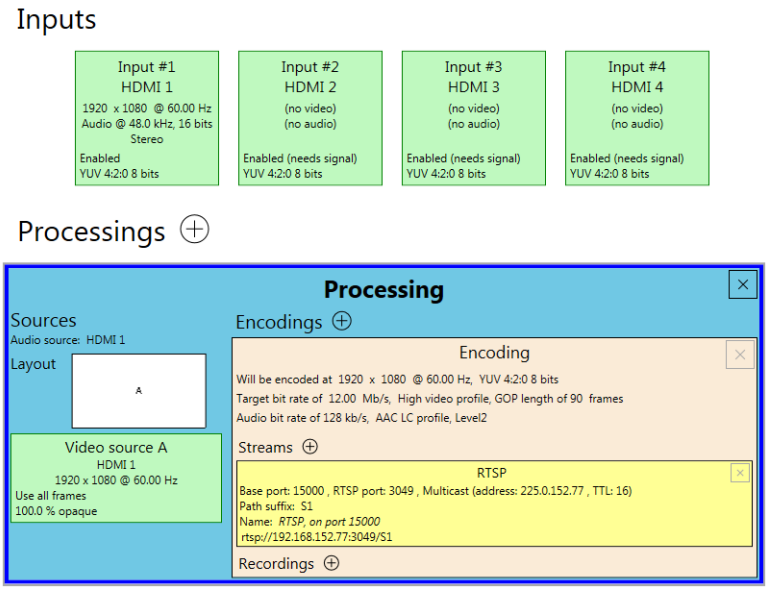
10 Basic configurations

The following provides basic configurations to help you get started with your product.

10.1 Setting up 4 streams using 1 input (Maevex 6100 encoder)

> **Note:** We recommend that you use video sources that are as close as possible in size (resolution and refresh rate) to the video you want to transmit. Also, to create multiple streams that use different resolutions and refresh rates, we recommend that your video source use the highest resolution and pixel format.

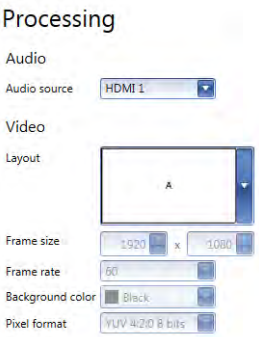
In PowerStream Plus, each **Input** lists the resolution and refresh rate, audio sampling and frequency rates, and chroma color sampling. By default, your Maevex 6100 encoder creates four (4) IP streams, one for each of your four inputs. Once an input receives a signal, an RTSP stream is encoded, transmitted, and ready for a decoding device (such as a Maevex 5150 decoder, a VLC media player, or a third-party streaming device).



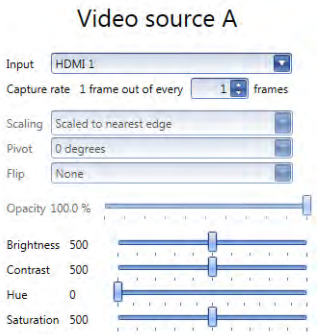
The following explains how to create and set up up three (3) RTSP streams of different qualities (one low, one medium, and one high quality) and one (1) high quality MPEG2-TS stream from a single HDMI source. That source outputs a 1080p60 video signal with a YUV 4:2:0 8-bit pixel format and an audio signal using AAC encoding.

1 **Processing** – Click the first **Processing** box for your encoder. All 4 streams will use the same source. We need one processing module with a single source layout. Because we're creating a single source layout, certain options (such as **Frame size**, **Frame rate**, and **Pixel format**) are unavailable.

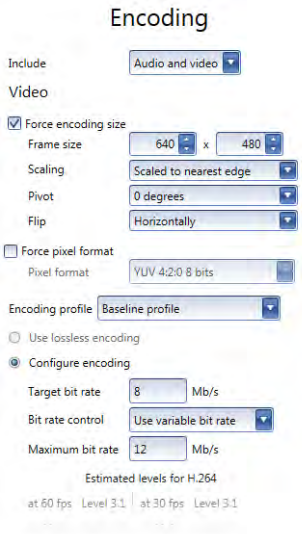
   Make sure the audio source for the processing is from the same input as for the video source.



2 **Video source** – Click the **Video source 1** box. Select your **Input**, **Capture rate**, and image appearance settings. Because our layout uses a single video source, certain options (such as **Scaling**, **Pivot**, **Flip**, and **Opacity**) are unavailable.



3 **Encodings** – An encoding defines the quality of the streams and recording it will produce. We need three encodings, one for each of the three quality of streams we want (low, medium, and high).



