ProHD

HEVC
H.265 - HIGH EFFICIENCY VIDEO CODING

ProHD BR-DE900

HEVC and H.264 Decoding Appliance

User Manual

Version 1.0

Date: March 4, 2018
Doc Rev: <A>

Contents

Safety Instructions

- Use the following safety guidelines to help protect your ProHD BR-DE900 unit from potential damage and to ensure your own personal safety.
- Make sure that only authorized personnel installs, connects and maintains ProHD BR-DE900 and its components.
- Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.
- As a power switch is not incorporated in the equipment, the power plug must be disconnected to shut down the unit

When using ProHD BR-DE900

- Install the system on a secured and stable surface.
- To help prevent electric shock, plug the power cable into properly grounded sources. Use only properly grounded extensions and adapters as the need arises.
- Make sure that nothing rests on your ProHD BR-DE900 power cable and that the cables are not located where they can be stepped or tripped over.
- Do not spill food or liquids on your unit.
- Keep your ProHD BR-DE900 unit away from radiators and heat sources. Do not place your ProHD BR-DE900 unit on a bed, sofa, or rug.
- When you disconnect a power cable, pull on its connector or on its strain relief loop not on the cable itself.
- **ESD Warning**: Normal handling precautions should be taken to avoid static discharge.

WARNING:

Do not try to open or replace parts as this will void your warranty.

Declaration of Conformity and Regulatory Compliance

USA: FCC Part 15 Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING:

Modifying the equipment without JVC authorization may result in the equipment no longer complying with FCC requirements for Class A digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

Canada: ICES-003

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

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

European Union - European Economic Area (EEA):

This product fulfills the essential requirements of the below European directives and thus bears the CE marking.

2004/108/EC Electromagnetic Compatibility (EMC)

2014/35/EU Low voltage (LVD)

2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS recast)

The following relevant harmonized standards were used during the assessment process:

EN 60950-1	Information technology equipment - Safety -- Part 1: General requirements
EN 61000-3-2	Limits for harmonic current emissions
EN 61000-3-3	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems
EN 55022	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
EN 55024	Information technology equipment - Immunity characteristics - Limits and methods of measurement

Per directive 2012/19/EU (Waste of Electrical and Electronic Equipment - WEEE), this product

must not be disposed of as unsorted waste and must be collected separately.

Copyright Notice

http://www.jvc.com/

Open Source Documentation

The software included in this product contains open source software components licensed under open source licenses (such as GPL - General Public License).

For information about copyright holders and licenses, or to receive a copy of the corresponding source code to which you may be entitled under the applicable open source license, please contact JVC.

CHAPTER 1

About This Manual

In This Chapter

General

Information in this document is subject to change without notice. JVC assumes no responsibility for any errors that may appear in this manual. Companies, names and data used in examples herein are fictitious unless otherwise noted. No part of this document may be copied or reproduced in any form, or by any means, electronic or mechanical, for any purpose, without the express written permission of JVC. JVC provides no warranties with respect to this documentation and disclaims any implied warranties of merchantability or fitness for a particular purpose.

Manual Structure and Use

This manual is structured in a modular format, containing the following sections:

- **ProHD BR-DE900 Overview** (on page 9)
  Describes the ProHD BR-DE900 product, its system requirements and I/O specifications.
- **Getting Started** (on page 14)
  Describes how to connect to the appliance for the first time.
- **Setup and Operations** (on page 19)
  Describes how to set and configure ProHD BR-DE900 appliance, obtain an event log and load new licenses.
- **Firmware Upgrade** (on page 44)
  Describes how to upgrade ProHD BR-DE900 firmware.
- **Technical Specifications** (on page 46)
- Describes the technical specifications of the ProHD BR-DE900 appliance.

CHAPTER 2

ProHD BR-DE900 Overview

In This Chapter

The Product

ProHD BR-DE900 is an advanced industrial-grade, HEVC (H.265) and H.264 (AVC) decoding appliance. ProHD BR-DE900 is the preferred Hardware decoder for JVC Professional streaming cameras. The ProHD BR-DE900 is designed for low latency decoding of high-definition and standard-definition video sources across the enterprise, utilizing minimal bandwidth while preserving broadcast-quality video up to full HD 1080p60 resolution.

The decoding and streaming appliance supports a wide range of streaming protocols including UDP TS, RTP TS, RTP ES (RTSP), Pro-MPEG and Zixi™ streaming with Error Correction mechanism for ensuring secure, error-free video over public networks (license required for Zixi™ Point to Point mode).

- **Pro-MPEG SMPTE-2022**

  Pro-MPEG SMPTE-2022 is an industry standard **Forward Error Correction (FEC)** protocol that uses a one or two dimensional XOR algorithm. It sends redundant information to accommodate for packet-loss during real-time video streaming. The Pro-MPEG SMPTE-2022 streaming mode is capable of correcting network errors up to 5% with an average end-to-end latency of 1.5 seconds. Pro-MPEG technology is included with the product.

- **Zixi™**

  Zixi™ error correction is a unique proprietary technology offers secure, reliable transmission of broadcast-quality HD/SD video over unmanaged internet connections and private IP networks. The Zixi™ protocol provides real-time protection from network jitter, packet-loss and latency to ensure error-free video transmission.

  The technology is capable of correcting high rates of network errors up to 30%. The end-to-end latency of such IPTV service is configurable on the encoder side, and ranges

between 500 milliseconds to 6 seconds. Zixi™ technology is included with the product when used in conjunction with JVC compatible cameras for point to point streaming (license required) or with Zixi™ Broadcaster server.

The ProHD BR-DE900 package includes:

- The ProHD BR-DE900 appliance
- Power supply with cable.
- Breakout cable for RS232, Genlock input (enabled by firmware upgrade), balanced and unbalanced stereo audio, AES digital audio.

System Requirements

Operating System:

- Microsoft ® Windows 2003 ®
- Microsoft ® Windows 2008 ®
- Microsoft ® Windows 2012 ®
- Microsoft ® Windows 7 ®
- Microsoft ® Windows 8.0 / 8.1 ®
- Microsoft ® Windows 10.0 ®
- Apple ® MAC OS ® 10.8 or higher

Internet Browser:

- Edge ® 38 or Higher
- Internet Explorer 10 ® or higher
- FireFox 36.0 ® or higher (Windows and Mac)
- Safari 9.0 ® or higher (Mac)
- Google Chrome ™ 49.0 or higher

I/O Specifications

ProHD BR-DE900 Front Panel

Figure 2-1: BR-DE900 Front Panel

Connector Label	Connector	Description
Audio Talkback IN	Mini Jack	Unbalanced Analog Audio input for Audio Talkback. To be enabled per firmware upgrade.
Audio Talkback OUT	Mini Jack	Unbalanced Analog Audio output for Audio Talkback. To be enabled per firmware upgrade.
USB Port	USB Type A	USB connection. To set or retrieve network parameters
Reset	Pin	After boot, a short press will restart the appliance. After boot, a long press (6 seconds minimum) will return the unit to factory settings (erasing all user-stored channel and network settings). Pressing more than 7 seconds while powering up, will cause the appliance to restore the unit to factory firmware settings.

LED/ Port	LED Status	Description
Power LED	• Off • Green • Blinking green once per second • Blinking green twice per second	• The appliance is off. • The appliance is up and ready • The appliance is starting • The appliance is being upgraded.
Error LED	• Off • Red	• All services are running smoothly. • An error occurred in one or more services: • - Steady on – channel error • - Blinking twice per second – abnormal temperature
Decode LED	• Off • Green • Blinking green once per second	• No Channel Decoding in progress • Channel Decoding • The channel has started, but no input stream was received
HD LED	• Off • Green	• SD stream input • HD stream input.

ProHD BR-DE900 Rear Panel

Connector Label	Connectors	Description
Ethernet 1	RJ-45	Gigabit Ethernet for streaming and management.
Ethernet 2	RJ-45	Gigabit Ethernet for streaming and management
DVB ASI IN	BNC	DVB ASI input
DVB ASI OUT	BNC	DVB ASI output/pass through
Serial/Audio/Genlock	Multi-pin connector	Breakout cable for audio outputs: Digital Audio AES x2 Balanced Analog Stereo Audio Unbalanced Analog Stereo Audio Genlock (enabled by firmware upgrade) Serial for KLV/STANAG/CoT output (future)
CVBS	BNC	Composite output
SDI1	BNC	SDI output
SDI2	BNC	Secondary SDI output
HDMI	HDMI Type A	HDMI2.0 output
POWER 20-50 VDC	Multi-pin connector	Power input.

CHAPTER 3

Getting Started

In This Chapter

Initial Connection and Setup

The ProHD BR-DE900 is configured, by default, to use a fixed static IP address for its streaming and management port 1 (labeled "Ethernet1"). Use the default 192.168.1.2 IP address to perform initial login from a computer connected directly to the platform.

