Makito™ XH Encoder Installation Guide

This Installation Guide summarizes the basic steps required to install and configure the Makito XH Encoder (single chassis, as shown below) to stream to your compatible decoding device. Please refer to the Makito X User's Guide or the online help (available from the Web Interface) for detailed information.

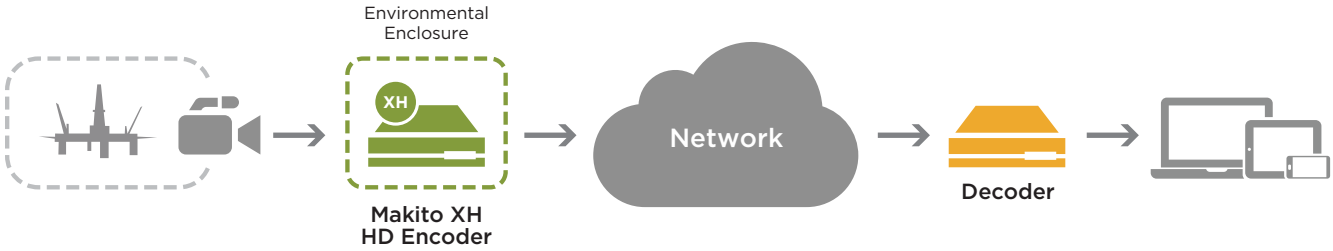
NOTE We recommend that you familiarize yourself with this Installation Guide before installing your Makito XH in a remote location.

The Makito XH is a semi-ruggedized, industrial version of the Makito X encoder, available in DVI, single and dual SDI input, and dual output configurations. It is designed for fan-less operation in harsh/hot environments, where it can survive exposure to a limited range of temperatures and other environmental factors (e.g. humidity, dust, etc).

The Makito XH is resistant to a limited amount of shock and vibration, and can tolerate variations in temperature (from 0 to 70 °C), humidity (5% to 95%, non-condensing), and air pressure (from 300 to 1015 kPa). In all other aspects (video/audio encoding, streaming, management, network/serial port and metadata control) the Makito XH is identical to its non-ruggedized Makito X counterparts.

Applications

The Makito XH is suited for ISR activities in remote locations, where it should be mounted within an environmental enclosure for additional protection. Typical applications include surveillance towers with security cameras that can feed an SDI signal to Makito XH units, which encode the video and stream it to a remote monitoring location.



NOTE While the Makito XH Encoder has a real-time clock (RTC), it has no RTC battery. In the event of a power loss, the system date and time settings are lost. For any application with a requirement for stand-alone synchronized system timing (or derived time codes), an NTP server should be used to provide time and date synchronization. Refer to the Makito X User's Guide for details.

Makito XH Characteristics

The table below describes some basic characteristics of the Makito XH. For complete specifications, please refer to the data sheet available from the Haivision Web site.

Dimensions	Chassis: 5.4” (13.72 cm) W x 8” (20.32 cm) D x 1.75” (4.45 cm) H	Storage Temperature	-10 °C to +70 °C
Material	Chassis: Aluminum 6061-T6 All materials are compliant with directive 2011/65/EU (RoHS2 / RoHS RECAST).	Working Temperature	0 °C to +70 °C, no derating
		Working Humidity	0 to 95% non-condensing
Weight	Approximately 4.0 lbs. (1.8 kg)	Pressure	300 to 1015 kPa
Finish	External: Black anodized, as per MIL-A-8625F, Type 2, Class 2 Internal: Chemical conversion as per MIL-DTL-5541F Type 2, Class 3	IP Rating	IP42

Power Supply Characteristics

The table below details the minimum requirements for an adapter or battery to be used as a power source for the Makito XH. The power adapter provided by Haivision (P-292-XH-PS-AC) is subject to high quality standards, and meets or exceeds these minimum requirements in all respects.

Nominal Output Voltage	12 VDC	Maximum Output Ripple	100 mV
Minimum Output Load	1.7 A	Minimum Operational Temperature Range	0 °C to +70 °C
Maximum Output Regulation	+/- 5%	Minimum Operational Humidity Range	0 - 95% (non-condensing)

CAUTION The use of a power adapter or battery that is not compliant with these specifications may cause irreparable damage to your Haivision appliance.

Makito XH Product Numbers

S-292E-X1H	Single channel SDI Makito XH high temperature encoder
S-292E-X2H	Dual channel SDI Makito XH high temperature encoder
S-292E-DVI-H	Single channel Makito X Harsh Environment DVI encoder
S-292D-X2H	Dual channel Makito X Harsh Environment decoder
P-292-XH-PS-AC	Commercial AC to +12V DC / 30 watt PSU supporting 0 °C to 70 °C operation

CAUTION We strongly recommend that you install the Makito XH Encoder and power adapter in an enclosure for protection against weather and other environmental stresses. The ambient temperature inside the enclosure should be between 0°C and 70°C, and the relative humidity between 5 and 95% (without condensation). If you have specific questions regarding the suitability of the Makito XH in your operating environment, please contact Haivision Technical Support.

