

Makito™ XH Decoder Installation Guide

This Installation Guide summarizes the basic steps required to install and configure the Makito XH “Harsh” HD/SD H.264 Video Decoder (single chassis, as shown below) to decode and display compatible IP video streams. Please refer to the Makito X Decoder User’s Guide or the online help (available from the Web Interface) for detailed information.

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

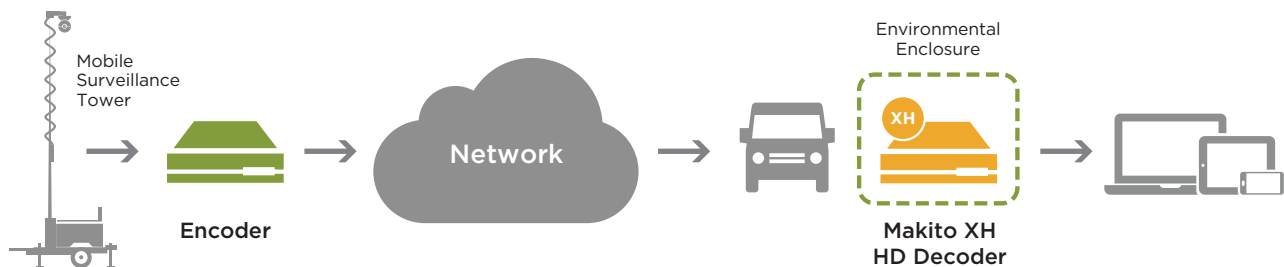
The Makito XH Decoder is a semi-ruggedized, industrial version of the Makito X Decoder, available in a dual SDI plus HDMI output configuration. It is designed for fan-less operation in harsh/hot environments, where it can survive exposure to a limited range of temperatures and other environmental factors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



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

Applications

The Makito XH Decoder is suited for ISR activities in remote locations, where it should be mounted within an environmental enclosure for additional protection. Typical applications include providing on-site decoding of video streams for border patrol operations, and fan-less decoding in noise-sensitive environments (e.g. a broadcast booth at a live sporting event).



i **NOTE** While the Makito XH Decoder 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.

Makito XH Decoder Characteristics

The table below describes some basic characteristics of the Makito XH Decoder. 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 Decoder. 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.

Product Numbers

S-292D-X2H	Dual channel Makito XH "Harsh" 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 Decoder and power adapter in an enclosure for protection against weather and other environmental stresses. The ambient temperature inside the enclosure should be between 0 and 70°C, and the relative humidity between 0 and 95% (without condensation). If you have specific questions regarding the suitability of the Makito XH Decoder 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 Decoder 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
 - HDMI cabling
 - Cabling for analog audio output (mini-DIN-8 connector)
 - Ethernet cable for a network connection
 - Sealant gel (e.g. X-Sealant Gel — <http://www.xmultiple.com/xwebsite-sealant.htm>)
 - Laptop with web browser and Telnet client
3. In order to be able to test the output from the Makito XH Decoder, make sure you have an encoding device or application that is able to support the UDP Transport Stream format.



NOTE If the Makito XH Decoder is to be installed in a remote location (e.g. 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 decoder 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 Decoder, please refer to the section on “Safety Guidelines” in the Makito X Decoder 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. Éviter 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.



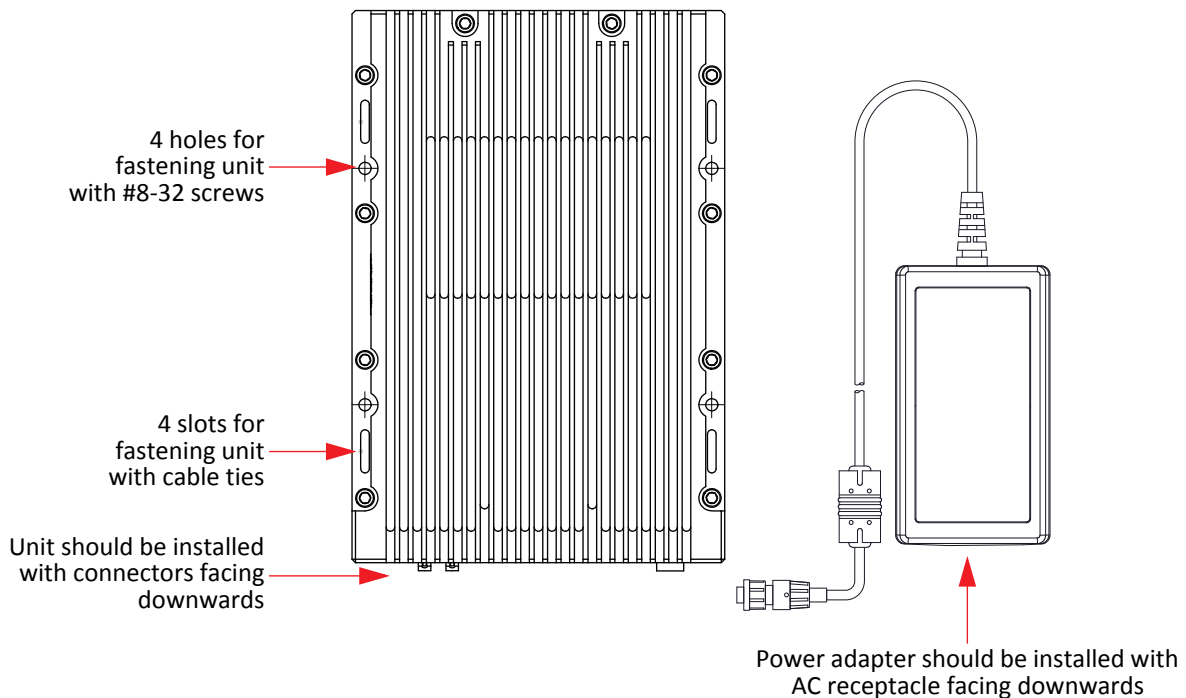
WARNING This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.
AVERTISSEMENT Ce produit est destiné à être installé dans une zone d'accès restreint. Les zones d'accès limité sont protégées par un mécanisme spécifique, une serrure et une clé ou tout autre dispositif de sécurité.

