570DSK-25G Series

Single Path Downstream Keyer with Logo Insertion

User Manual

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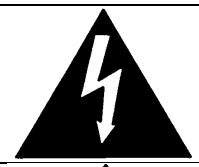
IMPORTANT SAFETY INSTRUCTIONS

	The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “Dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (Servicing) instructions in the literature accompanying the product.

- Read this information
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC – SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE

WARNING
DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS ARE PLACED ON THE EQUIPMENT

WARNING
TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE

WARNING
THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE

INFORMATION TO USERS IN EUROPE

NOTE

This equipment with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60065 Product Safety
- EN55103-1 Electromagnetic Interference Class A (Emission)
- EN55103-2 Electromagnetic Susceptibility (Immunity)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. 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.

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

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.

WARNING

Changes or modifications not expressly approved by Evertz Microsystems Ltd. Could void the user's authority to operate the equipment.

Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Sept 2019
2.0	Updated features	Feb 2021

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1. OVERVIEW

The 570DSK-25G is a single path Downstream UHD IP Keyer with Logo insertion. As part of 'Evertz' Software Defined Video Networking solution, the 570DSK-25G is an IP-based downstream keyer with 25GbE I/O for HD/3G/12G with an external keyer (from Key/Fill inputs) and an internal logo keyer for animations and static logos. Content for internal logo layer is stored on a customer provided NAS server.

The 570DSK-25G can be controlled by VUE, Evertz customizable user interface and/or third-party automation system over IP. The 570DSK-25G is *Vista*LINK® capable, offering remote monitoring, control and configuration capabilities via Simple Network Management Protocol (SNMP).

Features

- One 3G/4K/UHD external keyer (with external key and fill).
- Video formats: HD/3G Level A and 12G single essence.
- Full 12-bit linear keyer with video fade-in and fade-out processing.
- Insert static or animated logos from NAS storage.
- Multiple control interfaces and/or third-party automation using IP.
- Support for SMPTE ST 2110, including SMPTE 2059 for PTP Timing
- Support for Multipath Merge based on SMPTE 2022-7

Network Management

- Built in VistaLINK® support for remote monitoring and control via SNMP (using VistaLINK® PRO)

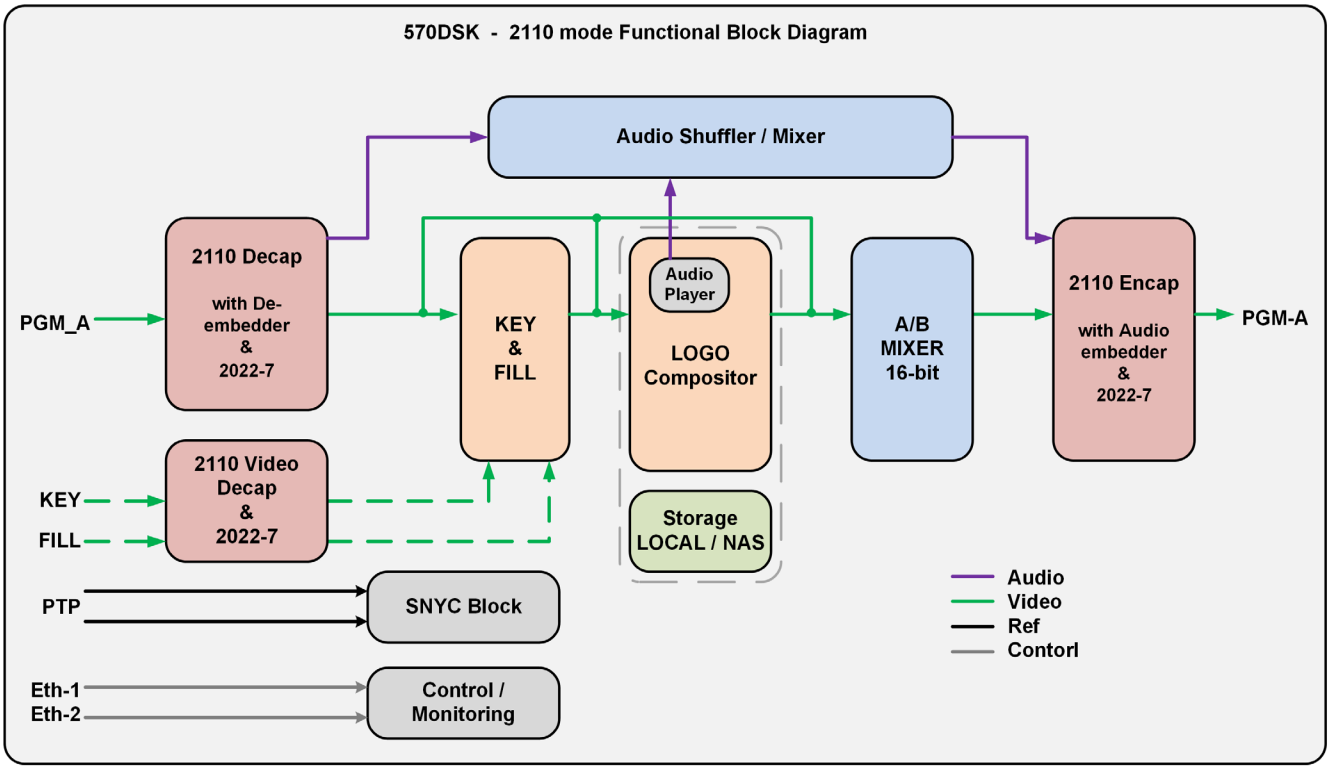

Figure 1-1 : 570DSK (-3G) (-4K) -25G Block Diagram

2. SPECIFICATIONS

2.1. VIDEO INTERFACES

Program, Key and Fill

Standards	SMPTE 424M (3Gb/s)
	SMPTE 425-5 (Quad-link 3Gb/s)
	SMPTE 2082 (12Gb/s) for video payload definition
Video Encapsulation	SMPTE 2110-20
Audio Encapsulation	SMPTE 2110-30
Metadata Encapsulation	SMPTE 2110-40

2.2. REFERENCE

- SMPTE 2059

2.3. ETHERNET INTERFACE

- 4XQSFP28
- 2XRJ-45 (10/100/1000)

2.4. DATA FORMAT

- Ethernet/IP/UDP

2.5. PHYSICAL

Number of Slots 1

2.6. ENCLOSURES

570FR 15-slot 3RU chassis

Ordering Information

570DSK-25G	3G/4K/UHD Single Downstream Keyer with Internal logo with Web and VistaLINK support

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3. INSTALLATION

3.1. FRONT AND REAR PANEL OVERVIEW

Figure 3-1 shows the Front and Rear panel of the 570DSK-25G modules. Sections 3.1.1 to 3.1.3 describe the specific video and control signals that should be connected to the 570DSK-25G and 570DSK-25G front & rear plates.

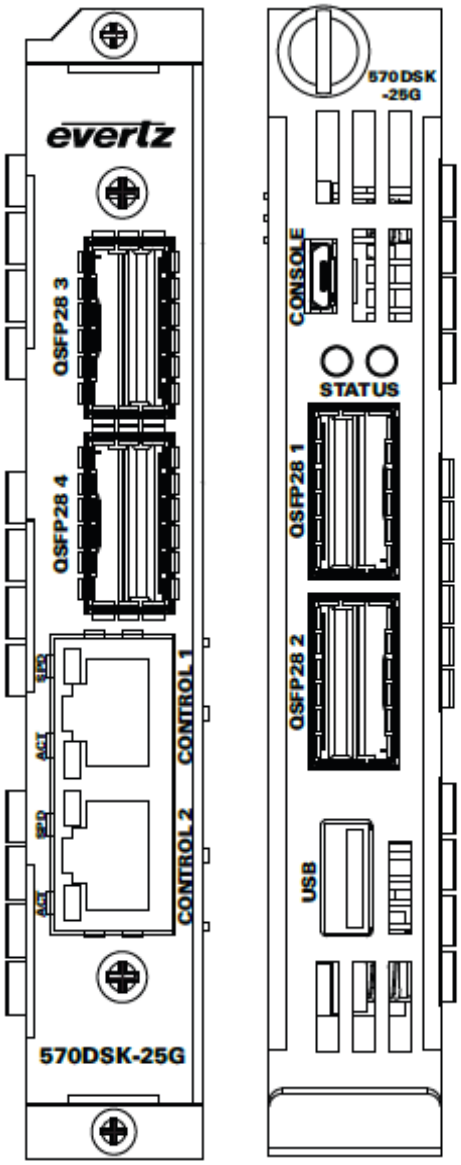


Figure 3-1 : 570DSK-25G Rear and Front Panels

3.1.1. Front Plate

The front plate of the 570DSK-25G series is equipped with 2x QSFP ports capable of passing 25GB of data per port.