Before You Begin

1. Unpack the box and visually inspect the package contents for any evidence of shipping damage. See the Important Notice document in the box for a list of contents.
2. In addition to the contents of the Makito XH box, you may need to have the following items available:
   - Environmental enclosure
   - Four #8-32 screws or stainless steel, harsh-environment cable ties
   - Coaxial cabling with BNC connectors for audio/video sources, or DVI cabling
   - Cabling for analog audio sources (mini-DIN-8 connector)
   - Ethernet cable for a network connection
   - Ethernet cable for a serial connection
   - Sealant gel (e.g., X-Sealant Gel — http://www.xmultiple.com/xwebsite-sealant.htm)
   - A laptop with Web browser, Telnet client, and video player (e.g., VLC)
3. In order to be able to view the output from the Makito XH Encoder, make sure you have a decoding device or video player that is able to support the UDP Transport Stream format.

NOTE If the Makito XH Encoder is to be installed in a remote location (e.g. on a utility pole, or on a mobile platform), we recommend that you follow the instructions in this Installation Guide to perform an initial setup in a "staging" environment, such as a lab or control center. Once the encoder has been set up and is demonstrated to be operating normally, you can then move it to the remote location.

CAUTION Before installing the Makito XH Encoder, please refer to the section on "Safety Guidelines" in the Makito X User's Guide. Only connect the unit to a compatible power source. If an electrical fault occurs, disconnect the unit and contact Haivision Technical Support. Never try to force the connections when setting up the system as this may damage the unit.

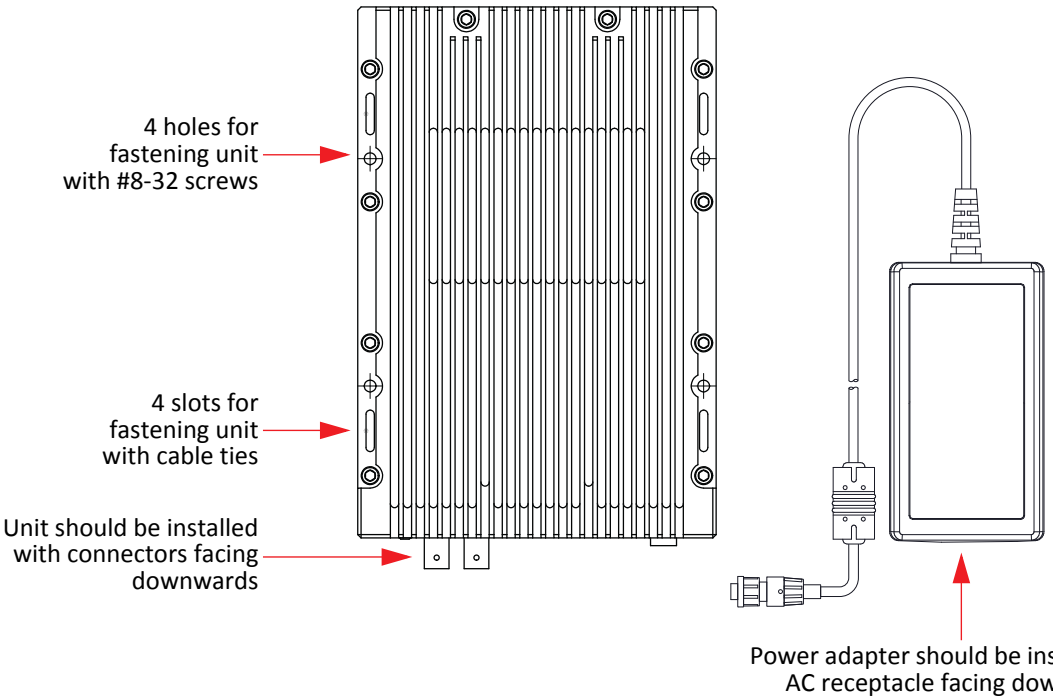
CAUTION **Hot surface. Avoid contact.** The chassis can achieve a surface temperature 95°C in poorly ventilated environments, and may cause personal injury if touched.
ATTENTION ***Surface chaude. Eviter le contact.*** *Le châssis peut atteindre une température de surface de 95°C dans des environnements mal ventilés et peut causer des blessures en cas de contact.*

WARNING This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.
AVERTISSEMENT *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.*

Installing the Makito XH

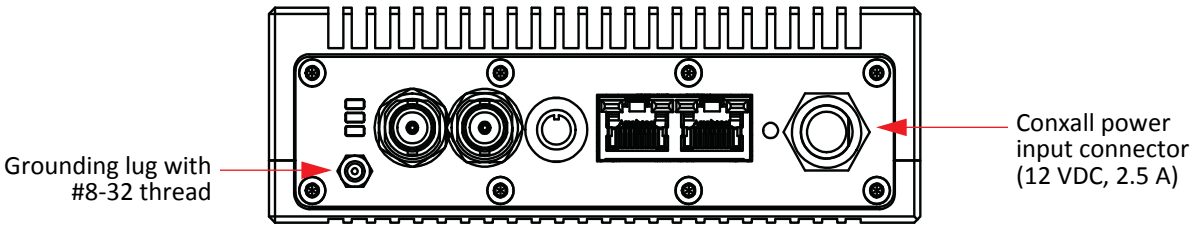
1. Position the appliance against a solid base, with the connectors facing downwards.

CAUTION The surface temperature of the chassis can reach 95°C in poorly ventilated environments. We recommend that you fasten the appliance to a metal (cold) plate to increase heat dissipation.