Installing the Makito XH Decoder

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

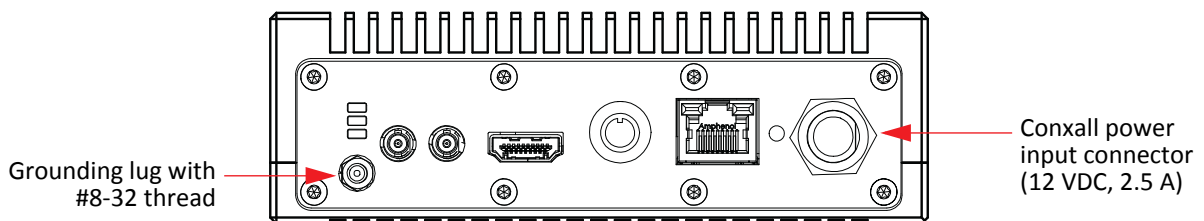


CAUTION The surface temperature of the chassis can reach 95°C in poorly ventilated environments. We recommend that you fasten the appliance to a metal (cold) plate to increase heat dissipation.



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.



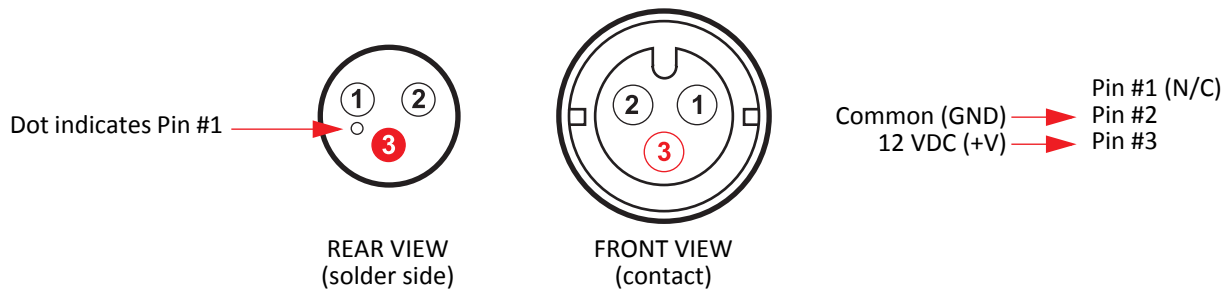
CAUTION The chassis must be properly grounded in order to provide protection against lightning strikes and other power surges.

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

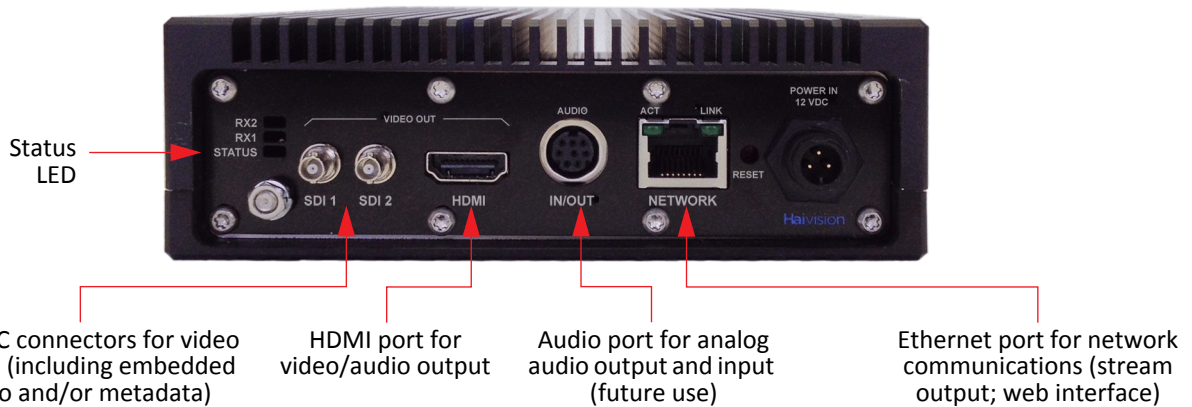
The pinouts for the power supply unit (PSU) provided with the Makito XH Decoder are as follows:



Connecting the Decoder to the Network and A/V Sources

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

Makito XH Decoder Dual SDI Output



2. Connect the Makito XH Decoder’s Ethernet port to the IP network using a Type Cat 5E cable.
3. **3G-SDI Video Output with Embedded Audio:** Connect one or both of the decoder’s SDI outputs to TV or display monitors, using the HD-BNC to BNC Adapter Cable(s) (included in the package for appliances).
4. **HDMI Video Output with Embedded Audio:** Connect the decoder’s HDMI output to a TV or display monitor, using an HDMI connector (refer to the Makito X Decoder User’s Guide for the HDMI connector pinouts).



NOTE By default, HDMI displays the SDI1 content. To monitor the SDI2 channel, see “Configuring the HDMI Video Display” in the Makito X Decoder User’s Guide.

5. **Analog Audio Out:** Connect the decoder’s audio output to the audio sound system/speakers, using the audio 8-pin Mini-DIN connector.



White - Channel 1 / Left Out
Red - Channel 2 / Right Out
Black - Talkback In (future use)

- For unbalanced audio, use the 8-pin audio to 3-RCA female cable adapter (included in the package).
 - A balanced audio cable adapter is available from Haivision upon request.
 - Refer to the Makito X Decoder User’s Guide for the balanced/unbalanced audio pinouts.
6. (Optional) Add a sealant gel around the decoder connectors in order to further protect them from water, humidity, sand and dust.
7. Power up the unit. Note that there is no power switch on the Makito XH Decoder. The power is automatically on when the unit is plugged in. The power supply cord is used as the main disconnect device.



CAUTION To prevent damage to the decoder 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 on the 12V power supply into the Power input jack at the rear of the decoder.
- Make sure the connector is properly inserted and locked to avoid intermittent power problems.
- Connect the power cord to the power supply and plug the cord into an AC power source.
- The Status LED will start blinking green, indicating that the decoder is booting up.
- Wait until the Status LED stays solid green, indicating that the decoder is ready for operation.



NOTE While the Conxall power connector on the Makito XH Decoder is identical to those on Makito X Decoder appliances, the power supply (PSU) itself is different in order to support the increased temperature range.

For more detailed information, please refer to “Installing the Decoder” in the Makito X Decoder User’s Guide.

Modifying the Decoder's IP Address

If you haven't changed the factory presets, and if not specified elsewhere in the shipment, the decoder'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 decoder. Only then you will be able to access the decoder and change the decoder's IP address, and then afterwards change your computer's IP address back.



TIP After you change the Makito XH'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 decoder.
2. The Makito XH Decoder comes pre-configured with the following settings:

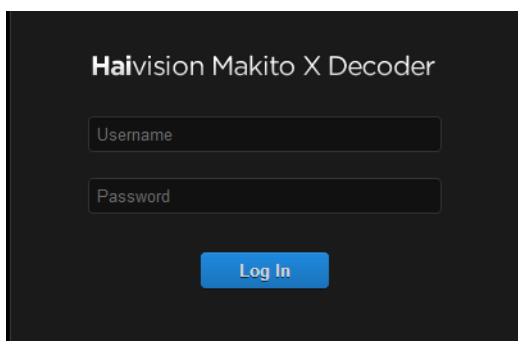
IP Address	Subnet Mask	Gateway
10.5.1.2*	255.255.0.0	10.1.50.1

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


3. Open a Web browser, type the IP Address for the decoder into the URL address bar, and press Enter. An Advisory and Consent banner may appear — review the terms and click OK to continue.
4. Log in to the Web Interface, using the following default administrative username and password:

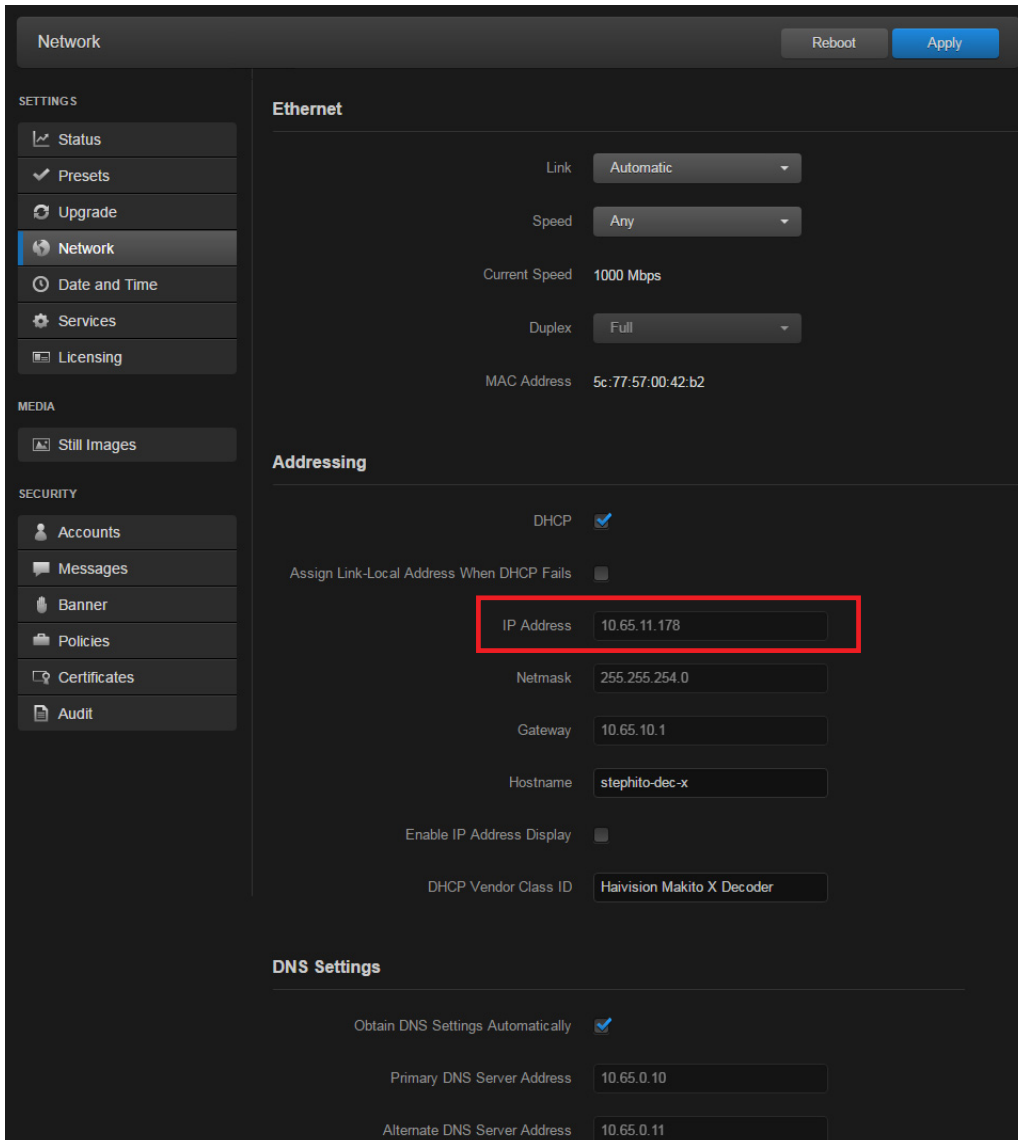
Admin Username	Password
admin	manager*

* Be sure to change the default password.



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

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



The screenshot displays the Network configuration page for the Makito XH Decoder. The interface is dark-themed and includes a sidebar with navigation options: SETTINGS (Status, Presets, Upgrade, Network, Date and Time, Services, Licensing), MEDIA (Still Images), and SECURITY (Accounts, Messages, Banner, Policies, Certificates, Audit). The main content area is titled 'Network' and features 'Reboot' and 'Apply' buttons. Under the 'Ethernet' section, settings for Link (Automatic), Speed (Any), Current Speed (1000 Mbps), Duplex (Full), and MAC Address (5c:77:57:00:42:b2) are shown. The 'Addressing' section includes a checked 'DHCP' option, an unchecked 'Assign Link-Local Address When DHCP Fails' option, and input fields for IP Address (10.65.11.178), Netmask (255.255.254.0), Gateway (10.65.10.1), and Hostname (stephito-dec-x). There is also an unchecked 'Enable IP Address Display' option and a 'DHCP Vendor Class ID' field containing 'Haivision Makito X Decoder'. The 'DNS Settings' section at the bottom has a checked 'Obtain DNS Settings Automatically' option, with Primary DNS Server Address (10.65.0.10) and Alternate DNS Server Address (10.65.0.11) fields.

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 Decoder.

For more detailed information, please refer to “Managing Users and Security” in the Makito X Decoder User’s Guide.