QSFP 1: This QSFP connector is the Main Program, Fill and Key input to the 570DSK(-4K)(-3G)-25G. The Program, Preview and HD Downconvert output is also on the same connector. Below is a breakdown of each of the lanes in the QSFP:

Lane 1 - Input: Program & Fill
- Output: Program & HD Downconvert

Lane 2 - Input: Key
- Output: Preview

Lane 3 - Input: Not used

Lane 4 - Input: Not used

QSFP 2: This QSFP connector is the Backup Program, Fill and Key input to the 570DSK(-4K)(-3G)-25G. The Program, Preview and HD Downconvert is also on the same connector. Below is a breakdown of each of the lanes in the QSFP:

Lane 1 - Input: Program & Fill
- Output: Program & HD Downconvert

Lane 2 - Input: Key
- Output: Preview

Lane 3 - Input: Not used

Lane 4 - Input: Not used

3.1.2. Rear Plate

The rear plate of the 570DSK-25G is equipped with 2x QSFP ports capable of passing 25GB of data per port and includes 2x 1G Ethernet ports.

QSFP 3: This QSFP connector goes to the 570HDC to provide an HD Downconvert of the Program video to the 570DSK-25G.
Below is a breakdown of each of the lanes in the QSFP:

Lane 1 - Input: HD Downconvert
- Output: HD Downconvert
Lane 2 - Input: Not used
Lane 3 - Input: Not used
Lane 4 - Input: Not used

QSFP 4: This QSFP provides a 10G Data connection to the 570DSK-25G.
Below is a breakdown of each of the lanes in the QSFP:

Lane 1 - Input: 10G Data
- Output: 10G Data
Lane 2 - Input: Not used
Lane 3 - Input: Not used
Lane 4 - Input: Not used

Ethernet 1: Network port to access the webpage, VistaLink and a connection to the FTP Server.

Ethernet 2: Network port to access the webpage, VistaLink and a connection to the FTP Server.

3.1.3. Reference

PTP: The 570DSK-25G can receive the PTP from QSFP interfaces.

3.2. POWER REQUIREMENTS

The standard 570DSK-25G is a 1 slot card contained within the 570FR. The 570FR frame comes standard with one auto-ranging power supply that automatically senses the input voltage over the range of 100 to 240 VAC. An additional power supply (570PS) can be ordered to provide fully redundant powering of the frame. Power should be applied by connecting a 3-wire grounding type power supply cord to the power entry module on the rear panel of each power supply. The power cord should be minimum 18 AWG wire size; type SVT marked VW-1, maximum 2.5m in length.

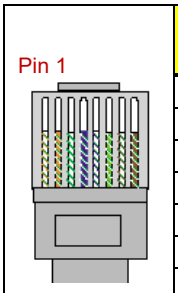
The power entry modules contain a standard IEC power inlet connector, two 5 x 20 mm fuse holders and an EMI line filter.

CAUTION – TO REDUCE THE RISK OF ELECTRICAL SHOCK, GROUNDING OF THE GROUND PIN OF THE MAINS PLUG MUST BE MAINTAINED.

3.3. CONNECTING TO AN ETHERNET NETWORK

The 570DSK-25G is designed to be used with either a 1Gbe or 10Gbe network also known as *Fast Ethernet*, twisted pair Ethernet cabling systems. The cable must be "straight through" with a RJ-45 connector at each end. Create a network connection by plugging one end of the cable into the RJ-45 receptacle of the 570DSK-25G and the other end into a port of the supporting network device.

The straight-through RJ-45 cable can be purchased or can be constructed using the pinout information in Table 3-1. A color code wiring table is provided in Table 3-1 for the current RJ 45 standards (AT&T 258A or EIA/TIA 258B color coding shown). Also refer to the notes following the table for additional wiring guide information.



Pin #	Signal	EIA/TIA 568A	AT&T 258A or EIA/TIA 568B	10BaseT or 100BaseT
1	Transmit +	White/Green	White/Orange	X
2	Transmit –	Green/White or White	Orange/White or Orange	X
3	Receive +	White/Orange	White/Green	X
4	N/A	Blue/White or Blue	Blue/White or Blue	Not used (required)
5	N/A	White/Blue	White/Blue	Not used (required)
6	Receive –	Orange/White or Orange	Green/White or Green	X
7	N/A	White/Brown	White/Brown	Not used (required)
8	N/A	Brown/White or Brown	Brown/White or Brown	Not used (required)

Table 3-1 : Standard RJ45 Wiring Color Codes

Note the following cabling information for this wiring guide:

- Only two pairs of wires are used in the 8-pin RJ 45 connector to carry Ethernet signals.
- Even though pins 4, 5, 7 and 8 are not used, it is mandatory that they be present in the cable.
- 10BaseT and 100BaseT use the same pins; a crossover cable made for one will also work with the other.
- Pairs may be solid colors and not have a stripe.
- Category 5 cable must use Category 5 rated connectors.

The maximum cable run between the downstream keyer and the supporting hub is 300 ft (90 m). The maximum combined cable run between any two end points (i.e. downstream keyer and PC/laptop via network hub) is 675 feet (205 m).

Devices on the Ethernet network continually monitor the receive data path for activity as a means of checking that the link is working correctly. When the network is idle, the devices also send a link test signal to one another to verify link integrity. The downstream keyer rear panel is fitted with two LEDs to monitor the Ethernet connection.

10/100: This LED is ON when a 100Base-TX link is last detected. The LED is OFF when a 10Base-T link is last detected. Upon power-up the LED is OFF as the last detected rate is not known and therefore defaults to the 10Base-T state until rate detection is completed.

LN/ACT: This dual purpose Green LED indicates that the 570DSK-25G has established a valid linkage to its hub, and it determines whether the 570DSK-25G is sending or receiving data. This LED will be ON when the 570DSK-25G has established a good link to its supporting hub. This gives you a good indication that the segment is wired correctly. The LED will BLINK when the 570DSK-25G is sending or receiving data. The LED will be OFF if there is no valid connection.

3.4. MODULE CONFIGURATION

The 570DSK-25G module features and parameters are configured through the following tools:

Module Serial Port: Module IP address network identification

***Vista*LINK® PRO:** An SNMP software tool that is used to configure the module's parameters for normal operation.

Web Server Interface: A web browser can be used to connect to the 570DSK-25G to configure the I/O and other parameters. This interface doesn't require any additional software to be installed.

3.5. CONFIGURING THE MODULE USING THE CARD EDGE SERIAL PORT

- Through the card edge's serial port, and using the serial 7700 upgrade cable connected to a PC's serial port running HyperTerminal (or equivalent), the 570DSK module's IP address and subnet are identified. The 7700 upgrade cable supplied with the 570FR frame is a multi-colored ribbon cable with a six pin header socket on one end and a female 9 pin D connector on the other end (Evertz part number WA-S76). This cable is normally in the vinyl pouch at the front of the manual binder. Connect the ribbon cable to port to J24 and power up the card. Configure the port settings of the terminal program as follows:

Baud	**115200**
Parity	**no**
Data bits	**8**
Stop bits	**2**
Flow Control	**None**

Table 3-2 : Port Settings

- When the card is powered-up, the HyperTerminal connection displays boot-up status information and once completed, ends with the "Status Message" as shown in Figure 3-2.

- Login with customer/customer credentials.

Figure 3-2 : Tera Term – Main Menu

3.5.1. Network Configuration

- Enter the Ethernet port you would like to change/set the IP address configuration. See below screenshot for reference. Eth0 is control port 2 and eth1 is control port 1. You can find the IP addresses for these ports by logging with root/evertz and type 'ifconfig eth0' or 'ifconfig eth1'.

```
login as: customer
customer@172.17.149.100's password:
******************************
******************************
Enter interface name e.g. eth0:
eth0
'dhcp' or 'static'?:
static
Enter IP address:
172.17.149.101
Enter Netmask address:
255.255.255.0
Enter Gateway address:
172.17.149.1
Enter Broadcast address:
172.17.149.255
Writing interface settings now...
******************************
******************************
Enter interface name e.g. eth0:
```

Figure 3-3 : Tera Term – Network Configuration

- To save the new IP address, login again with root/evertz and type ‘reboot’. See Figure 3-4 below screenshot for reference.

```
login as: root
root@172.17.149.100's password:
root@petalinux-570dp:~# reboot
```

Figure 3-4 : Tera Term – Saving New IP

3.6. CONNECTING THE VIDEO

3.6.1. Video Inputs

The HD or 3G or 4K program video source should be connected to QSFP 1 (Main) and QSFP 2 (Backup). The 570DSK-25G supports HD or 3G or 4K video in the formats shown in Table 3-3. The video standard must be set manually to match the incoming video type (see section 4.8 for VLPRO Configuration).

Common Name	Pixels / Active Lines	Frame Rate	Progressive/ Interlace	Standard
1080i/50	1920 x 1080	25	I	SMPTE
1080i/59.94	1920 x 1080	29.97 (30/1.001)	I	SMPTE
720p50	1280 x 720	50	P	SMPTE
720p59.94	1280 x 720	59.94	P	SMPTE
1080p/50	1920 x 1080	50	P	SMPTE
1080p/59.94	1920 x 1080	59.94	P	SMPTE
4K/50	3840 x 2160	50	P	SMPTE
4K/59.94	3840 x 2160	59.94	P	SMPTE

Table 3-3 : Video Input Formats

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4. HOW TO OPERATE DOWNSTREAM KEYER USING VISTALINK® PRO

4.1. WHAT IS *VISTA*LINK®?

*Vista*LINK® is Evertz's remote monitoring and configuration platform which operates over an Ethernet network using Simple Network Management Protocol (SNMP). SNMP is a standard computer network protocol that enables different devices sharing the same network to communicate with each other. *Vista*LINK® provides centralized alarm management, which monitors, reports, and logs all incoming alarm events and dispatches alerts to all the VLPro Clients connected to the server. Card configuration through *Vista*LINK® PRO can be performed on an individual or multi-card basis using simple copy and paste routines, which reduces the time to configure each module separately. Finally, *Vista*LINK® enables the user to configure devices in the network from a central station and receive feedback that the configuration has been carried out.

