

Niagara Video



## **GoStream® Broadcast Receiver Decoder (BRD)**

### **User Manual**

**Version 1.1**



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If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

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## Safety Instructions for the GOSTREAM BRD Appliance

The Niagara Video GOSTREAM BRD appliance is turned off by using the power switch. Power may still be present in the appliance. To ensure that the appliance is completely shut down, unplug its power cord from its power source.

The Niagara Video GOSTREAM BRD appliance ships with all required components installed. There is no need to open the chassis to add or remove components. Please contact Niagara Video regarding any malfunction or failure of the Niagara Video appliance.

### ***Electrostatic Discharge (ESD) and ESD Protection***

Static electricity can damage boards, and other components. Before connecting or disconnecting any device to the Niagara Video GOSTREAM BRD appliance, we recommend you discharge static electricity by first touching a metal part of a grounded PC.



**CAUTION:** To reduce the risk of electric shock, do not open chassis; do not defeat or remove the ground pin of the power cord; connect only to a properly grounded ac power outlet. No user-serviceable parts inside. Refer servicing to qualified service personnel.

### ***Safety Notice and Warnings***

#### **FCC Notice**

This device complies with Subpart B of Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

No Telecommunications Network Voltage (TNV)-connected PCBs shall be installed.

#### **Other Certifications**

This class A digital apparatus complies with Canadian ICES-003, Issue 4.

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

This device complies with EN 55022 standards.

This device complies with EN 61000-3-2 standards.

This device complies with EN 61000-4-2 standards.

This device complies with CISPR 22 Edition 6.

This device complies with AS/NZS CISPR 22.

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## CE Mark Warning

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

## Installation Safety Notes

- Do not place the Niagara Video GOSTREAM BRD appliance underneath heavy loads or in an unstable position.
- Do not expose the Niagara Video GOSTREAM BRD appliance under direct sunlight, high humidity or wet conditions.
- Do not use or expose the Niagara Video GOSTREAM BRD appliance around magnetic fields as magnetic interference may affect the performance of the device.
- Do not block the air vents to this device or impede the airflow in any way.



### Important Safety Information! Please note the following:

1. The Niagara Video GOSTREAM BRD is intended for indoor use only.
2. In case of emergency, disconnect the power cords.
3. If power cords are not provided:
  - In the United States, use standard computer power cords (as specified below).
  - In Europe, for 230 volt operation, use a cord set marked "HAR" and consisting of a min 3 core H05VVF3G075 cord that has a minimum 0.75 square mm diameter conductors, provided with an IEC 320 receptacle and a male plug for the country of installation, rated 6A, 250V.

READ THE FOLLOWING SAFETY INFORMATION THOROUGHLY BEFORE INSTALLING THIS NIAGARA VIDEO PRODUCT. FAILURE TO FOLLOW THIS SAFETY INFORMATION MAY LEAD TO PERSONAL INJURY OR DAMAGE TO THE EQUIPMENT.

## Power Supply

- This unit must be grounded.
- The unit must be connected to a grounded outlet to comply with product safety standards.
- The grounded socket-outlet shall be installed near the equipment and shall be easily accessible.
- Do not connect the power supply unit to an AC outlet without a ground connection.
- All power cords must be disconnected before servicing.

## Power Cords

The plug on the power supply cords is considered to be the equipment disconnect device and must be approved for the country where it is used.

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For USA and Canada:

- The cord set must be UL-approved and CSA-certified.
- The attachment plug must be an earth-grounding type with a NEMA 5-15P (15A 125V) plug and an EN60320/IEC320 receptacle.



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## Introduction

This manual covers the following products:

- The GOSTREAM BRD openGear® Multi-Standard Decoder card
- The GOSTREAM BRD standalone Multi-Standard Decoder appliance

All products have the same set of features, and essentially the same user interface. Unless specifically indicated, all features and controls described in this manual apply to all products.

The decoders have the following features:

- Multi-Standard Decoder (MPEG-2 and H.264), with support for both SD (Standard Definition) and HD (High Definition) content.
- Resolution resizing support (both upscale and downscale support).
- Frame rate conversion.
- Audio decoding support: MPEG-1 Layer III, AAC-LC, HE-AAC and Dolby AC-3.
- ASI input and output ports. All ports support the full ASI line rate of 213 Mb/s.
- Ethernet port for streaming with 100/1000 Mb/s support.
- Internet Protocol support:
  - UDP/RTP/SMPTE-2022 auto-sensing
  - HTTP Live Streaming (HLS) client
  - RTMP Client mode – connects to an RTMP server and plays the content
  - RTMP Server mode – accepts connections from an RTMP encoder
  - RTSP Client mode – connects to an RTSP server, such as a camera, and plays the content
- (P)SI and ATSC table parsing.

The GOSTREAM BRD stand-alone includes one additional Ethernet port for control and management.

Typical application scenarios for the BRD are:

- Contribution and Distribution: reception of MPEG-2/H.264 content.
- Contribution feeds over the Internet.
- Ingestion of traffic cameras for broadcast use.

## ***Product Overview***

The BRD is a multi-standard broadcast decoder with the following features:

- Video Decoding: MPEG-2 and H.264 4:2:0 High Profile video streams with resolution up to 1920×1080p60.

- Audio Decoding capabilities: summarized in the table below. Note that 5.1 and 7.1 audio services are down-converted to stereo when decoded.

Standard	Max Sample Rate	Max Channels
Dolby Digital <sup>1</sup>	48 kHz	5.1
Dolby Digital Plus <sup>1</sup>	48 kHz	7.1
WMA	48 kHz	2
WMAPRO	48 kHz	5.1
MPEG-1 Layer I/II/III	48 kHz	2
MPEG-2 Layer II MC	48 kHz	5.1
AAC-LC	48 kHz	5.1
HE-AAC V1	96 kHz	5.1
HE-AAC V2	96 kHz	2
DRA	96 kHz	7.1
FLAC	96 kHz	5.1
OGG Vorbis	48 kHz	5.1

- Inputs:
  - ASI Input
  - IP Input using an auto-sensing 10/100/1000 Gb/s Ethernet
- Internet Protocol support<sup>2</sup>:
  - UDP/RTP (auto-detected)
  - SMPTE-2022 FEC (auto-detected, support for both row and column)
  - HTTP Live Streaming (HLS) client
  - RTMP client (flash content playback from servers)
  - RTMP server (accepts connections from live encoders)
  - RTSP client (connects to IP cameras)
- Outputs
  - Composite video output
  - HDMI video output with embedded audio
  - SDI video output with embedded audio and SMPTE-334 closed-captions
  - Analog stereo audio output
  - ASI loop-through output

For the remainder of this manual, we will use the term *port* for a physical input/output port (such as ASI or Ethernet), and *stream* for a transport stream present in the port. ASI ports support only one stream, while Ethernet ports support multiple streams. A transport stream can have one or more *programs*. In this manual, we will use the words *program* and *service* interchangeably.

<sup>1</sup> A separate license is required for Dolby decoding. Please contact Niagara Video Corporation if you need this license.

<sup>2</sup> A separate license is required for the IP input. Please contact Niagara Video Corporation if you need this license.

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## GOSTREAM BRD Indicators and Switches

The GOSTREAM BRD card can be installed in the 20-slot DFR-8321 or OG-3 frames. The 10-slot DFR-8320 frame is not supported. Prior to installing the card, first install the corresponding rear panel I/O module.

### ***Rear I/O Panel Indicators***

There are two types of rear I/O panels available for the GOSTREAM BRD, depicted below. Both types include one ASI input, one ASI output, one composite output and one SDI output on standard BNC connectors, one HDMI output and one 100/1000 Mb/s Ethernet port on a standard RJ-45 connector. The panels differ only on the type of analog audio output: one type has balanced audio on terminal blocks, and the other type has unbalanced audio on RCA connectors.

The ASI input port has a green indicator LED, with the following states:

- **LED off:** ASI port is disabled.
- **LED flashing once every 3 seconds:** the ASI port is not locked to a signal (i.e., there is no input signal).
- **LED flashing once per second:** the ASI port is locked to a signal.

The ASI output port has a green indicator LED, with the following states:

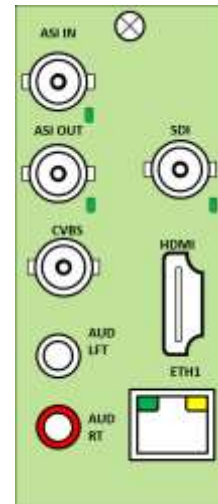
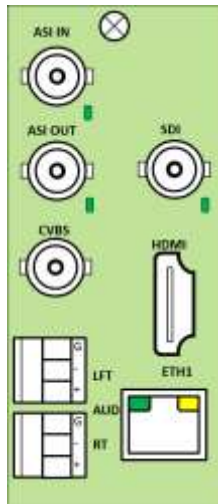
- **LED off:** ASI port is disabled.
- **LED flashing multiple times per second:** ASI port is transmitting packets.

The Video output ports share one green indicator LED, with the following states:

- **LED off:** the BRD is not currently decoding a stream. There may be a valid video signal in the output, but it does not correspond to a decoded stream.
- **LED flashing once per second:** the BRD is currently outputting an SD stream on the selected output ports.
- **LED flashing multiple times per second:** the BRD is currently outputting an HD stream on the selected output ports.

The Gigabit Ethernet port has two indicator LEDs, with the following states:

- **Green LED:**
  - **Off:** No link
  - **On:** Link
- **Yellow LED:**
  - **Off:** No activity (transmit and/or receive)
  - **Flashing:** Port is currently transmitting and/or receiving



## Front Indicators

A similar set of indicators exist in the front of the board. These are visible when the frame front door is opened. The indicator layout is depicted below.

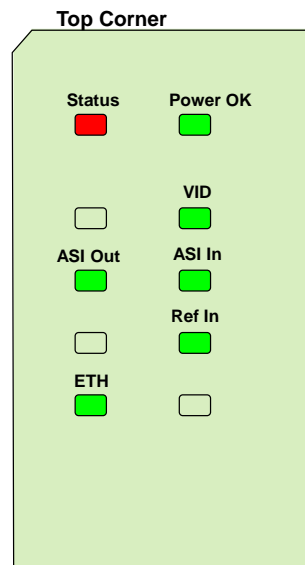
The LED indicators are as follows:

- **Status LED:** indicates the overall status of the board.
  - **Green:** no active alarm
  - **Red:** at least one critical alarm present

When inserting a board in the frame, this LED will be red until the board starts operation. At that point, it will turn green if there is no active alarm or red if there is at least one alarm.
- **Power OK LED:** indicates that the power received from the frame is OK.
  - **Green:** power OK
  - **Off:** no power (or insufficient voltage – check the frame power status)
- **ASI In LED:** behaves exactly the same as the ASI input rear I/O panel indicator.
- **ASI Out LED:** behaves exactly the same as the ASI output rear I/O panel indicator.
- **VID LED:** behaves exactly the same as the Video output rear I/O panel indicator.
- **Ref In LED:** this LED is illuminated if all the following conditions are met:
  - The BRD is configured for output genlock.
  - The BRD is receiving a valid genlock signal from the selected chassis reference input.
  - The genlock signal is compatible with the selected SDI output resolution and frame rate.

Consult the Decoder Output Configuration section later in this manual for the genlock source selection and the SDI output configuration.
- **ETH LED:** indicates the status of the back panel Ethernet connection.
  - **Off:** no link
  - **On:** link OK, no activity

- 
- **Blinking:** link OK, port is transmitting and/or receiving packets



The GOSTREAM BRD board has other LEDs that may or may not be illuminated. They are intended for engineering debug only.

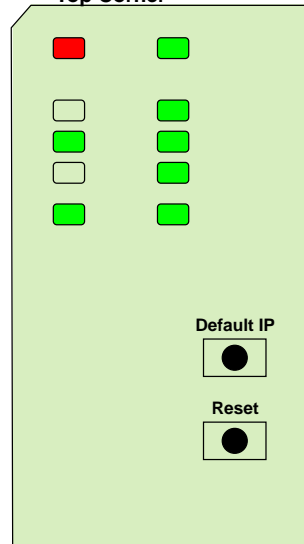
### ***Front Switches***

The GOSTREAM BRD board has two pushbutton-type switches in the front, just below the LEDs, as depicted below. Their operation is as follows:

- **Default IP Switch:** This switch is used to recover the board in the unlikely case of a corrupted or broken firmware update. In most cases, the GOSTREAM BRD will detect the error and automatically fall back into the factory-default firmware load. If it does not, pull the card out, press and hold this switch, and push the card back into the frame while still holding the switch. You can release the switch once the Status LED turns orange. This action causes the card to revert to the factory-default firmware.
- **Reset Switch:** Pressing this pushbutton switch causes the card to reset.

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**Top Corner**



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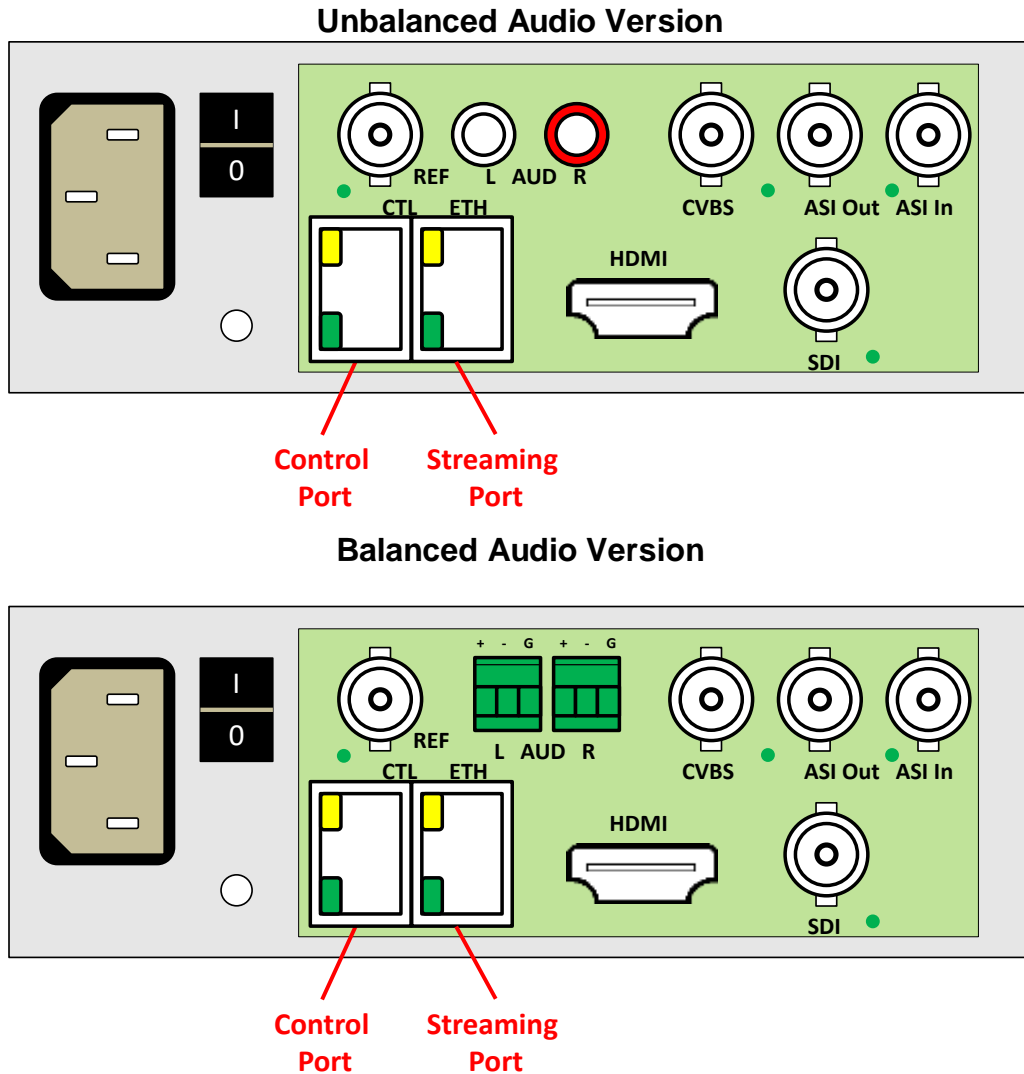
## GOSTREAM BRD Indicators and Switches

The GOSTREAM BRD stand-alone can be used as a desktop decoder, or in a 19" rack-mount tray that holds up to three units:



### ***Back Panel***

There are two types of rear I/O panels available for the GOSTREAM BRD stand-alone, depicted below. Both types include one ASI input, one ASI output, one composite output, one SDI output and one genlock reference input on standard BNC connectors, one HDMI output and one 100/1000 Mb/s Ethernet port on a standard RJ-45 connector. The panels differ only on the type of analog audio output: one type has balanced audio on terminal blocks, and the other type has unbalanced audio on RCA connectors.



The ASI input port has a green indicator LED, with the following states:

- **LED off:** ASI port is disabled.
- **LED flashing once every 3 seconds:** the ASI port is not locked to a signal (i.e., there is no input signal).
- **LED flashing once per second:** the ASI port is locked to a signal.

The ASI output port has a green indicator LED, with the following states:

- **LED off:** ASI port is disabled.
- **LED flashing multiple times per second:** ASI port is transmitting packets.

The Video output ports share one green indicator LED, with the following states:



- **LED off:** the BRD is not currently decoding a stream. There may be a valid video signal in the output, but it does not correspond to a decoded stream.
- **LED flashing once per second:** the BRD is currently outputting an SD stream on the selected output ports.
- **LED flashing multiple times per second:** the BRD is currently outputting an HD stream on the selected output ports.

The Reference Input port has one green indicator LED, with the following states:

- **LED off:** reference signal not valid.
- **LED on:** reference signal valid.

The Reference signal is deemed valid if all the following conditions are met:

- The BRD is configured for output genlock.
- The BRD is receiving a valid genlock signal from the selected chassis reference input.
- The genlock signal is compatible with the selected SDI output resolution and frame rate.

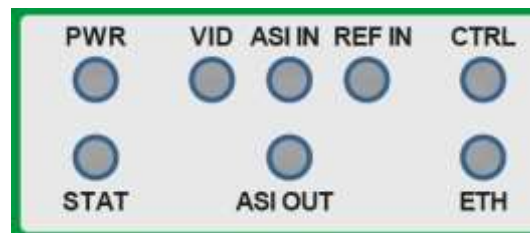
Consult the Decoder Output Configuration section later in this manual for the genlock source selection and the SDI output configuration.

The Control and Streaming Ethernet port have two indicator LEDs, with the following states:

- **Green LED:**
  - **Off:** No link
  - **On:** Link
- **Yellow LED:**
  - **Off:** No activity (transmit and/or receive)
  - **Flashing:** Port is currently transmitting and/or receiving

## Front Panel Indicators

A similar set of indicators exist in the front panel of the unit. The layout is depicted below.



The front panel LED indicators are as follows:

- **STAT:** indicates the overall status of the unit.
  - **Green:** no active alarm
  - **Red:** at least one critical alarm present

When powering up the unit, this LED will be red until the board starts operation. At that point, it will turn green if there is no active alarm or stay red if there is at least one alarm.
- **PWR:** indicates that the power is OK.