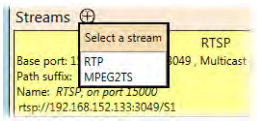
Our source uses a resolution of 1920 × 1080. For the lower quality encodings, we'll reduce the **Frame size**, **Target bit rate**, and **Maximum bit rate**.

a **Low quality** – All processings are created with at least one encoding. To create a low quality stream, we enable **Force encoding size** and set the frame size to 640 x 480, set the **Encoding profile** to **Baseline profile**, and reduce the **Target bit rate** to 8 Mb/s and the **Maximum bit rate** to 12 Mb/s.

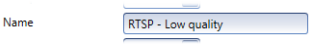
b **Medium quality** – To create a medium quality stream, we need a new encoding. Click the **Add** (⊕) icon next to **Encodings**. For this encoding, we'll set the **Frame size** to 1280 × 720, the **Encoding profile** to **Main profile**, the **Target bit rate** to 10 Mb/s. We'll leave the **Maximum bit rate** at 18 Mb/s.

c **High quality** – To create a highquality stream, we need a new encoding. Click the **Add** (⊕) icon next to **Encodings**. For this encoding, we'll leave all the encoding settings to their default values. This encoding will use the same resolution as the video source.

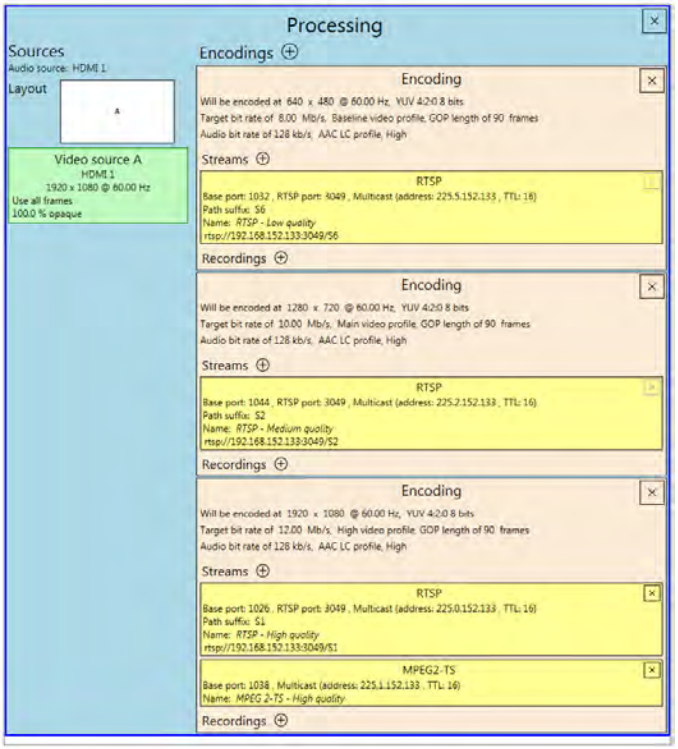
4 **Streams** – An RTSP stream is automatically created for each encoding. We now have three RTSP streams of different qualities. To add our fourth stream, in the box of the high quality encoding, click the **Add** (⊕) icon next to **Streams** and select **MPEG2TS**.



To make each stream easier to identify, we recommend you use a unique name for each stream.



The following shows the completed configuration:



10.1.1 Optional steps

The following are common procedures for customizing your configuration.

10.1.1.1 Using multiple sources

You can use multiple sources in one processing module with different layouts. For example, you can use two sources in a picture-by-picture (PbP) or picture-in-picture (PiP) layout.

When defining a processing module, the layout defines how many video sources to use. When multiple video sources are used, you need to define the **Frame size**, **Frame rate**, **Background color**, and **Pixel format** for the resulting frame used by your processing. You also need to define which input is used for each video source in that layout and how these video sources appear in their respective display area of the layout.

For more information, see “6.2.2 - Processings”, page 24 and “Source”, page 25.

10.1.1.2Adding a recording

To add a recording, click the **Add** (⊕) icon next to **Recordings** in the corresponding encoding box. An encoding module with a recording doesn't require a stream.

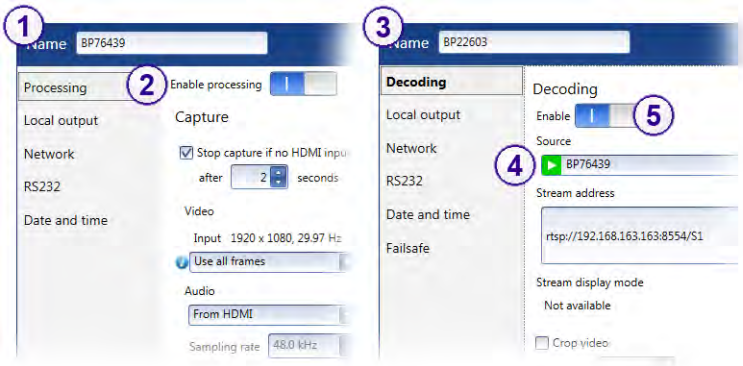
For more information, see "6.2.7 - Recordings", page 32.