There are 3 components of SNMP:

1. An SNMP manager, also known as a Network Management System (NMS), is a computer running special software that communicates with the devices in the network. Evertz VistaLINK® Pro Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *Vista*LINK® enabled fiber optic products.

2. Managed devices, each with a unique address (OID), communicate with the NMS through an SNMP Agent.

3. A virtual database, known as the Management Information Base (MIB), lists all the variables being monitored, which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

4.2. DEVICE STATUS

The *Device Status* section enables the user to see an overview on the state of the device.

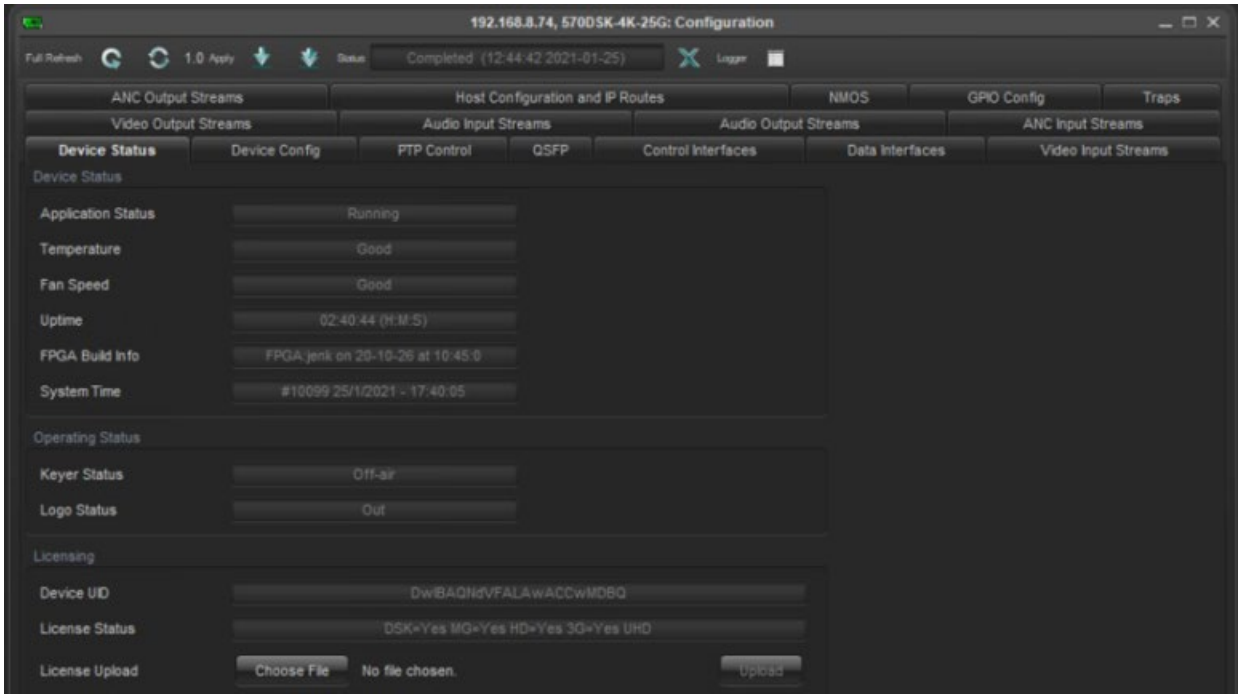

Figure 4-1 : VistaLINK® Pro - Device Status

Device Status:

- **Application Status:** Shows the status of the application running in the hardware.
- **Temperature:** Shows the current temperature of the device. If the temperature is running in normal operating range, “Good” will be displayed.
- **Fan:** This shows the state of the Fan running on the device. If the Fan is running in normal operating range, “Good” will be displayed.
- **Uptime:** This shows the amount of time that has elapse since the device was powered on. The format is Days:Hours:Minutes:Seconds.
- **FPGA Build Info:** Shows the FPGA version of the application running in the hardware.
- **System Time:** Shows the time of the hardware.

Operating Status:

- **Keyer Status:** Shows the status of the Keyer.
- **Logo Status:** Shows the status of the logo.

Licensing:

- **Device UID:** Shows the device’s Unique ID which is required to request license to enable the different feature keys.
- **License Status:** Shows the license’s status for feature keys. “Yes” means license is present and “No” means license is absent.
- **License Upload:** Option to upload the license key by selecting “Choose File” button.

4.3. DEVICE CONFIG

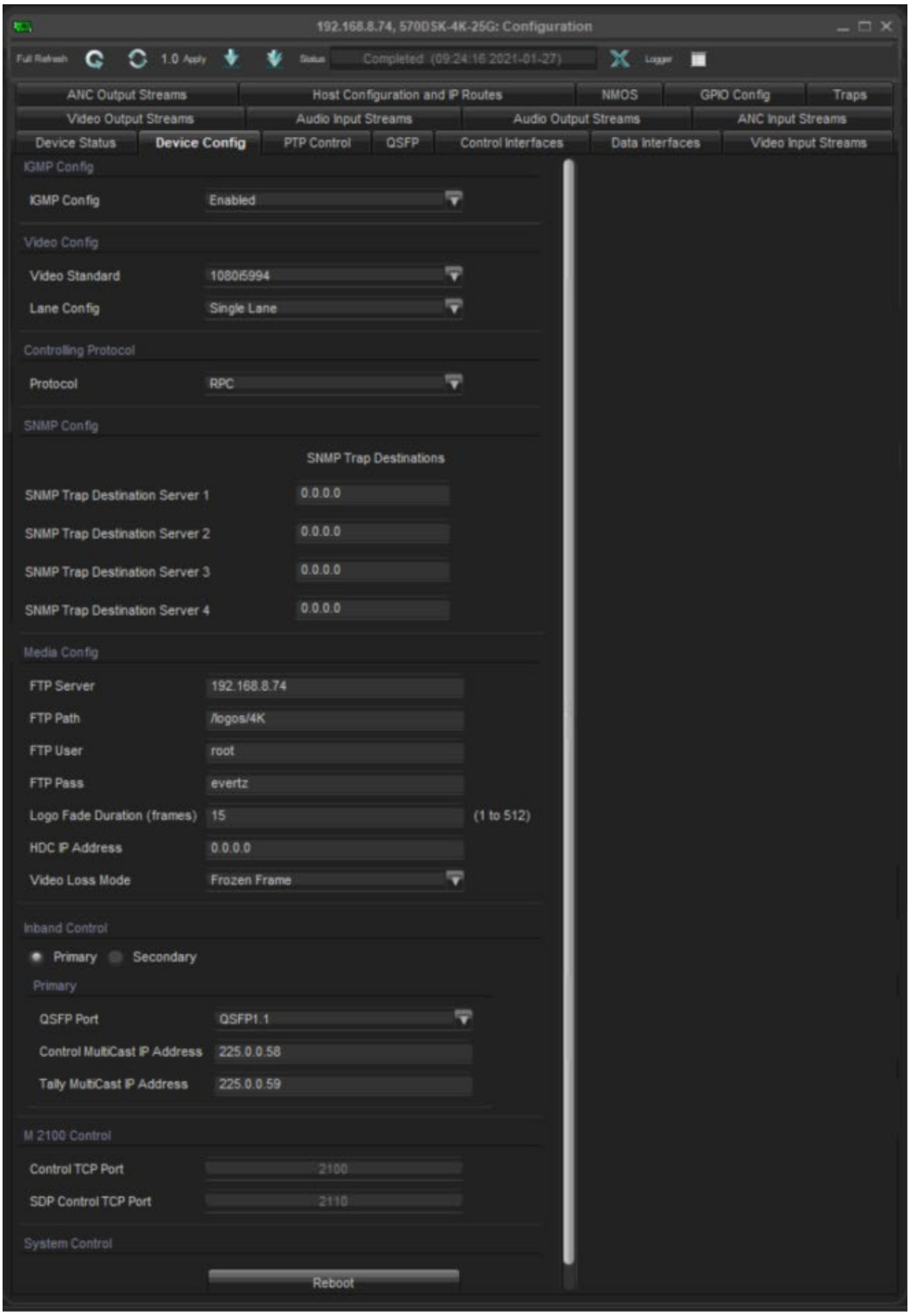

Figure 4-2 : : VistaLINK® Pro – Device Config

IGMP Config:

- **IGMP Config**: Allows user to enable or disable the IGMP. By default, it is enabled.

Video Config:

- **Video Standard:** Allows user to choose the video standard for DSK to pass
- **Lane Config:** Allows user to choose Single Lane or Multi Lane
  - Single Lane – Ability to receive and transmit using QSFP 1.1 and QSFP 2.1
  - Multi Lane – Ability to receive and transmit using QSFP 1.1/1.2 and QSFP 2.1/2.2. it is a recommended setting for 12G single essence signal.

