

Makito X4 Encoder Quick Start Guide

Makito X4 Encoder 1.0



This Quick Start Guide provides the steps required to install and get started configuring the Makito X4 encoder (appliance) to stream to a compatible decoding device or player, such as the Makito X decoder.

For detailed configuration and operation information, please refer to the *User's Guide* (available at <https://doc.haivision.com>). For the default credentials, refer to the *Important Notice* document (postcard shipped with the appliance or available on the Haivision Support Portal at <http://support.haivision.com>). For information on the MB6 (6-slot) or MB21 (21-slot) chassis, refer to the [MB6 Chassis Installation Guide](#) or the [MB21 Chassis Installation Guide](#).

Safety Guidelines

Warning

This product is intended for installation in a restricted area. Limited access areas are protected by a specific mechanism, lock and key or other security device.

ATTENTION Ce produit est destiné à être installé dans une zone d'accès restreint. Les zones d'accès limité sont protégées par un mécanisme spécifique, une serrure et une clé ou tout autre dispositif de sécurité.

Warning

When using the AC/DC power adapter, the power cord is the main disconnect device. Ensure that the socket-outlet is located/installed near the equipment and is easily accessible.

ATTENTION Quand on utilise l'adaptateur AC à DC, le cordon d'alimentation est utilisé comme interrupteur général. La prise de courant doit être située ou installée à proximité de l'équipement et être facile d'accès.

Warning

The installation of the equipment must comply with local and national electrical regulations.
ATTENTION L'installation de l'équipement doit être conforme aux réglementations électriques locales et nationales en vigueur.

Warning

Any power supply shipped with a Haivision Makito X Series encoder or decoder is to be used *only* with that product. Haivision supplied power supplies are *not* for general use.
ATTENTION Tout bloc d'alimentation électrique livré avec un encodeur ou un décodeur de la série Haivision Makito X doit être utilisé uniquement avec ce produit. Les blocs d'alimentation fournis par Haivision ne sont pas destinés à un usage général.

Antistatic Precautions

Electrostatic discharge (ESD) results from the buildup of static electricity and can cause computer components to fail. Electrostatic discharge occurs when a person whose body contains a static buildup touches a computer component.

The equipment contains static-sensitive devices that may be easily damaged, and proper handling and grounding is essential. Use ESD precautionary measures when installing systems or cards, and keep the parts and cards in antistatic packaging when not in use. If possible, use antistatic floor pads and workbench pads.

Caution

When handling components, or when setting switch options, always use an antistatic wrist strap connected to a grounded equipment frame or chassis. *If a wrist strap is not available, periodically touch an unpainted metal surface on the equipment.* Never use a conductive tool, such as a screwdriver or a paper clip, to set switches.

EMC Warnings

Notice with respect to Class A (FCC)

Changes to equipment without the permission of Haivision may result in its failure to comply with the FCC requirements for Class A digital devices. If applicable, your rights to use the equipment may be limited by the FCC rules and you may be able to remedy, at your own expense, any interference with radio or television equipment. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference that may occur when the equipment is used in a commercial environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Use of this equipment in residential areas may cause harmful interference. If necessary, users will have to resolve these issues at their own expense.

Avis relatif aux appareils de classe A (FCC)

Toute modification de l'équipement sans l'autorisation de Haivision peut entraîner sa nonconformité aux exigences de la FCC concernant les appareils numériques de classe A. Le cas échéant, vos droits d'utilisation de l'équipement seront susceptibles d'être limités par les règlements de la FCC et vous pourrez être amené à remédier, à vos frais, aux éventuelles interférences avec des dispositifs radiophoniques ou télévisuels. Cet équipement a été testé et jugé conforme aux limites d'un périphérique numérique de classe A en vertu de la partie 15 des règlements de la FCC. Ces limites ont pour but de fournir une protection raisonnable contre les interférences nuisibles susceptibles de se produire, lorsque l'équipement est utilisé dans un environnement commercial. Cet équipement génère, utilise et peut émettre de l'énergie radioélectrique. S'il n'est pas installé ni utilisé conformément au manuel d'instructions, il peut provoquer des interférences nuisibles aux communications radio. L'utilisation de cet équipement dans les zones résidentielles est susceptible de causer des interférences nuisibles. Le cas échéant, les utilisateurs devront résoudre ces problèmes à leurs frais.