10.1.1.3Deleting modules

If a processing, encoding, stream, or recording is no longer required, you can delete it by clicking the **Delete** (⊠) icon in corresponding box. The last module can't be deleted.

10.2Establishing a connection (Maevex 5150 encoder to decoder)

This describes the basic steps for streaming a video and an audio signal from an encoder to a decoder.



1 Double-click an encoder tile to open the **Settings** dialog box of an encoder.

2 In the **Processing** tab of your Maevex 5150 encoder, make sure **Enable processing** is enabled.

3 Double-click a decoder tile to open the **Settings** dialog box of a decoder.

4 In **Source** control, select the name of the encoder **Awaiting connection** (▶).

5 In the **Decoding** tab of your Maevex 5150 decoder, make sure **Enable decoding** is enabled. The status of the decoder changes to **Decoding**.

10.3 Configuring multicast routing

When using multiple decoders for a single encoder, use multicast routing instead of unicast to maximize your bandwidth use. For bandwidth purposes, multicast routing uses a single stream for all decoders connected to the multicast group of an encoder.

> **Note:** When applying settings to multiple devices, make sure static IP addresses and multicast addresses aren't being duplicated. For more information, contact your network administrator.

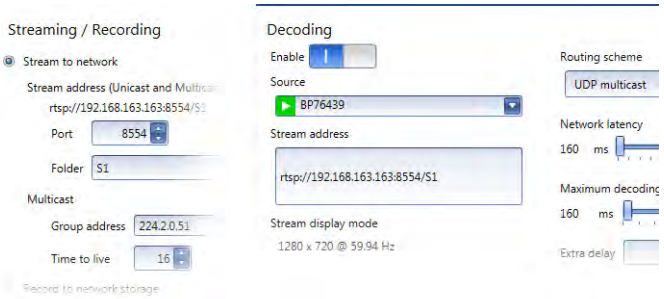
To use multicast routing, you need to set up both the encoder and decoders:

Encoder –

Provide an IP address for the multicast group of the encoder. Each encoder should have a unique multicast group address to ensure that each decoder in that group receives a single stream. For more information, see "7.1.4.1 - Stream to network", page 39.

Decoder –

Configure your decoder to use UDP multicast as the **Routing scheme**. Regardless of the routing scheme, the stream address of the encoder is the same. After connecting to the encoder, the decoder initializes a multicast transmission. For more information, see "8.1 - Decoding", page 47.



> **Note:** Multicast routing may require additional network configuration to support the transmission protocol (some network switches and routers block multicast signals). For more information, contact your network administrator.

11 Notes and limitations

11.1 General

- **Maevex 6100 encoder –** Using interlaced video as input isn't supported.
- Video capture and streaming of protected content isn't supported.
- **Maevex 5150 encoder –** Changing the display resolution of your monitors while your encoder or decoder are outputting to your monitors may cause your devices to fail.
- If an encoder isn't properly disconnected, decoders connected to this encoder device may still attempt to connect to it.
- **Maevex 5150 encoder –** The analog audio volume on the decoder device may be higher than on the encoder device, even though the volume on both devices is set to the same level.
- **Maevex 5150 encoder –** An encoder supports up to 8 simultaneous streams (1080p at 15Mb/s). When counting streams, a multicast stream is a unique stream regardless of the number of decoders receiving that stream.
- **Windows 10/8.1/7 –** If the settings window of a device is open when your controller system returns from sleep mode, you may receive an error message that a device is no longer active. Close and reopen the settings window of that device to view the device properties.
- **Windows Server 2012 R2, Windows Server 2012,** and **Server 2008 R2 –** Make sure the SSDP Discovery service, network discovery, and file sharing are enabled.

11.2 Playback

- **Maevex 5150 encoder –** Audio cuts out momentarily when enabling or disabling the **Use pass through** option.
- Playback of content with different audio sampling rates may cause issues with third-party players (such as VLC).

11.3 Network

- If a decoder uses a stream from an encoder located on a different subnet, the quality of the video output from the decoder may be degraded.