CAUTION The chassis and power adapter must be positioned with the connectors facing downwards to minimize the possibility of water penetration.

2. Fasten the appliance to its support base with four screws (size 8-32, or 6 mm). Alternatively, you can use stainless steel, harsh-environment cable ties, which can be passed through slots in the chassis.
3. Fasten a grounding wire (10 AWG minimum) to the grounding lug using the nut and lock washer provided.



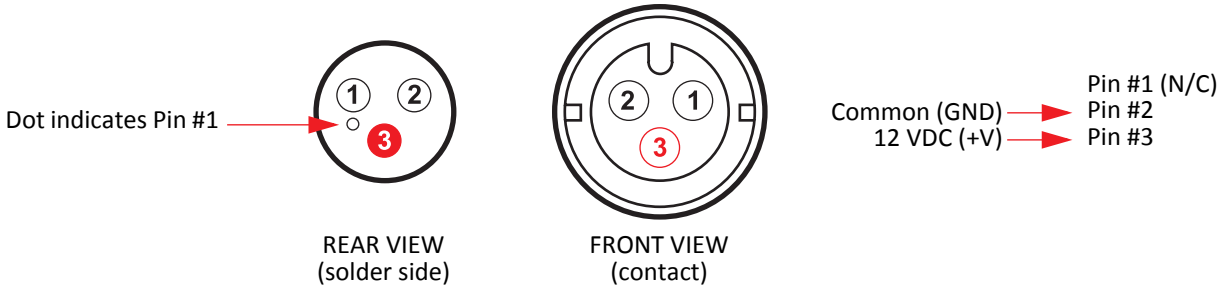
CAUTION The chassis must be properly grounded in order to provide protection against lightning strikes and other power surges.

PSU Power Cable Product Numbers

16282-3SG-311	Conxall cable O.D. range: .09 – .14”
16282-3SG-315	Conxall cable O.D. range: .15 – .17”
16282-3SG-318	Conxall cable O.D. range: .18 – .20” (custom grommet required if cable O.D. is over .200”)

PSU Pinouts

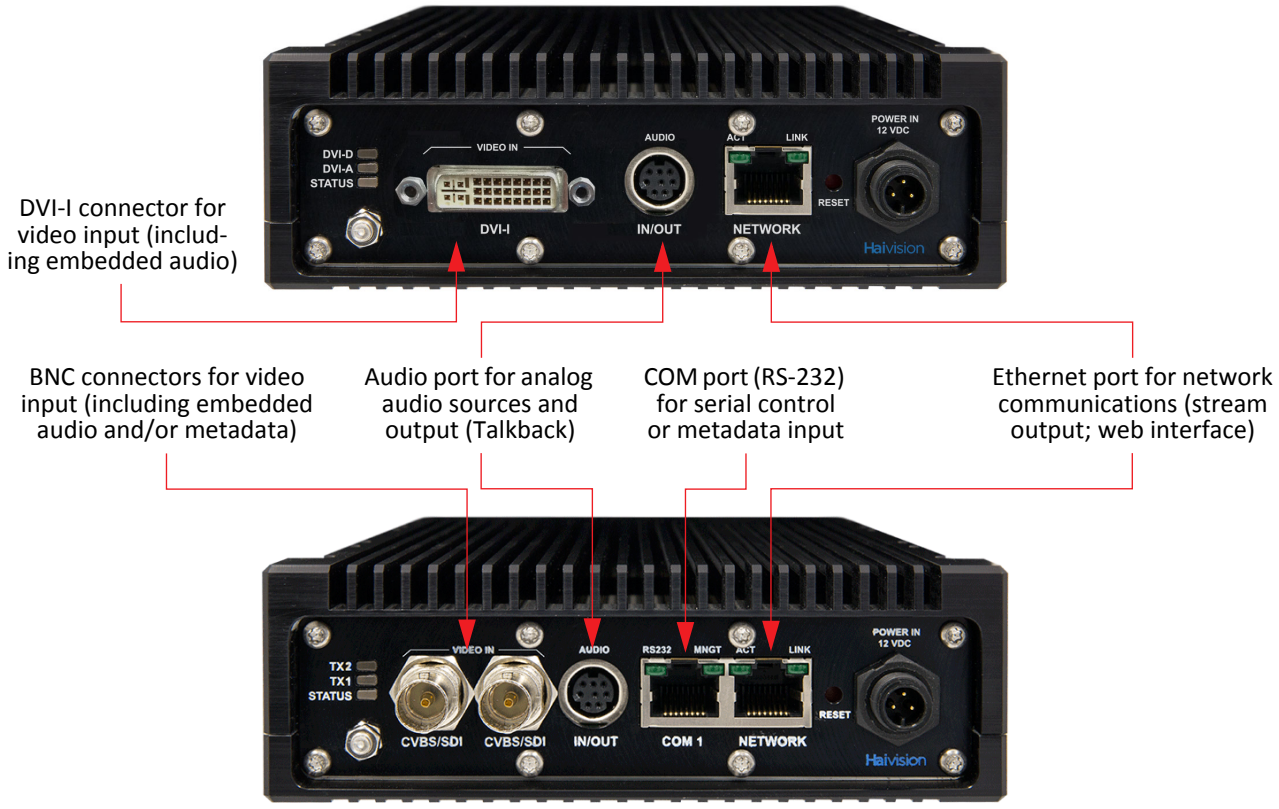
The pinouts for the power supply unit (PSU) provided with the Makito XH are as follows:



Connecting the Makito XH to the Network and A/V Sources

1. Connect video, audio, serial and network cables, referring to the images below:

Makito XH DVI Input

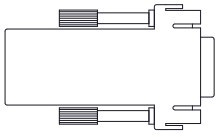


Makito XH Dual SDI Input

2. Connect the Makito XH's Ethernet port to the IP network using a Type Cat 5E cable.

CAUTION Take care not to plug the Ethernet cable from an Ethernet switch (especially a Power over Ethernet (PoE) switch) directly into the COM1 serial port as it may damage the encoder.

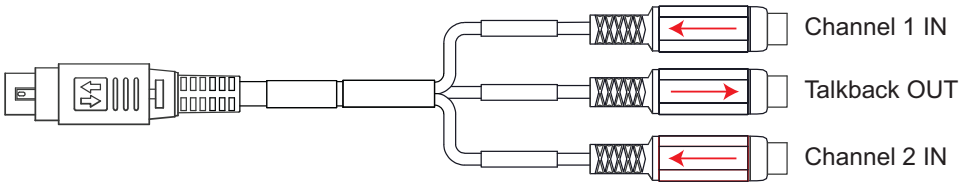
3. (Optional for SDI models) Connect the Makito XH's COM1 port to a metadata source or to the serial port of a computer using a standard straight Ethernet cable (TIA-EIA 561). You may need to use the RS-232 DB9-to-RJ45 serial management adapter provided with the encoder.



NOTE The Reset button provides two options:

- If you press and hold the button for less than 4 seconds, the system resets and load loads the last saved configuration. If no configuration was previously saved, the default settings prevail.
- If you press and hold the button for more than 4 seconds, the module performs a complete factory reset. It clears all of the previously configured settings, including IP, streams and encoder configurations.

4. Connect the Makito XH's SDI Video/Embedded Audio Input to your audio/video source(s) using the BNC connector(s) and coaxial cable(s).
   or
   Connect the Makito XH's DVI-I Video/Embedded Audio Input to your audio/video source(s) using a DVI-to-DVI or an HDMI-to-DVI cable.
5. Connect the Makito XH's mini-DIN-8 audio connector to your audio source. You may need to use the Audio cable/adapter provided with the Makito XH



NOTE The Makito XH supports Composite video as well as Analog audio formats. Selection between Analog (the default) and SDI audio can be done via the Web Interface.

NOTE The Talkback channel may be used to provide loudspeaker voice alerts to ground personnel near surveillance towers, or for back-channel communications to pilots or drivers.

For more information, please refer to "Connecting the Encoder to the Network and a Computer" and "Connecting the Encoder to A/V Sources" in the Makito X User's Guide.

6. (Optional) Add a sealant gel around the Makito XH connectors in order to further protect them from water, humidity, sand and dust.
7. Power up the unit as described below. Note that there is no power switch on the Makito XH appliance. The power is automatically on when the unit is plugged in.

CAUTION To prevent damage to the encoder and/or power supply, be sure to connect the power supply to the chassis *first* and then to the AC source.

CAUTION The power supply cord is used as the main disconnect device. Ensure that the socket-outlet is located/installed near the equipment and is easily accessible.
ATTENTION *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.*

- Insert the 3-pin connector of the power cord into the power input jack at the rear of the encoder.
- Make sure the connector is properly inserted and locked to avoid intermittent power problems.
- Connect the power cord to a 12V power supply and plug the cord into an AC power source.

  The Status LED next to J5 will start blinking green, indicating that the encoder is booting up.
- Wait until the Status LED stays solid green, indicating that the encoder is ready for operation.

NOTE While the Conxall power connector on the Makito XH is identical to those on the Makito X SDI appliances, the power supply (PSU) itself is different. Refer to "Power Supply Characteristics" on page 2 for details.

Modifying the Makito XH's IP Address

If you haven't changed the factory presets, and if not specified elsewhere in the shipment, the encoder's IP address is set by default to: `10.5.1.2`. To be able to log in to the Makito XH Web interface, your computer has to 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.

TIP After you change the Makito XH encoder's IP address, we recommend that you document it somewhere, and label the chassis.

1. If you have not already done so, power up the Makito XH.
2. The Makito XH comes pre-configured with the following settings:

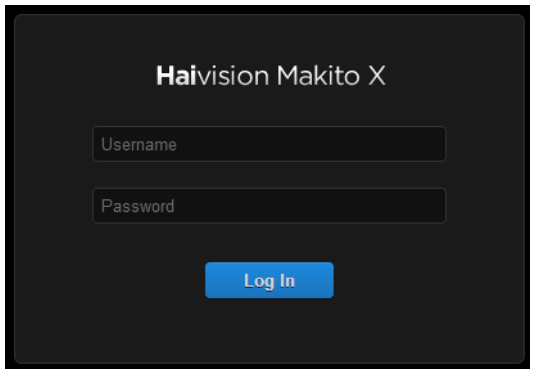
IP Address*	Subnet Mask	Gateway
10.5.1.2	255.255.0.0	10.5.0.1

* The IP address of your computer must be in the same subnet.