Controlling Protocol:

- **Protocol:** RPC / NMOS / M2100
  - RPC: Protocol used to control DSK using Magnum
  - NMOS: Protocol used to control DSK using third party controller
  - M2100: it is an automation interface protocol to control DSK

SNMP Config:

- **SNMP Trap Destination:** Allows user to set the trap ip address to receive the fault.

Media Config:

- **FTP Server:** Allows user to set the ip address of the FTP server
- **FTP Path:** Allows user to set the path where the logos are located in FTP server
- **FTP User:** Allows user to set the username to access the FTP server
- **FTP Pass (Password):** Allows user to set the password to access the FTP server
- **Logo Fade Duration:** Allows user to set the duration to fade in the logos
- **HDC IP Address:** Allows user to set the ip address of the HDC hardware
- **Video Loss Mode:** Allows user to choose the video loss options (Blue Screen, Black Screen & Frozen frame)

Inband Control:

- **Primary & Secondary:** Shows the settings for Primary and Secondary Inband Control.
- **QSFP Port:** Allows user to view the QSFP lanes for primary and secondary Inband control port.
- **Control Multicast IP Address:** Allows user to view the Control multicast for primary and secondary Inband control.
- **Tally Multicast IP Address:** Allows user to view the Tally multicast for primary and secondary Inband control.

M2100 Control:

- **Control TCP Port:** Allows user to set the port# for M2100 control.
- **SDP Control TCP Port:** Allows user to set port# for SDP M2100 control.

System Control:

- **Reboot:** Allow user to reboot the DSK hardware

4.4. PTP CONTROL

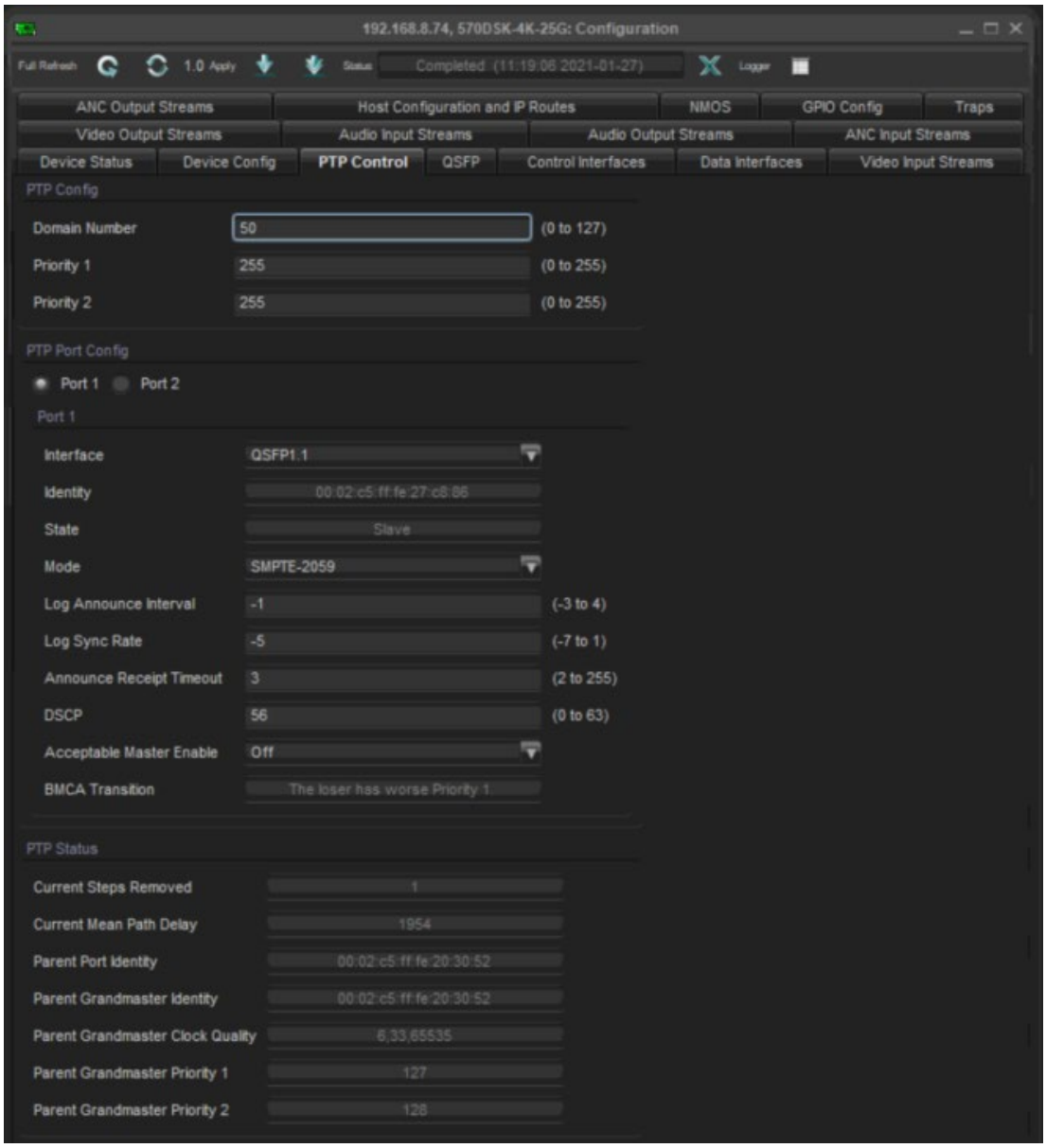

Figure 4-3 : VistaLINK® Pro - PTP Control

PTP Config:

- **Domain Number:** Allow the user to set the domain number of the PTP
- **Priority 1:** Allows the user to set the Priority# 1 of the PTP
- **Priority 2:** Allows the user to set the Priority# 2 of the PTP

PTP Port Config:

- **Port 1 & Port 2:** Shows the main and backup PTP ports
- **Interface:** Allows user to choose the interface where the PTP is receiving from.
- **Identity:** Shows the MAC address of the interface user selected
- **State:** shows the state (Slave or Listening) of the PTP in DSK

- **Mode:** Allows the user to select the PT mode from IEEE-1588 or SMPTE2059 or AES67
- **Log Announce Interval:** Allows the user to set the announce interval. Announce interval must match with the PTP settings in PTP grandmaster clock.
- **Log Sync Rate:** Allows the user to set the Sync rate. Sync rate must match with the PTP settings in PTP grandmaster clock.
- **Announce Receipt Timeout:** Allows the user to set the Announce timeout. Announce timeout must match with the PTP settings in PTP grandmaster clock.
- **DSCP:** Allows the user to set the QoS (Quality of Service) value.
- **Acceptable Master Enable:** Allows the user to choose which PTP should be master. By default, settings should be off.
- **BMCA Transition:** Allows the user to view the BMC transition message

PTP Status:

- **Current Steps Removed:** Allows the user to view the current steps removed.
- **Current Mean Path Delay:** Allows the user to view the path delay between delay request and delay response.
- **Parent Port Identity:** Allows the user to view the MAC ID of the boundary clock or Grandmaster clock.
- **Parent Grandmaster Identity:** Allows the user to view the MAC ID of the Grandmaster Clock
- **Parent Grandmaster Clock Quality:** Allows the user view the quality of the Grandmaster Clock
- **Parent Grandmaster Priority 1:** Allows the user to view the Priority 1 set in Grandmaster
- **Parent Grandmaster Priority 2:** Allows the user to view the Priority 2 set in Grandmaster