- When transmitting in multicast on a large network, we recommend using a router with multicast addressing support and switches with IGMP v2 support.
- Slow response from certain routers may cause a slow device detection in PowerStream.
- **Windows 10/8.1/7 –** If your controller system doesn't have access to a DNS (Domain Name System) server, or if response from its DNS server is slow, PowerStream may take a long time to start up (several minutes). To avoid this delay, configure your controller system to use a fixed IP address (such as local host 127.0.0.1) as its DNS server. For more information, see "PowerStream may be slow to start", page 72.

12 Troubleshooting

12.1 What to do if you have a problem

If you experience problems with your Matrox product:

- Make sure you're using the correct connectors, and that all connectors are properly fastened. For more information on the connection setup of your product, see the user guide for your Matrox hardware.
- Review the documentation provided with your Matrox product, including the information in this section, to see if your problem is already addressed. For information on Matrox PowerStream software features and options, see the help file included with your PowerStream software.

If your problem persists, contact Matrox. For more information, see "14 - Customer support", page 82.

12.2 Common problems and solutions

This section addresses common problems that could prevent you from using your devices.

Problem **Maevex device not discovered on the network**

Cause Your Matrox product may not be properly connected or may be on a different subnet.

Solution Verify the connection and status LEDs on your Matrox product. Also, make sure your Matrox product is properly connected and that all connectors are properly fastened. For more information, see your Matrox Maevex User Guide.

Cause **Windows Server 2012 R2/2012/2008 R2 only** – The Windows SSDP Discovery service may be disabled on your system.

Solution Make sure the SSDP Discovery service is enabled on your system.

1. **Windows Server 2012/2008 R2** – From the **Start** screen, click **All Programs** → **Administrative Tools** → **Services***. (* You may need administrator rights to access Windows services.)

   Windows Server 2012 R2 – Click **Start** → **Administrative tools** → **Services***. (* You may need administrator rights to access Windows services.)

2. Double-click **SSDP Discovery**.
3. Next to **Startup type**, select **Manual** or **Automatic**.

4 Click **OK**.

Cause Network discovery and file sharing may not be enabled on your system.

Solution Enable network discovery and file sharing on your system.

Windows 10/8.1/7 –

1 **Windows 10** – Click **Start** → **Settings** → **Network & Internet** → **Ethernet**.

   Windows 8.1 – From the **Start** screen, go to **All Apps** → **Windows System** → **Control Panel** → **Network and Internet***. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

   Windows 7 – Click **Start** → **Settings*** → **Control Panel** → **Network and Internet***. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

2 Click **Network and Sharing Center** → **Change advanced sharing settings**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

3 Under your current profile, make sure the following options are selected:

   - **Turn on network discovery**
   - **Turn on file and printer sharing**

4 If you make changes to your current profile settings, click **Save changes**.

Cause You may not be using the latest version of Matrox PowerStream software, or your Matrox firmware may be out of date.

Solution Make sure all Matrox software is up to date.

Cause The firewall for your controller system or for your network may be enabled and may prevent communication with your Maevex devices.

Solution Make sure your firewall is properly configured to allow the necessary communication between your controller system and your Maevex devices. For more information, see "Appendix 13 – - Firewall requirements", page 78.

Problem Can't access Maevex device through PowerStream (listed as 'View only')

Cause The device may be a recent addition to your environment and has no password.

Solution Try changing the password for that device (see "5 - Managing users and passwords", page 18).

Cause **Maevex 5150 encoder or 5150 decoder** – The device password doesn't match your environment password.

Solution Try a configuration reset of your device. For more information, see your Matrox Maevex User Guide.

Solution Contact your Maevex environment administrator to obtain your device password, then change the device password to match your environment password in PowerStream. For more information, see "5 - Managing users and passwords", page 18.

Problem No picture or output at all

Cause The device may not have started encoding or decoding.

Solution In PowerStream, make sure the encoding or decoding process has started:

- **6100 Encoder** – Listed as **Active**. The stream you're trying to connect to needs to be enabled.
- **5150 Encoder** – Listed as **Awaiting connection** or **Encoding**.
- **5150 Decoder** – Listed as **Decoding**. If the decoder isn't decoding, verify that the correct URL is being used in the **Stream address** box. If the URL in **Stream address** doesn't match the URL of an encoder, or if the encoder isn't encoding, attempting to start decoding results in an error.

For more information, see "3.8 - Understanding the status of your devices", page 14.

Cause **Maevex 5150 encoder only** – The **Use pass through** option is enabled, but your monitor is connected to the **VGA** connector on your encoder.

Solution If the **Use pass through** option is enabled, make sure your monitor is connected to the **HDMI Out** connector.

Solution In PowerStream, change the local output of your encoder to **Use confidence preview**.

Cause **Maevex 5150 encoder only** – The local output settings of your device may be improperly set.