Notification for Class A (Canada)

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

Notification pour les appareils de classe A (Canada)

Cet appareil numérique de Classe A est conforme à la norme NMB-003 du Canada.

Safety instructions for Class A for CISPR32

WARNING: This product is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may need to take appropriate measures.

Consigne de sécurité relative à la Classe A pour CISPR32

ATTENTION: Il s'agit d'un produit de Classe A. Dans un environnement domestique, ce produit peut entraîner des perturbations radioélectriques, auquel cas l'utilisateur devra éventuellement prendre des mesures adéquates.

Laser Safety With SFP+ Optical Modules

This section provides safety information and warnings for Small Form-factor Pluggable (SFP+) modules.

Warning

Laser Radiation Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

Class 1M Laser Radiation Class 1M laser radiation when open. Do not view directly with optical instruments.

Unterminated Fiber Cable Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard.

CE: Class 1 and Class 1M Laser Class I (CDRH) and Class 1M (IEC) laser products.

Attention

Rayonnement laser Les fibres ou connecteurs débranchés risquent d'émettre des rayonnements laser invisibles à l'œil. Ne regardez jamais directement les faisceaux laser à l'œil nu, ni d'ailleurs avec des instruments optiques.

Rayonnement laser pour les appareils de classe 1M Radiation laser de classe 1M en cas d'ouverture. Ne pas observer directement avec des instruments optiques.

Câble de fibre optique sans terminaison Des émissions de radiations laser invisibles peuvent se produire à l'extrémité d'un câble en fibre ou d'un raccord sans terminaison. Ne pas fixer du regard le rayon ou l'observer directement avec des instruments optiques. L'observation du laser à l'aide certains instruments optiques (loupes et microscopes) à une distance inférieure à 100 mm peut poser des risques pour les yeux.

CE: Laser pour les appareils de classes 1 et 1M Produits laser catégorie I (CDRH) et catégorie 1M (IEC).

Warnung

Unterbrochene Fasern oder Steckerverbindungen können unsichtbare Laserstrahlung abgeben. Blicken Sie weder mit bloßem Auge noch mit optischen Instrumenten direkt in Laserstrahlen. Laserstrahlung der Klasse 1 M, wenn geöffnet. Nicht mit optischen Instrumenten direkt hineinsehen. Laserprodukte der Klasse I (CDRH) und Klasse 1M (IEC).

Eine unsichtbare Laserstrahlung kann vom Ende des nicht angeschlossenen Glasfaserkabels oder Steckers ausgestrahlt werden. Nicht in den Laserstrahl schauen oder diesen mit einem optischen Instrument direkt ansehen. Ein Betrachten des Laserstrahls mit bestimmten optischen Instrumenten, wie z.B. Augenlupen, Vergrößerungsgläsern und Mikroskopen innerhalb eines Abstands von 100 mm kann für das Auge gefährlich sein.

 **Aviso**

Radiação laser invisível pode ser emitida de conectores ou fibras desconectadas. Não olhe diretamente para os feixes ou com instrumentos ópticos.

Radiação laser classe 1M quando aberto. Não olhar diretamente com instrumentos ópticos. Produtos laser Classe I (CDRH) e Classe 1M (IEC).

Radiação laser invisível pode ser emitida pela ponta de um conector ou cabo de fibra não terminado. Não olhe fixa ou diretamente para o feixe ou com instrumentos ópticos. Visualizar a emissão do laser com certos instrumentos ópticos (por exemplo, lupas, lentes de aumento ou microscópios) a uma distância de 100 mm pode causar riscos à visão.

 **iAdvertencia!**

Es posible que las fibras desconectadas emitan radiación láser invisible. No fije la vista en los rayos ni examine éstos con instrumentos ópticos.

Los productos láser Clase 1M emiten radiación una vez abiertos. No los mire directamente con instrumentos ópticos.

Produtos laser Classe I (CDRH) e Classe 1M (IEC).

El extremo de un cable o conector de fibra sin terminación puede emitir radiación láser invisible.

No se acerque al radio de acción ni lo mire directamente con instrumentos ópticos. La exposición del ojo a una salida de láser con determinados instrumentos ópticos (por ejemplo, lupas y microscopios) a una distancia de 100 mm puede comportar lesiones oculares.