4.5. QSFP

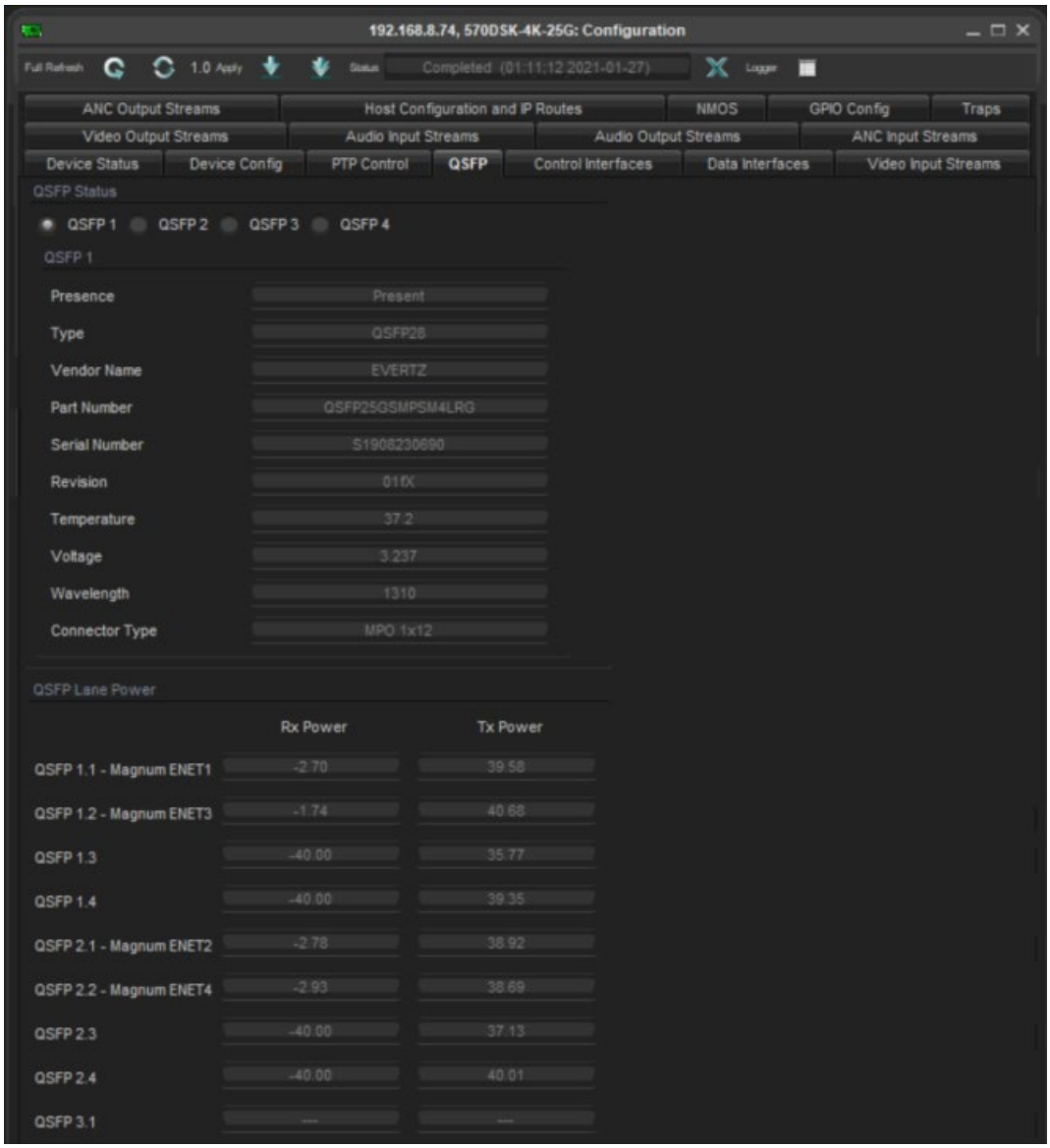

Figure 4-4 : VistaLINK® Pro – QSFP

QSFP sections shows the status and power levels of each QSFP lanes in each QSFP plugged in on DSK.

4.6. CONTROL INTERACES

The Control Interfaces section allows the user to view and set the control IP address of the DSK. It also shows the link status of each control interfaces.

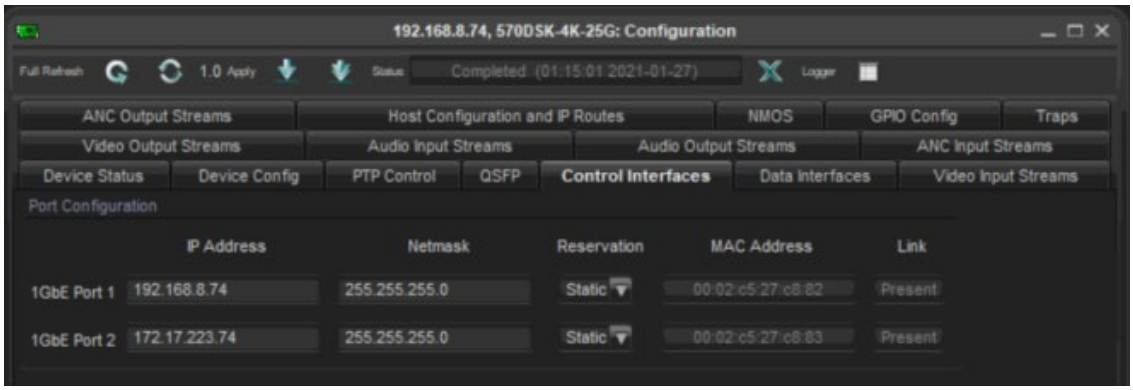

Figure 4-5 : VistaLINK® Pro – Control Interfaces / 1G Ethernet

Port Configuration:

- **IP Address:** Allows user to set and view the IP address of each control interfaces.
- **Netmask:** Allows user to set and view the netmask of each control interfaces.
- **Reservation:** Allows user to set or view whether it is Static or DHCP.
- **MAC Address:** Allows the user to view the MAC address of each control interfaces.
- **Link:** Allows the user to view the link status of each control interfaces.

4.7. DATA INTERFACES

The Data Interface section shows the current status of each QSFP lanes in each QSFP connection.

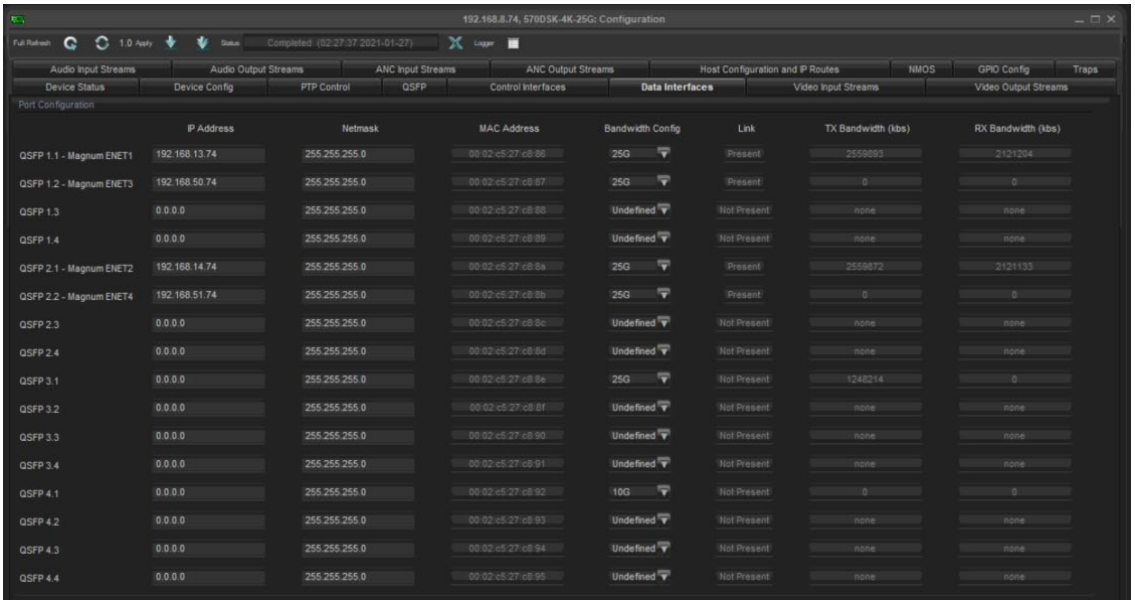

Figure 4-6 : VistaLINK® Pro – Data Interfaces / 25G Ethernet

Port Configuration:

- **IP Address:** Allows user to view the IP address for each of the 25G lanes in QSFP.
- **Netmask:** Allows user to view the Netmask for each 25G lanes in a QSFP
- **MAC Address:** Allows user to view This displays the MAC address for each of the 25G lanes
- **Bandwidth Config:** Allows user to config the link speed of the 25G lanes.
- **Link:** This shows the status of each of the network ports indicating if a connection is made.
- **TX Bandwidth:** This shows the bandwidth of outgoing data for the Port.
- **RX Bandwidth:** This shows the bandwidth of incoming data for the Port.

4.8. VIDEO INPUT STREAMS

The Video Input Stream section shows the details of each video input stream.

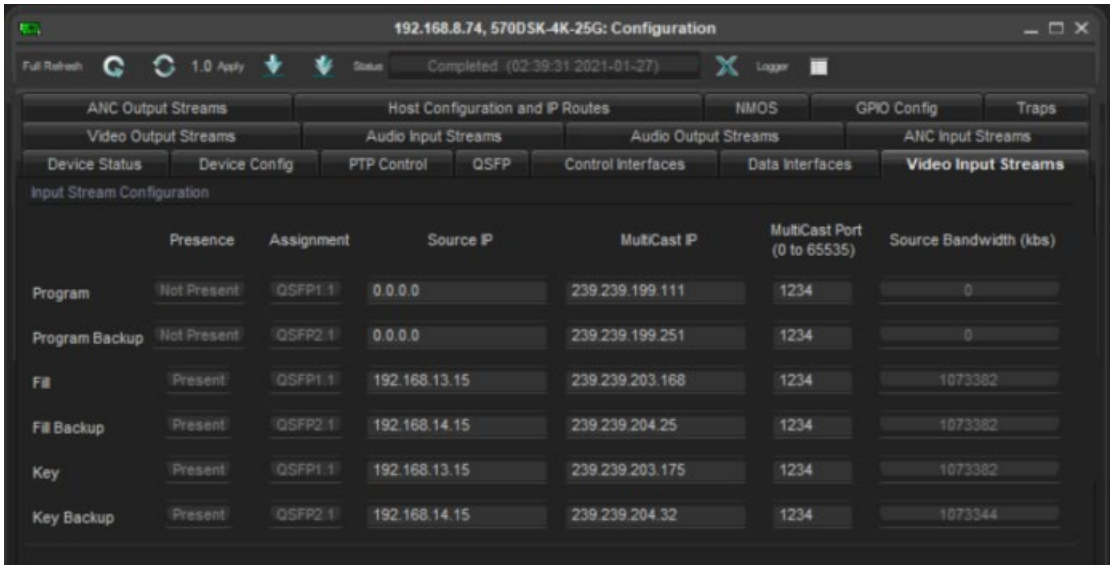

Figure 4-7 : VistaLINK® Pro – Video Input Streams

Input Stream Configurations:

- **Presence:** Allows user to view the status of each input streams indicating is there is a valid source detected or not.
- **Assignment:** Allows user to view the QSFP lanes where each ip input streams are receiving from.
- **Source IP:** Allows user to view the source IP address associated with the Multicast address.
- **Multicast IP:** Allows user to view the multicast address of the source.
- **Multicast Port:** Allows user to view the multicast port# of the source.
- **Source Bandwidth:** Allows user to view the bandwidth of the source for each of the Input streams.