- 
- **Green:** power OK
  - **Off:** no power or insufficient voltage
  - **ASI In LED:** behaves exactly the same as the ASI input rear I/O panel indicator.
  - **ASI Out LED:** behaves exactly the same as the ASI output rear I/O panel indicator.
  - **VID LED:** behaves exactly the same as the Video output rear I/O panel indicator.
  - **Ref In LED:** this LED is on if a valid reference signal is detected at the reference input. The Reference signal is deemed valid if all the following conditions are met:
    - The BRD is configured for output genlock.
    - The BRD is receiving a valid genlock signal from the selected chassis reference input.
    - The genlock signal is compatible with the selected SDI output resolution and frame rate.
- Consult the Decoder Output Configuration section later in this manual for the genlock source selection and the SDI output configuration.
- **ETH and CTRL LEDs:** indicate the status of the corresponding back panel Ethernet connection.
    - **Off:** no link
    - **On:** link OK, no activity
    - **Blinking:** link OK, port is transmitting and/or receiving packets

### ***Front Panel Default Switch***

The front panel has a recessed switch that can be used to restore the unit to its defaults. Use a pen or a small screwdriver to press this switch.

If the switch is pressed during normal operation, the control port IP address, mask and gateway are restored to the following factory default settings:

- IP Address: 192.168.1.30
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.1

The **STAT** front panel indicator will change colors for about 3 seconds to acknowledge the change. Note that this operation **may glitch the video**.

If you press and hold this switch when the unit is powered off, and then power up the unit while holding the switch, the following actions will be performed:

- The control IP address, mask and gateway are reset to the factory defaults as described above.
- The unit configuration is cleared.
- The unit reverts to the factory-installed firmware.

As before, the **STAT** LED will temporarily change color to acknowledge the command. When it changes color, you can release the switch. You can use this feature in the unlikely event of a corrupted firmware upgrade or a corrupted configuration.

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## GOSTREAM BRD Operation and Management

The GOSTREAM BRD is configured using the free Dashboard application, which is available for Windows, Apple OS X, and Linux. Dashboard can be downloaded from this link:

<http://www.opengear.tv/dashboard-software><sup>3</sup>

The GOSTREAM BRD user interface is depicted below. As with any openGear® card, it is divided into a statistics panel on the left, and a configuration panel on the right. Each panel has multiple tabs, corresponding to the various functions in the card. Note that the **Card State** alarm indicator is also reflected in the green/red **Status** LED in the front of the board or the **Status** button in the GOSTREAM BRD. The Status LED will be green when Card State is green or yellow, and will be red when Card State is red.

For the remainder of this manual, all described features are available for the GOSTREAM BRD card and stand-alone model unless explicitly stated. Both products are referred to as the BRD decoder.

The following tabs are available:

- **Product:** this tab provides general information on the card, including firmware version, uptime, temperatures, and other parameters. It appears only on the Statistics panel.
- **Network:** this tab is used to configure the IP addresses and network information for the Ethernet ports. The statistics side of the panel includes some additional information such as link state.
- **ASI Input:** this tab is used to configure/monitor the ASI Input port.
- **ASI Output:** this tab is used to configure/monitor the ASI Output port.
- **Decoder:** this tab is used to configure/monitor the decoding function.
- **IP Outputs:** this tab is used to configure/monitor the ASI to IP turnaround function.
- **Monitoring:** this tab is used to configure the decoder stream monitoring function, and to inspect any monitoring alarms.
- **Admin:** this tab is used for general administrative functions, such as firmware upgrades, licensing, logs, and configuration management.
- **Support:** this tab has information on how to contact Niagara Video Customer Support, and has the ability to generate a tech support dump for the unit. When contacting Niagara Video for support, always include the support dump from this tab.
- **Control:** this tab is present only in the GOSTREAM BRD stand-alone version of the product. It allows for the configuration of the Ethernet control port and the SNMP function.

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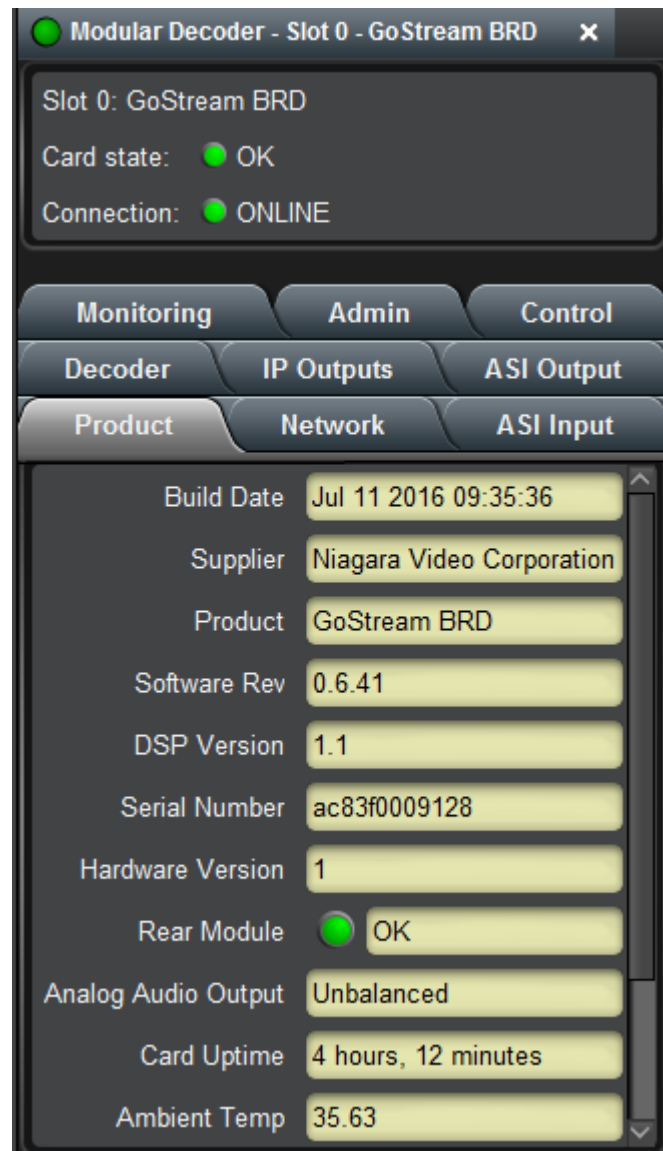
<sup>3</sup> Please note that DashBoard versions 4.0 and 4.1 have GUI performance problems with the GOSTREAM BRD. We recommend version 5.0 or higher with the GOSTREAM BRD.

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## Product Tab

The Product Tab contains basic information about the BRD.



The following information is available:

- **Build Date:** Date the firmware image was built.
- **Supplier:** Niagara Video Corporation.
- **Product:** GOSTREAM BRD.
- **Software revision:** This indicates the firmware revision currently running. The format is Major Version • Minor Version • Build Number.

- 
- **DSP version:** This indicates the firmware revision for the decoding subsystem. The format is Major Version • Minor Version. DSP firmware will only occasionally be updated by Niagara Video.
  - **Serial Number:** This is the serial number of this particular BRD card or stand-alone unit.
  - **Hardware Version:** This indicates the board version number. All board versions are functionally equivalent.
  - **Rear Module:** This indicates the status of the Rear I/O Module. It can have one of the following states:
    - **OK:** The Rear Module is the correct module for the GOSTREAM BRD. In the GOSTREAM BRDc/d this indicator will always indicate **OK**.
    - **Not Installed:** The GOSTREAM BRD is not connected to a rear module. The card is operating normally, but it will not be useful as there are no input and output connections to it.
    - **Wrong Module:** The GOSTREAM BRD is connected to a rear module that was not designed for it (most likely from another openGear™ vendor). Depending on the signals present on that module, there may be a small chance of damage to the GOSTREAM BRD; Niagara Video recommends that this situation be rectified immediately. This alarm will cause the front status LED to turn red.
  - **Analog Audio Output:** The BRD can be fitted with either balanced or unbalanced analog audio outputs. The openGear GOSTREAM BRD can be ordered with either balanced or unbalanced rear I/O panels. The same card will support both types. The stand-alone GOSTREAM BRDc/d factory-configured with balanced or unbalanced audio at the time of ordering. This parameter indicates the type of analog audio installed with this decoder.
  - **Card Uptime:** Indicates how long the card has been running since it was last rebooted.
  - **Ambient Temperature:** Temperature, in degrees centigrade, of the air intake of the card (measured at the front edge of the card).
  - **Internal Temperature:** Temperature, in degrees centigrade, at the back of the card.
  - **MDP Core Temperature:** Temperature, in degrees centigrade, of the core processing element.
  - **Card Power (W):** Indicates the current power draw of the unit, in watts.

The openGear™ frame is designed to operate in environments with up to 40°C ambient. There is typically a 5°C temperature raise from the external ambient to the “Ambient Temperature” measured by the GOSTREAM BRD. If that measurement is at 45°C or higher, action must be taken to cool down the ambient temperature. The GOSTREAM BRD will log excessive temperature events.

The GOSTREAM BRD stand-alone version is designed to operate in environments with an ambient temperature between 0 and 50 °C.

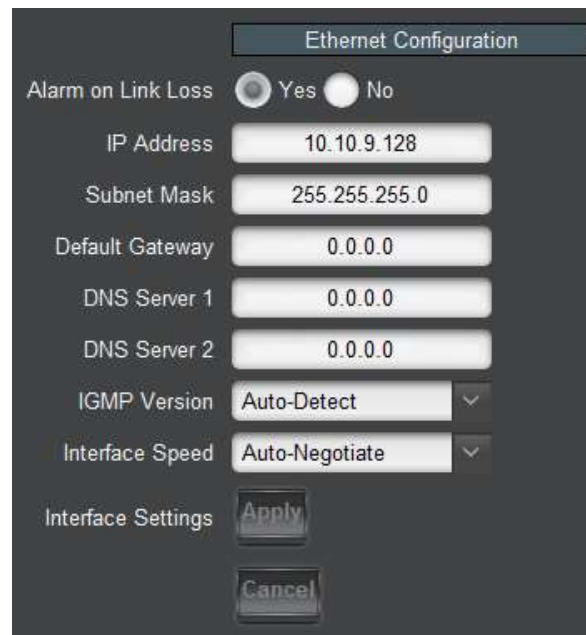
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## Network Tab

The Network Tab allows for configuration/monitoring of the streaming Ethernet port.

### *Network Configuration Tab*

The Network Configuration Tab is used to set the individual parameters for the streaming Ethernet port.



The following parameters can be configured:

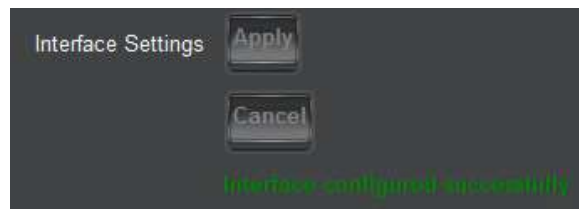
- **Alarm on Link Loss:** If set to Yes, the card will raise an alarm if this Ethernet interface loses link. The Card State indicator in Dashboard™ and the front Status LED will both be red. If set to No, the card will still report loss of link in the Statistics page but no alarm will be raised. Niagara Video recommends turning on the alarm for ports that are in use; only turn it off if you do not plan to connect that port to a network.
- **IP Address:** Enter the desired IP address for this Ethernet port.
- **Subnet Mask:** Enter the desired subnet mask for this Ethernet port.
- **Default Gateway:** Enter the desired default gateway for this Ethernet port, or 0.0.0.0 if no gateway is available.
- **DNS Server 1, DNS Server 2:** Enter up to two DNS IP addresses, or 0.0.0.0 if the DNS functionality is not required. The BRD will need to consult a DNS server when operating as an HLS or RTMP client, if the servers are to be specified by host names instead of IP addresses<sup>4</sup>.

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<sup>4</sup> If the BRD has connectivity to the Internet and there is no DNS in your local network, Niagara Video recommends using the Google public servers at addresses 8.8.8.8 and 8.8.4.4.




- 
- **IGMP Version:** The GOSTREAM BRD implements the IGMP protocol for multicast reception. This parameter controls the version of the protocol to be used.
    - **Auto-Detect:** The BRD will attempt to auto-detect the IGMP version in use by inspecting the Group Membership Requests received from the router. It defaults to IGMP Version 3 if no messages are received.
    - **IGMP Version 1:** Force the use of Version 1 only (not recommended)
    - **IGMP Version 2:** Force the use of Version 2 only
    - **IGMP Version 3:** Force the use of Version 3 only
  - **Interface speed:** Configures the speed of the interface. The following modes can be selected:
    - **Auto-Negotiate:** The Ethernet port will auto-negotiate the speed. All modes are available.
    - **100 Mb/s Full-Duplex:** Force the port to 100Mb/s Full-Duplex mode. Note that the port will still perform auto-negotiation, but it will only advertise this mode.
    - **1Gb/s Full-Duplex:** restrict the operation to 1Gb/s Full-Duplex mode. Note that the port will still perform auto-negotiation, but it will only advertise this mode.
  - **Interface Settings:** If you make any changes to the IP Address, Subnet Mask, Default Gateway and/or DNS fields, the **Apply** and **Cancel** buttons become active. The changes only take effect when you press the **Apply** button. Pressing the **Cancel** button reverts the fields back to their original values. Note that the BRD will check the consistency of the data entered and will reject invalid combinations. Once the **Apply** button is pressed, a status message appears just below the **Cancel** button, as follows:





## Network Statistics Tab

The Network Statistics Tab reports the current IP configuration the Ethernet port, as well as its link state and running status.



Ethernet Configuration	
Alarm on Link Loss	Yes
IP Address	10.10.9.128
Subnet Mask	255.255.255.0
Default Gateway	10.10.9.1
DNS Server 1	8.8.8.8
DNS Server 2	0.0.0.0
IGMP Version	Auto-Detect
Interface Speed	Auto-Negotiate
Port 1 Link	 Link OK
Link Speed (Mb/s)	1000
MAC Address	ac:83:f0:00:90:04

The following parameters are reported in the Network Statistics tab:

- **Alarm on Link Loss:** Reports the current setting of this parameter.
- **IP Address:** Reports the current IP Address for the port.
- **Subnet Mask:** Reports the current Subnet Mask for the port.
- **Default Gateway:** Reports the current Default Gateway for the port.
- **DNS Server 1, DNS Server 2:** Report the current DNS IP addresses.
- **IGMP Version:** Reports the current setting for this parameter.
- **Interface Speed:** Reports the current setting for this parameter.
- **Port 1 Link:** This indicator has the following states:
  -  **Link OK:** The port has established link with the switch.
  -  **No Link:** The port does not currently have link. If Alarm on Link Loss is set to Yes, the Dashboard™ Card State will be red and the Status LED in the front of the board will also be red. If Alarm on Link Loss is set to No, this indicator will still be red, but the alarm will not propagate.
- **Link Speed (Mb/s):** This parameter reports the actual speed negotiated with the switch for the port. If the port has no link, the value reported here is zero.
- **MAC Address:** This reports the MAC address of the Ethernet port.

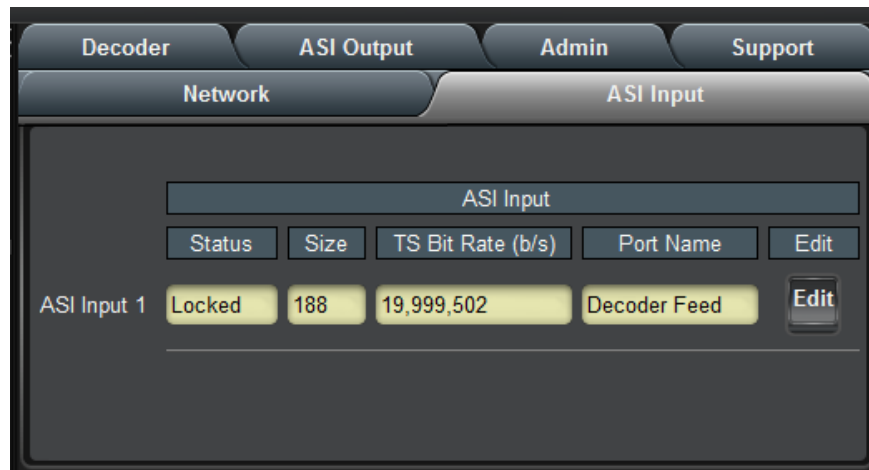
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## ASI Input Port Tab

The BRD decoder has one fixed-function ASI Input Port. This tab is used to configure and manage it.

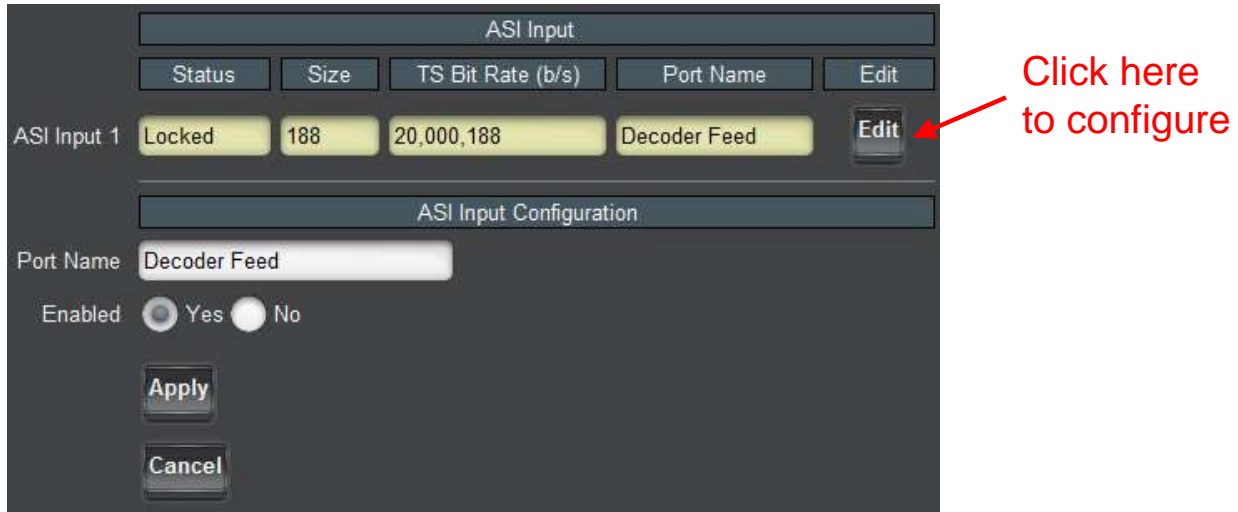
### ***ASI Input: Configuration Tab***

The Configuration Tab for the ASI inputs is shown below:



The Configuration tab is divided into two areas:

- The **ASI Input** table, which displays an overview of the ports. It contains the following fields:
  - **Status:** Indicates the current status of the port. The possible values are:
    - **Locked:** the port is enabled and locked to a valid ASI signal.
    - **Unlocked:** the port is enabled, but has no signal.
    - **Disabled:** the port is disabled by user configuration.
  - **Size:** Indicates the detected ASI transport packet size (188 or 204 bytes). If the port is disabled or unlocked, this field will show a value of 0 (zero).
  - **TS Bit Rate (b/s):** Measured transport stream bit rate, in bits/second.
  - **Port Name:** All BRD ports can be assigned a user-defined name, which is displayed here. The default name is **ASI Input 1**.
  - **Edit:** This button, when clicked, brings up the configuration area of the port.
- The configuration area of the port, which is accessed by clicking on the **Edit** button, as shown below.