Solution If the **Use confidence preview** option is enabled, adjust the following settings under the **Output** tab in PowerStream:

- Make sure the video output type selected is valid (**HDMI + VGA**, **HDMI**, or **VGA**).
- Disable the **Force display mode** option.
- Check your **Image appearance** settings (brightness, contrast, and so on). Image appearance values that are too high or too low may cause the image to disappear.

Solution **Decoder** – In PowerStream, adjust your local output settings:

- Disable the **Force display mode** option.
- Check your **Image appearance** settings (brightness, contrast, and so on). Image appearance values that are too high or too low may cause the image to disappear.

Cause Your monitor video controls may be improperly set.

Solution Adjust your monitor controls (brightness, contrast, and so on). For more information, see your monitor manual.

Cause Your monitor may not be properly connected (the connectors aren't properly fastened or the monitor power cable isn't firmly in place) or may have been disconnected.

Solution Make sure you're using the correct connectors, that all connectors are properly fastened, and that all power cables are firmly in place.

Cause If your monitor supports multiple input sources (analog/digital), it may be configured to use the wrong source.

Solution Make sure your monitor is using the correct input source. For more information on selecting the input source for your monitor, see your monitor documentation.

Cause The HDMI cable may have been connected to your encoder or decoder output ***after*** the encoding or decoding process started.

Solution Stop, then start the encoding or decoding process again.

Problem Storage path error message when specifying a network shared folder for recording

Cause The path for the network shared folder may be incorrect.

Solution Make sure you're using the full computer name of the system where the shared folder is located. The full computer name is part of the Windows properties of the system. For example, the full computer name of *networkserver* may be *networkserver.domain.com*. For more information, contact your network administrator.

Cause The file sharing configuration for the system hosting the shared folder may prevent writing operations.

Solution Make sure file sharing is enabled on your host system and that writing is permitted on that folder.

Cause The credentials provided to your encoder may not have writing permissions on the system hosting the shared folder.

Solution Make sure you're using the proper user credentials (user name and password) for your encoder.

Solution Make sure the permissions of the shared folder allow writing.

Cause The firewall may be enabled on the system that hosts the shared folder.

Solution Add rules to your Windows Firewall settings. For more information, see "13.5 - Adding rules to your Windows Firewall settings", page 80.

Problem Wrong color balance

Cause The local output settings of your encoder or decoder may be improperly set.

Solution Adjust your PowerStream settings. Check your **Image appearance** settings (brightness, contrast, and so on).

Cause Your monitor video controls may be improperly set.

Solution Adjust your monitor controls (brightness, contrast, and so on). For more information, see your monitor manual.

Cause Your monitor may not be properly connected (the connectors aren't properly fastened or the monitor power cable isn't firmly in place) or may have been disconnected.

Solution Make sure you're using the correct connectors, that all connectors are properly fastened, and that all power cables are firmly in place.

Problem Screen image is cropped, appears off-center, or uses a portion of the screen

Cause You may be using a lower display resolution than what your monitor supports. If your monitor supports display scaling, the image on your screen may appear blurry. If display scaling isn't supported, the display may use only a portion of your screen.

Solution In PowerStream, adjust **Force display mode** to use the highest display resolution available. This generally results in better image quality.

Cause PowerStream may be configured to modify the size of the video source.

Solution Adjust your PowerStream settings:

- **6100 Encoder** – Click the **Processing** tab, then make sure the width and height specified in the **Processing** or **Encoding** settings match the aspect ratio of your source.
- **5150 Encoder** – Click the **Processing** tab, enable the **Use specific video size** option, then specify the width and height of your video to match the aspect ratio of your source.
- **Decoder** – Make sure the settings for **Crop video** are set to properly show the video.

Problem Using 'pass through', the screen is unusable (5150 encoder only) (blank or blinking screen)

Cause Your monitor may be incompatible with the display mode used by your source.

Solution Make sure your monitor and your source support similar display modes. To validate the quality of your source, see your Matrox Maevex User Guide.

Solution Change the display mode used by your source.

Solution Try using a different monitor.

Cause If your monitor and source aren't properly synching, your screen may go blank for a few seconds.

Solution In PowerStream, change the local output of your encoder to **Use confidence preview**.

Solution Try using a different monitor.

Solution Make sure all Matrox software is up to date.

Problem Decoder loses connection to the encoder

Cause The encoder's settings may have changed (for example, the streaming address or IP address). A change may occur dynamically or after a power failure.

Solution Adjust your PowerStream settings:

- **Encoder** – Manually change the IP address to the previous address used by your encoder.
- **Decoder** – Reselect the encoder in your **Source** box.
- **Decoder** – If **Source** is set to **Manual**, make sure the URL used in the **Stream address** box matches the stream address used by the encoder.