3. Open a Web browser, type the IP Address for the Makito XH into the URL address bar, and press Enter.
4. Log in to the Makito XH Web Interface, using the following default administrative username and password:

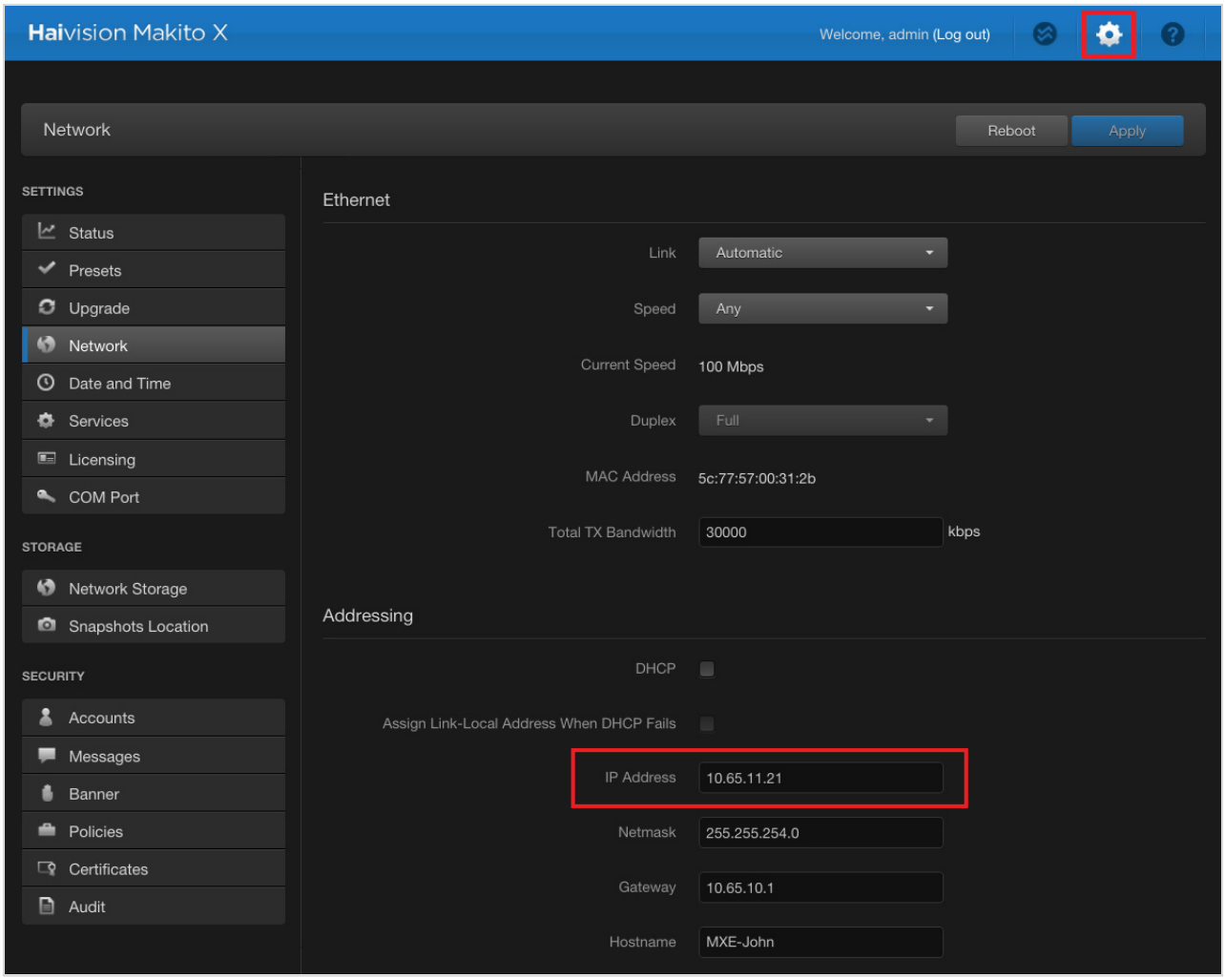
Admin Username	Password*
admin	manager

* Be sure to change the default password.



NOTE While the Web interface is most commonly used to control the Makito XH, a Command Line Interface (CLI) is accessible via Telnet or SSH. For more information, please refer to the Makito X User's Guide.

5. Select the ADMINISTRATION icon from the toolbar, and then select NETWORK (under SETTINGS).



6. Type in the new IP address. If required, select or enter other new value(s) in the appropriate field(s).
7. To apply your changes, click Apply, and then click Reboot. (You must reboot the system for the changes to take effect.)

NOTE Remember to change your computer network settings to be on the same network segment as the Makito XH.

For more detailed information, please refer to "Managing Users and Security" in the Makito X User's Guide.