To configure the appliance's network settings for the first time:

1. Connect a power source to the rear power input port.
2. Connect the network port labeled "Ethernet1" to a computer with network IP configured to 192.168.1.x range with subnet 255.255.255.0 and ensure you can ping the default IP address of the unit to 192.168.1.2.

3. Open a web browser and type the appliance's IP address in the URL field. The login window appears.

4. Type the password (the default password is "jvc1234") and click the blue arrow. The ProHD BR-DE900 interface is loaded.

5. From the main menu, select System. The system page opens:

6. Set the below parameters required for your network and click **Apply**.

Parameter	Description
IPv4/ Address Type	Select between Static IP or DHCP+Zeroconf mode. If a **Static** IP is used, its respective fields must be filled.
IP Address	Enter the static IP address.
Subnet Mask	Enter the subnet mask address.
Default Gateway	Enter the default gateway address.
IPv6 Address Type	Refer to The System Page (on page 38) for more information.
SAP Listener	Refer to The System Page (on page 38) for more information.

NOTE:

For more in-to-depth parameter information, refer to The System Page (on page 38).

CAUTION:

When in DHCP mode, ProHD BR-DE900 will receive an IP address automatically from the DHCP server. In order to know the provided address:

- Refer to **Retrieving or Setting Network Parameters through a USB Thumb Drive** (see "Retrieving or Setting Network Parameters through a USB Thumb Drive (on page 16)" on page).
- When you change the appliance's IP address to a different subnet you may need to reconfigure your computer network settings to re-connect to the appliance.

Retrieving or Setting Network Parameters through a USB Thumb Drive

To Retrieve Your Network Parameters through a USB Thumb Drive (When ProHD BR-DE900 IP Address is Unknown):

1. Turn ProHD BR-DE900 OFF.
2. Allocate a USB thumb drive and insert it to ProHD BR-DE900 USB port.

   NOTE:
   USB thumb drive must be formatted in FAT32.

3. Connect the network cable to ProHD BR-DE900 Ethernet port.
4. Insert the USB thumb drive to the ProHD BR-DE900 USB port.
5. Turn ProHD BR-DE900 ON. The network setup file **"DecoderNetworkSettings<the unit's serial number>.txt"** is being copied from the appliance to the thumb drive. Wait a few minutes to ensure that the file is being copied properly.
6. Remove the USB Thumb drive from the appliance, and insert it to a PC.
7. Open the **"DecoderNetworkSettings<the unit's serial number>.txt"** file in the USB thumb drive using any text editor program.
8. Read the IP address from the file.
9. Enter the read IP address in the Internet browser URL field. The Log on window appears.
10. Log in.

To Set Network Parameters through a USB Thumb Drive (When ProHD BR-DE900 IP Address is Known):

1. Either obtain the **"DecoderNetworkSettings<the unit's serial number>.txt"** as detailed above, or from JVC Online Support Portal. This file contains the default IP address of **192.168.1.2.** Open it using any text editor program.

   - or -

   Retrieve the IP address from ProHD BR-DE900 by repeating steps 1 through 7 as described in the section above.
2. Modify any of the listed network parameters, as required, and save the changes. The file name to be used is "DecoderNetworkSettings.txt".
3. Eject the USB thumb drive properly from the PC and insert it to the ProHD BR-DE900 USB port.

4. Turn ProHD BR-DE900 *ON.* When the boot process is completed, *ProHD BR-DE900 will be set with the new IP address.*
5. Enter the IP you have set to the Internet browser URL field. The Log on window appears.
6. Log in.
7. Save the file (either on a USB thumb drive or any other place of your choice for future reference. In case ProHD BR-DE900 IP address becomes unknown and needs to be retrieved, this file will be used.

CHAPTER 4

Setup and Operations

In This Chapter

Using the ProHD BR-DE900 Interface

ProHD BR-DE900 Functions

The followings are available at all times (regardless which menu item is selected):

- **Dashboard frame** - top of page from which decoding channel is controlled and monitored.
- **Help** - offline help/user manual.
- **Logout** - allows you to log out the application.
- **About** - provides information about ProHD BR-DE900.

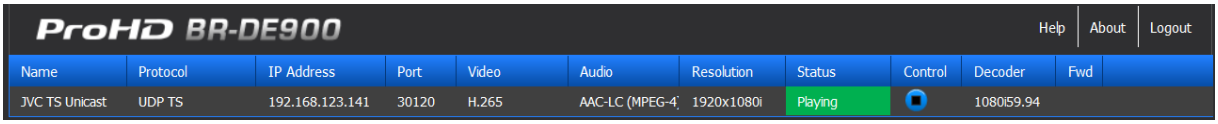
The Main Menu

The ProHD BR-DE900 main menu includes the following items:

- **Dashboard** - view platform, network and traffic information.
- **Channel** – view, set and select channel parameters: source streaming protocol, IP address, Ethernet port
- **Decoder Settings** – set video, audio, decoder parameters
- **System** - view and set appliance's parameters such as network, security, date and time.
- **Configurations** - allows saving of channel configurations.
- **General** - view system information such as software version, serial number, and provides restart, factory reset, licensing and firmware upgrade functions.

Dashboard Frame

In the dashboard frame section, you can review the system configuration and parameters.



The Dashboard section displays the following information:

Parameter	Display	Description
Name		Channel name defined by the user
Protocol	• UDP TS • RTP TS • RTP ES (RTSP) • Zixi™ Broadcaster • Zixi™ P2P • Pro-MPEG	Channel streaming protocol.
IP Address	• IP address	Displays the stream IP address. While protocol used is Zixi™ Broadcaster or RTSP ES, the streaming server IP address is displayed.
Port		Displays the stream port number. While RTSP ES protocol is used, the server port is displayed.

Video	• HEVC • H.264	Displays the stream video codec
Audio	• AAC-LC	Displays the stream audio codec
Resolution		Displays the stream video resolution
Status	• Playing • Started • Stopped • Error	Displays the status of the channel. If the stream is not received and ProHD BR-DE900 has been started, "Started" is displayed.
Control	Play/Stop	Start / Stop the decoder. If the stream is not received and ProHD BR-DE900 has been started, "Started" is displayed.
Decoder		Displays the decoder output resolution and frame rate.

The Dashboard Page

The dashboard is the main page displaying the appliance's view, and displays network information for both network interfaces as well as an overall stream and traffic summary.

Interfaces being activated and/or used appear in green (see figure below).

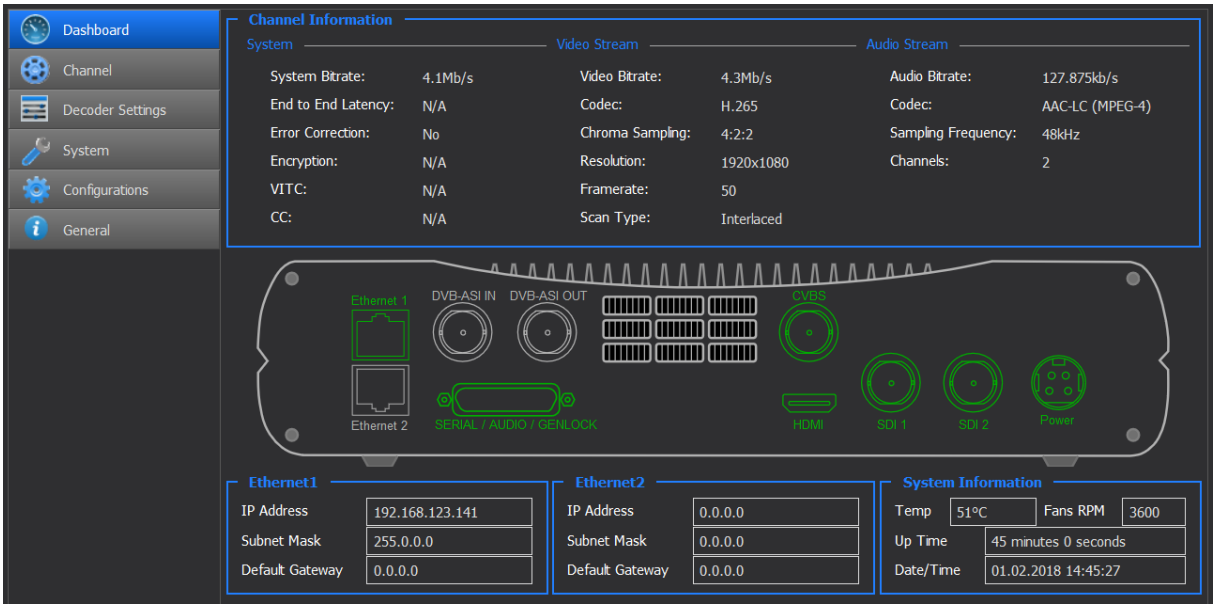


Figure 4-1: The Dashboard page

To view the dashboard parameters:

1. From the main menu, select **Dashboard.** The following parameters are displayed:

NOTE:

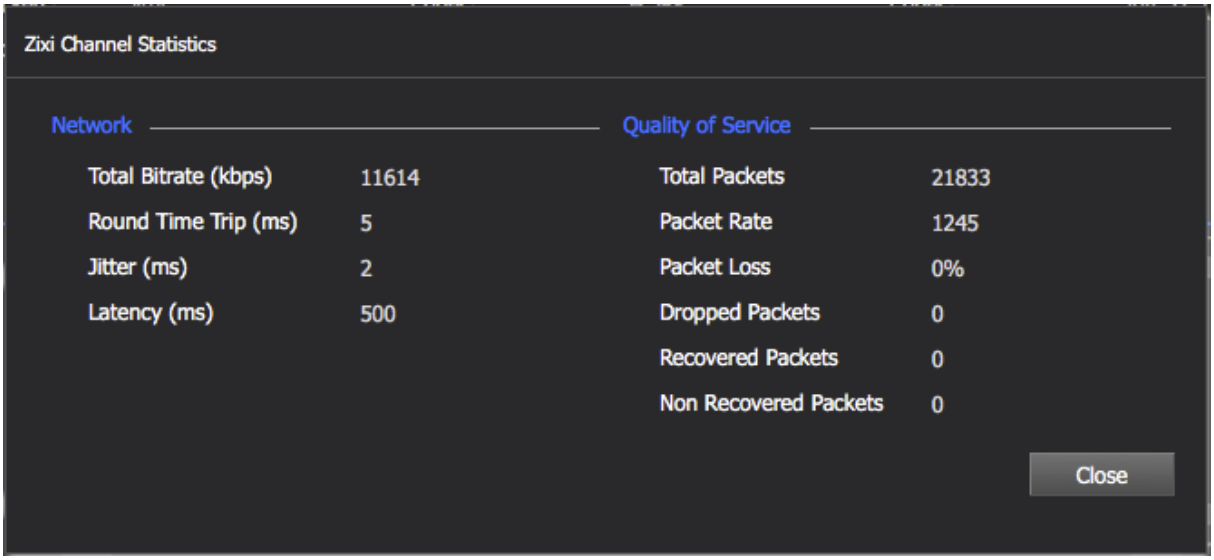
The Dashboard page automatically polls the appliance hardware for the latest status of channels, streams and sources. You may also manually refresh the Dashboard page (by either pressing the "F5" key on your keyboard or re-clicking **Dashboard**), to obtain instantly the current state of the system whenever you configure any of the following parameters: network interfaces, traffic, or rear panel connections.

Section	Description
Channel Information	**System** • **System Bitrates** – Displays the incoming system network bitrate. In case of several multicast streams on the network, the total bitrate of these streams will be displayed. • **End to End Latency -** N/A - for future usage. • **Error Correction -** Indicates if the stream is protected by either Zixi™ or Pro-MPEG protocol. • Zixi™ Statistics: When a Zixi™ channel is decoded, click the info button to access statistical Zixi™ information. • **Encryption – Indicates if an encrypted stream is being decoded** • **VITC -** Indicates if VITC information is detected with the stream (future) • **CC -** Indicates if Closed Captioning information is detected with the stream (future). **Video Stream** • **Video Bitrate** – Displays the incoming video bitrate. • **Codec -** Displays the video codec within the stream. • **Chroma Sampling -** Displays the chroma sampling of the stream. • **Resolution -** Displays the stream resolution. • **Framerate -** Displays the stream framerate. • **Scan Type -** Displays if the stream is progressive or interlaced. **Audio Stream** • **Audio Bitrate** – Displays the incoming audio bitrate. • **Codec -** Display the audio codec within the stream. • **Sampling Frequency-** Display the audio stream sampling rate. • **Channels -** Display the number of audio channels within the stream.

Ethernet 1	• **IP Address** – Displays the Network Interface IP address. • **Subnet Mask** – Displays the Network Interface subnet mask address. • **Default Gateway** – Displays the Network Interface Default Gateway address.
Ethernet 2	• **IP Address** – Displays the Network Interface IP address. • **Subnet Mask** – Displays the Network Interface subnet mask address. • **Default Gateway** – Displays the Network Interface Default Gateway address.
System Information	• **Temperature** – Displays the system internal temperature. • **Fans RPM** – Display current fan speed • **Up Time** – Displays the uptime since last reboot. • **Date/Time** – Display Date and Time.

Zixi™ Statistics Information

1. When a Zixi™ channel is decoded, click the info button to access statistical Zixi™ information.



Parameter	Description
Total Bitrate (kbps)	Current bitrate of the incoming channel
Round Time Trip (ms)	Two-way delay between the encoder and decoder (RTT)
Jitter (ms)	Network jitter
Latency (ms)	Stream Latency configured on the encoder side. If the latency set is less than 3 times the RTT value, then Latency value turns red to indicate non-sufficient error recovery buffer size (refer to the note below)
Total Packets	Total number of packets already transmitted
Packet Rate	Current number of packets per second received
Packet Loss	The current percentage of dropped packets between the encoder and decoder (the packet loss is introduced by the network link)
Dropped Packets	Total number of packets dropped between the encoder and the decoder due to the network link. The dropped packets are recovered by Zixi™ technology (see below parameters).
Recovered Packets	The total number of dropped packets that have been recovered since the beginning of the streaming
Non-recoverable Packets	Total number of non-recovered packets since the beginning of the streaming. If the packet loss is lower than 30%, this number should remain zero if the latency set on the encoder or Zixi broadcaster is high enough, meaning no interruption or decoding artifacts were experienced by the viewer.

NOTE:

For getting sufficient error-recovery, it is recommended to set the Latency on the encoder side at least 3 times larger than the RTT (i.e Latency >= 3* RTT).

The Channel Page

In the **Channel** page, a list of channel can be set and saved. The following channel protocols are supported:

- UDP TS
- RTP TS
- RTP ES (RTSP)
- Zixi™ Broadcaster
- Zixi™ P2P (if license is enabled)
- Pro-MPEG.

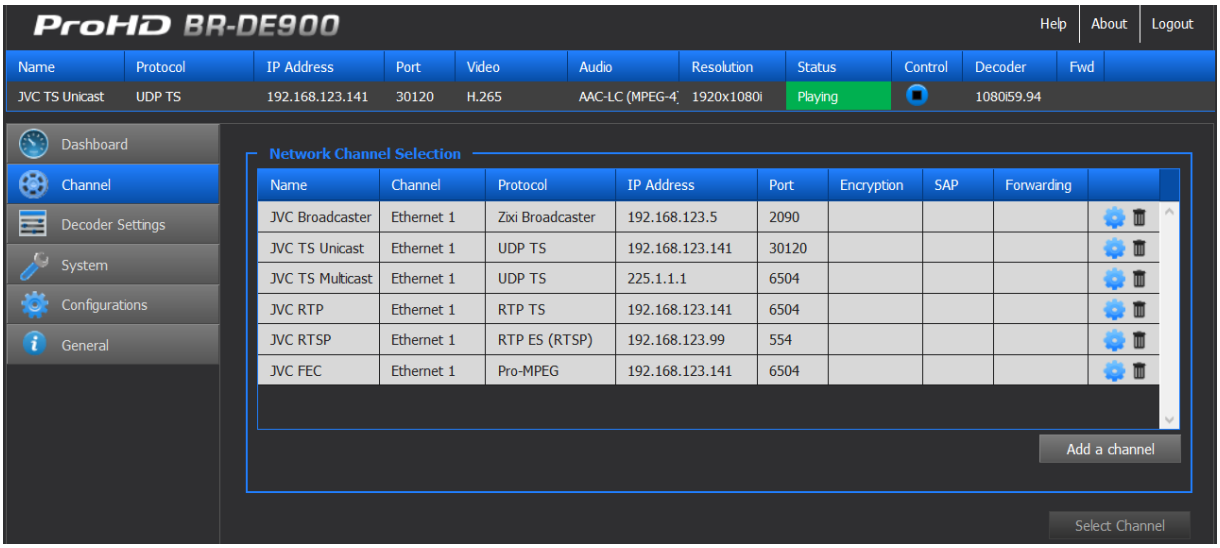


Figure 4-2: The Channel page

To set the channel parameters:

1. From the main menu, select **Add a Channel**.
2. The **Input Channel Configuration** page appears:

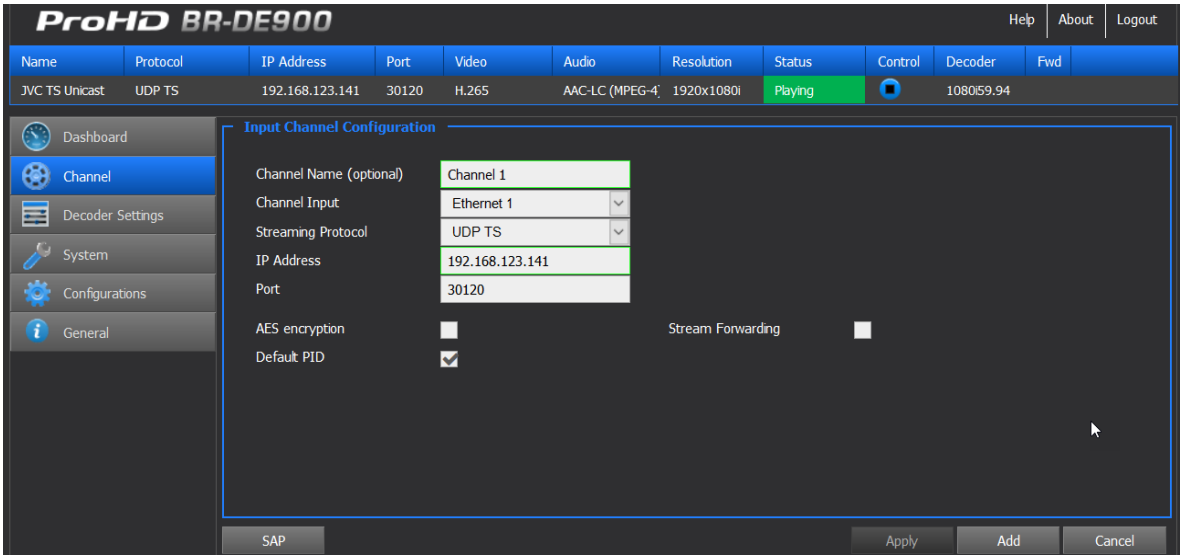


Figure 4-3: The Input Channel Configuration page

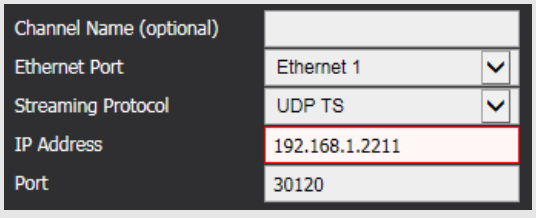
3. Set the channel fields (name….), as required

-Or-

4. Click **SAP** (bottom left) to display the list of channels announced by the Session Announcement Protocol. SAP channel parameters are automatically configured. Refer to the next section - Input Channel Configuration - for more information.
5. Click **Add**.
6. Refer to the Input Channel Configuration description in the next section for more information.

NOTE:

A red frame appears when the entered value is not valid.



7. A new channel is added to the **Network Channel Selection** List.

8. Select the channel to be decoded row within the list and click **Select Channel.**

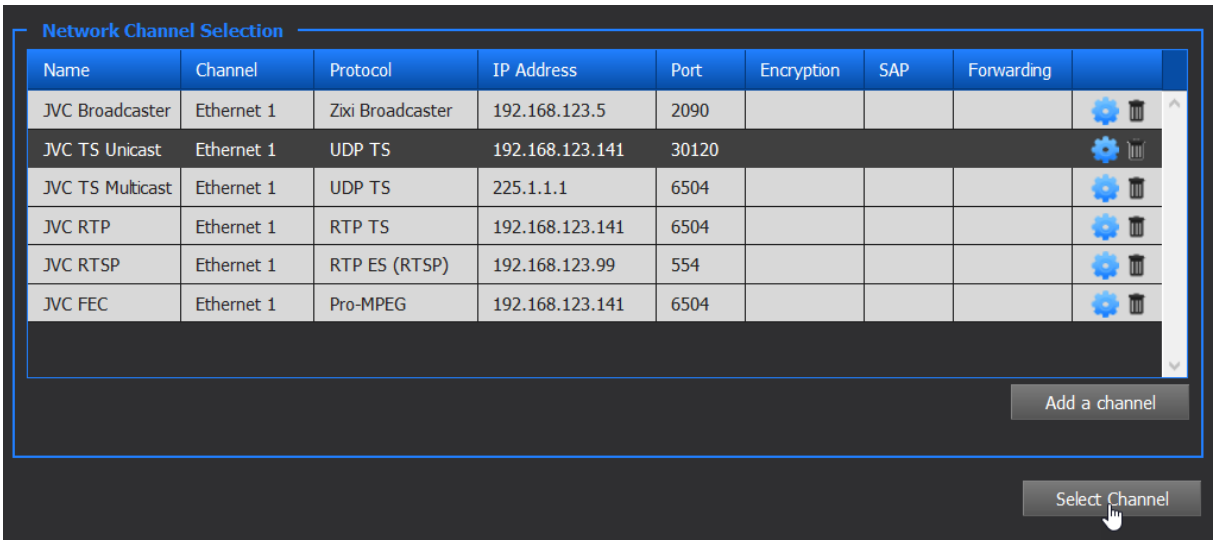


Figure 4-4: The Network Channel Selection window

NOTE:

Channels can be modified or deleted using the settings or bin icons respectively.

Input Channel Configuration

Adding a SAP Channel

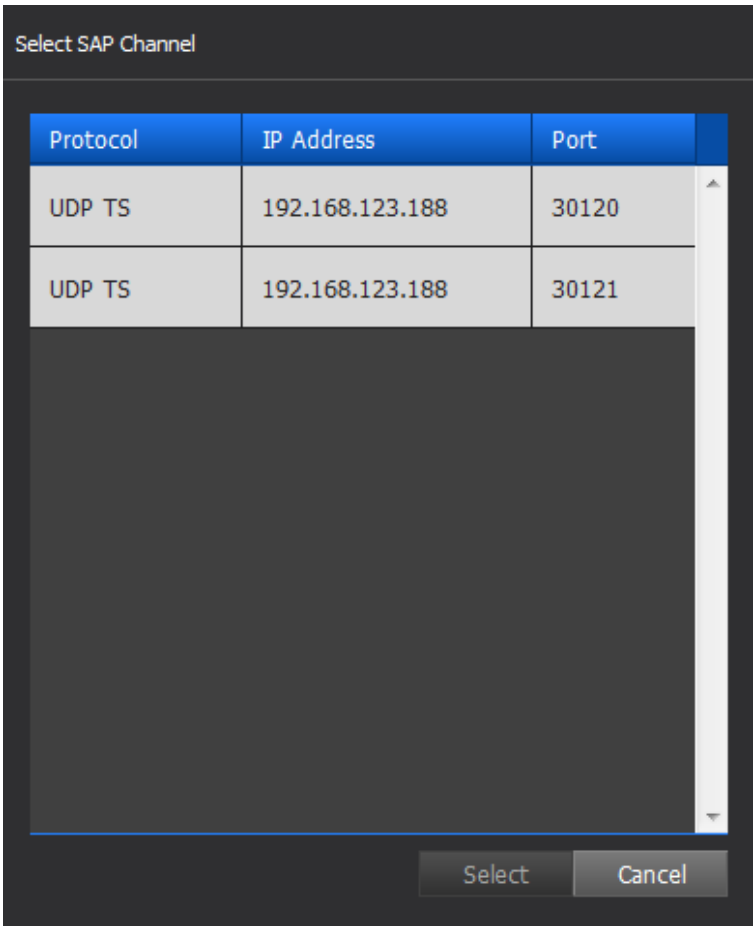
ProHD BR-DE900 allows to manually enter the parameters of a channel. It also supports the Session Announcement Protocol (SAP) which allows to detect announced streams on a network for auto channel configuration:

NOTE:

The SAP Listener feature must be enabled for adding a SAP Channel. Refer to The System Page (on page 35) for instructions.

To add a channel using SAP:

1. Click **SAP** in the Input **Channel Configuration** page:



2. Select the desired channel row, and click **Select.**
3. The input channel configuration is now populated, add a Channel Name if required (optional parameter).

To manually add a channel:

If a channel does not appear within the SAP list, the channel can be manually set.

For UDP TS and RTP/RTSP channels:

Parameter	Description
Channel Name (Optional)	Enter a Channel Name to differentiate channels within the Channel list. The Channel name is an optional field.
Channel Input	Select the Channel Input from which the channel is received. Either Ethernet Port 1, Ethernet Port 2 or DVB-ASI input can be selected.
Streaming Protocol	Select the required protocol.
IP Address	Type the channel IP address.
Port	Type the port number.
AES Encryption	Select if you wish to decode an encrypted channel. The AES key value must be entered.
Default PID	By default, the decoder selects the first Video and Audio PID to be decoded. In case another PID to be decoded is required, clear the check box and enter the values accordingly.
Program PID	Set the program PID to be selected. Only available when Channel Input selected is DVB-ASI.
Video PID	Set the Video PID to be decoded
Audio1/2 PID	Set the Audio PID to be decoded for each audio pair (1 and 2)

For RTP ES (RTSP) channel:

In addition to the parameters specified in the table above, type the path of the SDP file residing on the RTP server (Stream Name).

NOTE:

You must click **Apply** for the new settings to be saved.

Zixi™ Channels

NOTE:

The Zixi™ protocol supports two modes:

- Zixi™ Broadcaster Server.
- Zixi™ P2P: Point-to-Point streaming directly from a JVC encoder. A license is required to support this mode.