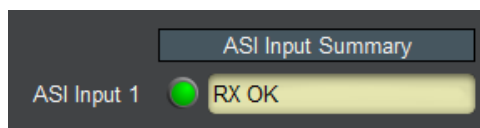
The following parameters are available:

- **Port Name:** All BRD inputs and outputs can be assigned a user-defined port name. This name is used to identify the port later when making connections. Use any descriptive name suitable for your application, or accept the default.
- **Enabled:** the ASI Input can be enabled/disabled using this parameter. When the port is disabled, the corresponding LED in the front and back panels stays off.

Once the desired configuration is entered, click on the **Apply** button to have them take effect. This will cause the changes made in the Configuration Parameters to be implemented. Clicking on the **Cancel** button will discard any changes.

### ***ASI Input: Statistics Tab***

The Statistics Tab for the ASI Ports provides a quick visual summary status for the ports. A sample is depicted below:



The ASI Input Port indicator can have the following values:

- **● RX Locked:** The port is locked to an input signal.
- **○ RX Disabled:** The port is disabled.
- **● RX Unlocked:** The port is not locked to any signal.

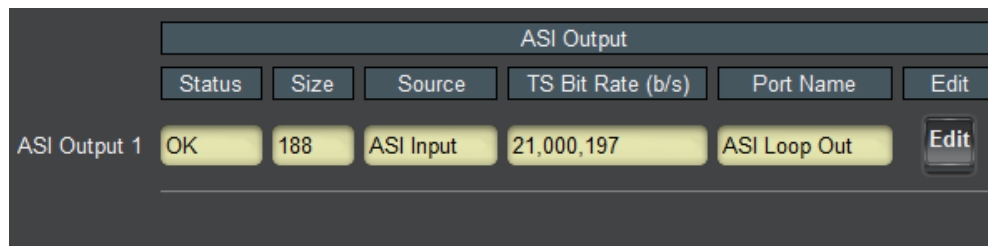
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## ASI Output Port Tab

The BRD decoder has one fixed-function ASI Output Port. This tab is used to configure and manage it.

### *ASI Output Port: Configuration Tab*

The ASI Output Configuration Tab is show below:



	Status	Size	Source	TS Bit Rate (b/s)	Port Name	Edit
ASI Output 1	OK	188	ASI Input	21,000,197	ASI Loop Out	Edit

The **ASI Output** table is always displayed, and its columns are:

- **Status:** Indicates the port status. It can contain the following values:
  - **OK:** Port is operating normally.
  - **Unlocked:** Port is unlocked. This status means that the port is in Automatic mode and it has no input.
  - **Overflow:** This means that the ASI Output is in Manual mode, and the configured bit rate is insufficient to carry the input connected to it. This situation will raise an alarm.
- **Size:** Indicates the transport packet size, in bytes.
- **Source:** Indicates the current source for the data being outputted in the port.
- **TS Bit Rate (b/s):** This reports the actual transport stream bit rate, in bits/second.
- **Port Name:** This reports the configured Port Name.
- **Edit Button:** Clicking on this button allows reconfiguration of the port. The ASI Port Configuration screen appears, with the settings for the port.

Clicking on the **Edit** button will cause the configuration area of the port will to open, as depicted below. The configurable parameters are:

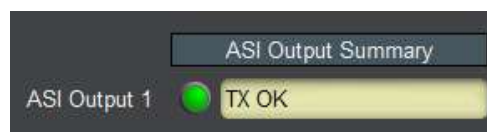
- **Port Name:** All BRD inputs and outputs can be assigned a user-defined port name. This name is used to identify the port later when making connections. Use any descriptive name suitable for your application, or accept the default.
- **Packet Size:** Select between 188 or 204 bytes.
- **ASI Rate:** The available selections are:
  - **Manual:** In this mode, the ASI output bit rate is manually set. If the content routed to the port exceeds the configured bit rate, packets will be dropped and the port will raise an alarm.
  - **Automatic:** In this mode, the ASI output bit rate is automatically set by the BRD to match the source connected to the port.

- **Bit Rate:** This field is only shown if the **ASI Rate** control is set to **Manual**. Enter the desired bit rate in bits/second.
- **Source:** This field indicates the source for the ASI Output content. For the current firmware version, the only option is the ASI Input content. Future versions of the firmware will offer additional options.

Once the desired configuration is entered, click on the **Apply** button to have them take effect. This will cause the changes made in the Configuration Parameters to be implemented. Clicking on the **Cancel** button will discard any changes.

### ***ASI Output Port: Statistics Tab***

The Statistics Tab for the ASI Output Port provides a quick visual summary status. An example is depicted below.



The ASI Port indicator can have the following values:

- **● TX OK:** The port is operating normally in transmit mode (ASI Output).
- **● TX Overflow:** The port is in manual bit rate setting, and the connected bit rate is excessive. The Dashboard Card State will be red and the Status LED in the front of the board will also be red. To correct this problem, either externally reduce the input bit rate, or increase the ASI output bit rate, or configure the port in Automatic mode. **If this alarm is active, data is being dropped.**
- **● TX Unlocked:** The port is in transmit mode, automatic bit rate, and there is no data rate coming to it. Any downstream ASI receivers will lose lock.

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## Decoder Tab

The Decoder Configuration Tab contains the configuration parameters for the decoding function. The Statistics tab provides quick feedback on the configuration and status of the decoding process.

### ***Decoder Configuration Tab***

The decoder configuration tab is divided into two bottom tabs (depicted below):

- The **Configuration** tab, where all the main decoder parameters are configured.
- The **Program Info** tab, where program-specific information is displayed. If the decoder is in HLS mode, this tab allows for manual configuration of the decoded profile.



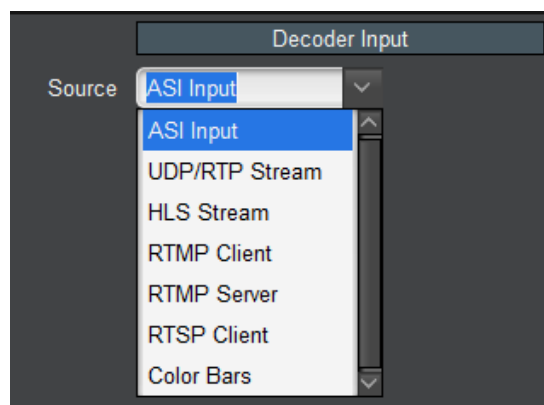
The decoder configuration tab is divided into the following functional areas:

- The **Decoder Input** configuration area
- The **Program and Audio Selection** configuration area
- The **Output Configuration** area
- The **Analog Audio Configuration** area
- The **Apply/Cancel** buttons

The settings displayed in each of the areas will vary according to the specific configuration.

### **Decoder Input Configuration**

The primary decoder input configuration parameter is the **Source**, which selects the input and protocol from which the decoder will take its content:



The following stream sources are supported:

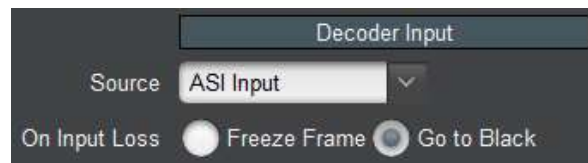
- **ASI Input:** the decoder will accept content on its ASI Input port.

- **UDP/RTP Stream:** the decoder will accept content on Ethernet over UDP/RTP, with optional support for SMPTE-2022 FEC. The BRD also supports the notion of a backup flow – if the primary flow disappears, the decoder will switch to the backup. Note that, in the stand-alone GOSTREAM BRDc, UDP/RTP streams are only accepted in the streaming Ethernet port.
- **HLS Stream:** the decoder will retrieve the stream in real-time from an HTTP Live Streaming web server.
- **RTMP Client:** the decoder will retrieve a Flash stream from an RTMP Server, such as the Adobe Media Server or similar.
- **RTMP Server:** the decoder will accept a Flash stream from a publishing RTMP client.
- **RTSP Client:** the decoder will connect to an RTSP server, such as an IP Camera, and play the content.
- **Color Bars:** the decoder will output standard color bars.

The remaining parameters in the **Decoder Input** section will depend on the **Source** selection.

### ASI Input

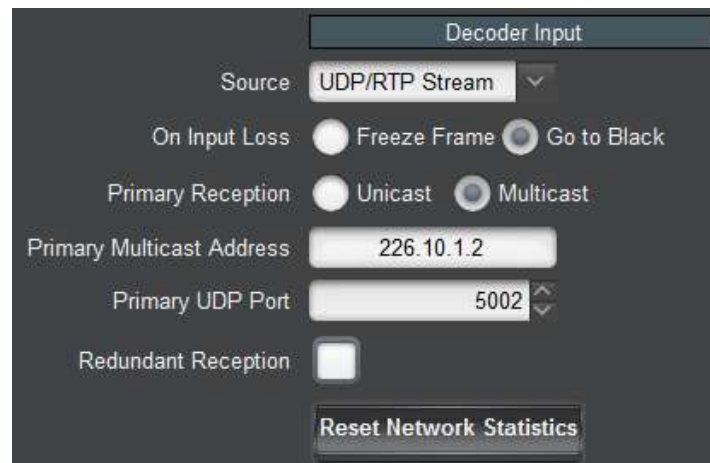
When ASI Input is selected, the following control becomes available:



- **On Input Loss:** selects the decoder behavior when the input signal disappears. If **Freeze Frame** is selected, the decoder displays the last valid frame; if **Go to Black** is selected, the decoder resets the signal and goes to black. The criterion for signal disappearance is loss of tables.

### UDP/RTP Stream

When UDP/RTP Stream is selected, the following controls become available:



- **On Input Loss:** selects the decoder behavior when the input signal disappears. If **Freeze Frame** is selected, the decoder displays the last valid frame; if **Go to Black** is selected, the decoder resets the signal and goes to black. The criterion for signal disappearance is loss of tables.
- **Primary Reception:** select between **Unicast** and **Multicast**. In **Unicast** mode, the stream must be sent to the decoder's streaming port IP address (see the Network Tab). In **Multicast** mode, the decoder will join an IP Multicast stream. When this mode is selected, a new field appears for the multicast address:

- **Primary Multicast Address:** enter the desired IP multicast address. The decoder will only accept addresses between 224.0.0.0 and 239.255.255.255 in this field.
- **Primary UDP Port:** enter a valid UDP port. Valid values are between 1 and 65535.
- **Redundant Reception:** if this box is checked, a backup UDP flow can be configured. If the BRD stops receiving packets in the primary flow, it will switch to the backup. When this box is checked, the following new fields appear:

- **Flip Time (s):** this configures how long the BRD will wait to decide to flip between primary and backup streams.
  - **Backup Reception:** select between **Unicast** and **Multicast**. In **Unicast** mode, the stream must be sent to the decoder's streaming port IP address (see the Network Tab). In **Multicast** mode, the decoder will join an IP Multicast stream. When this mode is selected, a new field appears for the multicast address:

- **Backup Multicast Address:** enter the desired IP multicast address for the backup stream. The decoder will only accept addresses between 224.0.0.0 and 239.255.255.255 in this field.
  - **Backup UDP Port:** enter a valid UDP port for the backup stream. Valid values are between 1 and 65535.



- **Flip Redundancy:** if this button is clicked, the BRD will manually flip to the other stream (i.e., if it is receiving from the primary, it will go to the backup, or vice-versa).
- **Reset Network Statistics** button: when clicked, this button causes the UDP/RTP statistics shown in the Network Tab on the Statistics area to be cleared. This is useful to manage network performance (i.e., packet loss) from a known state.

The BRD will automatically detect UDP/RTP/SMPTE-2022 FEC (if licensed).

## RTP/ARQ Stream

When RTP/ARQ Stream is selected, the following controls become available:

The screenshot shows a configuration panel titled "Decoder Input". It includes a "Source" dropdown menu set to "RTP/ARQ Stream". Below this are two radio buttons for "On Input Loss": "Freeze Frame" and "Go to Black", with "Go to Black" selected. There are also two radio buttons for "Primary Reception": "Unicast" and "Multicast", with "Unicast" selected. The "Primary UDP Port" is set to 2042, and the "NACK Window (ms)" is set to 100. The "NACK Target" has two radio buttons: "Source IP" (selected) and "Custom IP". There is a checkbox for "Redundant Reception" which is currently unchecked. At the bottom is a button labeled "Reset Network Statistics".

- **On Input Loss:** selects the decoder behavior when the input signal disappears. If **Freeze Frame** is selected, the decoder displays the last valid frame; if **Go to Black** is selected, the decoder resets the signal and goes to black. The criterion for signal disappearance is loss of tables.
- **Primary Reception:** select between **Unicast** and **Multicast**. In **Unicast** mode, the stream must be sent to the decoder's streaming port IP address (see the Network Tab). In **Multicast** mode, the decoder will join an IP Multicast stream. When this mode is selected, a new field appears for the multicast address:

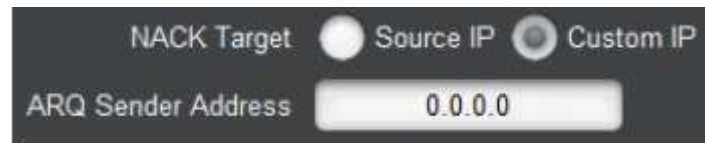
The screenshot shows a configuration panel titled "Reception". It has two radio buttons: "Unicast" and "Multicast", with "Multicast" selected. Below the radio buttons is a text field labeled "Multicast Address" containing the value "225.2.1.36".

- **Primary Multicast Address:** enter the desired IP multicast address. The decoder will only accept addresses between 224.0.0.0 and 239.255.255.255 in this field.
- **Primary UDP Port:** enter a valid UDP port. Valid values are between 1 and 65535. Note that RTP requires that the UDP port be even (multiple of 2). ARQ, if present, will

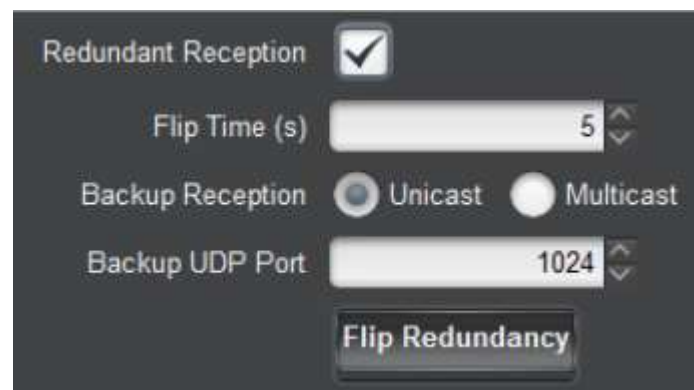
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use the next UDP port. For example, if the UDP port is set to 2042, ARQ will be on port 2043.

- **NACK Window (ms):** enter the window, in milliseconds, for the NACK packets. The value entered here should be at least equal to the round-trip delay between the encoder and the decoder. For best possible performance, use 3 to 4 times the round-trip delay, so the decoder has multiple chances of recovering a lost packet. Note, however, that the value of the NACK window adds to the end-to-end (glass-to-glass) latency.
- **NACK Target:** this parameter controls to which IP address the decoder will send the NACK packets. The options are:
  - **Source IP:** if this is selected, the decoder will send the NACK packets to the source IP address of the received bitstream. This is the most common case, when there are no firewalls between the encoder and decoder, or when the firewall at the encoder is configured to forward the packets transparently.
  - **Custom IP:** if this is selected, a custom IP address can be specified for the NACK packets. The decoder will send NACK packets to this IP address. When this is selected, the following field appears:



- **ARQ Sender Address:** send the NACK packets to this IP address instead of the source IP address of the received bitstream packets.
- **Redundant Reception:** if this box is checked, a backup UDP flow can be configured. If the BRD decoder stops receiving packets in the primary flow, it will switch to the backup. When this box is checked, the following new fields appear:



- **Flip Time (s):** this configures how long the BRD decoder will wait to decide to flip between primary and backup streams.
- **Backup Reception:** select between Unicast and Multicast. In Unicast mode, the stream must be sent to the decoder's streaming port IP address (see the Network Tab). In Multicast mode, the decoder will join an IP Multicast stream. When this mode is selected, a new field appears for the multicast address:

- **Backup Multicast Address:** enter the desired IP multicast address for the backup stream. The decoder will only accept addresses between 224.0.0.0 and 239.255.255.255 in this field.
- **Backup UDP Port:** enter a valid UDP port for the backup stream. Valid values are between 1 and 65535.
- **Flip Redundancy:** if this button is clicked, the BRD decoder will manually flip to the other stream (i.e., if it is receiving from the primary, it will go to the backup, or vice-versa).
- **Reset Network Statistics** button: when clicked, this button causes the RTP/ARQ statistics shown in the Network Tab on the Statistics area to be cleared. This is useful to manage network performance (i.e., packet loss) from a known state.

RTP/ARQ mode is also compatible with plain UDP streams, but no packet recovery will be possible.

## HLS Stream

In this mode, the decoder can access and play a stream from a web server with an HTTP Live Streaming service. Access to the server can be either from the control or streaming ports. The configuration parameters are:

- **HLS URL:** Enter a valid HLS URL. The URL must start with **http://** or **https://** and must end with either **.m3u** or **.m3u8**. In order to use a server name instead of an IP address, the decoder must have at least one DNS server configured and accessible. DNS servers can be specified in the Network Configuration Tab, or, for the GOSTREAM BRDc stand-alone unit, also in the Control Port Configuration Tab or obtained by DHCP.
- **Restart HLS Playback:** HLS content in the server may be a continuously-running live stream or a VOD stream. If it is a VOD stream, the decoder will stop at the end of the stream. Clicking on this button makes it play it again. The type of stream (Live or VOD) is reported in the Network Tab in the Statistics area.

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## RTMP Client

In this mode, the decoder can access and play a Flash stream from an RTMP Server such as the Adobe Media Server or similar. Note that not all Flash streams are supported. The BRD will only support the following types of streams:

- Video Compression: H.264
- Audio Compression: MPEG-1 Layer III or AAC-LC.

An RTMP access point is defined by the following:

- An RTMP URL, of the form:

**`rtmp[t][e][s]://servername/app`**

- A stream name

The first part of the URL defines the protocol, as follows:

- **rtmp**: standard RTMP with no security
- **rtmpt**: RTMP tunneled over HTTP
- **rtmpe**: encrypted RTMP using proprietary security
- **rtmps**: encrypted RTMP over SSL
- **rtmpte**: encrypted RTMP using proprietary security, tunneled over HTTP
- **rtmpts**: encrypted RTMP over SSL, tunneled over HTTP

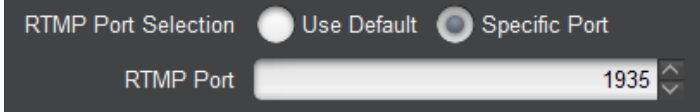
The **servername** field is the host name or IP address of the RTMP server to be contacted. The **app** field is the application in the server that should receive the data being transmitted. Note that, depending on the service, the **app** field may contain a complete path or even a set of parameters.