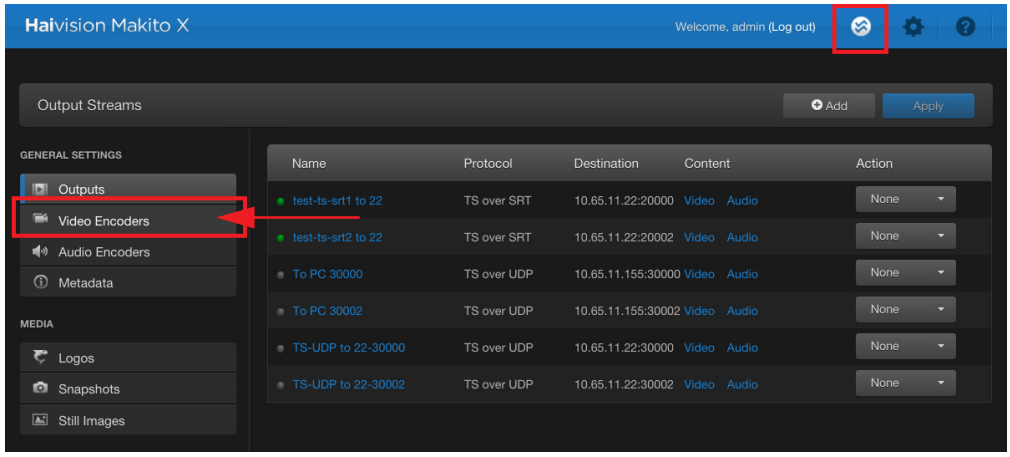
Setting up a Test Stream

Setting up a test stream requires that you have an active video source connected to the Makito XH. You will need to configure an encoding instance based on your video source, and then configure an output stream for that encoder. For detailed information, please refer to Chapter 4 of the Makito X User's Guide.

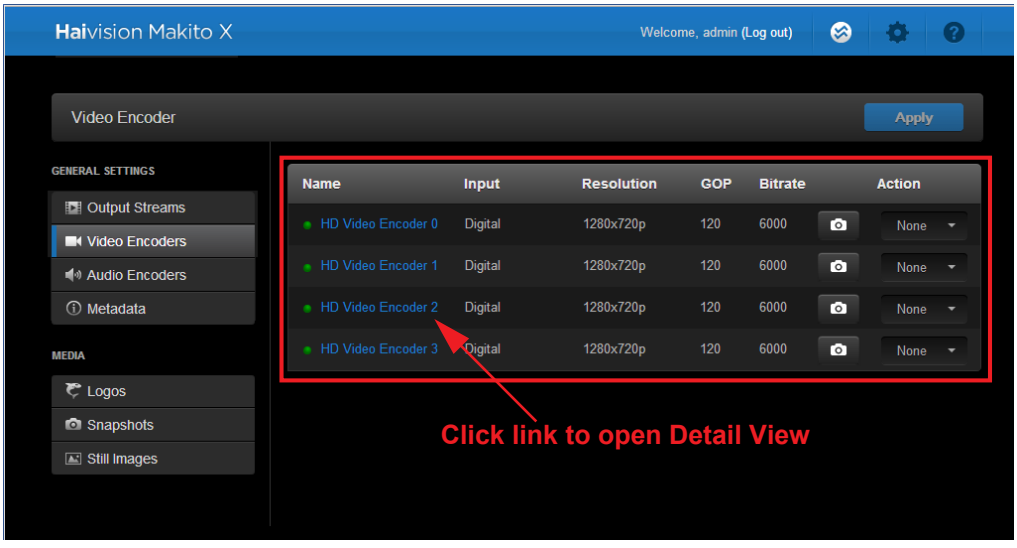
1. If you have not already done so, power up the Makito XH.
2. Open a Web browser, type the IP Address* for the Makito XH into the URL address bar, and press Enter.

   * The IP address of your computer must be in the same subnet (see "Modifying the Makito XH's IP Address" on page 8).