Installing the Encoder

1. Unpack the box and visually inspect the package contents for any evidence of shipping damage. [See the *Important Notice* postcard in the box for list of contents.]
2. Install the Makito X4 as a desktop unit on a flat, well-ventilated surface.

Before You Begin

Use the following guidelines when unsafe conditions exist or when potentially hazardous voltages are present:

- Always use caution and common sense.
- To reduce the risk of electrical shock, do not operate equipment with the cover removed.
- Repairs must be performed by qualified service personnel only.

Improper handling and/or installation practices of sensitive equipment may VOID the warranty.

Caution

When handling components, or when setting switch options, always use an antistatic wrist strap connected to a grounded equipment frame or chassis. *If a wrist strap is not available, periodically touch an unpainted metal surface on the equipment.* Never use a conductive tool, such as a screwdriver or a paper clip, to set switches.

Important

Please refer to the following safety and disposal notices:

- [Safety Guidelines](#)
- [Laser Safety With SFP+ Optical Modules](#)
- [Waste Electrical and Electronic Equipment \(WEEE\) Disposal](#)

Connecting to the Network

To connect the Network Interface:

1. Connect the Makito X4's network port to the IP network using an Ethernet UTP cable (type Cat 5 or higher).



2. **Warning**



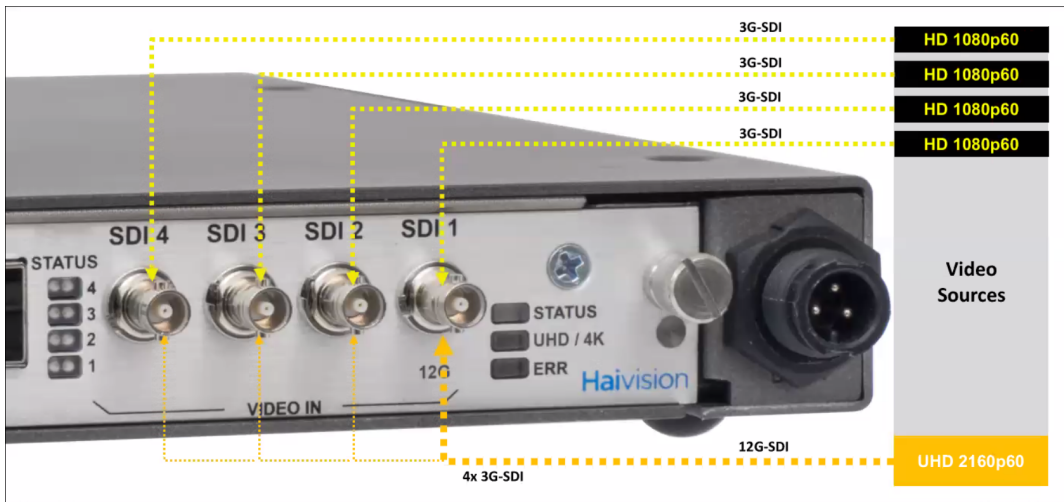
Warning

Laser Radiation - SFP+ Port: Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Please refer to [Laser Safety With SFP+ Optical Modules](#) for details.

Connecting to A/V Sources

To connect to Audio/Video sources:

Connect your video source cables to one (or more) of the Makito X4's video inputs, using the BNC connector(s):



Note

The Makito X4 is shipped with four (4) HD-BNC to BNC adapter cables.

The following video configurations are available:

Single UHD (Ultra High Definition) input carried in one 12G/6G-SDI channel

- 12G/6G-SDI single channel ingest of UHD resolutions (up to 3840 x 2160p60)
- Only HD-BNC1 can support input up to 6/12G-SDI. All the other inputs support up to 3G-SDI.

Use scenario: UHD Video / 6/12G-SDI → Makito X4 Encoder → stream to decoder
UHD video transport; 6/12G-SDI infrastructure required.

Single UHD input carried over four 3G-SDI channels

- Four (4) x 3G-SDI ingest of UHD resolutions (up to 3840 x 2160p60)
- Web UI → configure video encoding core to use all four input interfaces as a video input source.
- Only 2SI (two-sample interleave division) mode is supported in Release 1.0. 2SI mode uses four sub-images and alternates the samples every two pixels and every line (instead of splitting the image into four quadrants). Each link contains a full image at 1/4 resolution.