4.9. VIDEO OUTPUT STREAMS

The Video Output Streams section shows the details of each video output stream.

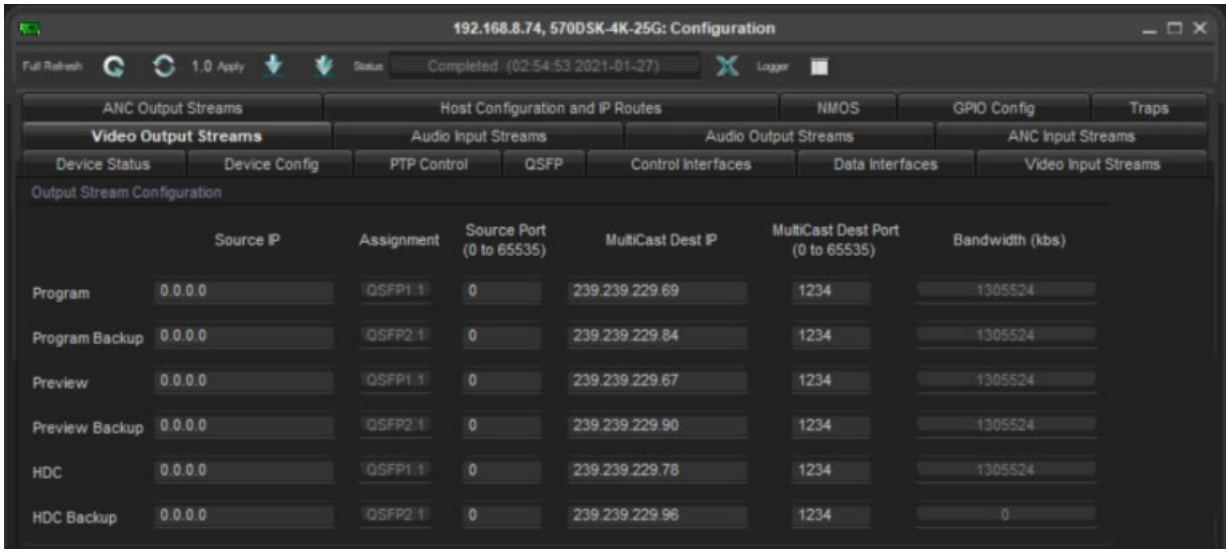

Figure 4-8 : VistaLINK® Pro – Video Output Streams

Output Source Configuration:

- **Source IP:** Allows user to set the source Ip address needs to be associated with multicast address.
- **Assignment:** Allows user to view the QSFP lanes where each ip output streams of DSK are transmitting to.
- **Source Port:** Allows user to set the source port#.
- **Multicast Destination IP:** Allows user to set the multicast address for each DSK IP outputs.
- **Multicast Destination Port:** Allows user to set the multicast port# for each DSK IP outputs.
- **Bandwidth:** Allows user to view the bandwidth of each DSK ip output streams in kbps.

4.10. AUDIO INPUT STREAMS

The Audio Input Streams section shows the details of each Audio input stream.

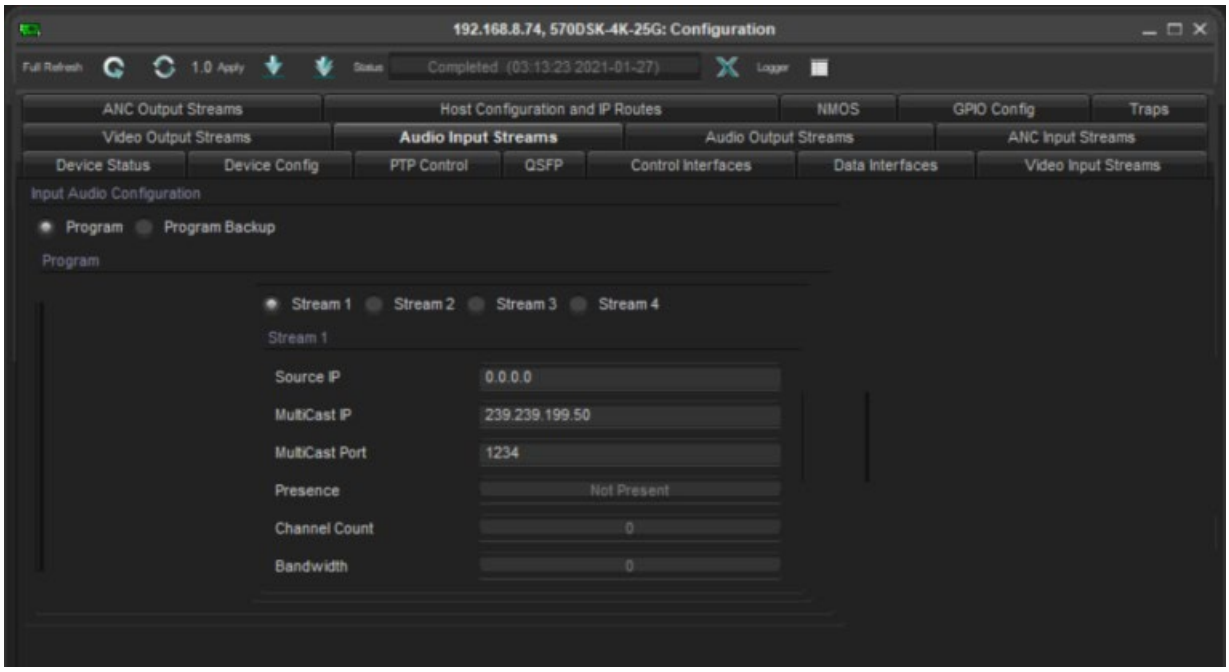

Figure 4-9 : VistaLINK® Pro - Input Audio Streams

- **Program & Program Backup:** Allows user to configure the audio ip input streams in program and program backup section.
- **Stream:** Each stream supports 4 audio channels per multicast address.
- **Source IP:** Allows user to set the source ip address associated with the audio multicast address.
- **Multicast IP:** Allows user to set the multicast address for each stream
- **Multicast Port:** Allows user to set the multicast port# for each stream
- **Presence:** Allows user to view the status of audio multicast address.
- **Channel Count:** Allows user to view the count of audio channels present in audio multicast address.
- **Bandwidth:** Allows user to view the bandwidth of incoming audio stream

4.11. AUDIO OUTPUT STREAMS

The Audio Output Streams section shows the details of each Audio output stream.

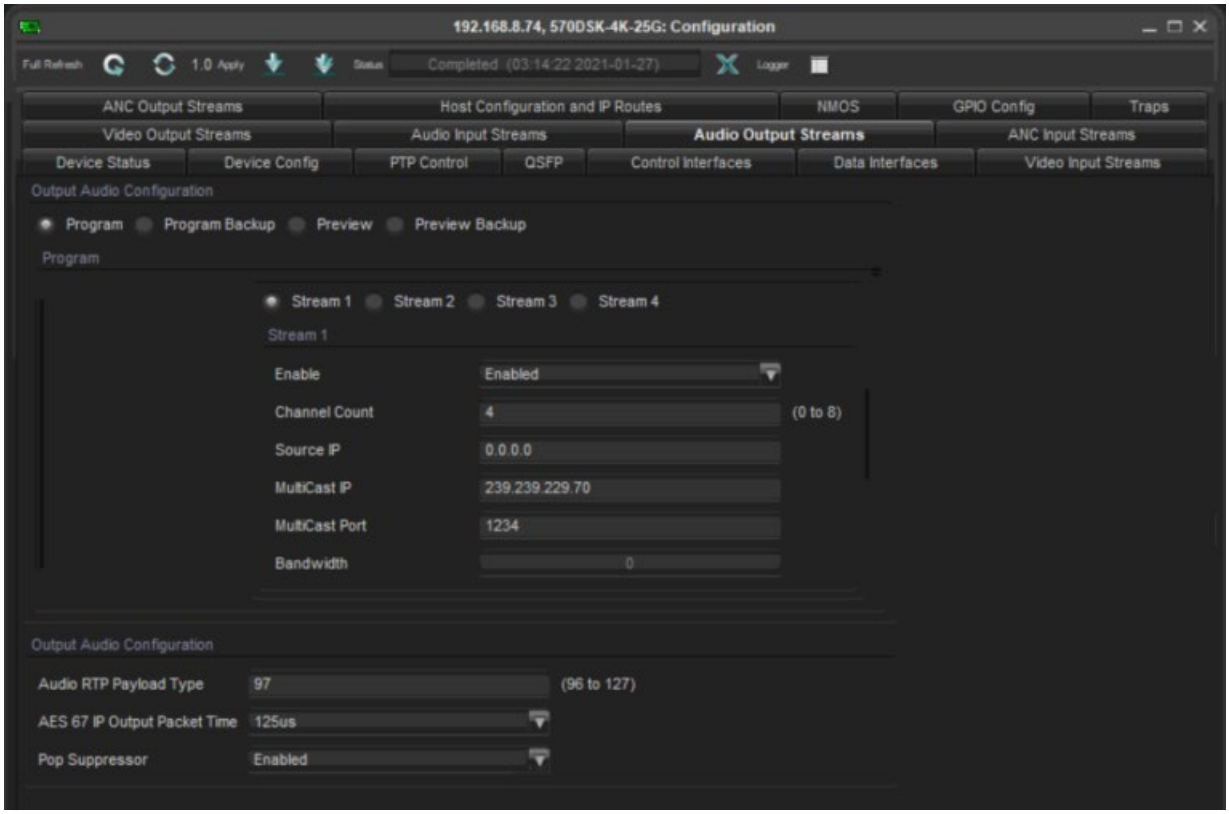

Figure 4-10 : VistaLINK® Pro – Audio Output Streams

Output Audio Configuration:

- **Program and Preview Audio Outputs:** Allow user to configure main and backup of program and preview audio ip outputs.
- **Stream:** Each stream supports 4 audio channels per multicast address
- **Enable:** This control is only for troubleshooting purposes. BY default, keep it “Enabled”
- **Channel Count:** Allows user to configure how many audio channels can be transmitted per multicast address.
- **Source IP:** Allows user to set the source ip address to be associated with the audio multicast address.
- **Multicast IP:** Allows user to set the multicast address for each stream
- **Multicast Port:** Allows user to set the multicast port# for each stream
- **Bandwidth:** Allows user to view the bandwidth of the transmitting audio ip output stream.
- **Audio RTP Payload Type:** Allows user to set the audio RTP payload type. By default, keep it as 97
- **AES67 IP Output Packet Time:** Allows user to set the audio packet time.
- **Pop Suppressor:** Allows user to enable or disable the pop suppression.

4.12. ANC INPUT STREAMS

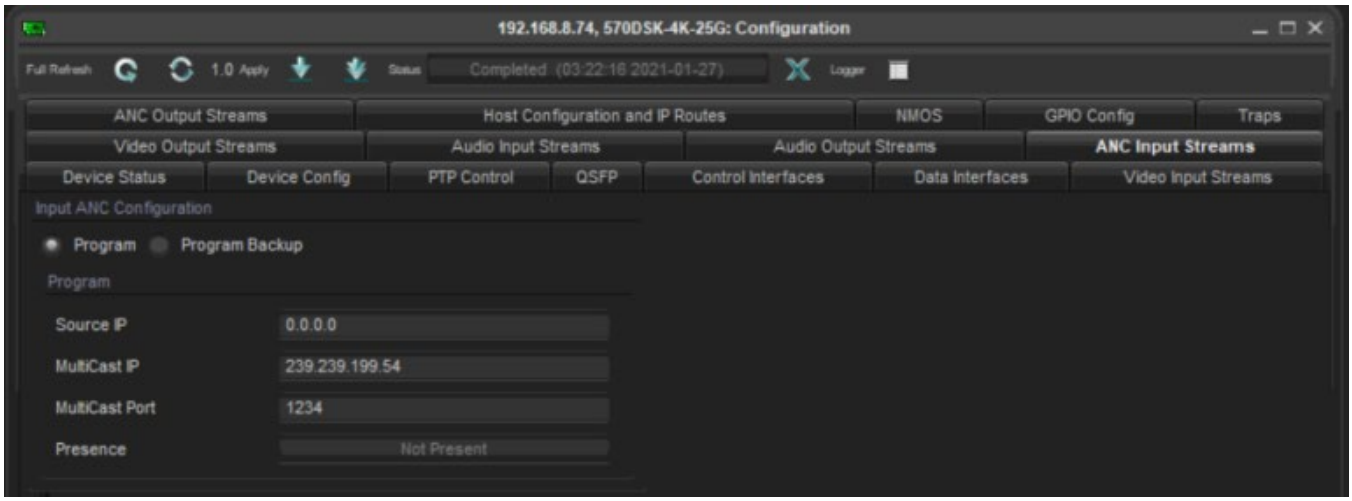

Figure 4-11 : VistaLINK® Pro – ANC Input Streams

Input ANC Configuration:

- **Program & Program Backup:** Allows user to configure the anc ip input streams in program and program backup section.
- **Source IP:** Allows user to set the source ip address associated with the anc multicast address.
- **Multicast IP:** Allows user to set the multicast address for each stream
- **Multicast Port:** Allows user to set the multicast port# for each stream
- **Presence:** Allows user to view the status of anc multicast address.

4.13. ANC OUTPUT STREAMS

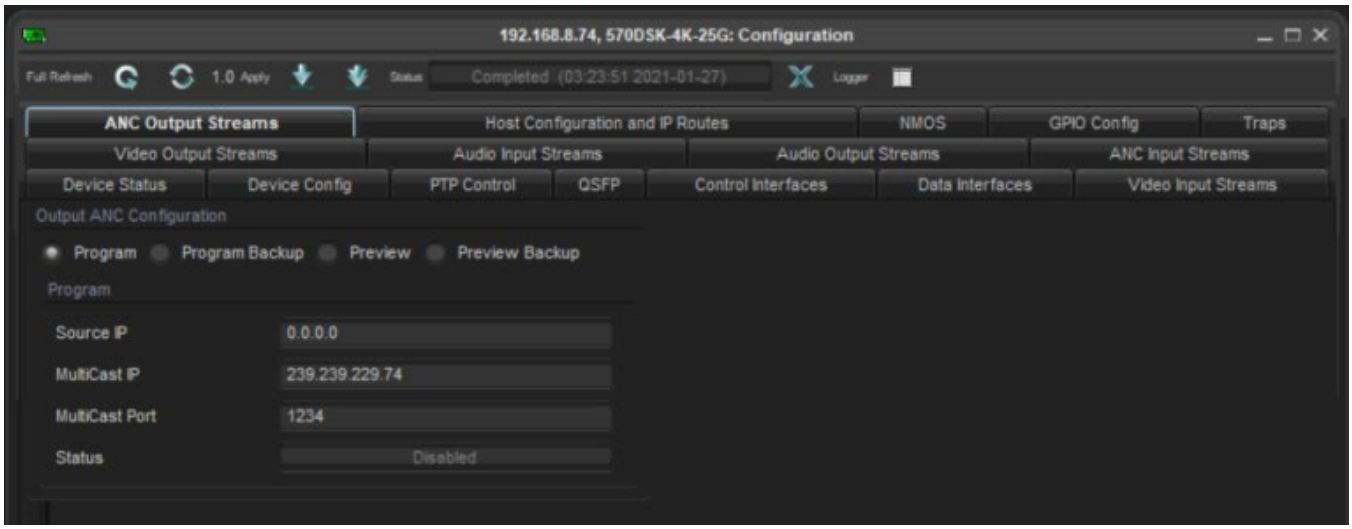

Figure 4-12 : VistaLINK® Pro – ANC Output Streams

Output ANC Configuration:

- **Program and Preview Audio Outputs:** Allow user to configure the main and backup program and preview audio ip outputs.
- **Source IP:** Allows user to set the source ip address to be associated with the anc multicast address.
- **Multicast IP:** Allows user to set the multicast address for each stream
- **Multicast Port:** Allows user to set the multicast port# for each stream
- **Status:** Allows user to view the status of the transmitting anc ip output stream.