The RTMP Client configurable parameters are:

The image shows a configuration window titled "Decoder Input". It contains several fields and options for setting up an RTMP client:

- Source**: A dropdown menu with "RTMP Client" selected.
- RTMP Protocol**: A dropdown menu with "rtmp" selected.
- RTMP Server**: A text input field containing "server".
- RTMP Port Selection**: Two radio buttons, "Use Default" (selected) and "Specific Port".
- RTMP App**: A text input field containing "app".
- RTMP Server URL**: A text input field containing "rtmp://server/app".
- RTMP Stream**: A text input field containing "livestream".
- Authentication**: Two radio buttons, "No" (selected) and "Yes".

- **RTMP Protocol:** Select the protocol variant, as discussed above.
- **RTMP Server:** Enter the host name or IP address of the RTMP server to be contacted. If you want to use host names instead of IP addresses, make sure to configure at least one DNS server. DNS servers can be specified in the Network Configuration Tab, or, for the GOSTREAM BRDc stand-alone unit, also in the Control Port Configuration Tab or obtained by DHCP.
- **RTMP Port Selection:** If your RTMP server is using the default TCP ports for the protocol variant, select **Use Default**. If your server is using a non-standard port, select **Specific Port**. When **Specific Port** is selected, an additional field is displayed:



RTMP Port Selection ☐ Use Default ☒ Specific Port

RTMP Port

- **Port:** This field is only displayed if **RTMP Port Selection** is set to **Specific Port**. Configure a non-standard TCP port here.
- **RTMP App:** Enter the application name in the server, as discussed above. Consult your CDN or server documentation to find out what should be entered in this field.
- **RTMP Server URL:** This informational field is automatically updated as you configure the RTMP parameters. It displays the full RTMP URL for the primary server.
- **RTMP Stream:** Enter the stream name for the server. Consult your server documentation or CDN to find out what should be entered here. Some servers allow arbitrary stream names, while others use this field for authentication and thus require specific names.
- **Authentication:** Some RTMP servers require username/password authentication for access. If your server does not require authentication, select **No**, otherwise select **Yes**. If you select **Yes**, additional fields are presented.
- **Username:** Enter the username to be used for authentication.
- **Password:** Enter the password to be used for authentication.

## RTMP Server

In RTMP Server mode, the decoder waits for a publishing RTMP client to connect to it and publish a stream, which the decoder will then play. **Please note that with the current version of the decoder firmware, Niagara Video only guarantees compatibility with the GoStream B264 series encoders in this mode.**

The configuration parameters are as follows:

Decoder Input

Source: RTMP Server

RTMP Protocol: rtmp

RTMP Port Selection: ☒ Use Default ☐ Specific Port

RTMP App: app

RTMP Stream: livestream

- **RTMP Protocol:** This is an informational field. The only supported variant is **rtmp://**.
- **RTMP Port Selection:** If **Use Default** is selected, the decoder will listen on the default RTMP Port (TCP Port 1935). If a custom, non-standard port is desired, select **Specific Port**, and a new field will appear for the TCP port.

RTMP Port Selection: ☐ Use Default ☒ Specific Port

RTMP Port: 1935

- **Port:** This field is only displayed if **RTMP Port Selection** is set to **Specific Port**. Configure a non-standard TCP port here.
- **RTMP App:** any arbitrary name can be used here. Configure the exact same name in the encoder.
- **RTMP Stream:** this field is fixed at **livestream**. Configure this name in the encoder.

## RTSP Client

In RTSP Client mode, the decoder will connect to an RTSP server (specified by an **rtsp://** URL), request a stream, and play the stream. This mode is intended primary to support devices such as IP Cameras. The configuration parameters are as follows:

Source: RTSP Client

RTSP URL: rtsp://camera/axis-media/media.amp

TCP Transport: ☐

Authentication: ☒ No ☐ Yes

RTSP Reconnect

The parameters are:

- **RTSP URL:** Enter the full RTSP URL to access the RTSP server. Please consult the RTSP server vendor to find out what to enter here. A comprehensive list of URLs from the various IP Camera manufacturers can be found in [this link](#).
- **TCP Transport:** Standard RTSP uses a TCP connection to negotiate the streaming, and RTP/UDP on a dynamically-allocated port for the video content. This mode of operation

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is compatible with all RTSP devices, but it does not work well over the Internet nor can it go across most firewalls. Many RTSP cameras support tunneling the video over the control TCP connection, which works a lot better in complex networks, at the expense of increased latency. If this box is checked, the BRD will request this tunnel mode. If this mode works with your camera, it is preferred.

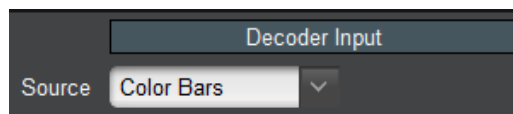
- **Authentication:** Some RTSP devices can be configured to require username/password authentication. Select **Yes** if this is the case. The following additional options are displayed.
- **Username:** enter the username expected by the RTSP device.
- **Password:** enter the password expected by the RTSP device.
- **RTSP Reconnect:** if this button is clicked, the BRD drops the RTSP connection and re-creates it.

RTSP support in the BRD has the following limitations:

- No audio support.
- For video, only H.264 compression is supported.
- No support for encrypted passwords.

## Color Bars

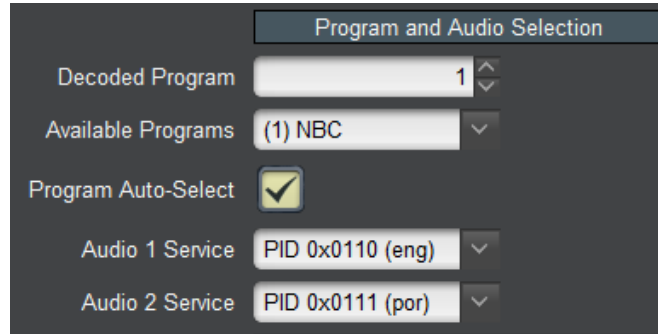
No additional parameters are required for Color Bars. Use the Decoder Output Configuration controls to specify the desired output, frame rate, and other video output parameters.



## Decoder Program and Audio Selection

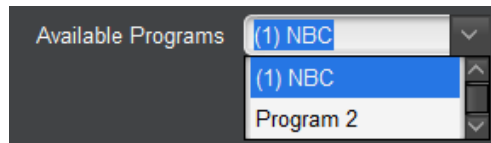
This section is only displayed if the **Source** parameter in Decoder Input Configuration is set to either **ASI Input** or **UDP/RTP Stream**. It allows the following selections to be made:

- If the stream being received by the decoder is a Multi-Program Transport Stream (MPTS), the program to be decoded can be chosen here.
- If the program being played by the decoder has multiple audio PIDs, the audio PIDs being decoded can be selected here.



The parameters are:

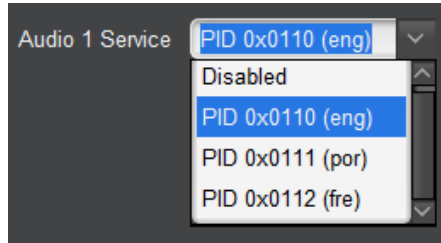
- **Decoded Program, Available Programs:** These two parameters work together, and are used to select the program to be decoded in an MPTS. The program can be specified by number in the **Decoded Program** field, or selected in the **Available Programs** drop-down menu. If **Program Auto-Select** is checked, and a non-existing program number is entered in the **Decoded Program** field, the decoder will ignore the setting and stay on the current program.
- **Available Programs:** This control is pre-populated with a drop-down list of the programs available in the transport stream. If the program name can be determined, it will be shown, with the program number in parenthesis. If not, the program is shown as **Program X**, where **X** is the actual program number. In the example below, Program 1 has a name (NBC), so it is shown as “**(1) NBC**”, and Program 2 does not have a name, so it is shown as **Program 2**.



- **Program Auto-Select:** If checked, if the decoder does not find the configured program, it will automatically play the first program in the MPTS. Otherwise, it will not play any programs<sup>5</sup>.
- **Audio 1 Service, Audio 2 Service:** The BRD has two independent audio decoders. These controls allow the selection of the audio service for each of the audio decoders. The selection is a drop-down menu with the audio PID values. If a language descriptor can be found for the audio service, the language code is displayed here as well. It is also possible to disable audio decoding altogether, by selecting the **Disabled** option. An example with three audio services (English, Portuguese and French) is shown below.

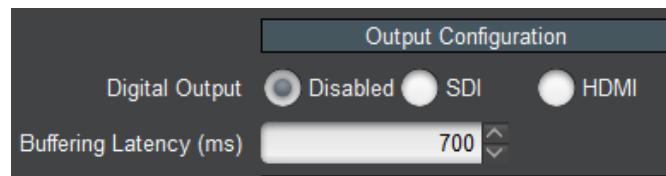
<sup>5</sup> In the current firmware version, this control is not available and is always checked.





## Decoder Output Configuration

This set of controls configures the video outputs. The appearance of the controls depends on the selection made on the **Digital Output** parameter:



The following parameter is always available:

- **Buffering Latency (ms):** the buffering latency through the decoder can be configured using this parameter. The range is from 0 to 700 milliseconds. It can be used to reduce overall end-to-end latency depending on stream delivery conditions. **Values below 200 milliseconds must be used with care.** If this value is set too low for the network and encoding conditions, **the BRD will stop decoding audio.** Increase the value in this case.

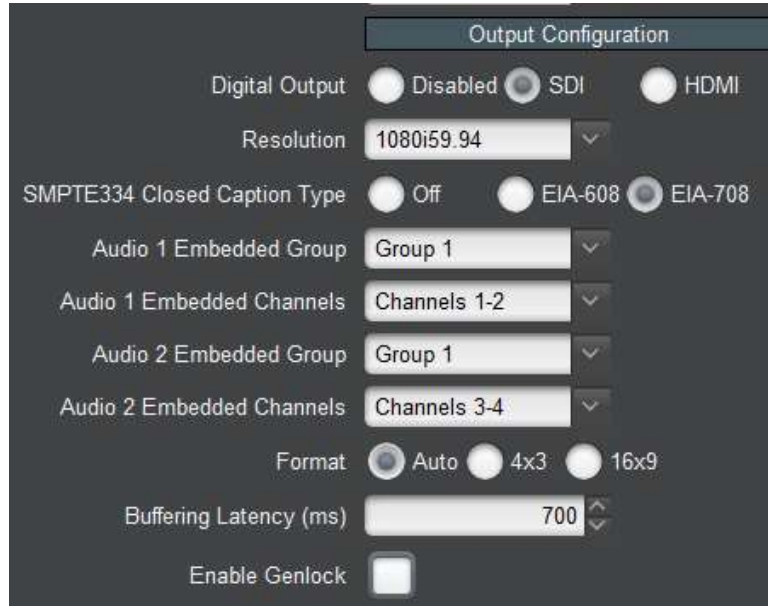
### Digital Output: Disabled

No additional parameters are displayed in this case. Both the SDI and the HDMI outputs will be disabled, and video will be present only in the composite output. The composite output will present either an NTSC or PAL signal depending on the program being decoded.

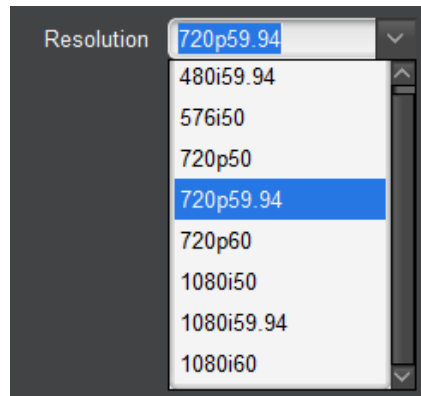
### Digital Output: SDI

This selection enables the SDI output. The composite and HDMI outputs will be disabled. **Note that, in this mode, the decoder may output a garbled signal on the HDMI output. Do not use the HDMI output when SDI is selected, even if there is a signal present.**

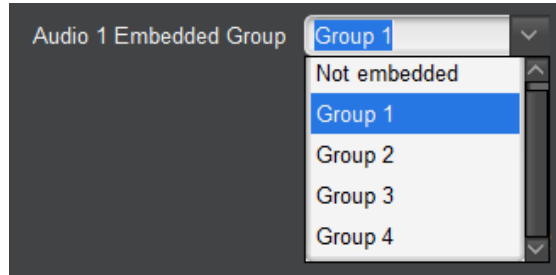
The available parameters are:



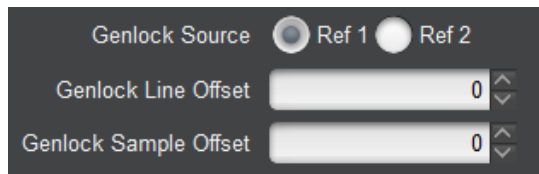
- **Resolution:** Select the SDI output resolution. The decoder can convert between formats and frame rates, so this selection can be made independent of the decoded signal. The available formats are:



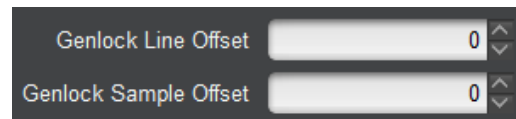
- **SMPTE-334 Closed-Caption Type:** The decoder supports Closed-Caption injection if the incoming bitstream has captions. The options are:
  - **Off:** no Closed-Captioning injection.
  - **EIA-608:** Inject Closed-Captioning in EIA-608 format.
  - **EIA-708:** Inject Closed-Captioning in EIA-708 format.
- **Audio 1 Embedded Group:** Select the group to embed the first decoded audio service. Groups 1 through 4 can be selected, or audio embedding can be disabled:



- **Audio 1 Embedded Channels:** Select the channels to embed the first decoded audio. The available choices are **Channels 1-2** or **Channels 3-4**.
- **Audio 2 Embedded Group, Audio 2 Embedded Channels:** These controls are similar to the corresponding Audio 1 controls. They select the embedding of the second decoded audio pair.
- **Format:** This selects the output format. It is only relevant if the BRD is decoding a Standard Definition (SD) signal and up-converting it to HD. Setting format to **4x3** will produce a pillarbox image (a 4x3 image with black bands on both sides). Setting format to **16x9** will stretch the image to full screen – this is recommended if the SD signal is anamorphic.
- **Enable Genlock:** If this box is checked, the SDI output can be genlocked to a reference signal. The following controls become available:



**GOSTREAM BRD card**

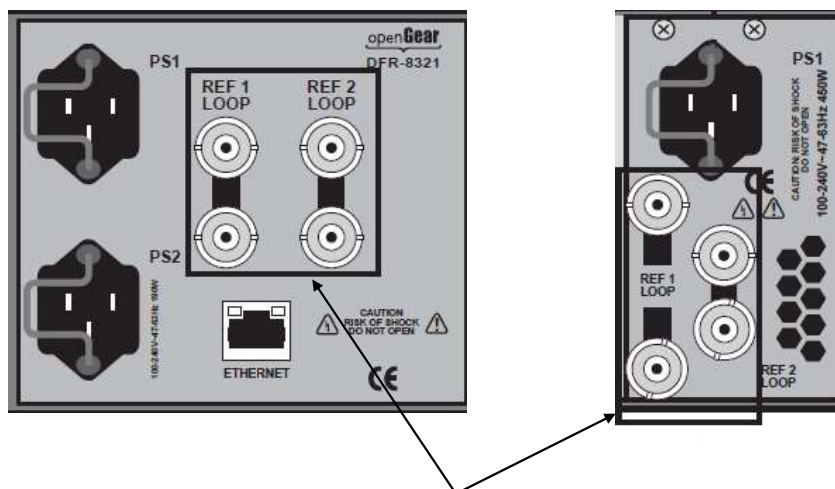


**GOSTREAM BRD stand-alone**

- **Genlock Source:** This control is displayed only for the openGear version of the decoder. The openGear chassis has two reference inputs, marked **Ref 1** and **Ref 2**. The GOSTREAM BRD card will accept the genlock reference signal from either input.

## DFR-8321 Frames

## OG3-FR Frames



### Reference Inputs

- **Genlock Line Offset:** By default, the BRD will align the beginning of the video frames between the genlock reference and the SDI output. This control allows the offset to be changed by an integral number of lines. The available range for this parameter depends on the SDI output selection, as follows:

SDI Standard	Line Offset Range
480i	0 to 524
576i	0 to 624
720p	0 to 749
1080i	0 to 1124

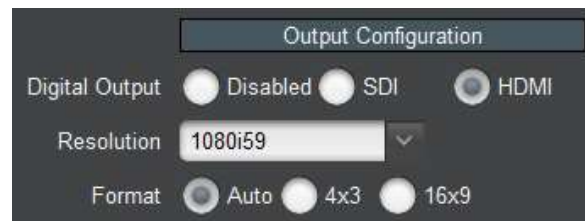
- **Genlock Sample Offset:** By default, the BRD will align the beginning of the video frames between the genlock reference and the SDI output. This control allows the offset to be changed by an integral number of samples (pixels). The available range for this parameter depends on the SDI output selection, as follows:

SDI Standard	Line Offset Range
480i59.94	0 to 1715
576i50	0 to 1727
720p50	0 to 1979
720p59.94	0 to 1649
720p60	0 to 1649
1080i50	0 to 2639
1080i59.94	0 to 2199
1080i60	0 to 2199

---

## Digital Output: HDMI

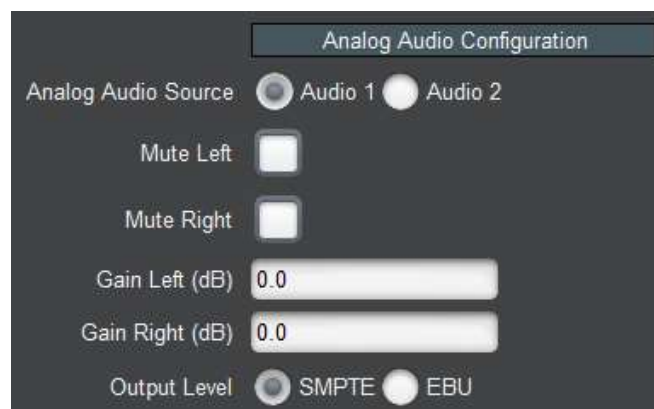
This setting enables the HDMI output. The SDI output will be disabled. Depending on the HDMI resolution settings, an SD version of the signal may be present in the composite output.