Use scenario: UHD Signal → 4 x 3G-SDI → Makito X4 Encoder → stream to network/decoder
Uses existing 3G-SDI cabling to support new UHD work-flows by sending the UHD video over 4 parallel cables.

Quad channel encoding - Up to four full-HD 1920 x 1080p60 inputs carried over four independent 3G-SDI channels

- Up to 4 input SDI signals up to 3G-SDI (up to 1080p60).
- Each input channel can be encoded independently. The high/low encoding for each input is supported for a total of 8 encoding cores (which can be assigned to any input independently).

Use scenario: 4 video sources → Makito X4 Encoder (each input is encoded 2 times) → 8 x stream to decoder
Uses Makito X4 as a four-channel encoder; each encode channel can support up to 1080p60/3G-SDI input video. The encoder may be configured to support a high/low streaming configuration for each channel, so long as the total aggregate encoding capabilities of the device are not exceeded.

Powering Up the Encoder

Once all the cables are in place, the encoder is ready to be powered up.

⚠ Caution

To prevent damage to the Makito X and/or power supply, be sure to connect the power supply to the chassis first and then to the AC source. Always use the AC power cord and power supply provided with the unit. The single and dual-height chassis have different power supply units and chassis connectors.

📘 Important

There is no power switch on the Makito X appliance. The power is automatically on when the unit is plugged in. When using the AC/DC power adapter, the power supply cord is used as the main disconnect device. Ensure that the AC socket outlet is located near the equipment and is easily accessible.

To power up the encoder:

1. Insert the 3-pin connector on the 12V power supply into the Power input jack at the rear of the Makito X4.
2. Connect the power cord to the power supply and plug the cord into a grounded AC power source. The status LED will start blinking green, indicating that the encoder is booting up.
3. Wait until the Status LED stays solid green, indicating that the encoder is ready for operation.



Connect Power Supply here
(Power Input Jack)

Power Adapter 12VDC with Conxall 3-pin Connector



Accessing the Web Interface

1. Open a Web browser of your choice, such as Chrome, Firefox, Safari, or Internet Explorer.
2. Type the IP address for the encoder into the browser’s address bar and press Enter.
The Makito X4 comes pre-configured with the following default settings:

IP Address	Subnet Mask	Gateway
10.5.1.2	255.255.0.0	10.5.0.1

Note

To access the Web interface, your computer must be in the same IP Address range (subnet). You may have to temporarily change your computer’s IP Address to be in the same subnet as the encoder. Only then will you be able to access the encoder and change its IP address, and then afterwards change your computer’s IP address back. For details, see [Configuring Network Settings](#) in the User’s Guide.

3. The first time you try to access the Web interface from a new browser, the browser may not recognize the Makito X4’s https connection, and you may get a Security Certificate Warning (such as “This Connection is Untrusted.” or “The site’s security certificate is not trusted.”). You must accept the Makito X’s self-signed certificate in order to access the Web interface.

Note

The Makito X4 identity certificate and trusted root certificates may be managed from the Web interface (Certificates page) or using the CLI `certificate` command. See [Managing Certificates](#) in the User’s Guide.

4. Sign in to the Web interface, using the default administrative username and password. Please refer to the *Important Notice* (postcard included in the box or available from the [Download Center](#) on the Haivision Support Portal) for the default login credentials.