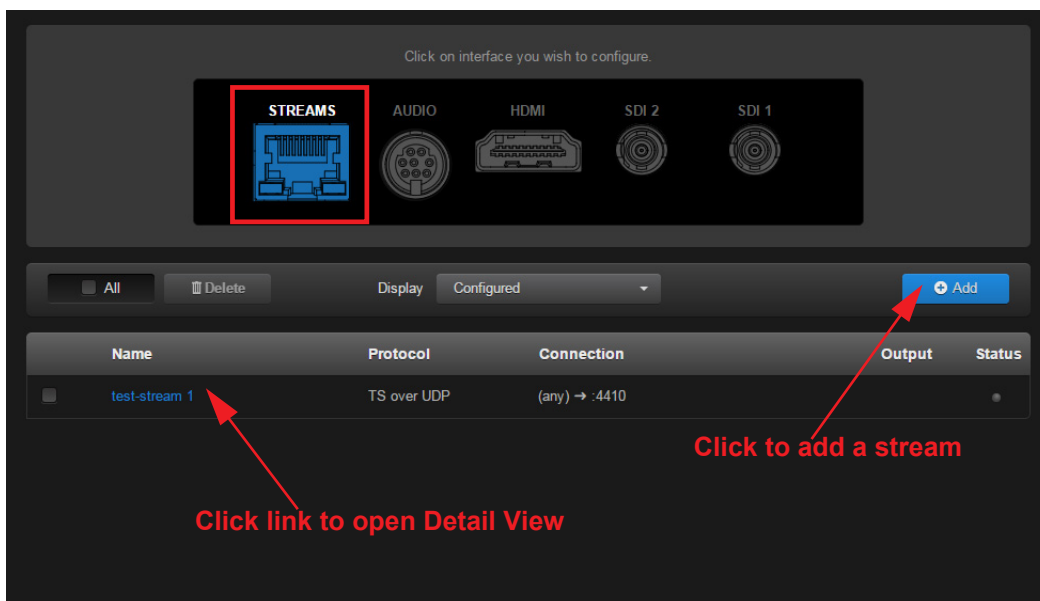
Setting Up a Test Stream

To verify that the Makito XH Decoder is operational, you will need to set up an encoded video stream for it to receive and decode. To do this, make sure that your encoding device (or software) is compatible with the UDP Transport Stream format and is on the same network segment as the Makito XH Decoder.

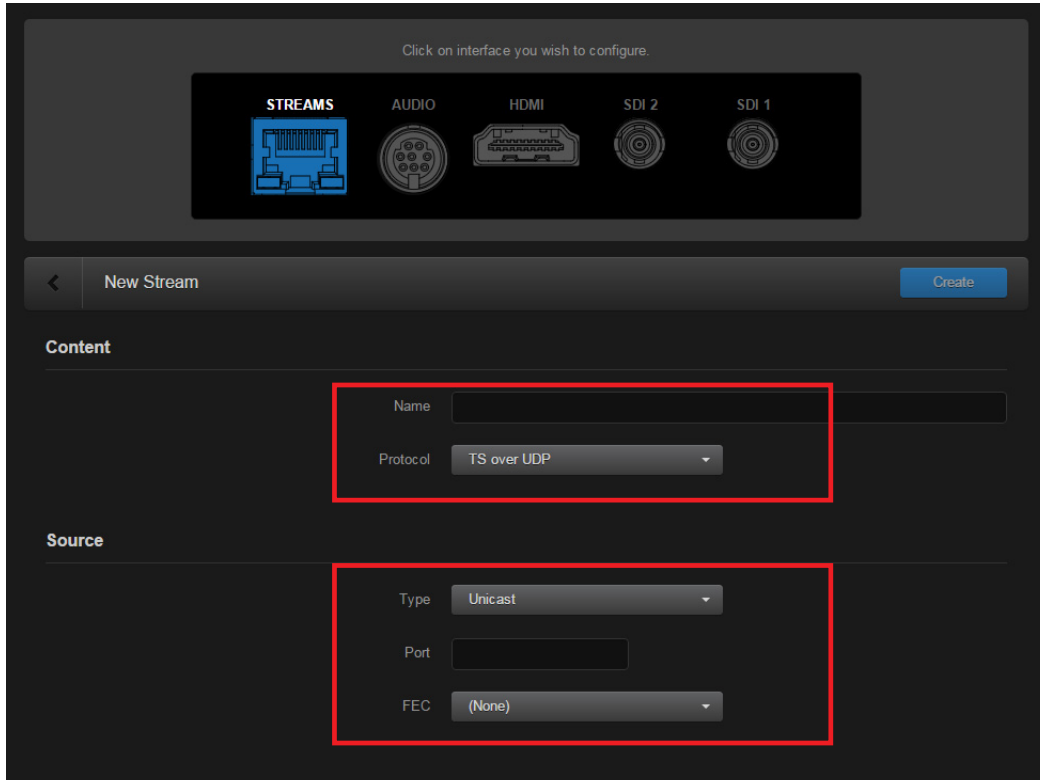
We recommend setting up the encoder to unicast a **TS over UDP** test stream to the IP address of the Makito XH Decoder.

Decoding and Viewing the Test Stream

1. If you have not already done so, power up the Makito XH Decoder.
2. Open a Web browser, type the IP Address* for the Makito XH Decoder into the URL address bar, and press Enter.
* The IP address of your computer must be in the same subnet (see “[Modifying the Decoder’s IP Address](#)” on page 7).
3. Once you have successfully logged in, the Web interface opens to the Streams List View, displaying the defined streams for the decoder. The following example shows the Streams List View after a stream has been created, but not yet bound to output interfaces.



4. To add an incoming stream, click [Add](#).
5. The Output Streams Detail View opens (as shown in the following example for a new stream).