For more information, see "4.2 - Understanding the status of your devices", page 13.

Cause The encoder may have stopped transmitting.

Solution Make sure your encoder is transmitting.

Problem PowerStream may be slow to start (several minutes)

Cause Your controller system may not have access to a DNS (Domain Name System) server.

Solution Configure your system to use a fixed IP address (such as local host – 127.0.0.1) as the DNS server.

Windows 10/8.1/7 –

1. **Windows 10** – Click **Start** → **Settings** → **Network & Internet** → **Ethernet**.

   Windows 8.1 – From the **Start** screen, go to **All Apps** → **Windows System** → **Control Panel** → **Network and Internet*** → **Network and Sharing Center**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

   Windows 7 – Click **Start** → **Settings*** → **Control Panel** → **Network and Internet*** → **Network and Sharing Center**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

2. Click **Change adapter settings**.
3. Double-click the icon for your network adapter (such as **Local Area Connection** or **Ethernet**).
4. Click **Properties** → **Yes***. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)
5. Double-click **Internet Protocol Version 4 (TCP/IPv4)**.
6. Select **Use the following DNS server addresses**.
7. Next to **Preferred DNS server**, enter **127.0.0.1**.
8. Click **OK** → **OK** → **Close**.

Problem PowerStream stops responding

Cause Your PowerStream software or Maevex device may have encountered an error.

Solution Try closing, then restarting Matrox PowerStream software.

Solution Restart your controller system.

Problem Maevex device tile is listed as unresponsive (yellow device tile)

Cause Your network may be slow, causing a delay in the response time from your Maevex device.

Solution Wait a few minutes, then make sure the status of the device was properly updated.

Cause Your PowerStream software or device may have encountered an error.

Solution Try closing, then restarting Matrox PowerStream software.

Solution If your device status is still listed as initializing, try rebooting your device. Through the Encoder or Decoder settings panel in PowerStream, click **Reboot**. You can also reboot your device by holding the **Reset** button for *less than 2 seconds*.

Solution Try a configuration reset of your device. For more information, see your Matrox Maevex User Guide.

Problem 'Web services fails' message appears after attempting to change decoder settings

Cause The decoding process may take all the decoder's resources.

Solution Stop the decoding process, make your changes, and restart the decoding process.

Solution When making changes to multiple decoders connected to the same encoder, stop the encoder, make the changes on your decoders, then restart the encoder.

Problem Black border appears around the video

Cause The aspect ratio of your video source may not match the aspect ratio of your monitor.

Solution Use PowerStream software to adjust your **Video** settings (such as enabling **Force display mode** and selecting a **Scaling** option).

Cause The border may be part of your video.

Solution Crop your video source:

1. Under your decoder settings, enable the **Crop video** option.
2. Enter values to remove the borders.
3. Click **Apply** for your changes to take effect.

Cause Your source uses a display resolution that's higher than the resolution used to show the video.

Solution Try configuring your source to use a different display resolution.

Cause Your monitor doesn't support display scaling.

Solution Adjust your video settings:

1. Under **Size and Transformation** of the **Local output** settings of your Maevex device, try selecting **Stretch to display** for scaling.
2. Click **Apply** for your changes to take effect.

Problem Video appears stretched or squished

Cause There may be a problem with your video source.

Solution Verify the quality of your source. For more information, see your Matrox Maevex User Guide.

Cause You may be encoding at a resolution that has a different aspect ratio than what your source or output is using.

Solution Try selecting a video size with the same aspect ratio as your source.

Solution Make sure **Use specific video size** (5150 Encoder) or **Force encoding size** (6100 Encoder) is disabled.

Cause The aspect ratio of your source may not match the aspect ratio of your monitor.

Solution Adjust your video settings:

1. Under **Size and Transformation** of the local output settings of your Maevex device, try selecting **Stretch to display** for scaling.
2. Click **Apply** for your changes to take effect.

Solution If possible, set the display resolution of your source to match the aspect ratio of your monitor.

Cause You may be using a lower display resolution than what your monitor supports.

Solution In PowerStream, make sure **Force display mode** is disabled to use the highest display resolution supported by your monitor. This generally results in better image quality.

Cause PowerStream may be configured to modify the size of the video source.

Solution Adjust your PowerStream settings:

- **Encoder** – Enable the **Use specific video size** (5150 Encoder) or **Force encoding size** (6100 Encoder) option, then specify the width and height of your video to match the aspect ratio of your source.
- **Decoder** – Make sure the settings for **Crop video** are set to properly show the video.

Problem Image appears blurry

Cause You may be encoding at a different resolution than what your source is using.