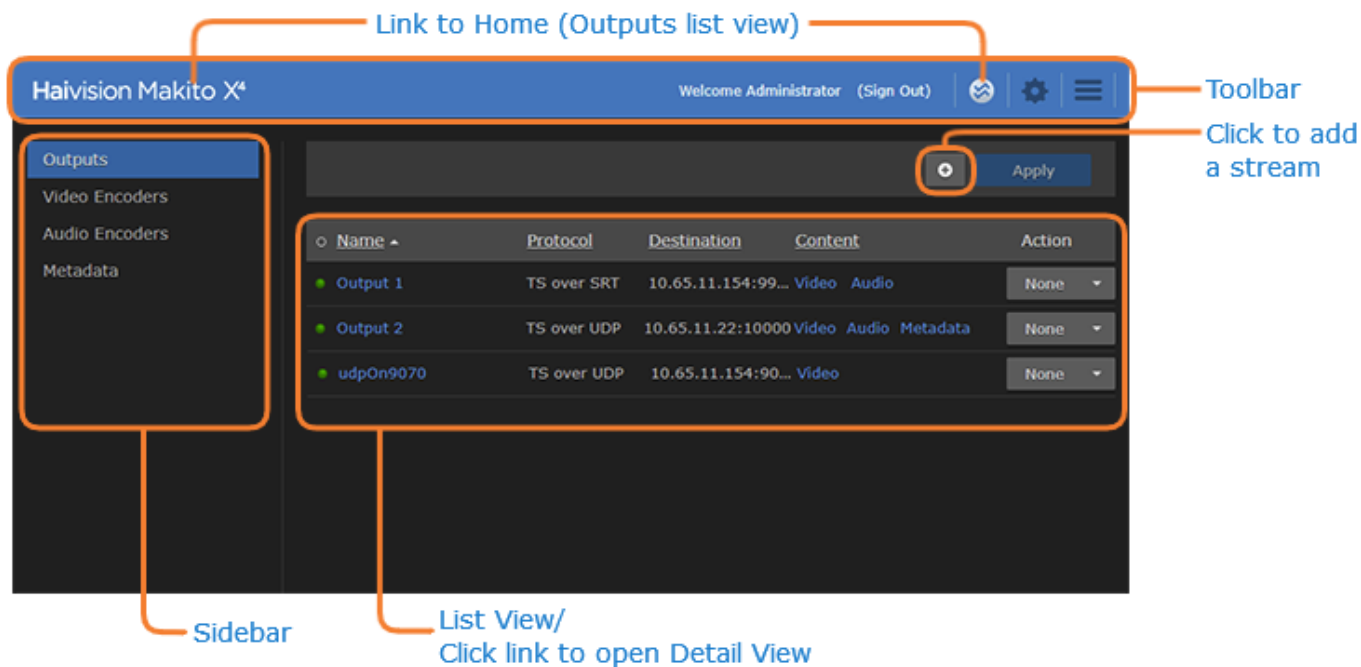
Important

Makito X Series devices ship from the factory with only the `admin` account enabled. For security reasons, the two default user accounts (`user` and `operator`) are locked at the factory as well as after a factory reset. An administrator must unlock them and change the passwords to use them for the first time.

Tip

For security purposes, be sure to change the default passwords! See [Changing Your Password](#) in the User's Guide.

The Web interface opens to the Outputs List View.