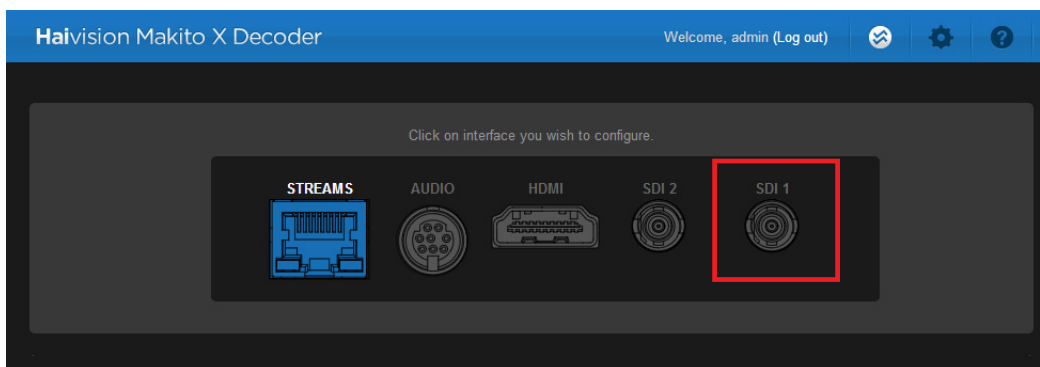


6. Under **Content**, type a name for the stream in the Name field and select **TS over UDP** for the Protocol.
7. In the **Source** section, select **Unicast** and enter the appropriate **Port** number (from the encoder).
8. From the [SDI1](#) and [SDI2 DECODER](#) pages, you can manage video decoding for the SDI1 and SDI2 ports. This includes binding the video output(s) to the stream(s) you have created and configuring properties such as the Output Resolution and Frame Rate.