When streaming using Zixi™ Broadcaster Server, the BR-DE900 pulls video from one of the server's inputs. Enter the Zixi™ Server IP address and Stream ID / Password for the associated input (do not attempt to create a new output on the server).

When streaming directly from an encoder, enter the stream port to match the encoder settings.

For Zixi™ Broadcaster channel:

Parameter	Description
Channel Name (Optional)	Enter a Channel Name to differentiate channels within the Channel list. Channel name is optional.
Ethernet Port	Select the Ethernet Port from which the channel is received.
Streaming Protocol	Select Zixi™ Broadcaster.
IP Address	Type the Zixi™ server IP address.
Port	Type the Zixi™ server port.
Stream Name	Type the channel name entered in Zixi™ server.
Password (Optional)	Type the password if required.
Latency	Type the latency value for the Broadcaster server. It should match the latency value that is set on the Zixi™ Broadcaster.

For Zixi™ Point-to-point channel (a license is required):

Parameter	Description
Streaming Protocol	Select Zixi™ P2P.
Port	Type the Channel port

NOTE: Zixi™ point-to-point streaming from JVC appliances

Zixi™ Point-to-point license is included when ProHD BR-DE900 is used in conjunction with JVC encoders and cameras.

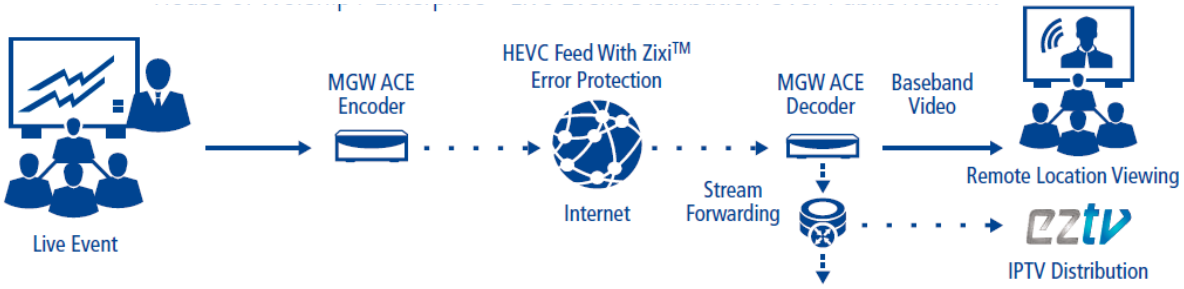
To start using point-to-point Zixi™ streaming between ProHD BR-DE900 and JVC encoders/cameras:

- Verify that the JVC encoder and the BR-DE900 can communicate (the gateways should be properly configured).
- Set Zixi™ as the protocol on both ProHD BR-DE900 and the JVC encoder.
- Set the JVC encoder **Target Address** by entering ProHD BR-DE900 system IP address (Zixi™ is unicast address only).
- Set the same target port on both ProHD BR-DE900 and JVC encoder.

Start the ProHD BR-DE900 by clicking **Play**.

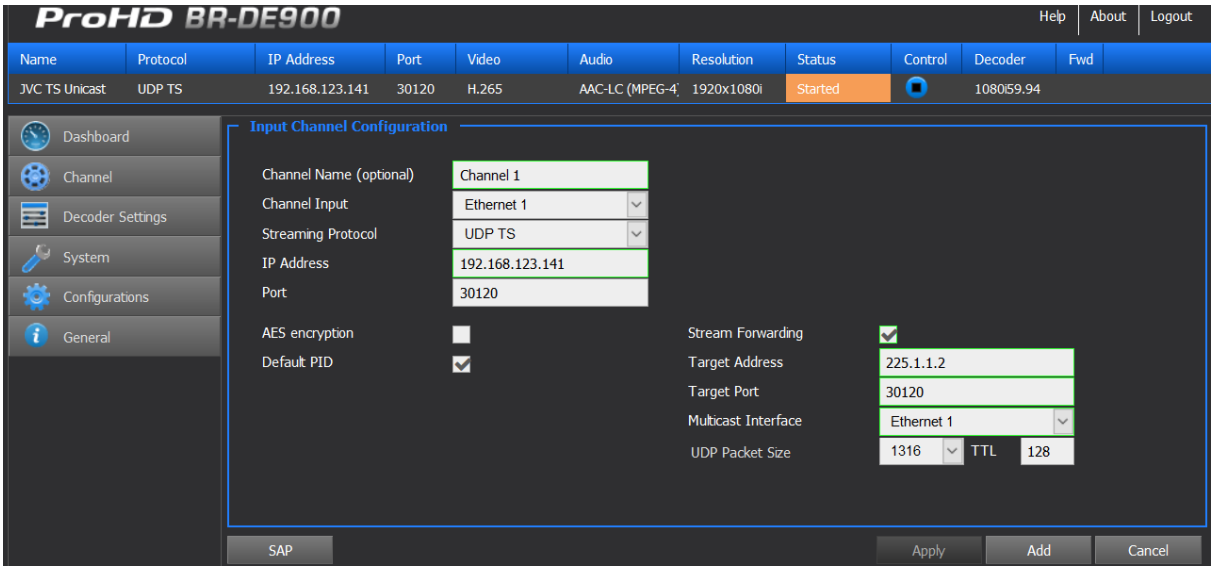
Stream forwarding:

ProHD BR-DE900 allows to forward an incoming UDP TS,Zixi™ (P2P or from a Zixi™ Broadcaster) or Pro-MPEG channel to a UDP TS channel over IP (unicast or multicast).



1. To activate stream forwarding, click "Stream Forwarding".

2. Enter the following parameters:



Parameter	Description
Target Address	Enter the Target IP Address
Target Port	Enter the Target IP Port number
Multicast Interface	When a multicast address is specified in the target field, select the Ethernet Port where the stream shall be transmitted to.
UDP Packet Size	Select the UDP Packet Size value
TTL	Enter the TTL value

For Pro-MPEG channel:

Parameter	Description
Channel Name (Optional)	Enter a Channel Name to differentiate channels within the Channel list. Channel name is optional.
Ethernet Port	Select the Ethernet Port from which the channel is received.
Streaming Protocol	Select Pro-MPEG protocol.
IP Address	Type the channel IP address.
Port	Type the port number of the main input stream.
1-D Port Number	Type the port number through where columns checksums will be sent.
2-D Port Number	Type the port number through where rows checksums will be sent when the 2-D mode is selected.

The Decoder Settings Page

In the **Decoder Settings** page, the below parameters can be set:

- **Video**
- **Audio**
- **Decoder**

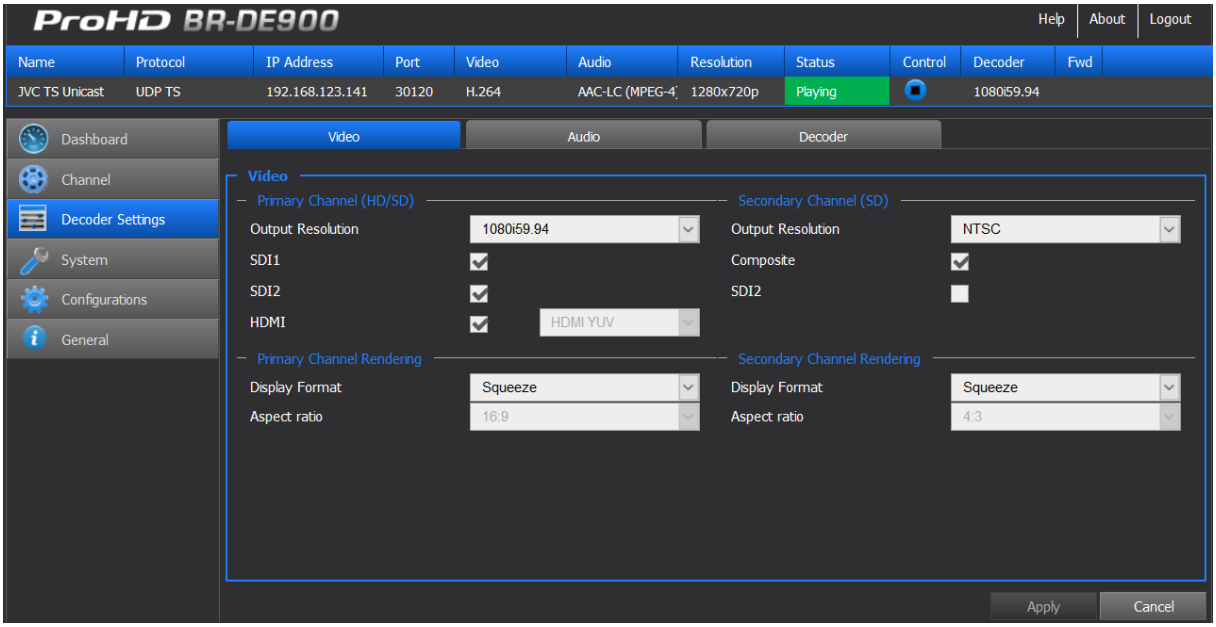


Figure 4-5: The Decoder Settings Video page

To set Video parameters:

This section sets video output settings. Video outputs are split into two channels:

- Primary Channel: SDI1/SDI2 (3G/HD/SD-SDI) and HDMI outputs can be configured.
- Secondary Channel: SDI2 (SD-SDI) and Composite outputs can be configured.