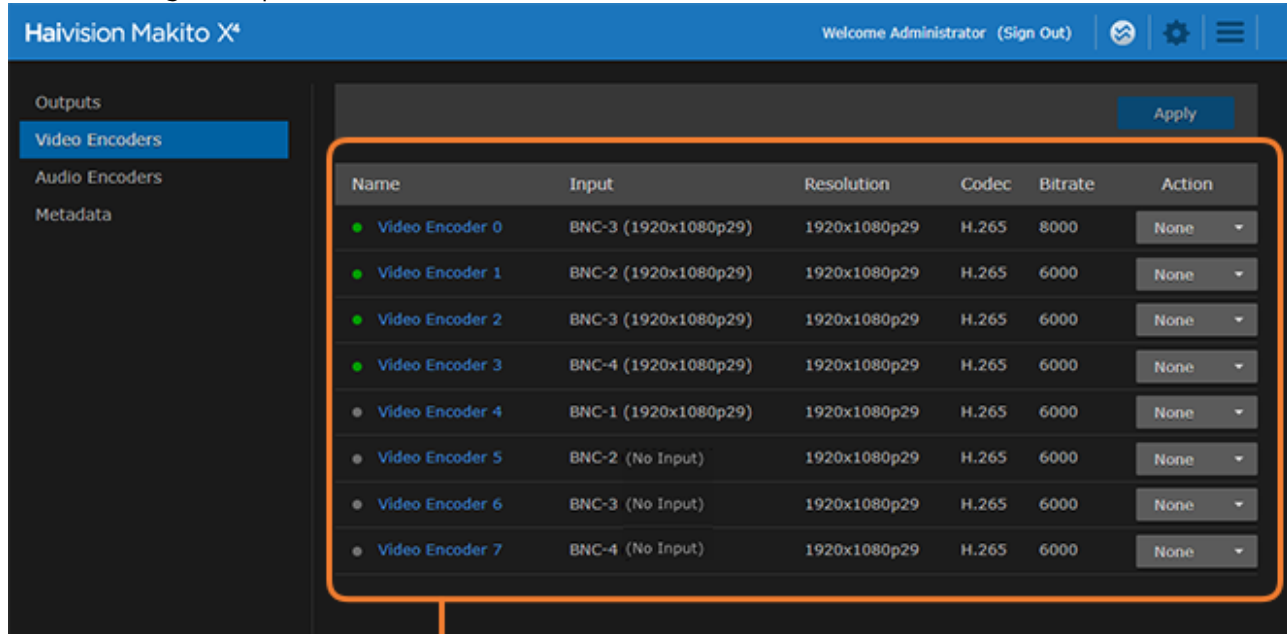


Configuring the Video Settings

From the Video Encoders pages, you can configure up to eight independent video encoders to apply to streams. Each encoder can be configured independently and assigned to multiple outputs to support multi-bitrate.

1. Click **Video Encoders** on the sidebar.

The Video Encoders List View displays information at a glance for the video encoders, as shown in the following example:



Video Encoders List View/
Click link to open Detail View

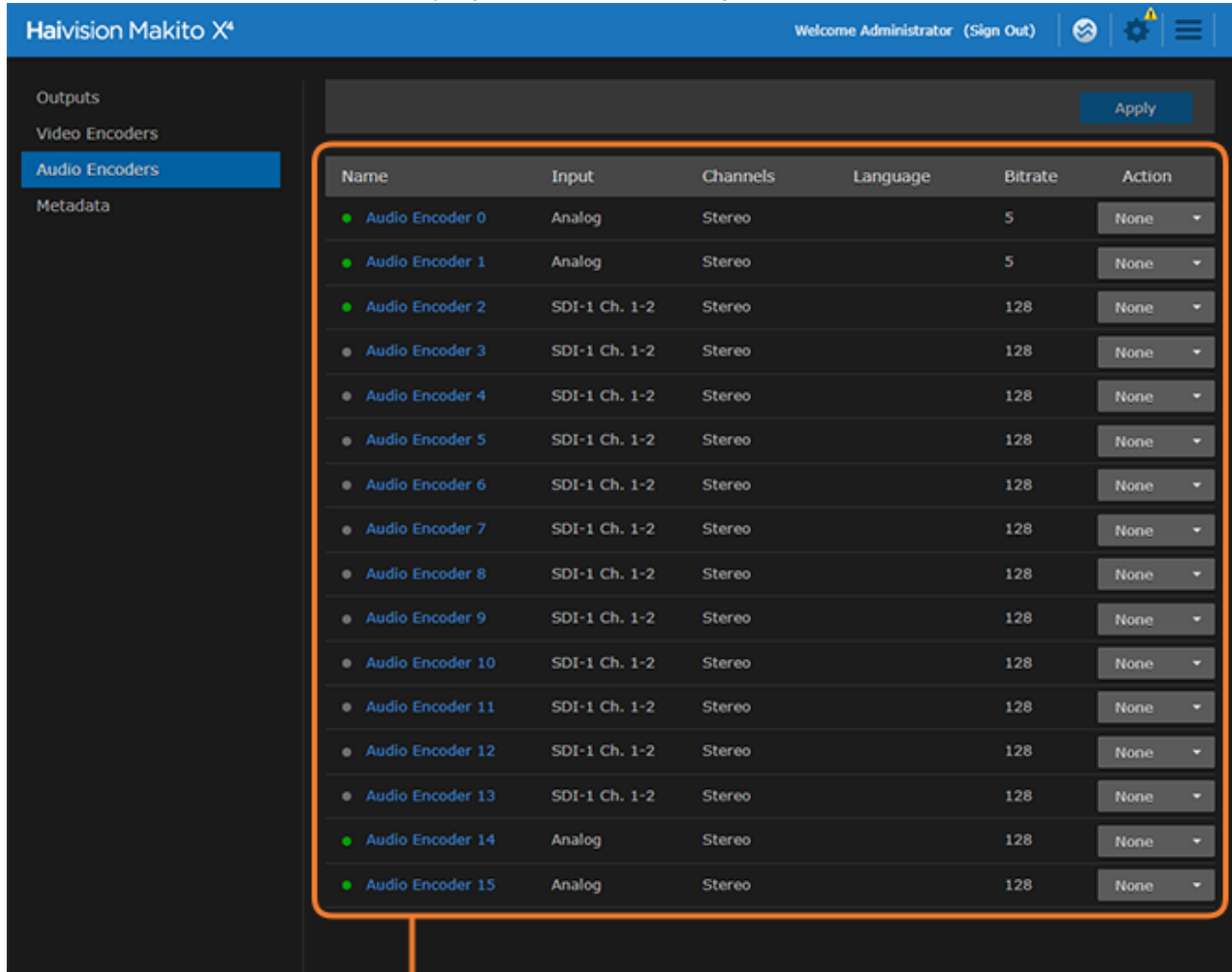
2. To view the status for an encoder, hover over the status LED (to the left of the row).
3. To change the status for an encoder, click the drop-down list under **Action** and select either Start or Stop (as applicable).
4. To view details or configure the settings for a video encoder, click the link in the table.
5. On the Detail View, you can configure the Video Encoder settings.
 - To configure settings such as the video Input, (output) Bitrate, Resolution, and GOP Size, select or enter new values in the appropriate fields. See [Video Encoder Settings](#) in the User's Guide.
 - To apply your changes, click **Apply**.
 - To start or stop the encoder, click **Start** or **Stop** (as applicable).
 - To view statistics for the encoder, click **Statistics**.