- **Resolution:** select the desired HDMI output resolution. You can choose a specific resolution, or select **Auto**. In **Auto** mode, the decoder will communicate with the HDMI monitor, determine its optimum resolution, and provide a signal of that resolution. Note the following for **Auto** mode:
  - If the monitor requests a non-standard resolution, the decoder will comply, but the composite signal will be turned off. If a composite signal is required, select one of the standard modes.
  - If the monitor does not complete the negotiation with the decoder, **no video will be displayed**. Select a standard resolution in this case.
- **Format:** This selects the output format. It is only relevant if the BRD is decoding a Standard Definition (SD) signal and up-converting it to HD. Setting format to **4x3** will produce a pillarbox image (a 4x3 image with black bands on both sides). Setting format to **16x9** will stretch the image to full screen – this is recommended if the SD signal is anamorphic.

## Decoder Analog Audio Configuration

This area configures the analog audio stereo output. It includes the following controls:



- **Analog Audio Source:** Selects between the first and the second decoded audio services for the analog output.
- **Mute Left, Mute Right:** these controls will mute the corresponding audio analog output.

- 
- **Gain Right, Gain Left:** these controls can provide independent audio gain or attenuation for the left/right channels. The range for these controls is from -12 dB to +12 dB, in steps of 0.5 dB.
  - **Output Level:** This control is only displayed if the decoder is fitted with balanced audio outputs. Select between **SMPTE** and **EBU** output levels.

## Decoder Apply/Cancel Buttons

When the **Apply** button is clicked, the decoder configuration takes effect. All changes cause interruption to the video stream, except for changes related to audio – namely any changes in the Analog Audio Configuration or the Audio Service Selection.

If there are no errors, the Decoder configuration area closes. If any errors are detected, an error message is displayed by the **Apply** button. The possible error messages are:

- **Error: no available IP License:** the **Source** parameter in the Decoder Input Configuration is set to one of the IP protocols, and the unit does not have the IP License (check the Admin License Keys Tab). Contact Niagara Video if you need to acquire this license.
- **Error: no available Dolby License:** the incoming stream has Dolby audio, and the unit does not have the Dolby decoding license (check the Admin License Keys Tab). If the program has other audio services, select an alternate audio PID in the Decoder Program and Audio Selection area. Contact Niagara Video if you need to acquire this license.
- **Error: no available Genlock License:** the **Enable Genlock** parameter in the Decoder Output Configuration is enabled, and the unit does not have the Genlock License (check the Admin License Keys Tab). Contact Niagara Video if you need to acquire this license.

If the **Cancel** button is clicked, all changes are discarded, and the parameters return to their original values.

## Decoder Program Info Tab

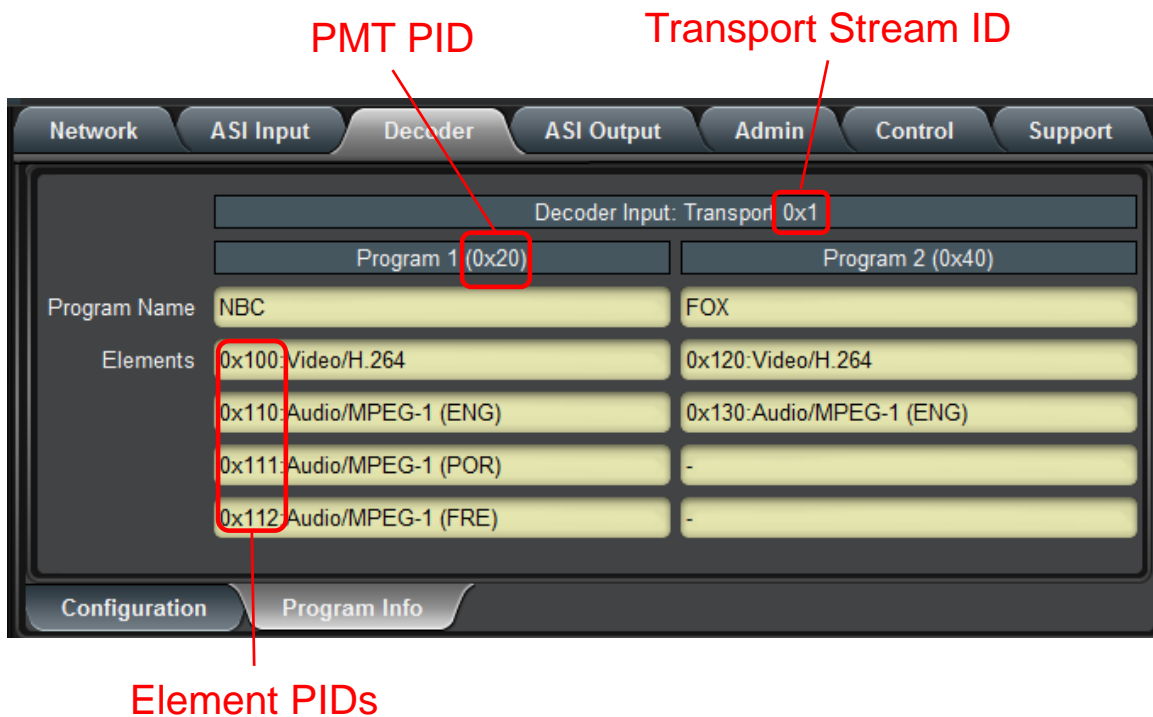
The information available in the **Program Info** tab depends on the setting of the **Source** parameter in the Decoder Input Configuration.



### Program Info Tab for ASI Input and UDP/RTP Stream

For ASI Inputs and UDP/RTP Streams, the Program Info tab displays the information about the transport stream being received:

- **Header Information:** The top header indicates the Transport Stream ID (TSID). For each program, an individual header is provided, showing the Program Number and the PMT PID.
- **Program Name:** If available, the Program Name is displayed. If the transport stream contains a Service Description Table (SDT), the Service Name is displayed here. If the transport stream contains a Virtual Channel Table (VCT – used in terrestrial ATSC broadcasts), this field will show the major and minor channel numbers, and the short channel name (as depicted above).
- **Elements:** For each program, a list of elements is provided. The list contains the Element PID, the element type (Audio/Video/other), and the type of compression if appropriate. For audio streams, if a language code is present, it is displayed here as well.



### Program Info Tab for HLS Stream

For HLS Streams, the Program Info Tab shows the available profiles and their bit rates. It also shows which profile the decoder is currently downloading.

The controls available in this tab are:

- **Profile Switch:** If this is set to **Automatic**, the decoder will select the highest bit rate profile supported by its Internet connection. If this is set to **Manual**, the **Load** buttons in the **Select** column will become available, and a specific profile can be selected.

- **Load:** these buttons can be used to manually select one of the available profiles. If a button is pressed, the **State** entry next to it will indicate **Requested** until the decoder starts downloading that profile.

The table will also show the bit rate for each profile (as informed by the HLS server) and will indicate which profile is currently being downloaded – marked as **Selected** in the **State** column.

	Bit Rate	State	Select
Profile 1	492,000		Load
Profile 2	768,000		Load
Profile 3	1,060,000		Load
Profile 4	1,672,000		Load
Profile 5	2,640,000		Load
Profile 6	4,000,000	Selected	Load

**Automatic Profile Selection**

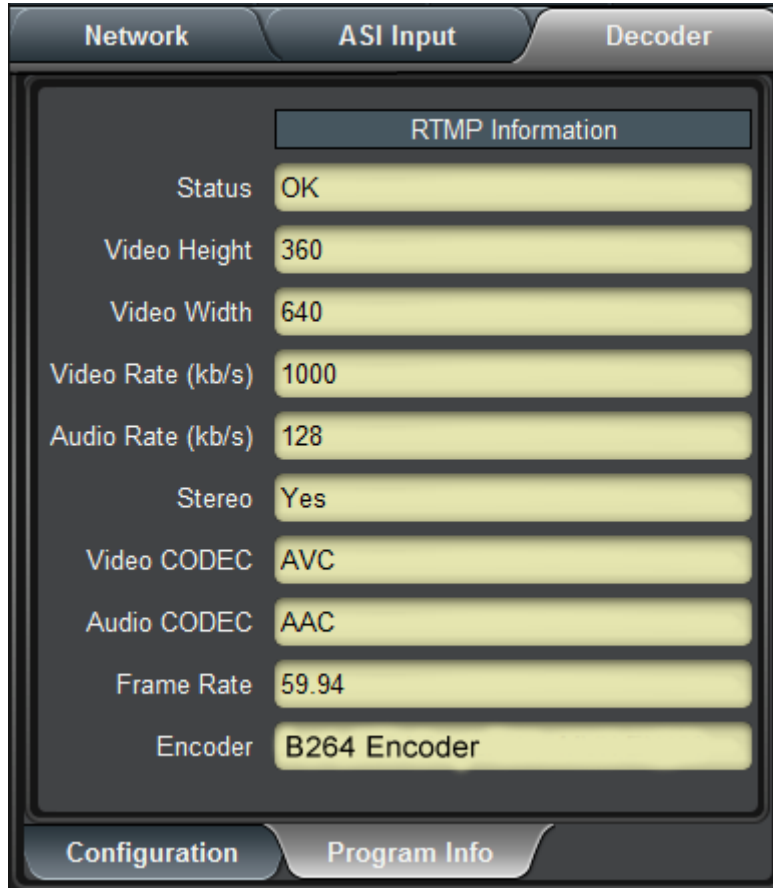
	Bit Rate	State	Select
Profile 1	492,000		Load
Profile 2	768,000		Load
Profile 3	1,060,000		Load
Profile 4	1,672,000		Load
Profile 5	2,640,000		Load
Profile 6	4,000,000	Selected	Load

**Manual Profile Selection**

### Program Info Tab for RTMP Client and Server

For RTMP Streams, the Program Info Tab shows the RTMP Metadata, if it has been provided by the client or the server.





### Program Info Tab for RTSP Streams

No additional information is presented for RTSP streams in the Program Info Tab:

Decoder set to RTSP Reception

### Program Info Tab for Color Bars

No additional information is presented in the Program Info Tab when the decoder is in Color Bars mode:

Decoder set to Color Bars

### Decoder Statistics Tab

The Decoder Statistics Tab is divided into three bottom tabs:



- The **Status** tab displays the current decoding status and information.

- 
- The **Network** tab displays network statistics. It changes according to the decoder source selection.
  - The **Configuration** tab is a mirror of the Configuration Tab and displays the current decoder configuration.

## Status Tab

The Status Tab provides basic information about the state of the decoding (whether it is decoding or not) and information about the stream being decoded, if available. If the **Enable Genlock** control in the Digital Output: SDI section of the decoder configuration is checked, additional fields related to the genlock function are displayed.

The Status Tab includes the following information:

- **Decoder State:** if this indicator is green, the content is being decoded normally. Otherwise, it will be red and the state of the decoder will be displayed.
- **Program Information:** this section contains general program information: program number, name (if available), and the PMT and PCR PIDs.
- **Video Information:** this section contains information about the video stream: PID, CODEC (H.264 or MPEG-2), resolution, and whether it is progressive or interlaced.
- **Audio Information:** if audio decoding is enabled, this section contains information about the stream being decoded. There are two audio information sections, one for each audio decoder. If the audio decoder is enabled, it contains the PID, CODEC, and language code (if present in the stream).

---

Decoder State	<span style="color: green;">●</span> Playing
Program Information	
Program Number	1
Program Name	NBC
PMT PID	0x20
PCR PID	0x101
Video Information	
Video PID	0x100
Video CODEC	H264
Video Resolution	1280x720
Video Mode	Progressive
Audio 1 Information	
Audio 1 PID	0x110
Audio 1 CODEC	MPEG
Audio 1 Language	eng
Audio 2 Information	
Audio 2 PID	0x111
Audio 2 CODEC	MPEG
Audio 2 Language	por

If the **Enable Genlock** control in the Digital Output: SDI section of the decoder configuration is checked, two additional information items are included in the Status Tab:

Decoder State	<span style="color: green;">●</span> Playing
Genlock Status	<span style="color: green;">●</span> OK
Genlock Signal	720x480i59.94
Program Information	
Program Number	1

- **Genlock Status:** this field can show the following values:
  - ● **OK:** The genlock function is operating normally, and the output is genlocked to the reference.
  - ● **Incompatible Reference:** The BRD has detected a valid genlock signal, but the decoder output is incompatible with this genlock signal. Please consult the

genlock compatibility matrix below to confirm the supported combinations. The SDI output is **NOT** genlocked to this signal and is free-running.

- **Unlocked:** The BRD is not detecting any genlock signal. The SDI output is free-running.
- **Genlock Signal:** this field indicates the resolution and frame rate of the detected genlock signal.

Not all combinations of SDI output standard and genlock signal are supported. The matrix below indicates what combinations are legal.

**Genlock Compatibility Matrix**

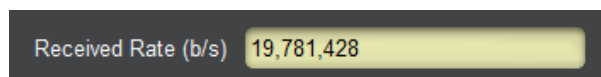
		SDI Output Signal							
		576i50	720p50	1080i50	480i59	720p59	1080i59	720p60	1080i60
Genlock Signal	576i50	√	√	√					
	720p50		√						
	1080i50	√	√	√					
	480i59				√	√	√		
	720p59					√			
	1080i59				√	√	√		
	720p60							√	
	1080i60							√	√

## Network Tab

The Network Tab contains protocol-specific statistics and changes according to the decoder source selection.

### Network Tab for ASI Input

The only parameter displayed is the measured input bit rate from the ASI port. This is the same value also displayed in the ASI Input: Statistics Tab.



### Network Tab for UDP/RTP Stream

The following statistics are displayed for UDP/RTP:

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---

Received Rate (b/s)	6,240,611
Protocol	RTP
Stream Source IP Address	10.10.9.104
SMPTE 2022 FEC	Row and Column
Columns	10
Rows	10
Received Packets	10843
Lost Packets	0
Recovered Packets	0
Unrecovered Packets	0

- **Received Rate (b/s):** indicates the measured rate in bits/second at the input of the decoder. This does not include FEC bit rate or UDP/IP overhead – it is the transport stream rate.
- **Protocol:** indicates the detected protocol, either UDP or RTP.
- **Stream Source IP Address:** indicates the current IP address from which the stream is being received.
- **SMPTE 2022 FEC:** Indicates the detected FEC mode, as follows:
  - **None:** SMPTE 2022 FEC transmission is not being detected by the BRD.
  - **Column Only:** The BRD is detecting SMPTE 2022 FEC in Column Only mode.
  - **Row and Column:** The BRD is detecting SMPTE 2022 FEC in Row and Column mode.
  - **Not Licensed:** The SMPTE 2022 functionality is not licensed in this unit (see the Admin License Keys Tab). If SMPTE 2022 FEC is present, it is being ignored by the BRD.
- **Columns:** If SMPTE 2022 FEC is being received, this indicates the number of columns detected.
- **Rows:** If SMPTE 2022 FEC is being received, this indicates the number of rows detected.
- **Received Packets:** This indicates the number of packets received since the last time the statistics were reset. This count does not include the FEC packets, if any.
- **Lost Packets:** This indicates the total number of lost packets since the last time the statistics were reset. Note that the BRD can only detect lost packets if the incoming protocol is RTP. It is not possible to detect lost packets with UDP as it lacks a sequence number.
- **Recovered Packets:** This indicates the total number of packets recovered with SMPTE 2022 FEC since the last time the statistics were reset.
- **Unrecovered Packets:** This indicates the total number of lost packets that could not be recovered with SMPTE 2022 FEC (either because of excessive loss or because SMPTE 2022 is not present).

The counts for Received Packets, Lost Packets, Recovered Packets and Unrecovered Packets can be reset at any time by clicking on the **Reset Network Statistics** button in the UDP/RTP Stream area of the Decoder Input configuration, also reproduced below:

Decoder Input

Source: UDP/RTP Stream

Reception: ☐ Unicast ☒ Multicast

Multicast Address: 225.2.1.36

UDP Port: 20136

**Reset Network Statistics**

### Network Tab for HLS Stream

The Network Tab statistics for the HLS Stream are show below:

Type	Live Stream
Profiles	6
Profile Rate (b/s)	4,000,000
Segments Loaded	7
Segment Duration (s)	6.0



- **Type:** This field will contain the following values:
  - **Unknown:** the stream type is unknown.
  - **VOD:** the stream is VOD content. This means that it is finite, it has a well-defined end. The BRD will stop playing the content at the end, use the **Restart HLS Playback** button in the HLS Stream configuration area to play it again.
  - **Live Stream:** the stream is live.
  - **Event:** the stream is an event. This means that it is finite, it has a well-defined end. The BRD will stop playing the content at the end, use the **Restart HLS Playback** button in the HLS Stream configuration area to play it again.
- **Profiles:** indicates the number of profiles advertised by the server. You can get more information about the profiles in the Program Info Tab for HLS Stream.
- **Profile Rate:** indicates the bit rate of the current profile being downloaded, as advertised by the server.
- **Segments Loaded:** indicates the number of segments downloaded from the server since the connection was made.
- **Segment Duration (s):** Indicates the segment duration, in seconds, advertised by the server.

---

## Network Tab for RTMP Client and Server


The Network Tab Statistics for the RTMP Client and Server modes is depicted below:



Received Rate (b/s)	905,467
Stream Source IP Address	192.168.129.48
RTMP Connection	 OK

- **Received Rate (b/s):** indicates the measured rate in bits/second at the input of the decoder.
- **Stream Source IP Address:** if there is an RTMP connection, it indicates the IP address of the source. In RTMP Client mode, this is the IP address of the RTMP Server from which the decoder is pulling the stream. In RTMP Server mode, this is the IP address of the publishing client.
- **RTMP Connection:** this shows the RTMP connection state, as follows:
  -  **Connected:** The decoder has established a connection with the RTMP server or client and is transferring data.
  -  **Not Connected:** The decoder has not been able to connect to the RTMP server, or there is no RTMP client connected to it. If the decoder is in RTMP client mode, check the Admin Event Log Tab for possible reasons why it is unable to connect.

## Network Tab for RTSP Client

The Network Tab Statistics for the RTSP Client is depicted below:

Received Rate (b/s)	804,147
Stream Source IP Address	192.168.129.112
RTSP Connection	 OK
Video Protocol	RTP
Video UDP Port	59970
Video CODEC	H264
Video Frame Rate	30

- **Received Rate (b/s):** indicates the measured rate in bits/second at the input of the decoder.
- **Stream Source IP Address:** if there is an RTSP connection, it indicates the IP address of the source.
- **RTSP Connection:** this shows the RTSP connection state, as follows:
  -  **Connected:** The decoder has established a connection with the RTSP server and is transferring data.
  -  **Not Connected:** The decoder has not been able to connect to the RTSP server.

- 
- **Video Protocol:** RTSP creates a separate connection to transfer the video bitstream. This field contains a textual representation of the protocol name, obtained from the RTSP server.
  - **Video UDP Port:** RTSP creates a separate connection to transfer the video bitstream, and the UDP port used in this transfer is dynamically negotiated with the server. This field reports the UDP port number being used. Note that if the protocol is RTP, two consecutive ports are used. In the example above, port 59970 is being used for the video, and port 59971 is being used for RTCP.
  - **Video CODEC:** This field contains a textual representation of the video CODEC, as reported by the server. The BRD only supports H.264 in RTSP mode, but this field will always be updated.
  - **Video Frame Rate:** This field contains the video frame rate, as reported by the RTSP server.