NOTE:

The Secondary channel is a downscaled version of the primary channel.

Parameter	Description
Output Resolution (for each channel)	Select the required resolution from the drop-down list.
SDI1 / HDMI **SDI2 / Composite**	Enable video outputs when the box is selected. SDI2 can be configured as part of the Primary channel or Secondary channel.
Display Format	Select the preferred display from the drop-down list.
Aspect Ratio	Select the aspect ratio from the drop-down list. When "Auto" is selected the aspect ratio is determined according to the aspect ratio of the incoming stream parameter (planned for next versions).

To configure Audio Settings:

This section sets audio routing for:

- SDI1/SDI2 and HDMI outputs
- Digital AES 1 and 2 unbalanced outputs. It is possible to set if AES or S/PDIF format is outputted (respectively Consumer or Professional).
- Analog Balanced and Unbalanced audio outputs. The volume can be adjusted independently for the audio analog balanced and unbalanced outputs.

Figure 4-6: The Decoder Settings Audio page

To set the Decoder parameters:

1. From the main menu, select **Decoder Settings.**
2. Set the following parameters as required in each section and click **Apply.**

Parameter	Description
Decoder Clock Source	Select source clock either from: **Stream clock** **Genlock input clock** (planned for next versions).
Decoder Buffer (ms)	Type the decoder buffer value (0-1500ms). This parameter is used for handling network jitter, allowing smooth playback. The bigger the buffer, the higher the latency. If staggering occurs, increase the buffer value until reaching a smooth decoding. The default buffer value should comply to most streams.

The System Page

In the **System** page you set the parameters of the following tabs:

- **Network Interfaces**
- **Date and Time**
- **Security**

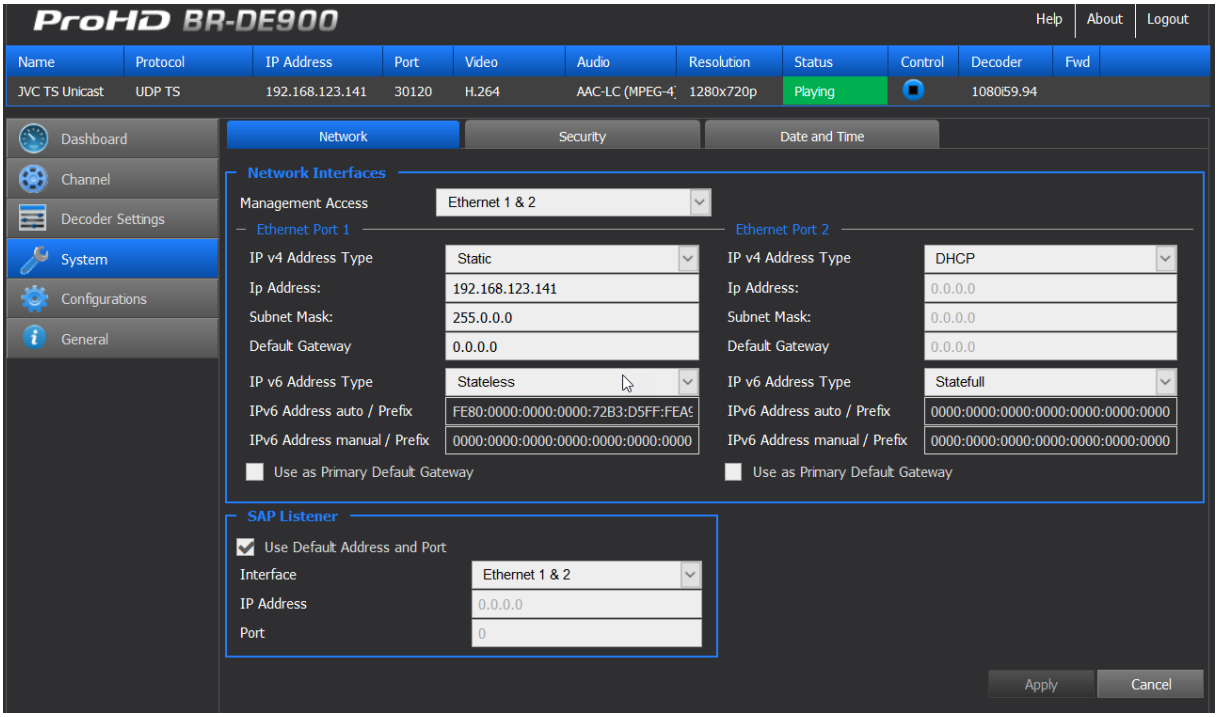


Figure 4-7: The System page

System Parameters:

1. From the main menu, select **System.**
2. Set the fields in each of the following sections below, as required, and click **Apply.**

To set the Network Interfaces:

Two network interfaces are available. Each one can be used for either management and/or streaming.

For easier management of the system, Ethernet Port 1 and 2 can be configured in DHCP mode. If DHCP mode is selected, the system will obtain the IP address automatically from the DHCP server.

Parameter	Description
Management Access	Select the Ethernet Port used for management (Ethernet Port 1, 2 or 1&2)
IPv4 Address Type	Select either Static, DHCP, or DHCP+Zeroconf. Zeroconf allows the unit to get an IP address automatically without DHCP server on the network. To retrieve the system IP address (see "Retrieving or Setting Network Parameters through a USB Thumb Drive (on page 16)" for more information).
IP Address	Enter IPv4 Address if Static mode is selected
Subnet Mask	Enter Subnet Mask if Static mode is selected
Default Gateway	Enter default Gateway if Static mode is selected
IPv6 Address Type	Select either **Static, Statefull** or **Stateless.** **Static** – enter the Static IPv6 address. **Stateless** - when there is no concern with the exact addresses the host use. **Statefull** - when more precise control over exact address assignments is required.
IPv6 Address auto/prefix	Displays the IP/Prefix address.
IPv6 Address manual/prefix	Enter a static IP/Prefix address.
Default Gateway	Select which Ethernet port settings to be used as the default gateway.

NOTE:

You must click **Apply** for the new settings to be saved.

To set SAP:

Parameter	Description
Use default SAP address and port	Use the default Session Announcement Protocol multicast group and port as per **RFC 2974**.
Interface	Select which Ethernet interface listens to the SAP.
IP Address	Set the target multicast IP address to which SAP messages will be sent.
Port	Set the target port to which SAP messages will be sent.

NOTE:

You must click **Apply** for the new settings to be saved.

To set Security:

Parameter	Description
Current Password	Type the current password.
New Password	Type the new password (7-16 characters).
Re-Type Password	Re-type the new password.
Host Name	Host name is "BR-DE900_<SN>" where SN is the system serial number.

Figure 4-8: The Security page

To set Date and Time:

Parameter	Description
Use NTP	Select the box to enable synchronization with the NTP server.
Server Address	Enter the NTP server address.
Sync Period	Enter the synchronization period.
Date	Set the date.
Time	Set the time.
Time Zone	Set the time zone.
Daylight Saving	See instructions below.

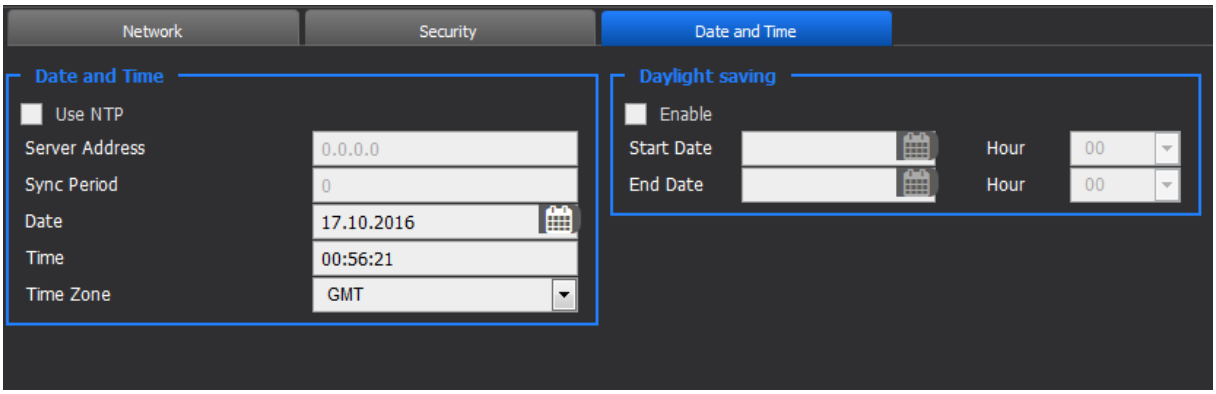


Figure 4-9: The Date and Time page

To set Daylight saving:

Parameter	Description
Enable	Select the box to enable daylight saving.
Start Date	Set the daylight saving start date.
End Date	Set the daylight saving end date.