Solution Try selecting a video size with the same aspect ratio as your source.

Solution If **Use specific video size** is enabled, try disabling it to avoid scaling by the encoder.

Cause You may be using a lower display resolution than what your monitor supports, or your monitor supports display scaling.

Solution In PowerStream, adjust **Force display mode** to use the highest display resolution available. This generally results in better image quality.

Problem Poor video quality or video is jerky (skipping or dropping frames)

> **Note:** Jerky video may be the result of slow recording. Slow recording causes frames to be dropped (frames aren't recorded). If jerky video is caused by frames that were dropped during recording, the problem can only be fixed by recapturing the video under better conditions or with different video settings. For more information, see your Matrox Maevex User Guide.

Cause PowerStream may not be configured to optimize video or audio quality.

Solution When adjusting your encoder or decoder settings, we recommend starting with the default values for all your settings and modifying the settings as necessary.

Cause High network traffic may be degrading the quality of your stream.

Solution Make sure your network equipment supports the bandwidth required.

Solution Try using a dedicated network for your Maevex environment. For more information, contact your network administrator.

Solution Try using Matrox PowerStream to increase the **Network latency** of your decoder.

Cause There may be too many video devices between your video source and destination, or one or more of the video devices may be degrading the quality of the stream. Adapters, long cables, cable extensions, and improper connections can all affect video signal quality.

Solution If possible, use fewer connections. For example, don't use cable extensions.

Problem No sound or sound is distorted or too loud

Cause Your capture settings may not match your audio input.

Solution Make sure your capture settings are set to capture the proper audio source.

Cause Audio cables may be loose, or the audio output device may not be properly connected.

Solution Make sure you're using the correct connectors, all connectors are properly fastened, and that all power cables are firmly in place.

Cause There may be a problem with your audio source.

Solution Verify the quality of your source. For more information, see your Matrox Maevex User Guide.

Cause The PowerStream **Audio** setting of your Maevex device may be too low, too high, or muted.

Solution Adjust your audio settings for the best performance.

Cause **Maevex 6100 encoder only** – You may not be using an audio source, or your audio source may not be included in your encoding process.

Solution Adjust your audio settings:

- **Processing** – Make sure an **Audio source** is selected.
- **Encoding** – Make sure your signals is set to include audio (**Audio only** or **Audio and video**) in your encoding.

Cause **Maevex 5150 encoder only** – If you're using pass through, your HDMI source may disable its audio output if the HDMI output device connected to your encoder doesn't support audio output. This disables the audio output for the encoder and all decoders connected to this encoder.

Solution Make sure the HDMI output device connected to your encoder supports audio output.

Solution In PowerStream, change the local output of your encoder to **Use confidence preview**.

Cause **Maevex 5150 encoder only** – If you're using pass through, your audio output device may be connected to a connector that has no corresponding input.

Solution Make sure your audio output device is connected to the proper corresponding audio input connector (for example, **HDMI** to **HDMI in**, and **Line out** to **Line in**).

Solution In PowerStream, change the local output of your encoder to **Use confidence preview**.

Cause **Maevex 5150 encoder only** – Your source may disable its HDMI audio output when switching from confidence preview to pass through, or vice versa.

Solution To re-enable the audio signal, try disconnecting and reconnecting your HDMI connector.

Problem Inconsistent sound quality between video files

Cause The audio level for the original video sources differs.

Solution Resample the original video sources to normalize the audio output between sources.

Solution Your source may be able to normalize audio levels automatically. For more information, see your source documentation.

Appendix 13 – Firewall requirements

The following are the firewall requirements for your controller system and for a network with a Maevex environment.

13.1 PowerStream

The following are the firewall requirements for your controller system.

Network Ports	Type	Inbound	Outbound	Functionality
20,21	TCP	—	✓	**FTP**: Failsafe file upload*
53	TCP	—	✓	**DNS**: DNS requests
443†	TCP	—	✓	**HTTPS**: PowerStream commands
1900†	UDP	✓	✓	**UPnP**: Microsoft SSDP for discovery of UPnP devices
		✓	✓	Note: ICMP must be enabled (ping)

* Maevex 5150 decoder only.
† Minimum requirements.

13.2 Firmware updater

The following are the firewall requirement for a system running the Matrox Firmware Updater.

Network Ports	Type	Inbound	Outbound	Functionality
20,21	TCP	—	✓	**FTP**: Failsafe file upload
22*	TCP	✓	✓	**SSH**: Firmware update
443*	TCP	—	✓	**HTTPS**: Authentication
1900*	UDP	✓	✓	**UPnP**: Microsoft SSDP for discovery of UPnP devices

* Minimum requirements.