### Network Tab for Color Bars

No additional information is presented in the Network Tab when the decoder is in Color Bars mode:

Decoder set to Color Bars



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## Configuration Tab

The Configuration Tab shows the current running configuration of the decoder. When the **Apply** button is pressed, the changes made in the configuration area are reflected here. It follows the same layout as the Decoder Configuration Tab. An example is shown below:

	Decoder Input
Source	UDP/RTP Stream
Reception	Multicast
Multicast Address	225.2.1.36
UDP Port	20136
	Program and Audio Selection
Decoded Program	1
Available Programs	(1) NBC
Program Auto-Select	Yes
Audio 1 Service	PID 0x0110 (eng)
	Output Configuration
Digital Output	HDMI
Resolution	1080i59
	Analog Audio Configuration
Analog Audio Source	Audio 1
Mute Left	No
Mute Right	No
Gain Left (dB)	0.0
Gain Right (dB)	0.0
Output Level	SMPTE

---

## IP Outputs Tab

The BRD is capable of doing ASI to IP turnaround, if it equipped with the optional IP Output license (see the Admin License Keys Tab). The output streams can be sent using UDP or RTP, and, if the unit has the SMPTE 2022 FEC license, it can also transmit a FEC stream.

The IP Output function is independent of the decoder source selection and is always available. For example, the decoder may be displaying a stream received from Ethernet, and at the same time transmitting an ASI stream over IP.

The IP Output function of the BRD has the following capabilities:

- Protocol support: UDP, RTP and SMPTE-2022 FEC (if licensed)
- Full transport transmission
- MPTS splitting into multiple SPTS streams
- NULL-padding of SPTS streams
- Support for up to 16 IP flows
- Transmission always uses the streaming Ethernet port

### ***IP Outputs Configuration Tab***

The IP Outputs configuration tab is depicted below. It contains 16 pre-defined IP output streams, managed as follows:

- Stream 1 is always the full transport stream received from the ASI input.
- Streams 2 to 16 are SPTS streams, automatically pre-populated with the programs present in the ASI input, in the order they appear in the PAT.

The most common settings and statistics for each stream are shown in the table below. Note that changes in the table take effect immediately. The columns are:

- **Program:** This column shows the program number for the specific stream. The possible values are:
  - **All:** this will only be shown for Stream 1, to indicate that it is the full transport.
  - **1 to 65535:** these are program numbers, read from the PMT.
  - **None:** this will be displayed for streams for which there are no available programs. These streams can be configured, but will only actually transmit if the transport changes and more programs appear.
- **Enable:** Checking this box enables transmission of a particular stream. This operation will fail if the BRD does not have an IP Output license.
- **Destination Address:** Enter the desired destination IP address for the stream. Both multicast and unicast are supported.
- **UDP Port:** Enter the desired UDP port for the stream.
- **RTP:** If this box is checked, the RTP protocol is used. If not checked, the UDP protocol is used. Note that RTP requires that the UDP port be an even number. Checking this box will change the UDP port to the next even number if it is an odd number.

- **NULL Pad:** If this box is checked, the stream is made CBR by padding it with NULL packets. The padding rate can be controlled by using the **Advanced Edit** button. This function is not available for Stream 1 as it is already padded from the ASI source.
- **Input Rate:** This field reports the instantaneous measured input rate for the stream.
- **Peak Rate:** If the stream is enabled, this field reports the peak rate observed in the stream since it was enabled.
- **Output Rate:** This field reports the output rate of the stream. If NULL padding is disabled, it will match the input rate. If NULL padding is enabled, it will correspond to the padding rate.
- **Advanced Edit:** When the **Edit** button is clicked, the **Advanced Edit** area opens at the bottom of the table. This allows for detailed configuration of the port, including the NULL padding parameters, IP parameters, and FEC parameters. A more detailed description of the edit area is provided below.

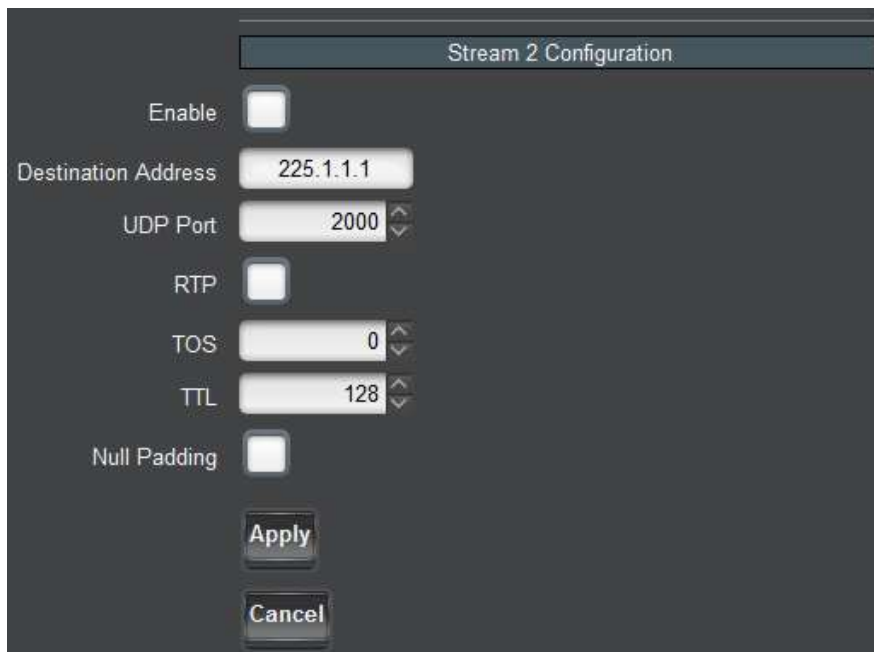
	Program	Enable	Destination	UDP	RTP	Null	Input	Peak	Output	Advanced
			Address	Port		Pad	Rate(b/s)	Rate(b/s)	Rate(b/s)	Edit
Stream 1	All	<input type="checkbox"/>	225.1.1.0	2000	<input type="checkbox"/>	<input type="checkbox"/>	19,871,832	0	0	Edit
Stream 2	3	<input type="checkbox"/>	225.1.1.1	2000	<input type="checkbox"/>	<input type="checkbox"/>	13,525,414	0	0	Edit
Stream 3	4	<input type="checkbox"/>	225.1.1.2	2000	<input type="checkbox"/>	<input type="checkbox"/>	1,763,434	0	0	Edit
Stream 4	5	<input type="checkbox"/>	225.1.1.3	2000	<input type="checkbox"/>	<input type="checkbox"/>	1,637,420	0	0	Edit
Stream 5	6	<input type="checkbox"/>	225.1.1.4	2000	<input type="checkbox"/>	<input type="checkbox"/>	1,652,421	0	0	Edit
Stream 6	None	<input type="checkbox"/>	225.1.1.5	2000	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	Edit
Stream 7	None	<input type="checkbox"/>	225.1.1.6	2000	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	Edit
Stream 8	None	<input type="checkbox"/>	225.1.1.7	2000	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	Edit
Stream 9	None	<input type="checkbox"/>	225.1.1.8	2000	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	Edit
Stream 10	None	<input type="checkbox"/>	225.1.1.9	2000	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	Edit
Stream 11	None	<input type="checkbox"/>	225.1.1.10	2000	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	Edit
Stream 12	None	<input type="checkbox"/>	225.1.1.11	2000	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0	Edit

When the **Edit** button is clicked for a stream, the following message appears at the top of the table:

Advanced config for Stream 2 open below

Program	Enable	Destination	UDP	RTP	Null	Input	Peak	Output	Advanced
		Address	Port		Pad	Rate(b/s)	Rate(b/s)	Rate(b/s)	Edit

At the bottom of the table, the Advanced Configuration area opens:



The image shows a 'Stream 2 Configuration' dialog box. It contains the following fields and controls:

- Enable:** A checkbox that is currently unchecked.
- Destination Address:** A text input field containing '225.1.1.1'.
- UDP Port:** A spin box with '2000' selected.
- RTP:** A checkbox that is currently unchecked.
- TOS:** A spin box with '0' selected.
- TTL:** A spin box with '128' selected.
- Null Padding:** A checkbox that is currently unchecked.
- Buttons:** 'Apply' and 'Cancel' buttons at the bottom.

Changes made in this configuration area only take effect when the **Apply** button is clicked. If the **Cancel** button is clicked, the changes are discarded. The configuration area closes when either button is clicked.

The **Enable**, **Destination Address**, **UDP Port**, **RTP** and **NULL Padding** fields correspond to the fields in the table, described above. The following additional parameters are available:

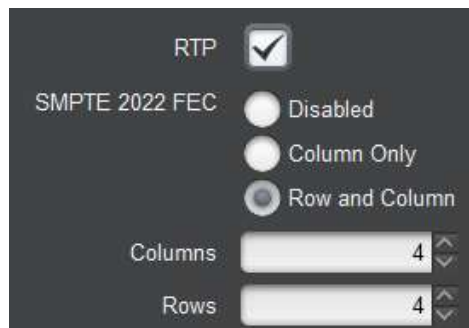
- **TOS:** This parameter allows the configuration of the Type-Of-Service (TOS) byte in the IP header (also known as the Differentiated Services – DS – field). Valid values are between 0 and 255. Configuring this is only useful if the downstream router is configured to honor the field.
- **TTL:** This parameter allows the configuration of the Time-To-Live (TTL) byte in the IP header. Valid values are between 0 and 255. If not explicitly configured, it defaults to 128. This field controls how many hops the packet can traverse before it is dropped by a router. The default value of 128 is suitable for virtually all applications.

If the **RTP** box is checked, the following additional control becomes available:



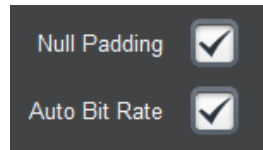
- **SMPTE 2022 FEC:** Select the FEC mode, as follows:
  - **Disabled:** No SMPTE 2022 FEC packets are transmitted.
  - **Column Only:** The BRD will send a single FEC flow, corresponding to the column protection data, using a UDP port number corresponding to the media UDP port number plus 2.
  - **Row and Column:** The BRD will send two FEC flows, the first corresponding to the column protection data, and the second corresponding to the row protection data. The row protection data will be sent using a UDP port number corresponding to the media UDP port number plus 4. Note that not all receivers support Row and Column mode; such receivers will only use the FEC Column data and discard the FEC Row data.

If either **Column Only** or **Row and Column** are selected, the following additional controls are displayed:



- **Columns:** Number of columns in the FEC matrix. This variable must be between 1 and 20 if **SMPTE 2022 FEC** is set to **Column Only**, and between 4 and 20 if it is set to **Row and Column**.
- **Rows:** Number of rows in the FEC matrix. This variable must be between 4 and 20.

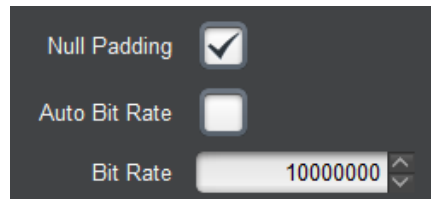
If the **NULL Padding** box is checked, the following additional control is displayed:



- **Auto Bit Rate:** If this box is checked, the BRD will automatically determine the NULL padding rate for the stream, based on the measured peak rate. The auto rate may change over time if the stream peaks at higher rates. The current auto bit rate can be read in the

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**Output Rate** column of the table. If this box is unchecked, the following additional control is displayed:



- **Bit Rate:** Enter the desired NULL padding bit rate, in bits/second. Note that if the stream data rate peaks over the configured value, data can be dropped, depending on the peak duration (the BRD will buffer the data for short periods of time, but the MPEG buffer models may be compromised).

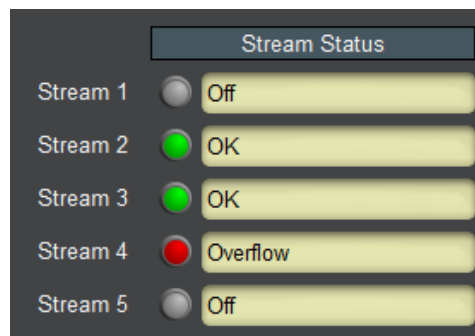
When the **Apply** button is clicked, the changes entered in the Advanced Configuration area are implemented, if the BRD is licensed to support them:

- Enabling a stream requires an IP Output license.
- Enabling SMPTE 2022 FEC requires a FEC license.

An error message is displayed at the top of the table if either or both licenses are not available.

## ***IP Outputs Status Tab***

The IP Outputs Status tab is depicted below. It has one entry for each available stream:



The following status are reported:

- **Off:** The stream is not enabled (and is not transmitting).
- **OK:** The stream is enabled and is transmitting correctly.
- **Overflow:** The stream is set for NULL Padding with Auto Bit Rate disabled, and the configured padding rate is not high enough to support the current stream rate. Packets are being dropped. Either increase the padding rate, or set the port to Auto Bit Rate, or disable NULL padding.
- **Overrun:** The overall IP output capacity of the BRD has been exceeded, and packets are being dropped. This will happen if too many output flows are enabled, especially if NULL padding is also enabled. Turn off unneeded streams, reduce the NULL padding rate, or disable NULL padding if possible.

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## Monitoring Tab

The BRD is capable of doing basic stream monitoring, if it equipped with the optional Monitoring license (see the Admin License Keys Tab). It will monitor the stream being decoded. This function is only available for transport streams received from ASI or UDP/RTP (with or without SMPTE-2022 FEC).

The Monitoring function of the BRD has the following features:

- Capable of displaying instantaneous bit rate for up to 32 PIDs in the incoming transport stream.
- Capable of tracking and monitoring Continuity Counter errors for up to 32 PIDs in the incoming transport streams.
- Up to 8 configurable PID alarms – the device will generate an alarm and send an SNMP trap if a given PID disappears for more than a configurable amount of time.

### Monitoring Configuration Tab

The Monitoring Configuration Tab is divided into two sub-tabs:



- The **PID Monitor** sub-tab displays the PID monitoring function.
- The **PID Alarms** sub-tab configures up to 8 PID alarms.

### PID Monitor Configuration Tab

If PID monitoring is disabled, the only control displayed is:



Set **Monitoring** to **Enabled** to start the PID Monitor function. Note that this operation will fail with the message **Error: No Monitoring License** if the unit is not licensed for this function. Contact Niagara Video Corporation if you would like to purchase this license.

Once PID monitoring is enabled, the unit starts reporting the PID list from the incoming transport stream that is being decoded, with the individual PID bit rates and CC (Continuity Counter) error counts.

Monitoring
☐ Disabled
☒ Enabled

PID Display
☒ Hexadecimal
☐ Decimal

PID	Bit Rate	CC Errors
0x0	15605	0
0x11	743	0
0x20	15605	0
0x100	6167161	0
0x101	50532	0
0x110	188009	0
0x111	188009	0
0x1FFF	589295	0

Reset PID Statistics

The following controls are available:

- **PID Display:** selects **Hexadecimal** or **Decimal** display for the PID values. Hexadecimal PID displays are prefixed with “0x”.
- **Reset PID Statistics:** if this button is clicked, the CC Error counts are reset to zero. Also, the list of detected PIDs is also reset, and PIDs are re-discovered from the stream.

The PID monitoring results are displayed in a table with the following columns:

- **PID:** discovered PID value. Only PIDs present in the stream are displayed. If a PID is initially present and then disappears, it will remain in the table until the **Reset PID Statistics** button is clicked.
- **Bit Rate:** current PID bit rate, in bits/second. Bit rates are averaged every 2 seconds.
- **CC Errors:** number of Continuity Counter errors detected in this PID.

## PID Alarms Configuration Tab

The PID Alarms function is only available if PID Monitoring is enabled. If PID Monitoring is disabled, the PID Alarms sub-tab will only contain this message:

PID Monitor disabled

Go to the PID Monitor Configuration Tab and enable PID Monitoring to configure the alarms.

Once PID monitoring is enabled, the alarms are available:



PID	Trigger (s)	Enable	Elapsed (s)	Alarm
0x100	5	<input checked="" type="checkbox"/>	0	<span style="color: green;">●</span> OK
257	10	<input checked="" type="checkbox"/>	0	<span style="color: green;">●</span> OK
300	8	<input checked="" type="checkbox"/>	15	<span style="color: red;">●</span> Alarm
0	10	<input type="checkbox"/>	0	<span style="color: gray;">●</span> Off
0	10	<input type="checkbox"/>	0	<span style="color: gray;">●</span> Off
0	10	<input type="checkbox"/>	0	<span style="color: gray;">●</span> Off
0	10	<input type="checkbox"/>	0	<span style="color: gray;">●</span> Off
0	10	<input type="checkbox"/>	0	<span style="color: gray;">●</span> Off

This table allows up to 8 alarms to be configured, as follows:

- **PID:** Enter the desired PID value to be monitored. This field accepts both decimal and hexadecimal entries. For example, the PID value 256 can be entered either as 256 or as 0x100.
- **Trigger (s):** Enter the desired timeout for the PID, in seconds. If the PID disappears for a period of time greater than what is configured in this field, the alarm is raised.
- **Enable:** Check this box to enable the alarm. If the PID is not actually present in the stream, the alarm will only be raised when the elapsed time from the enable moment exceeds the trigger.
- **Elapsed (s):** This field indicates the number of seconds since the PID in this alarm was last seen. It is only active if the alarm is enabled. In the example above, PID 0x100 is present, but PID 300 has not been seen in 15 seconds.
- **Alarm:** This field contains the alarm state for the entry, as follows:
  - ● **Off:** This alarm is disabled.
  - ● **OK:** The alarm is enabled, and the PID was last seen within the trigger period.
  - ● **Alarm:** The PID has not been seen for a period of time that exceeds the configurable trigger. The actual time is displayed in the **Elapsed** field.

## Monitoring Status Tab

The Monitoring Status Tab is just a subset of the Configuration tab.



Monitoring ☐ Enabled

PID	Bit Rate	CC Errors
0x0	16317	0
0x11	741	0
0x20	15575	0
0x100	6173919	0
0x101	50435	0
0x110	189133	0
0x111	188392	0
0x1FFF	582235	0

PID Monitor

PID Alarms

PID	Trigger (s)	Enable	Elapsed (s)	Alarm
0x100	5	Enabled	0	OK
257	10	Enabled	0	OK
300	8	Enabled	113	Alarm
0	10	Disabled	0	Off
0	10	Disabled	0	Off
0	10	Disabled	0	Off
0	10	Disabled	0	Off
0	10	Disabled	0	Off

PID Monitor

PID Alarms

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## Admin Tab

The Admin tab contains a number of general administrative functions, each on its own tab. The general layout is shown below:

The screenshot displays a web-based configuration interface for the Admin tab. At the top, there are two rows of tabs: the first row includes 'ASI Output', 'Monitoring', 'Admin' (which is the active tab), 'Control', and 'Support'; the second row includes 'Network', 'ASI Input', 'Decoder', and 'IP Outputs'. The main content area is dark gray and contains three configuration sections. The first section, 'Card Name', has a text input field containing 'GoStream BRD'. The second section, 'SNMP Traps', features two radio buttons: 'Enabled' (which is selected) and 'Disabled'. The third section, 'MIB File Download', has a text input field containing 'CARD-MIBS.ZIP' and a 'Save' button to its right. At the bottom of the interface, there is a row of five tabs: 'General', 'Firmware', 'Config Files', 'License Keys', and 'Event Log'.