The Configurations Page

ProHD BR-DE900 allows you to save screen shots of various configurations to be loaded manually or automatically in the future

In the **Configurations** page you can add, delete, Activate and Auto start a channel configuration.

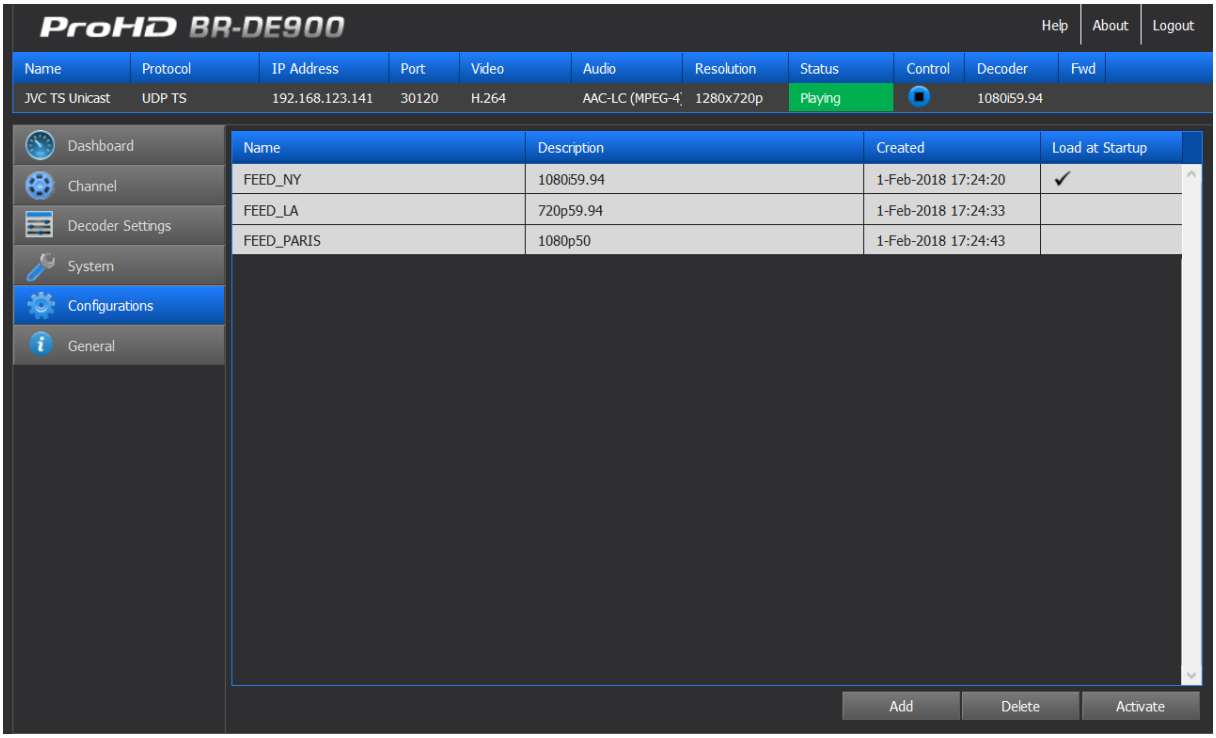


Figure 4-10: The Configurations page

To add a configuration:

1. Click **Add.**

Figure 4-11: The Add Configuration window

2. Type the configuration name and description.

3. Click **Save**. The new configuration appears on the top row.

To activate a configuration:

1. Select the desired configuration row.
2. Click **Activate** to activate the configuration. The activated configuration is applied.

To delete a configuration:

1. Select the desired configuration row.
2. Click **Delete** to delete the configuration.

To activate a configuration on boot up:

1. Select the desired configuration row.
2. Click the desired configuration row under the **Load at Startup** column**.** The ✓ icon appears in the **Load at Startup** column in the relevant configuration row.

   On next reboot, the selected configuration will load automatically.

NOTE:

- The configuration saves all ProHD BR-DE900 parameters and status. If the configuration was saved while in Stop mode, the system will return to that state while loading the configuration.
- For the appliance to automatically start decoding at boot up, ensure the configuration is saved while "Playing" a stream.

The General Page

In the **General** page you can view appliance related parameters and perform firmware upgrades.

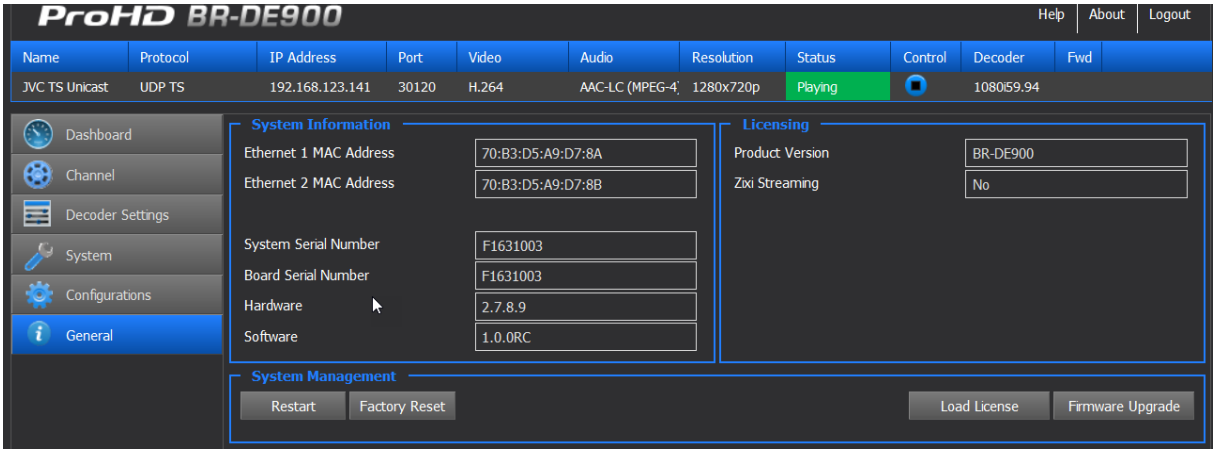


Figure 4-12: The General page

System Information parameters:

Parameter	Description
Ethernet 1 MAC Address	Displays the Network Interface #1 MAC Address.
Ethernet 2 MAC Address	Displays the Network Interface #2 MAC Address.
System Serial Number	Displays the system serial number.
Board Serial Number	Displays the video board serial number.
Hardware	Displays the current hardware revision.
Software	Displays the active software version.

Licensing:

Parameter	Description
Product Version	Displays the Product version name
Zixi™ Streaming	Displays the Zixi™ P2P license status

To restart the appliance:

1. Click **Restart** to restart the appliance.

To restore factory settings:

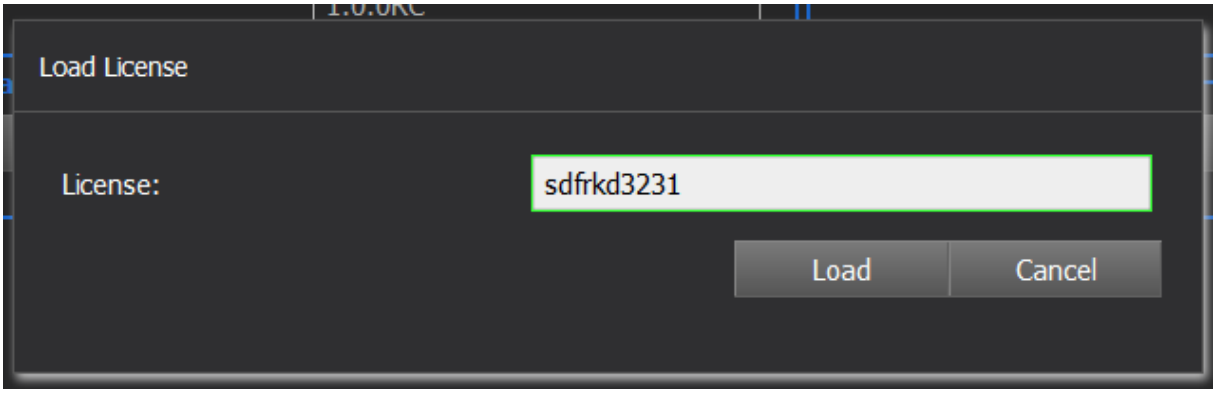
1. Click **Factory Reset** to reset all parameters to default factory values.

NOTE:

- The **Factory Reset** function will return the unit to its default IP settings: 192.168.1.2 with subnet mask 255.255.255.0 (Ethernet1) and DHCP mode for Ethernet 2.
- To connect from Ethernet 1, if you are connected to the unit from a PC on a different subnet, reconfigure your computer to the 192.168.1.x subnet to gain access to the unit and modify its settings for network use.
- To connect from Ethernet2, ensure you are connected to DHCP router, and retrieve the IP address of ProHD BR-DE900 using the USB key procedure (or define an IP address to ProHD BR-DE900 based on its MAC Address).