13.3 Maevex devices

The following are the requirements for a network firewall present on a network with a Maevex environment.

Network Ports	Type	Inbound	Outbound	Functionality
20,21	TCP	✓	—	**FTP**: Failsafe file upload
22*	TCP	✓	✓	**SSH**: Firmware update
69	UDP	—	✓	**DHCP**: DHCP client
123	UDP	✓	✓	**NTP**: Network Time Protocol
161	UDP	✓	✓	**SNMP**: Network management (public community string)
443*	TCP	✓	—	**HTTPS**: PowerStream commands and Firmware Updater Authentication
1900*	UDP	✓	✓	**UPnP**: Microsoft SSDP for discovery of UPnP devices
Ephemeral*	UDP	✓	✓	**RTP/RTCP**: Audio and video streams and control
8554 (Maevex 5150), 3049 (Maevex 6100)*	TCP	✓	✓	**RTSP**: Streaming (configurable)†
12000‡	TCP	✓	✓	**RS232**: RS232 virtualization§

* Minimum requirements.

† For more information, see "7.1.4.1 - Stream to network", page 39.

‡ Fixed value when using the **Relayed serial over IP** feature in PowerStream Plus. User defined when using the **Direct serial over IP** feature in PowerStream Plus.

§ Maevex 5150 encoder and 5150 decoder only.

13.4 Accessing your Windows Firewall settings

> **Note:** You may need administrator rights to modify your Windows Firewall settings. For more information, see Windows documentation or contact your system administrator.

To access your Windows Firewall settings:

Windows 10/8.1/7 –

1. Windows 10 – Click **Start** → **Settings** → **Network & Internet** → **Ethernet** → **Windows Firewall**.

Windows 8.1– From the **Start** screen, go to **All Apps** → **Windows System** → **Control Panel** → **Network and Internet*** → **Network and Sharing Center***. (* Depending on your configuration, these steps may be unnecessary.)

Windows 7 – Click **Control Panel** → **Network and Internet*** → **Network and Sharing Center***. (* Depending on your configuration, these steps may be unnecessary.)

2 Windows 10 – In the left panel, click **Advanced Settings**.

Windows 8.1/7 – In the left panel, click **Windows Firewall** → **Advanced Settings**.

13.5 Adding rules to your Windows Firewall settings

Note: You may need administrator rights to modify your Windows Firewall settings. For more information, see Windows documentation or contact your system administrator.

Windows 10/8.1/7 –

1 Windows 10 – Click **Start** → **Settings** → **Network & Internet** → **Ethernet** → **Windows Firewall**.

Windows 8.1 – From the **Start** screen, go to **All Apps** → **Windows System** → **Control Panel** → **Network and Internet*** → **Network and Sharing Center***. (* Depending on your configuration, these steps may be unnecessary.)

Windows 7 – Click **Control Panel** → **Network and Internet*** → **Network and Sharing Center***. (* Depending on your configuration, these steps may be unnecessary.)

2 Windows 10 – In the left panel, click **Advanced Settings**.

Windows 8.1/7 – In the left panel, click **Windows Firewall** → **Advanced Settings**.

3 Click **Inbound Rules**.

4 In the **Actions** panel, click **New Rule**. Configure the new rule with the following settings:

- **Rule** – Select **Custom**.
- **Program** – Select **All programs**.
- **Protocol and Ports** – Next to **Protocol**, select **TCP**. Next to **Local port**, select **Specific ports**. For the port number, enter **445**. Next to **Remote port**, select **All Ports**.
- **Scope** – Under the remote IP address, add the IP range you want to use for your encoders. You can use a range (such as *192.168.1.0/24*) or a single IP address (such as *192.152.168.62*).
- **Action** – Select **Allow the connection**.
- **Profile** – Select the network location of your system (**Domain**, **Private**, or **Public**).

- **Name** – Enter the name for your rule (such as *Maevex Encoder Recording – TCP rule*).

5 In the **Actions** panel, click **New Rule**. Configure the new rule with the following settings:

- **Rule type** – Select **Custom**.
- **Program** – Select **All programs**.
- **Protocol and Ports** – Under **Protocol type**, select **ICMPv4**.
- **Scope** – Under the remote IP address, add the IP range you want to use for your encoders. You can use a range (such as *192.168.1.0/24*) or a single IP address (such as *192.152.168.62*).
- **Action** – Select **Allow the connection**.
- **Profile** – Select the network location of your system (**Domain**, **Private**, or **Public**).
- **Name** – Enter the name for your rule (such as *Maevex Encoder Recording – ICMPv4 rule*).

For more information, see your network administrator.