The Admin tabs are:

- **General:** Manages a number of general card parameters; provides an SNMP MIB download.
- **Firmware:** Manages firmware images.
- **Config Files:** The BRD has the ability to store multiple configurations, and it has a number of pre-set configurations as well. These are managed in this tab.
- **License Keys:** Contains the current licensing state of the BRD, and allows for new license keys to be entered.
- **Event Log:** The BRD contains a non-volatile event log. It can be inspected and downloaded from this tab.

The Admin Statistics tabs are simplified read-only versions of the corresponding Admin Configuration tabs. They will not be explicitly described here.

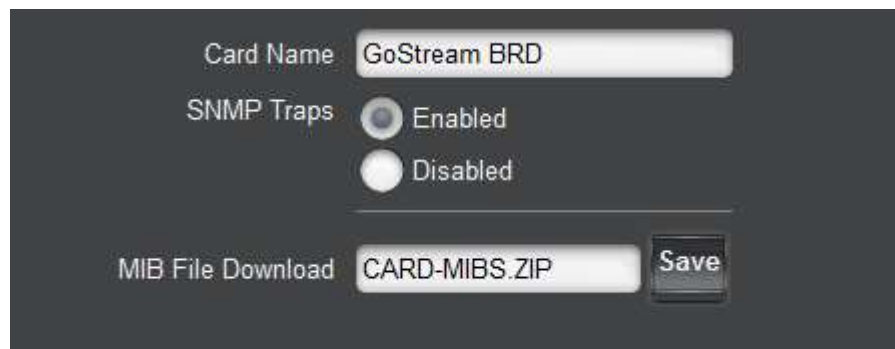
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## Admin General Tab

The Admin General Tab includes the following parameters:

- **Card Name:** This field defaults to GoStream BRD but can be set to any descriptive name. The name provided here will also appear in the Dashboard™ Tree View.
- **SNMP Traps:** This allows SNMP traps to be enabled or disabled<sup>6</sup>. Note that this setting does not take effect immediately – it will become active the next time the card is rebooted.
- **MIB File Download:** The BRD provides an up-to-date copy of its MIBs. If you click on the **Save** button, a zip file with the relevant MIBs will be downloaded to your computer. This zip file contains the card MIBs, as well as the Ross Video and openGear MIBs required to compile the card MIBs.

The Admin General Tab is depicted below:



The screenshot shows a dark-themed user interface for the Admin General Tab. It contains three main sections: 1. 'Card Name' with a text input field containing 'GoStream BRD'. 2. 'SNMP Traps' with two radio buttons; 'Enabled' is selected (indicated by a filled circle) and 'Disabled' is unselected (indicated by an empty circle). 3. 'MIB File Download' with a text input field containing 'CARD-MIBS.ZIP' and a 'Save' button to its right.

## Admin Firmware Tab

The BRD can hold up to three distinct firmware images: a **Factory** image, and two upgrade images, called **Image 1** and **Image 2**. The Factory image can never be overwritten, and will always be available as a fall-back in case of problems or failed updates. Image 1 and Image 2 can be updated at will. Since the card offers two upgrade images, it is always possible to fall back to the previous image if there are any problems with the current one. The card will also automatically fall back to the factory image if it detects a corrupted firmware image. Finally, the push buttons on the front of the card allow for a forced override to the factory image, as described in the Front Switches section.

The BRD has one additional firmware image, called the **DSP Image**. The unit can hold up to 4 DSP images. DSP images will be rarely updated by Niagara Video. The decoder will only accept a firmware upgrade if the corresponding DSP image is already loaded in the unit; if Niagara Video releases a new DSP image, it must be loaded first. DSP images are automatically

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<sup>6</sup> SNMP is an optional feature in the openGear™ frame controller. The GOSTREAM BRD SNMP functions are only available if SNMP is licensed in the frame controller. SNMP is always available in the stand-alone GOSTREAM BRD version.

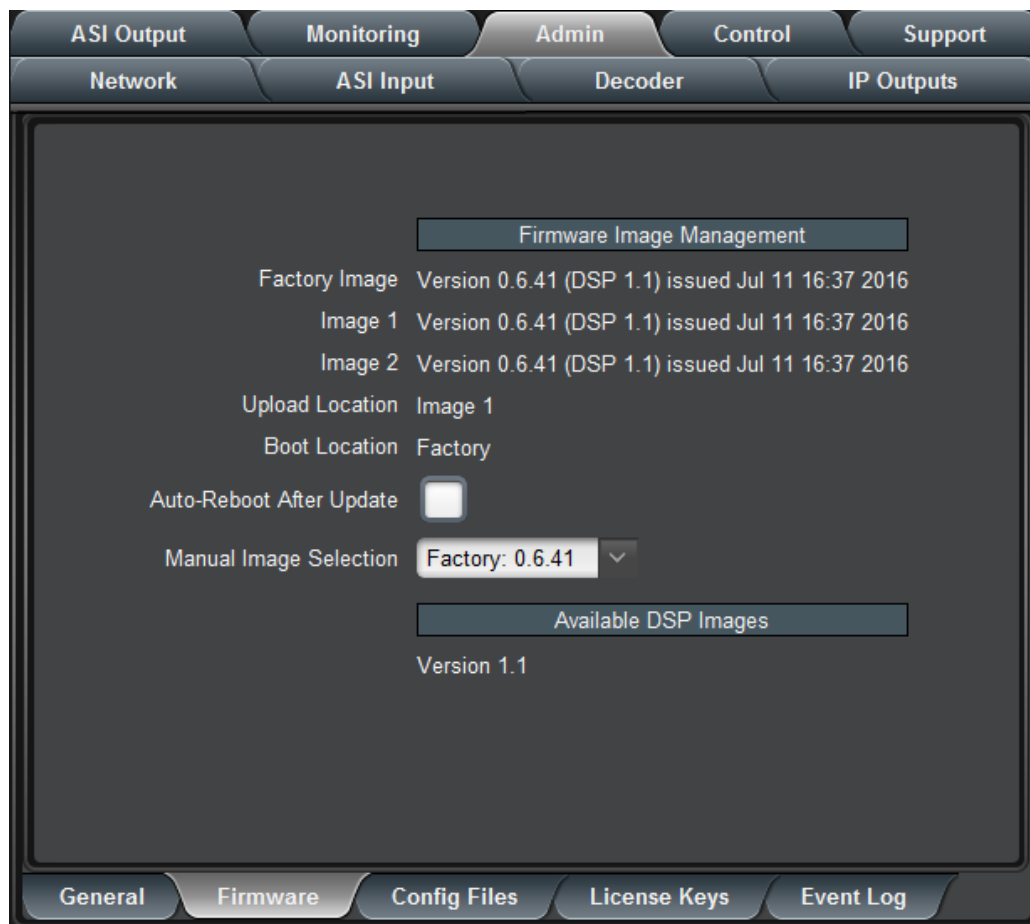
---

managed – the unit will never replace a DSP image required by any of the loaded firmware images.

BRD firmware and DSP images are updated in the same fashion as with any standard openGear™ card. Once you obtained the upgrade image from Niagara Video, place it anywhere in your computer and click on the **Upload** button, as shown below. A dialog box allows you to select the upgrade file. Note that you can simultaneously upgrade all of your BRD cards and stand-alone units over multiple chassis if you wish. For more detail, consult the **Dashboard User Manual**, chapter 6, section **Upgrading Device Software**. The Dashboard manual can be downloaded from:

<http://www.opengear.tv/dashboard-software>

Note that uploading firmware to the BRD does not affect its operation in any way and does not introduce any glitches in the inputs/outputs.



The fields in the Firmware Image Management tab are:

- 
- **Factory Image, Image 1, and Image 2:** These contain version and release date information for the corresponding firmware images. If no image is present, this field will indicate **No Image**. This field also shows the required DSP image for each of the firmware images.
  - **Upload Location:** This field contains the location where the image upload will go. The BRD automatically chooses a location that will not overwrite the currently running image.
  - **Boot Location:** This field indicates which image will be used in the next boot. If an image is successfully uploaded through Dashboard, this automatically changes to point to that image. It can also be manually changed.
  - **Auto-Reboot After Update:** This field controls whether or not the BRD will automatically reboot after a successful firmware upload through Dashboard. By default, the BRD will **not** reboot after an update. You can upload the firmware at any time, and reboot later during a maintenance window.
  - **Available DSP Images:** this field has a list of loaded DSP images.

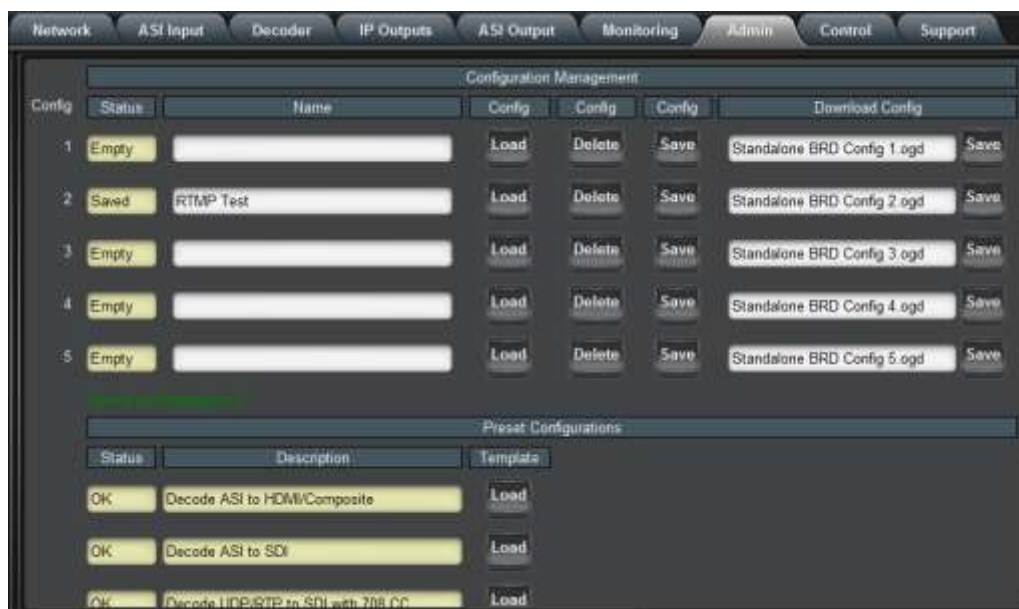
### ***Admin Config Files Tab***

As you make configuration changes to the BRD, they are automatically persisted in non-volatile storage. If the card is rebooted or power-cycled, it will come back in the same configuration.

In addition to automatic configuration persistency, the BRD also offers the ability to save up to 5 complete configurations, load them, and even export them. This can be used to quickly configure it for different scenarios, or for saving configuration “checkpoints” as a complex configuration is built. Since configurations can be exported, they can be archived outside the card as well.

Finally, the BRD also offers 5 pre-saved configuration templates for some common scenarios.

The layout of the Admin Config Files tab is shown below.



## User-Saved Configurations

The fields in the user-saved configuration are:

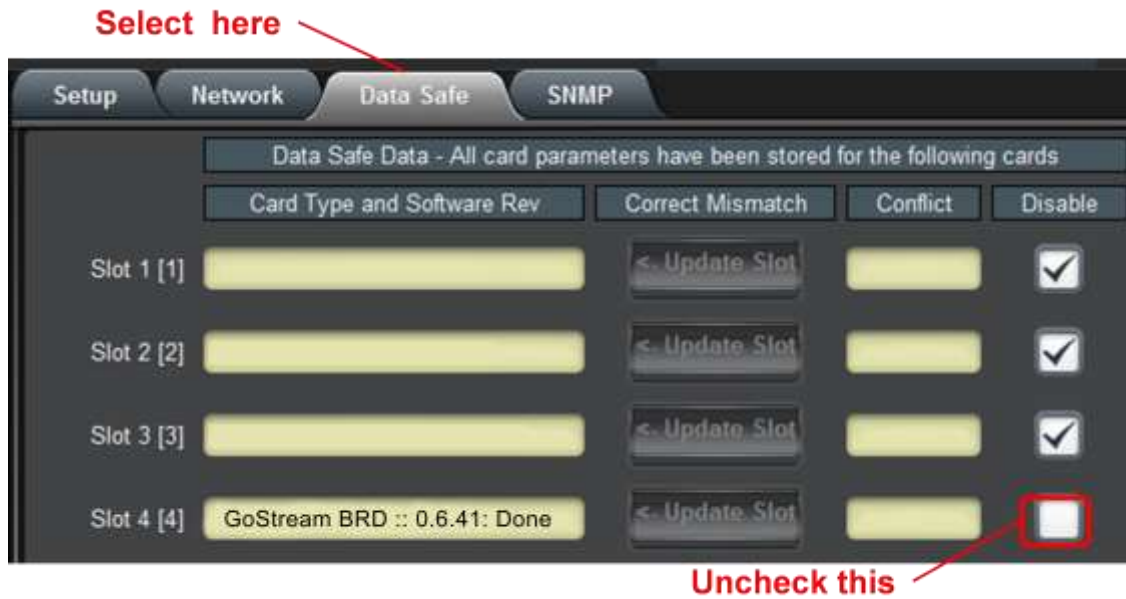
- **Status:** This indicates whether there is a saved configuration on that particular slot. It will contain the words **Saved** or **Empty**.
- **Name:** This is an optional name for the configuration. It is not required but highly advisable. The name can be edited at any time (even when there is no saved configuration).
- **Config Load Button:** If you click on this button, the corresponding configuration is loaded in the BRD card. It will replace the currently-running configuration. Dashboard™ will take a few seconds to reload (longer if you are accessing over a wide-area network), but the actual configuration in the BRD is virtually instantaneous. The Status Message Area will indicate the result of the operation.
- **Config Delete Button:** If you click on this button, the corresponding configuration and its description are deleted.
- **Config Save Button:** If you click on this button, the current card configuration is saved on the corresponding slot, possibly replacing the configuration saved there if it is not empty.
- **Download Config:** If you click on the **Save** button, the corresponding file is downloaded to your computer. This feature is provided to allow configuration backups.

If you save a configuration to your computer, and later wish to restore it to the BRD, use the following procedure:

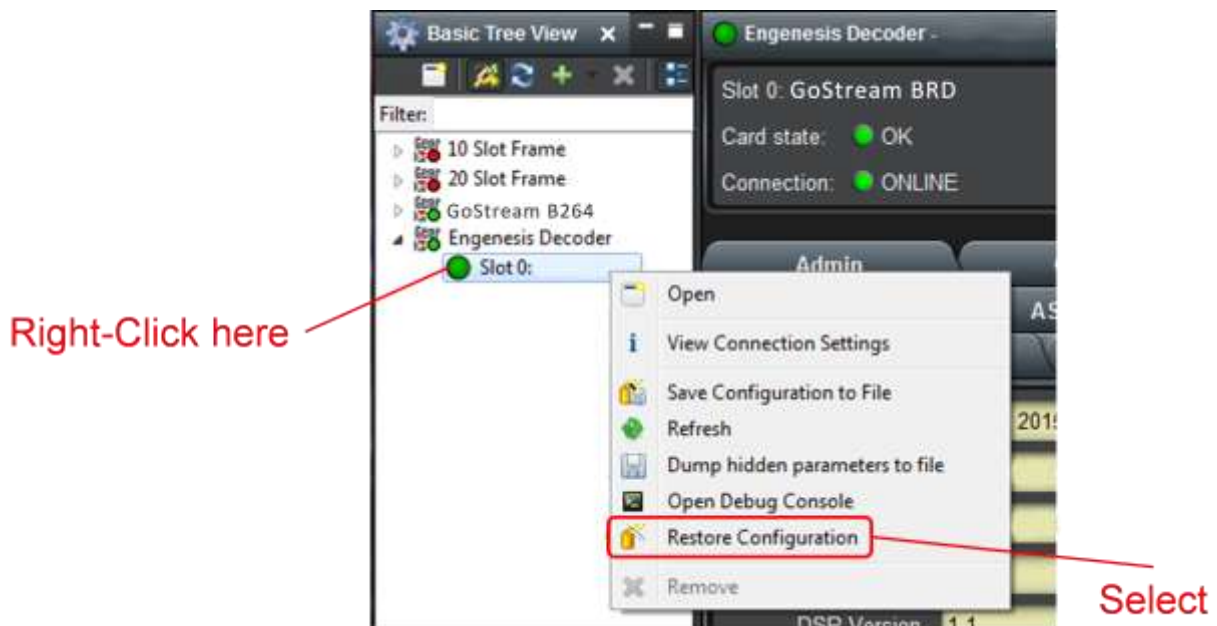
1. If you have a stand-alone GOSTREAM BRD proceed directly to step 5. If you have an openGear GOSTREAM BRD, proceed to step 2.
2. On Dashboard, open the user interface for the frame controller (slot 0).



3. Select the **Data Safe** tab in the configuration area.
4. Uncheck the **Disable** checkbox corresponding to the card you wish to restore the configuration. This step is depicted below.



5. On the Dashboard Tree View, right-click on the card, and select **Restore Configuration**. Follow the prompts and navigate to the file you wish to restore. This process is illustrated below





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This process is discussed in further detail in the **Dashboard User Manual**, chapter 5, section **Restoring Configurations to Devices**.

## Pre-defined Templates

The BRD offers 5 pre-defined configuration templates, as indicated below.

Status	Description	Template
OK	Decode ASI to HDMI/Composite	Load
OK	Decode ASI to SDI	Load
OK	Decode UDP/RTP to SDI with 708 CC	Load
OK	Decode HLS from the Internet	Load
OK	RTMP Server Mode	Load

To load a template, just click on the **Load** button next to it. The pre-defined templates are;

- **Decode ASI to HDMI/Composite:** This template assumes a signal present in the ASI Input, decode it, and simultaneously outputs it to the HDMI and composite ports.
- **Decode ASI to SDI:** This template assumes a signal present in the ASI Input, decode it, and simultaneously outputs it to the SDI port.
- **Decode UDP/RTP to SDI with 708 CC:** This template assumes a multicast stream present in the Ethernet streaming port, and decodes it to the SDI output. If the input stream has closed-captions, these are passed through as SMPTE-334M captions.
- **Decode HLS from the Internet:** This template loads a public HLS feed from the Internet and decodes it. If the decoder has access to the Internet via either the streaming port or the control port, and is configured with a DNS address, there may be actual video being displayed<sup>7</sup>.
- **RTMP Server Mode:** This template puts the decoder in RTMP Server Mode. It will wait for a connection from an RTMP publishing client and display the stream.

## Clear Current Configuration Button

The **Clear Current Configuration** button clears all the configured ports and streams as follows:

- The ASI Ports are enabled. The ASI Output is configured in automatic mode.
- The decoder is configured to decode from ASI.
- All decoder parameters are reset to their defaults.