To load a Zixi™ license:

1. Click **Load License** to load the Zixi™ license number.
2. To get a Zixi™ license number, contact your JVC sales representative. The System Serial Number will be requested to generate the license



CHAPTER 5

Firmware Upgrade

In This Chapter

Upgrading the Firmware

Important Notes Prior to Upgrade

JVC periodically releases new firmware versions that include critical updates as well as feature enhancements.

ProHD BR-DE900 firmware and software upgrade process involves uploading a .TAR file within the unit HTTPS user interface, allowing the unit to extract the required files and perform internal updates. Uploading time of the upgrade file can take up to few minutes and may vary from one computer to another. It also depends on network speed and the connection's quality between the computer and the ProHD BR-DE900 appliance. On regular LAN, it takes only few seconds.

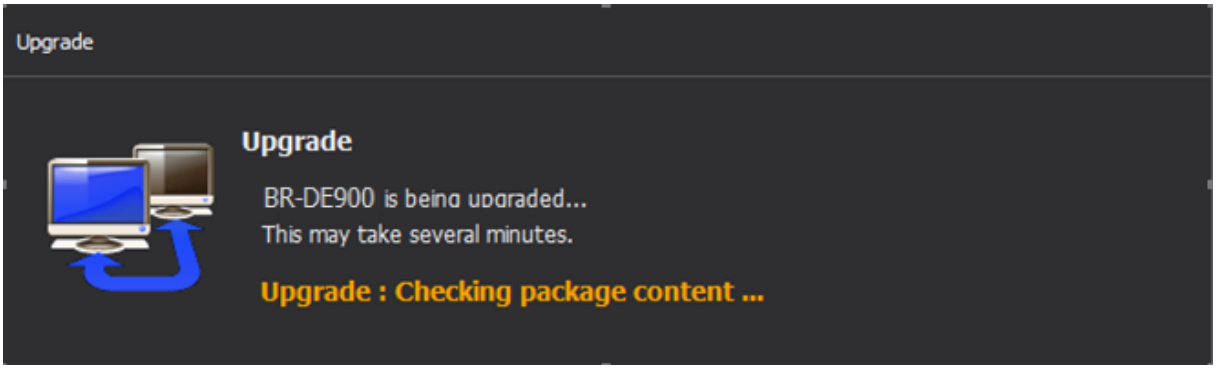
During the upgrade, while the file is uploaded, the web based HTTPS interface polls the unit status. This polling attempt occurs also during the actual execution of the upgrade inside the appliance. To avoid interruption to the upgrade process, do not close the active browser window used for uploading the file.

Read carefully the step-by-step procedure below and pay extra attention to notes and warnings.

To upgrade ProHD BR-DE900 Firmware version:

1. Send JVC your upgrade firmware request.
2. Click the **General** tab.
3. Click **Firmware Upgrade.** The **Load Firmware** window appears.
4. Click **Browse**. A browser window opens.

5. Select the appropriate ***.tar** file and click **Load.** The Upgrade window appears on the screen, indicating the progress of the upgrade process:



   The loading process takes from a few seconds to few a minutes, depending on your available network bandwidth. When loading completes, the Upgrade message disappears.

6. ProHD BR-DE900 reboots. Reconnect using the previously used IP address, and enter your login information.

In the **General** screen, verify that the upgrade was successful by inspecting the **Software Version** field.

CHAPTER 6

Technical Specifications

In This Chapter

Compliance

- FCC Part 15, Class A
- CE
- ICES-003
- RoHS

Environmental

- Operating Temperatures: 0 ºC to +50 ºC (-4 ºF to 122 ºF)
- Relative Humidity: 5% to 95% (non-condensing)

Physical

- Dimensions: 1.65" H x 7.95" W x 4.60" D (42.4 mm H x 202 mm W x 117.5 mm D)
- Weight: 2.40 lb (1.1 kg)
- Enclosure: Industrial-grade
- Mounting holes for seamless installation in vehicles / onto flat surfaces

Functional Description

Stream Input support:

Video Decoder- HEVC (H.265)

MPEG-H HEVC (ISO/IEC 23008-2) Modes:

- Profile/Level: up to Main422 10@L4.1 High Tier
- Color sampling & bit-depth: up to 4:2:2 / 10 bits
- Bit Rate: up to 50Mbps
- Frame Rate: 1-60 fps.
- Input Resolutions: from CIF up to 1920x1080

Video Decoder- H.264 (HEVC)

MPEG-4 AVC/H.264 (ISO\IEC 14496-10 MPEG-4 AVC -Rec. ITU-T H.264)

- Profile/Level: up to Hi10@L4.2
- Color sampling / Bit-depth: up to 4:2:2 / 10 bits
- Bit Rate: up to 100Mbps
- Frame Rate: 1-60 fps.
- Input Resolutions: from CIF up to 1920x1080

Audio Decoder

- MPEG-4 AAC-LC (ISO/IEC 14496-3)
- Up to 2x stereo channel
- Sample Rate: 48kHz
- Bit Rate: 16-192kbs

Network Protocols

- UDP TS
- RTP TS
- RTP ES (RTSP)
- Zixi™ Error-Correction (HEVC and H.264) – Zixi™ P2P and Broadcaster modes with stream forwarding feature.
- RTP TS with ProMPEG Forward Error Correction (SMPTE 2022)

Security

- Real-time AES decryption for video, audio and metadata

Network Interfaces

- 2x Gigabit Ethernet ports for management and/or streaming
- DVB-ASI Input and Output

Video Outputs (Rear Panel)

- 1 x 3G/HD-SDI/SD-SDI (SMPTE 259M-C, SMPTE 292M, SMPTE 274M, SMPTE 296M, SMPTE 424M, SMPTE 425M-A) (12G-SDI activated by firmware update and license option)

- 1 x HDMI v2.0
- 1x SD-SDI (SMPTE 259M-C)
- 1x Composite (CVBS)

Output Resolutions / frame rates support:

- 1920x1080p @ 60, 59.94, 50, 30, 29.97, 25, 24, 23.976
- 1920x1080i @ 60, 59.94, 50 Hz
- 1280x720p @ 60, 59.94, 50, 30, 29.97, 25
- 720x480i @ 59.94 Hz (NTSC)
- 720x576i @ 50 Hz (PAL)

Audio Outputs

- SDI Embedded audio (PCM support)
- HDMI Embedded audio (PCM support)
- 2x AES3 Digital Audio (BNC Female)
- 1 x Analog unbalanced stereo audio, AC-coupled (RCA Female)
- 1 x Balanced analog stereo audio (XLR Male)

Talkback Audio (front panel)

- Input : 1 x Analog unbalanced stereo audio, AC-coupled (Mini Jack)
- Output 1 x Analog unbalanced stereo audio, AC-coupled (Mini Jack)

Warranty

Limited Hardware Warranty Terms

Subject to the terms and conditions specified below your JVC product (the **"Product"**) is warranted against defects in material and workmanship (the "Warranty") for a period of 12 (twelve) months following the Delivery Date (the **"Warranty Period"**). The Warranty provided to you hereunder supersedes any warranty which may be provided to you by the original manufacturer of the Product.

JVC (collectively "**company**") will repair or replace (at its option) any defective part during the Warranty Period, provided that (i) the Warranty remains in force. Your dated sales receipt or invoice shall be considered as the delivery date of the Product form JVC's premises to your designated address (the "**Delivery Date**"); (ii) your Product unit carries a serial number on its rear panel; (iii) you received from JVC Customer Service department a Return Materials Authorization (RMA) number. No Product unit will be accepted for repair without RMA number; and (iv) the entire Product unit is returned to the company by prepaid shipping in JVC's original packaging.

JVC will not be responsible for (i) any damages resulting from the use, maintenance or installation of any Product; or (ii) for the incorporation of any spare or replacement parts not approved by the company.

Without limiting the generality of the foregoing, The company reserves the right to refuse to provide any services under the Warranty for any Product that, in the company opinion, has been subjected to any abnormal electrical, mechanical, or environmental abuse, or shows signs of modification by an unauthorized person or company. Call your local distributor or reseller for out-of-warranty repair charge estimates prior to returning a product.

You acknowledge that the product licensed or sold hereunder, which may include technology and software, are subject to the export control laws and regulations of the United States ("U.S.") and/or any other country in which the product is received. You agree that you will not knowingly transfer, divert, export or re-export, directly or indirectly, the product, including the software, the software source code, or technical data (as defined by the U.S. Export Administration Regulations) restricted by such regulations or by other applicable national regulations to any person, firm, entity country or destination to which such transfer, diversion, export or re-export is restricted or prohibited by U.S. or other applicable law, without obtaining prior authorization from the U.S.

Department of Commerce and other competent government authorities to the extent required by those laws.

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