3. Click the STREAMING icon on the toolbar, and then click VIDEO ENCODERS from the sidebar menu.

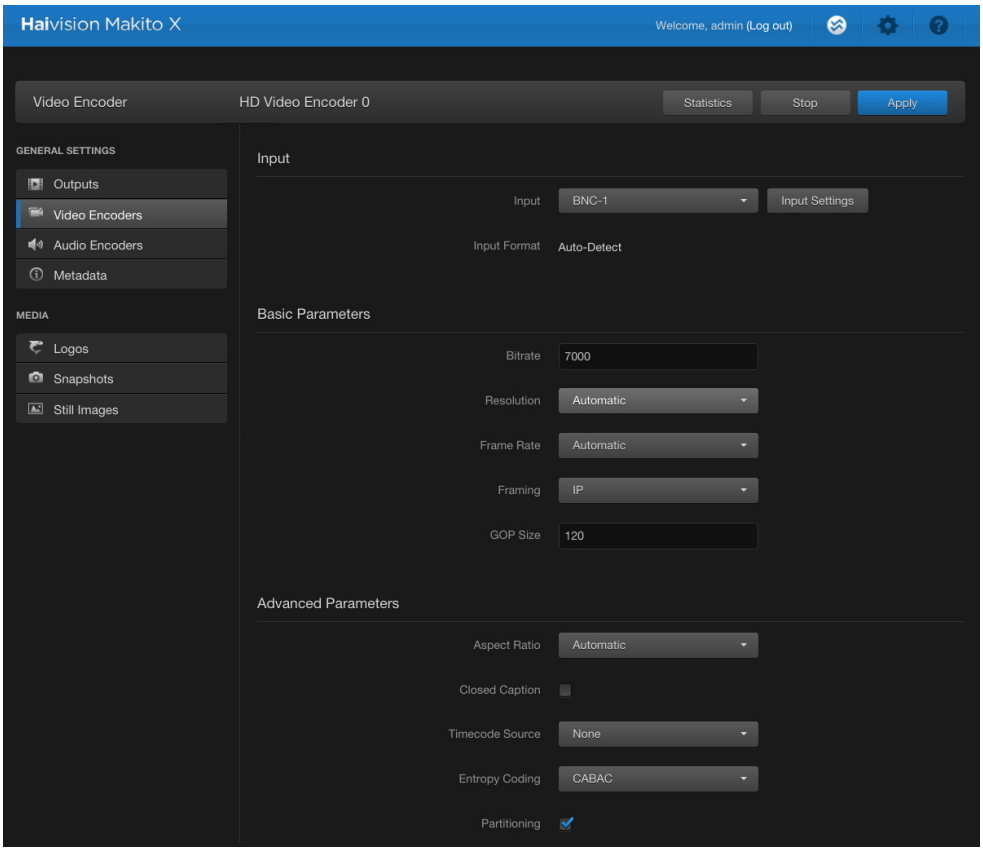


The Video Encoders List View opens, as shown in the following example.



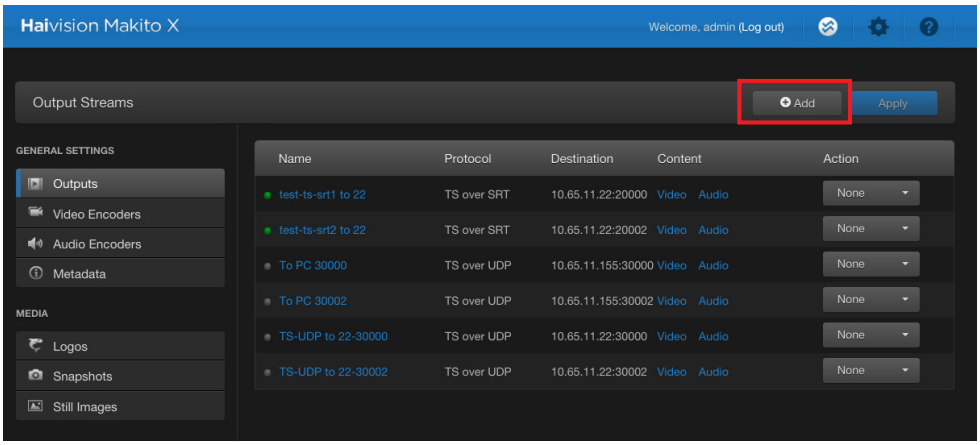
4. From the Video Encoders List View, click a link in the table to select the encoder.

   The Video Encoder Detail View opens, displaying the settings for the selected video encoder (see following example).



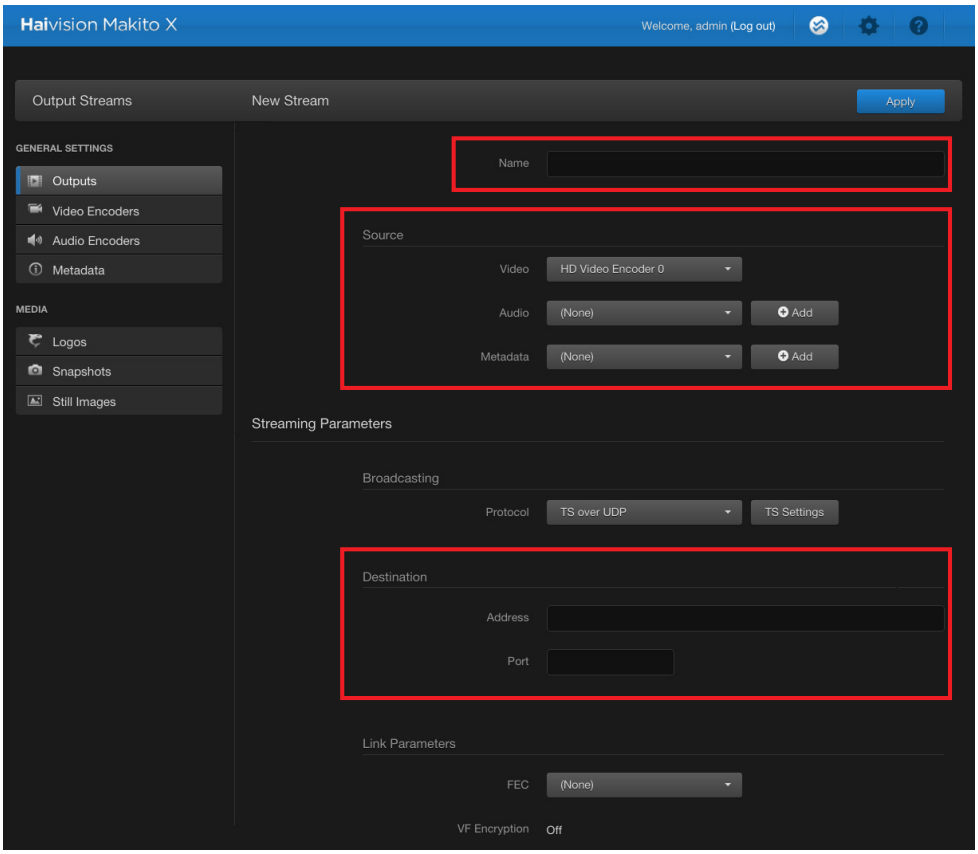
5. Select or enter the new value(s) in the appropriate field(s).
6. Click Start, and then click Apply.
7. Click the  STREAMING icon on the toolbar, and then click OUTPUTS from the sidebar menu.