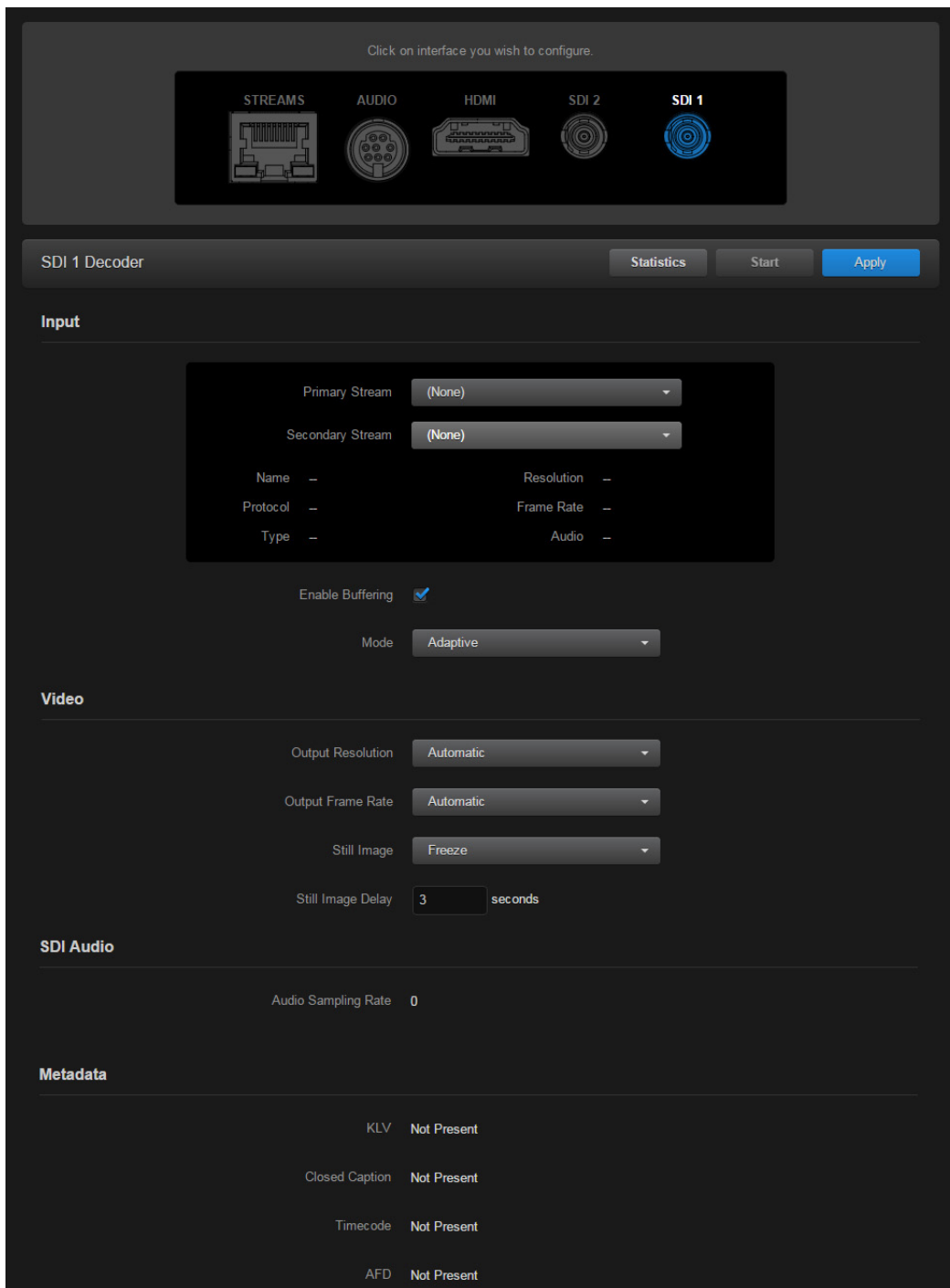


NOTE The Makito XH Decoder supports two independent video decoders that feed the two SDI interfaces. The HDMI port can be configured to mirror the same content that is seen on either SDI1 or SDI2. The decoder also can support the display of computer graphics content over the HDMI port.

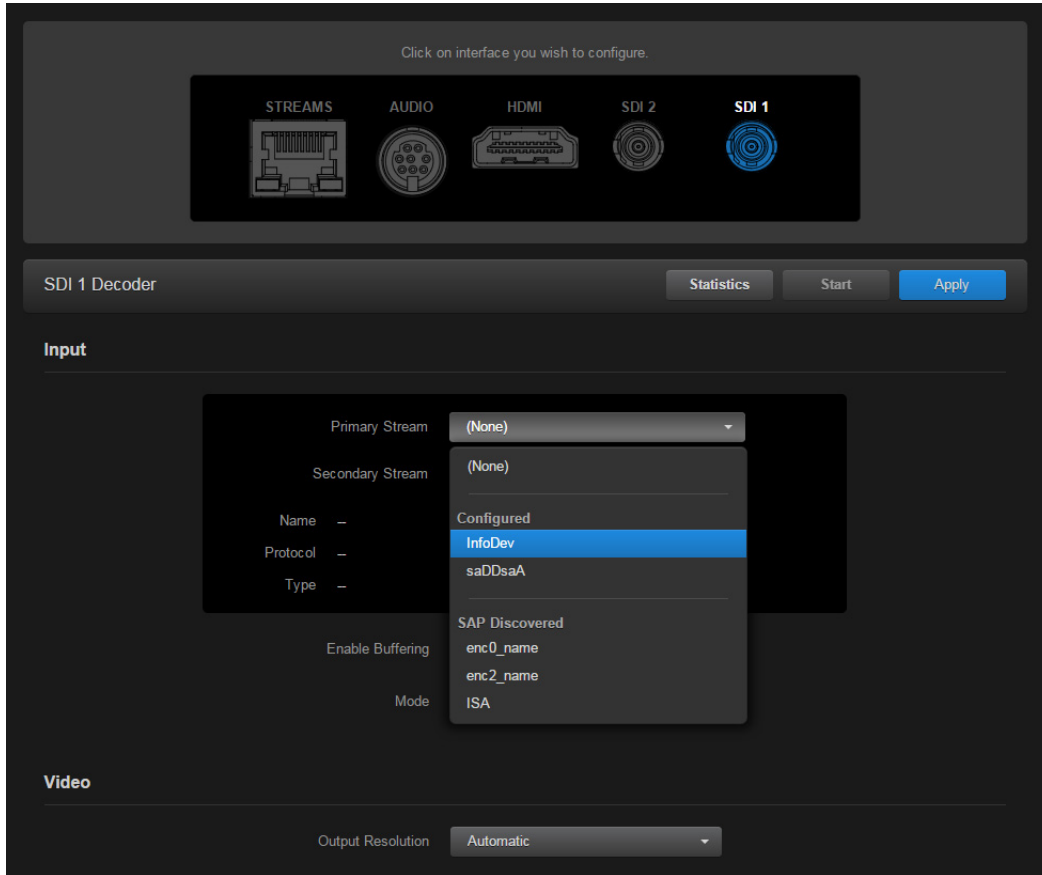
9. Click [SDI1](#) from the output interface bar.