Configuring the Audio Settings

From the Audio Encoders pages, you can configure up to 16 independent audio encoders to apply to streams.

1. Click **Audio Encoders** on the sidebar.

The Audio Encoders List View displays information at a glance for the audio encoders.



Audio Encoders List View/
Click link to open Detail View

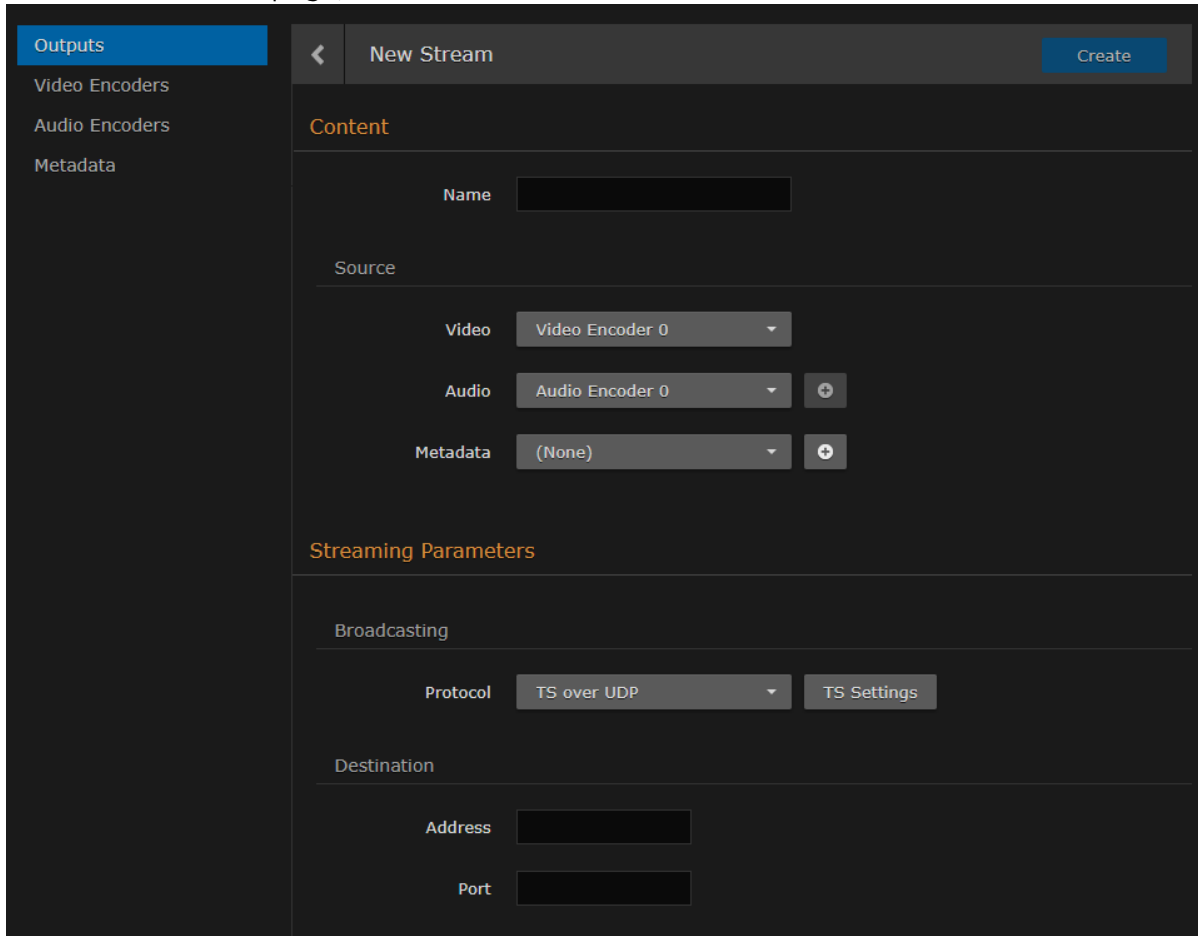
2. To change the status for an encoder, click the drop-down list under **Action** and select either Start, Stop or Mute (as applicable).
3. To view details or configure the settings for an audio encoder, click the link in the table.
4. On the Detail View, you can configure the Audio Encoder settings.
 - To configure audio settings such as the Input, Bitrate, and Language, select the new values in the appropriate fields. See [Audio Encoder Settings](#) in the User’s Guide.
 - To apply your changes, click **Apply**.
 - To start or stop the encoder, click **Start** or **Stop** (as applicable).
 - To mute the audio (when active), click **Mute**.