   The Output Streams List View opens, as shown in the following example.



8. To add an output stream, click Add.

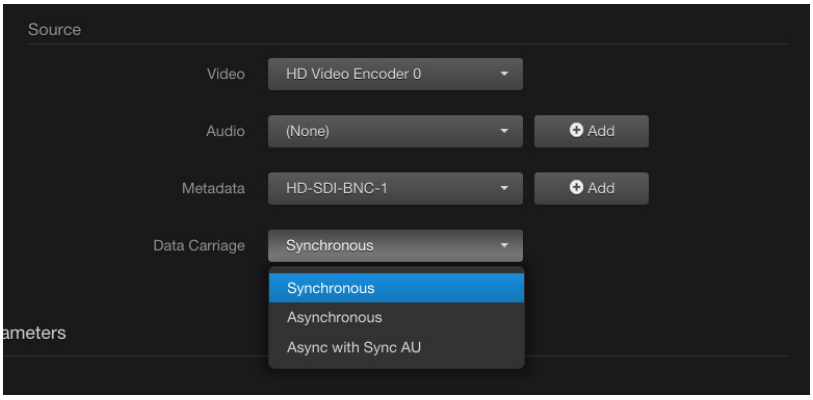
   The Output Streams Detail View opens (as shown in the following example for a new stream).



9. Type a Name for the stream and select **TS over UDP** for the Protocol.
10. In the Source section, select the encoder you started in step 6. from the **Video** menu.
11. In the Destination section, type in a valid multicast **Address** (e.g. `239.192.2.3`) and **Port** number (e.g. `2000`).

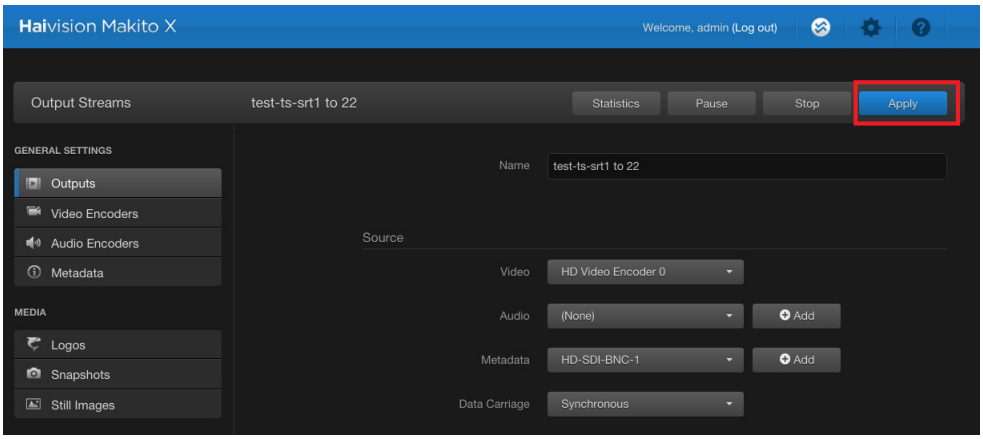
NOTE The Multicast address range is from `224.0.0.0` to `239.255.255.255`. Multicast addresses from `224.0.0.0` to `224.0.0.255` are reserved for multicast maintenance protocols and should not be used by streaming sessions. We recommend that you use a multicast address from the Organization-Local scope (`239.192.0.0/14`).

12. To add metadata to the stream (SDI models only), select the Metadata source, and (optionally) select the encapsulation type (Data Carriage).



13. To apply your changes and start streaming, click Apply.

    The changes will take effect immediately *but will be lost after a reboot.* For information on saving configuration settings, please refer to the "Saving and Loading Presets" section of the Makito X User's Guide.



Viewing the Test Stream

1. Make sure your decoding device (or software) is compatible with the UDP Transport Stream format.
2. Turn the device on and connect it to a display (if applicable), or open your video player software (e.g. VLC).
3. Make sure you are on the same network segment as the Makito XH, and
4. Tune your decoding device or software to the Makito XH multicast address of the test stream coming from the Makito XH.

For More Information

Contact Haivision Technical Support via our Support Portal on our website at: http://www.haivision.com/support-portal-home

Or you may use the phone numbers or email addresses listed below:

North America:	Toll Free: 1.877.224.5445 (option 4)
International:	Tel: 1-514-334-5445 (option 4) Fax: 1-514-334-0088
Technical Support email:	tickets@haivision.com
Product Information email:	info@haivision.com

You may download the latest software, Release Notes and other relevant documentation through our Download Center at: http://www.haivision.com/download-center/

Waste Electrical and Electronic Equipment (WEEE) Disposal

Haivision is compliant with the European Union (EU) WEEE Directive. For recovery and recycling information, please visit our website at:
http://www.haivision.com/environment