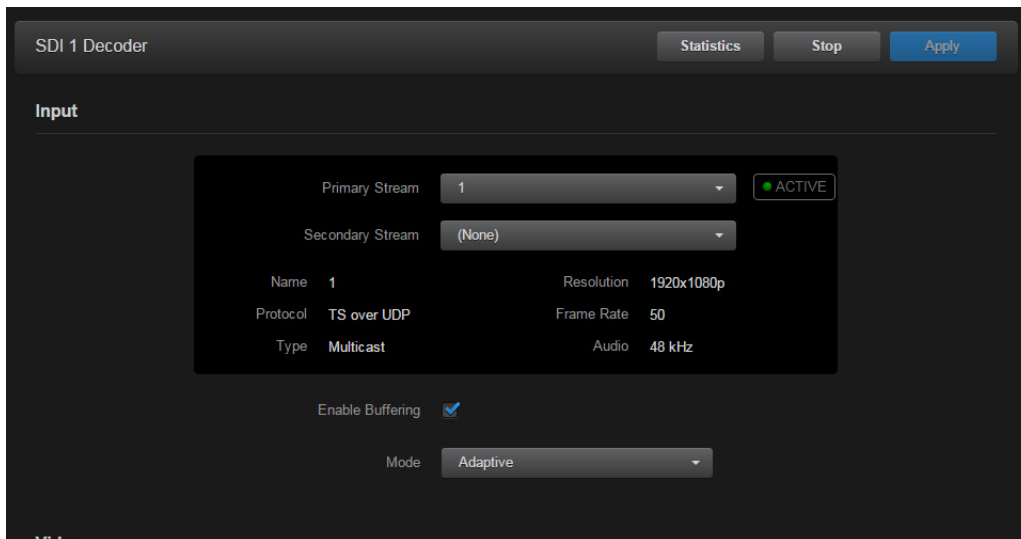
The SDI1 Decoder page opens, displaying the current video decoding settings.



- Under **Input**, select the Primary input stream from the drop-down list of the stream(s) you have created.



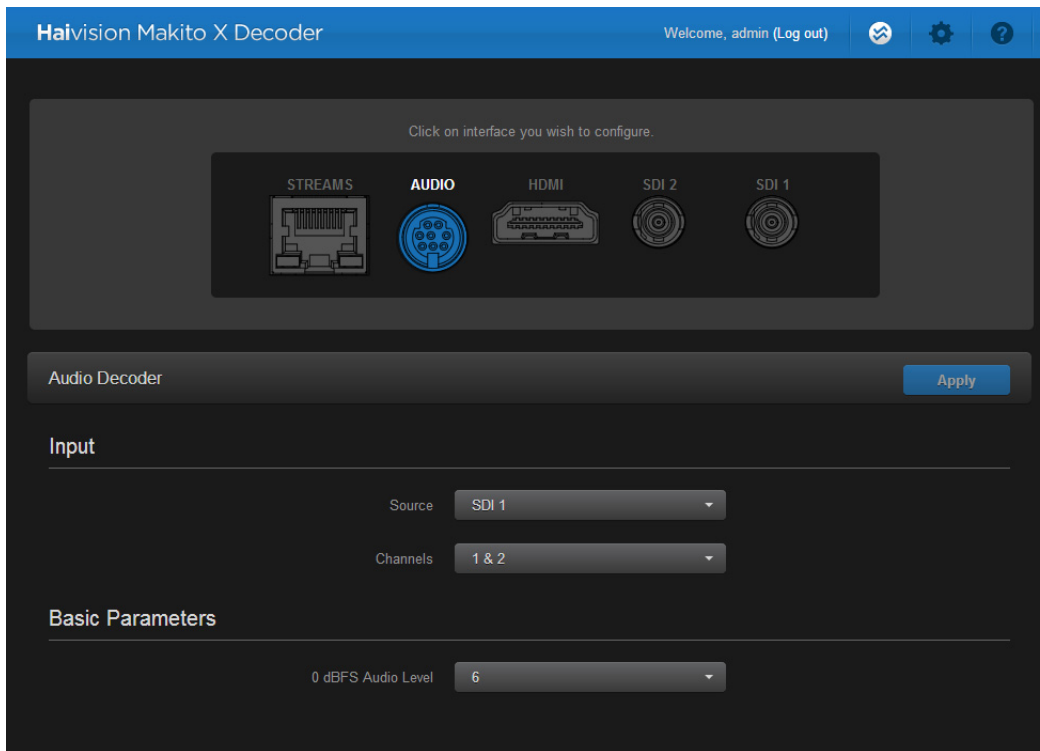
The Name, Protocol, Type, incoming Resolution, Frame Rate, and Audio Sampling Rate for the selected stream now are displayed.



11. If required, adjust the video settings. For details, see “SDI Decoder Settings” in the Makito X Decoder User’s Guide.

- To apply your changes, 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 Decoder User’s Guide.
- Click [AUDIO](#) from the output interface bar.

The Audio page opens, displaying the current analog audio decoding settings, as shown in the following example.



NOTE On the dual channel decoder, two streams are received and can be displayed on either SDI video port. Analog audio can be selected from embedded channels on either stream. *Both* Analog Audio and Embedded Digital Audio are active.

- Select or enter the new value(s) in the appropriate field(s). For details, see “Analog Audio Settings” in the Makito X Decoder User’s Guide.
- To apply your changes, click [Apply](#).

You should now be able to view the output of the Makito XH Decoder on the monitor or TV connected to SDI1.

For more detailed information, please refer to “Managing the Decoder” in the Makito X Decoder User’s Guide.

For More Information

Contact Haivision Technical Support via our Support Portal on our website at: <http://support.haivision.com>

Or you may use the phone number or email address 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 firmware, Readme file, and PDF versions of the User's Guide and Installation Guide through our Knowledge Base at: <http://support.haivision.com>

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>