- To view statistics for the encoder, click **Statistics**.

Setting Up Streaming

From the Outputs pages, you can set up streaming.

1. Click **Outputs** on the sidebar.
2. On the Outputs List View, click the **+** button to create the first stream.
3. On the New Stream page, fill in the fields to choose the Content:



4. Type a name for the stream in the Name field.

5. **Note**

By default, Input 1 (SDI1) is assigned to Video Encoders 0 and 1, Input 2 (SDI2) to Video Encoders 2 and 3 , Input 3 (SDI3) to Video Encoders 4 and 5 , and Input 4 (SDI4) to Video Encoders 6 and 7.

6. For a basic MPEG-2 transport stream setup, under Broadcasting, select TS over UDP as the Protocol (keeping the default TS settings).
7. Under Destination, type in the IP Address and Port number, for example, multicast address `225.6.7.8` and port `2000` .
8. Leave the default values for the remaining Streaming parameters. See [Output Settings](#) in the User's Guide.
9. Click **Apply**.

Viewing Your Streams

To view your streams, make sure your decoding devices or applications:

- support MPEG Transport Stream format,
- are turned on and connected to a display (if applicable), or open your video player software (e.g., VLC),
- are accessible on the same network segment as the Makito X4, and
- are “tuned” to the Makito X4 Destination IP address and Port, for example, 225.6.7.8 / ports 2000 and 2400 (as defined in [Setting Up Streaming](#)).


Tip

For the recommended settings to optimize the Makito X4 encoder configuration to stream to the Makito X decoder, see [Makito Decoder Interoperability](#) in the User’s Guide.

Note

In order to optimize your encoder’s performance, it is recommended that *only* the required network services be enabled. Please review the network services to make sure services used for your application are enabled or disabled as appropriate. See [Enabling and Disabling Network Services](#) in the User’s Guide.

Important

Clicking **Apply** does not save your changes and they will be lost after a reboot. Saving configurations as presets provides a way for you to save groups of settings and apply them to other streams. A warning indication  appears in the title bar on systems with unsaved configurations. For more information, see [Saving and Loading Presets](#) in the User’s Guide.

Obtaining Documentation

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Getting Help

General Support	<p>North America (Toll-Free) 1 (877) 224-5445</p> <p>International 1 (514) 334-5445</p> <p><i>and choose from the following:</i> Sales - 1, Cloud Services - 3, Support - 4</p>
Managed Services	<p>U.S. and International 1 (512) 220-3463</p>
Fax	<p>1 (514) 334-0088</p>
Support Portal	<p>https://support.haivision.com</p>
Product Information	<p>info@haivision.com</p>