---

<sup>7</sup> Since the server is not operated by Niagara Video, we cannot guarantee that video will actually play.

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The button does not affect the following areas:

- The settings in the **Network** tab are not changed.
- The settings in the **Admin General** tab are not changed.
- Saved configurations are not modified in any way.

Dashboard will take a few seconds to reload (longer if you are accessing over a wide-area network), but the actual configuration in the BRD is virtually instantaneous. The Status Message Area will indicate the result of the operation.

## ***Admin License Keys Tab***

The BRD has a number of optional licensable features. The Admin License Keys Tab is used to manage these features. Using this tab, you can see how many licenses you have for each optional feature, and how many you are currently using.

The BRD has the concept of a temporary license. If you want to try out a certain feature, contact Niagara Video. You will receive a license key that enables that feature for a specific period of running time (license time does not “count” when the device is off).

The Admin License Keys Tab includes a License Status table, and a configuration area, as shown below. The table rows are license counts, and the columns correspond to different licensable features. The rows are:

- **Permanent Licenses:** This is the number of non-expiring licenses for each feature.
- **Temporary Licenses:** This is the number of temporary licenses for each feature. Once the license period expires, they are removed.
- **Total Licenses:** This is the total number of licenses for each feature.
- **Used Licenses:** This is the number of licenses in use for each feature by the current card configuration.

If you have temporary licenses, the **Time Remaining** field indicates how long until they expire. If you do not have temporary licenses, this field has the message “No active temporary licenses”.

The table columns correspond to the licensable features, as follows:

- **IP Protocols:** This field indicates whether or not the BRD is licensed to accept content on its Ethernet port. Without this license, the unit will only decode from ASI.
- **Dolby Decoding:** This field indicates whether the unit is licensed to decode Dolby AC3/EAC3 audio. Without this license, if the BRD is presented with a stream with Dolby, no audio decoding will be performed.
- **Genlock:** This field indicates whether or not the unit is licensed for output genlock.
- **SMPTE 2022 FEC:** This field indicates whether the unit is licensed to decode or generate SMPTE 2022 FEC. Without this license, the unit will still decode the RTP flow containing the bitstream, but will ignore the SMPTE 2022 FEC packets.

- **IP Output:** This field indicates whether the unit is licensed for ASI to IP Output. If it has the SMPTE 2022 FEC license, it will also be able to generate FEC on the output streams.
- **Monitoring:** This field indicates whether or not the unit is licensed for stream monitoring.

	License Status					
Feature	IP Protocols	Dolby Decoding	Genlock	SMPTE 2022 FEC	IP Output	Monitoring
Permanent Licenses	0	0	0	0	0	0
Temporary Licenses	1	1	1	1	1	1
Total Licenses	1	1	1	1	1	1
Used Licenses	1	0	1	1	0	0
Time Remaining	5 weeks, 6 days, 23 hours					
	License Key Installed OK					
License Key	<input type="text"/>					
	<input type="button" value="Apply License Key"/>					
Serial Number	ac83f00090c8					

If you want to request a license key from Niagara Video, you will need to provide the card serial number. It can be found in the Product Tab and in the Admin License Key Tab as well. Once you receive the key from Niagara Video, enter it in the **License Key** field shown above, and click on the **Apply License Key** button. If the key is accepted, you will see the message *License Key Installed OK*, as illustrated above. If there are any problems, you will see an error message in the same location. The following are the possible error messages:

- **Invalid key: missing characters:** the key you entered is too short. Double-check that you entered all the characters.
- **Invalid/Corrupted Key:** the key you entered has the correct number of characters, but it is invalid. Double check what you entered.
- **Serial number mismatch: this key is for serial xxxxxxxxxxxx:** BRD license keys are specific to a unit. You entered a valid license key, but it is intended for a different unit, whose serial number is displayed in the message. You must use this key on the correct unit.
- **This key has already been applied:** License keys can only be applied once. This is a valid key for this unit, but you have already applied it, and its features are already available.

## Admin Event Log Tab

The BRD includes an Event Log in non-volatile storage. This event log can be used for fault-finding, and to check for error conditions. The following information is included in each BRD event in the log:

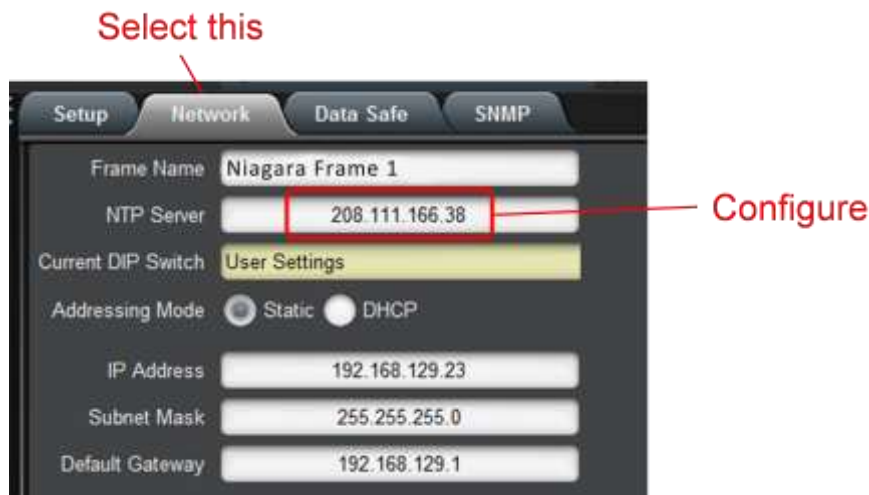
- **Date:** The calendar date in which the event occurred.
- **Time:** The time at which the event occurred.
- **Severity:** The severity of the event. The BRD defines three severity levels:
  - **Error:** These are events that affect the operation of the device. For example, an ASI Input losing lock. An error will impact service until addressed.
  - **Warning:** These are events that may produce visible glitches, but they do not have a continuous service impact.
  - **Info:** These are informational events. All configuration actions are logged with this severity. When an error is cleared (for example, an ASI Input regains lock), the event is logged with this severity as well.
- **Subsystem:** The subsystem affected by the event. This may be a port, a stream, or the card itself.
- **Event:** This is a textual description of the event.

None of the BRD models have a battery-backed real-time clock, so they depend on external time servers to synchronize to the current time. By default, the BRD will initialize its internal time-of-day clock to January 1, 2010, GMT and synchronize with a time server if available.

For the GOSTREAM BRD stand-alone, the NTP server IP address can be entered in the Control Tab.

The GOSTREAM BRD openGear card depends on the frame controller to obtain the current date and time, and the frame controller depends on an external Network Time Protocol (NTP) server to obtain current date and time.

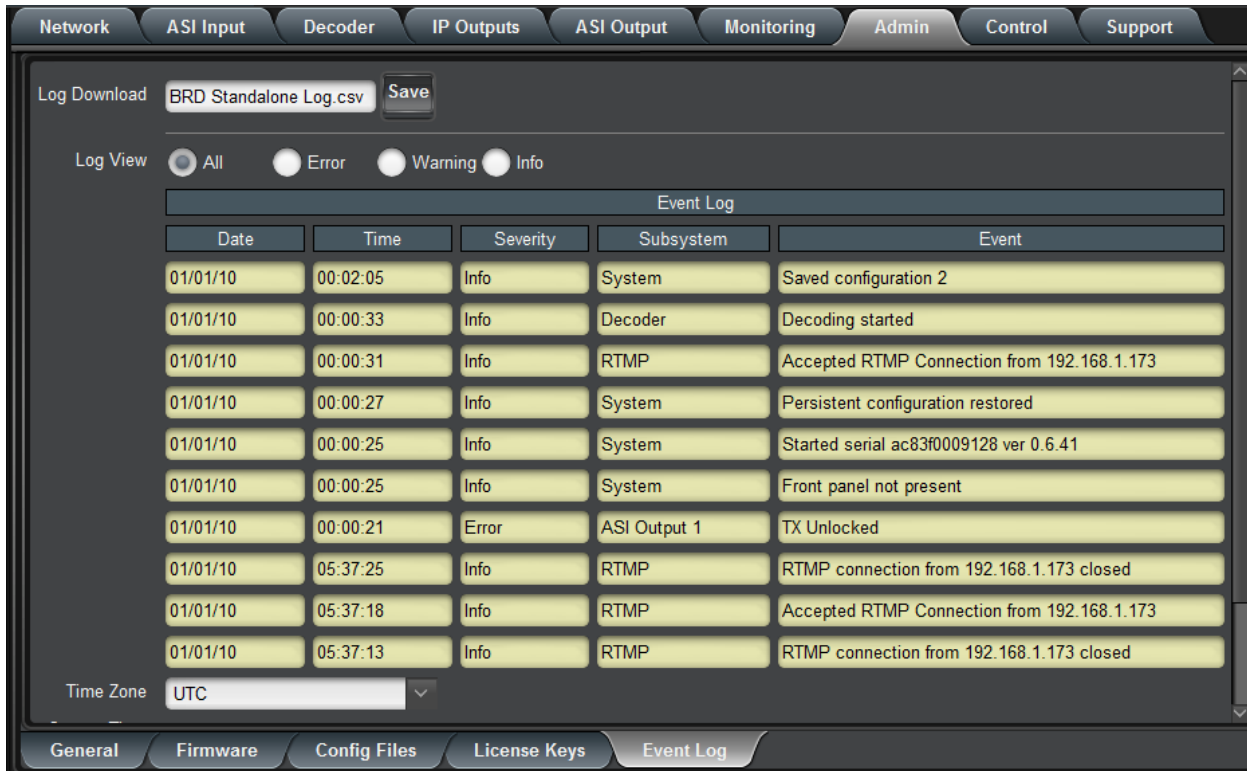
In order to configure the openGear chassis frame controller for NTP, open its configuration screen on Dashboard™, select the **Network** Tab, and enter the IP address of an available NTP server:



If your frame controller has access to the Internet, you can point it to one of the public NTP servers for your region. You can find more details on this link:

<http://psp2.ntp.org/bin/view/Servers/WebHome>

The full Admin Event Log tab is displayed below:



The fields are:

- **Log Download:** The user interface only displays the last 10 events of each type. If you would like to see the whole event log, it can be downloaded to your computer by clicking on the **Save** button. The log will be in CSV format, and it can be opened by any utility that can read text files; ideally, you should use a spreadsheet program such as Microsoft Excel or similar so it is presented in tabular format. The log will be in chronological order, oldest entry to newest.
- **Log View:** The user interface can display the last 10 events. You can choose to see the last 10 events of any kind by selecting **All**, or you can restrict the view only to **Info**, **Warning**, or **Error**.
- **Event Log:** This table presents the last 10 events of the selected type.
- **Time Zone:** To simplify the correlation of the events with your local time, you can set your time zone using this drop-down menu. Note that the BRD presents a simplified list, with standard GMT offsets. Note that standard GMT offsets do not change back and forth with Daylight Savings; you will need to make this adjustment manually if it is relevant to you.

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- **Current Time:** This field indicates the BRD view of what the current date and time is. If your frame is not NTP-synchronized, this is useful to figure out “how long ago did this event happen”.
  - **Clear Log Display:** If you click on this button, it clears all log views. This is useful to quickly identify any new events after the unit has been set up. Note that this action does not clear the logs stored in non-volatile memory.

The BRD will store up to about 400 kBytes of logs in non-volatile memory. When that limit is reached, the oldest half of the stored logs will be deleted to make space for new logs.

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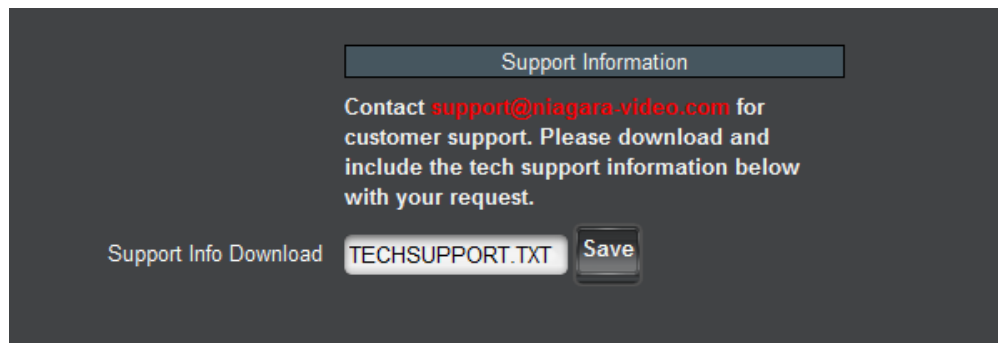
## Support Tab

If you need support with your BRD Decoder, you can contact Niagara Video Corporation by phone or e-mail:

- Phone number: +1 925-399-7201, Monday-Friday 9:00AM – 5:00PM Pacific Time
- E-mail: [support@niagara-video.com](mailto:support@niagara-video.com)

If you need to contact Technical Support, please be prepared to provide the following information:

1. A detailed description of the problem, and any actions taken to solve it.
2. A detailed description of the environment around the gateway. This includes the make and model of any connected devices being used, as well as the connection network (IP or ASI) between the gateway and any other devices.
3. The Technical Support information from the decoder itself. This is downloaded from the **Support** tab:



Select the **Support** Tab, and click on the **Save** button next to **Support Info Download**. This will create a file called **TECHSUPPORT . TXT** in the computer running DashBoard. Please e-mail this file to [support@niagara-video.com](mailto:support@niagara-video.com).

The **TECHSUPPORT . TXT** file contains the following information:

- The current configuration of the unit
- A copy of the Event Log (which can also be obtained via the Admin Event Log Tab)

This file does not contain any information that would allow remote access to the unit.

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## Control Tab

The Control Tab is used to configure the management Ethernet ports in the GOSTREAM BRD stand-alone. This includes both the IP information, as well as the SNMP parameters. The Control Tab is only displayed for the GOSTREAM BRD stand-alone.

The management port supports operation at 10, 100 and 1000 Mb/s, both half-duplex and full-duplex, with auto-negotiation and auto-crossover detection.

The Control Tab has two bottom tabs:

- **Control Port** is used to configure the IP parameters of the control port.
- **SNMP** is used to configure the SNMP parameters for the unit.

### ***Control Port Configuration Tab***

The control configuration window is depicted below:

Device Name: Modular Decoder

Control Interface Configuration

IP Configuration: ☒ Static IP ☐ DHCP

IP Address: 0.0.0.0

Subnet Mask: 0.0.0.0

Default Gateway: 0.0.0.0

DNS Server: 192.168.1.1

NTP Server: 0.0.0.0

Apply

Cancel

The configuration parameters are:

- **Device Name:** This field controls the top-level name of the device in the Dashboard tree. It defaults to “Stand-alone Decoder”. Changes to this field take effect immediately.
- **IP Configuration:** This field selects the control port IP configuration mode, as follows:
  - **Static IP:** This option selects a static IP address, specified by the IP Address, Subnet Mask, and Default Gateway fields.



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- **DHCP:** This option selects control port IP address configuration by DHCP. If this option is selected, the IP Address, Subnet Mask and Default Gateway fields are not shown.
  - **IP Address:** This field is only shown if **IP Configuration** is set to **Static IP**. Enter the desired control port IP address.
  - **Subnet Mask:** This field is only shown if **IP Configuration** is set to **Static IP**. Enter the desired control port subnet mask.
  - **Default Gateway:** This field is only shown if **IP Configuration** is set to **Static IP**. Enter the desired control port default gateway.
  - **DNS Server:** This field is only shown if **IP Configuration** is set to **Static IP**. The GOSTREAM BRD stand-alone needs DNS for the HLS and RTMP Client protocols, if you wish to specify the server by name instead of IP address. If you do not need DNS, you can leave this field at 0.0.0.0. If your GOSTREAM BRD stand-alone is connected to the Internet and you do not have a local DNS server, a good option is the Google public DNS at 8.8.8.8.
  - **NTP Server:** If you want the unit to be NTP-synchronized (for logging purposes), enter the IP address of an accessible NTP server in this field. If you do not need NTP, you can leave this field at 0.0.0.0. If your GOSTREAM BRD stand-alone has access to the Internet through the control port, you can point it to one of the public NTP servers for your region. You can find more details on this link:

<http://psp2.ntp.org/bin/view/Servers/WebHome>

- **Apply/Cancel:** Use these buttons to apply or cancel the changes to the control port IP configuration. Note that if you change the IP address, DashBoard may lose contact with the GOSTREAM BRD stand-alone. The IP Address, Subnet Mask and Default Gateway entries will be checked for consistency and will be rejected if invalid.

### ***Control Port Statistics Tab***

The Control Port statistics screen is depicted below. It contains the current settings for the control port. If you have configured the unit for DHCP, it will include the current IP Address, Subnet Mask, Default Gateway and DNS server obtained from the DHCP server. It also includes the link state for the control Ethernet port.

Monitoring		Admin		Control	
Decoder		IP Outputs		ASI Output	
Product		Network		ASI Input	
Device Name	Modular Decoder				
Control Interface Configuration					
IP Configuration	DHCP				
IP Address	192.168.1.197				
Subnet Mask	255.255.255.0				
Default Gateway	192.168.1.1				
DNS Server	192.168.1.1				
NTP Server	0.0.0.0				
Control Link	<input checked="" type="radio"/> Link OK				
Control Speed	1 Gb/s Full Duplex				
Control Port		SNMP			

### ***SNMP Configuration Tab***

The GOSTREAM BRD stand-alone includes a built-in SNMP agent with support for SNMP V1 and V2C. It will respond to SNMP transactions only on the control port, for security reasons. This tab includes the parameters for the SNMP configuration. Changes to these parameters take effect immediately.

SNMP Configuration	
Read Community	public
Write Community	private
System Contact	Contact Not Set
System Location	Location Not Set
Trap Destinations	
Trap Destination 1	0.0.0.0
Trap Destination 2	0.0.0.0
Trap Destination 3	0.0.0.0
Trap Destination 4	0.0.0.0
Trap Destination 5	0.0.0.0

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The SNMP parameters are as follows:

- **Read Community:** this is the SNMP Read-Only community string.
- **Write Community:** this is the SNMP Read-Write community string.
- **System Contact:** this configures the value for the MIB-II System variable System Contact. Whatever value entered here is returned for SNMP queries to that variable.
- **System Location:** this configures the value for the MIB-II System variable System Location. Whatever value entered here is returned for SNMP queries to that variable.
- **Trap Destinations:** the GOSTREAM BRD stand-alone supports up to 5 trap destinations. Enter the desired IP addresses here. Note that the GOSTREAM BRD stand-alone will only generate SNMP V2C traps.

### ***SNMP Statistics Tab***

The SNMP statistics tab displays the current SNMP configuration.

SNMP Configuration	
Read Community	public
Write Community	private
System Contact	Contact Not Set
System Location	Location Not Set
Trap Destinations	
Trap Destination 1	0.0.0.0
Trap Destination 2	0.0.0.0
Trap Destination 3	0.0.0.0
Trap Destination 4	0.0.0.0
Trap Destination 5	0.0.0.0