4.14. HOST CONFIGURATION AND IP ROUTES

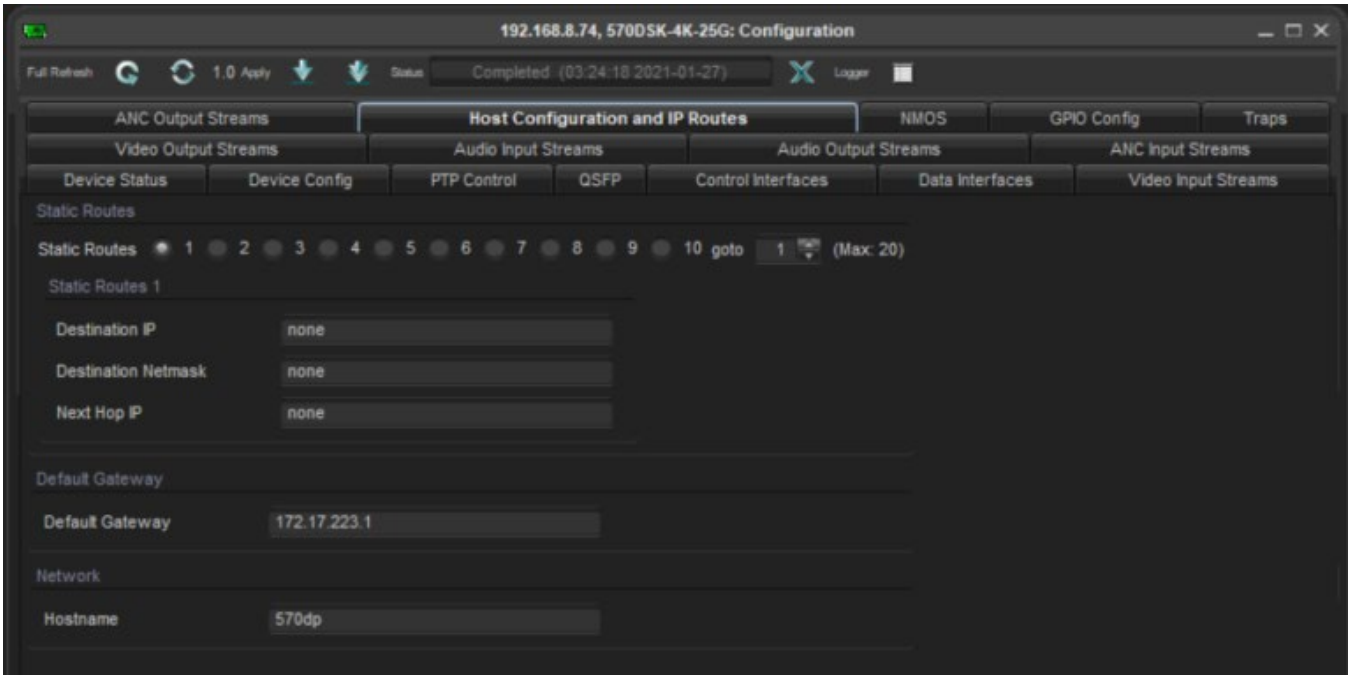

Figure 4-13 : VistaLINK® Pro – Host Configuration and IP Routes

- **Static Routes:** Allows user to set the static IP routes.
- **Default Gateway:** Allows user to set the default gateway for the control interfaces.
- **Hostname:** Allows user to change the hostname of the device.

4.15. NMOS

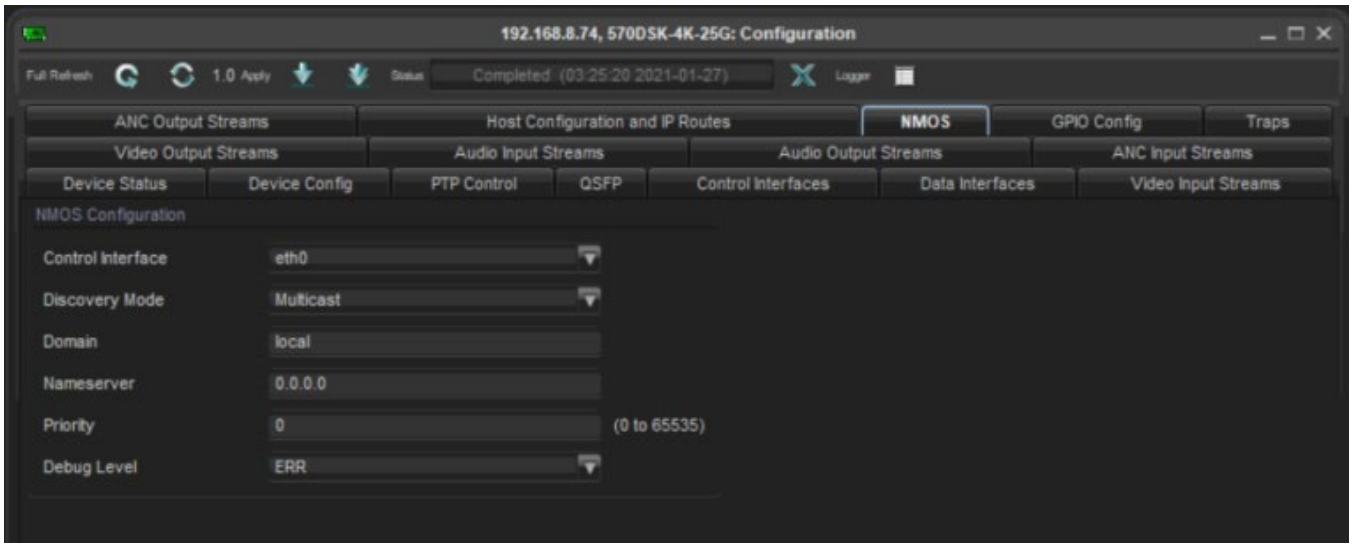

Figure 4-14 : VistaLINK® Pro – NMOS

NMOS Configuration:

- **Control Interface:** Allows user to set the NMOS control interface for controlling the 570DSK.
- **Discovery Mode:** Allows user to set the discovery mode to discover the device in NMOS controller. User can set to Multicast DNS or Unicast DNS mode. If it is set Unicast DNS mode user need to set Domain and Nameserver address to get device discovered in control system.
- **Domain:** Allows user to set the domain name of the unicast DNS server. By default, set local as domain name.
- **Nameserver:** Allows user to set the name server ip address of the DNS server, By default, set the nameserver ip address as 0.0.0.0
- **Priority:** Allows user to set the priority of the nmos device.
- **Debug level:** This control is for engineering purposes for troubleshooting and get the logs in different level.

4.16. GPIO CONFIG

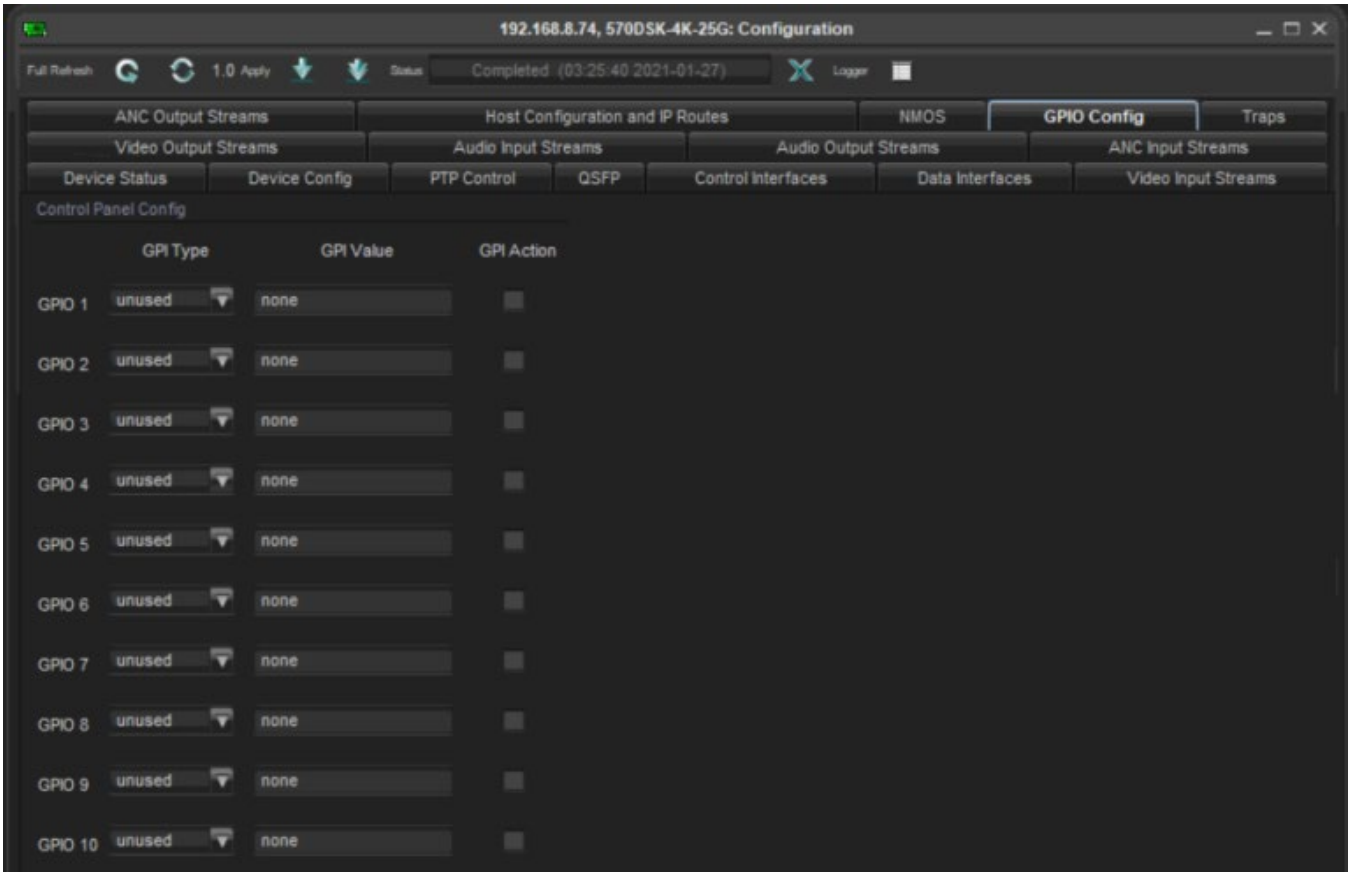

Figure 4-15 : VistaLINK® Pro – GPIO Config

Control Panel Config:

The GPIO control enables the user to configure the General Purpose Inputs and Outputs.

5. WEB INTERFACE

The 570DSK-25G series of products are controlled using a web interface.

Login

After the card has been installed and configured with the required network addresses for the control port, it can be completely configured using the web interface. For doing this, simply type the IP address of the control port of 570DSK-25G module in the web browser.

Note:
Computer must be on the same subnet in order to have communication with the module. If the module is in different subnet, be sure to configure a gateway address to be able to access the module on a different subnet.

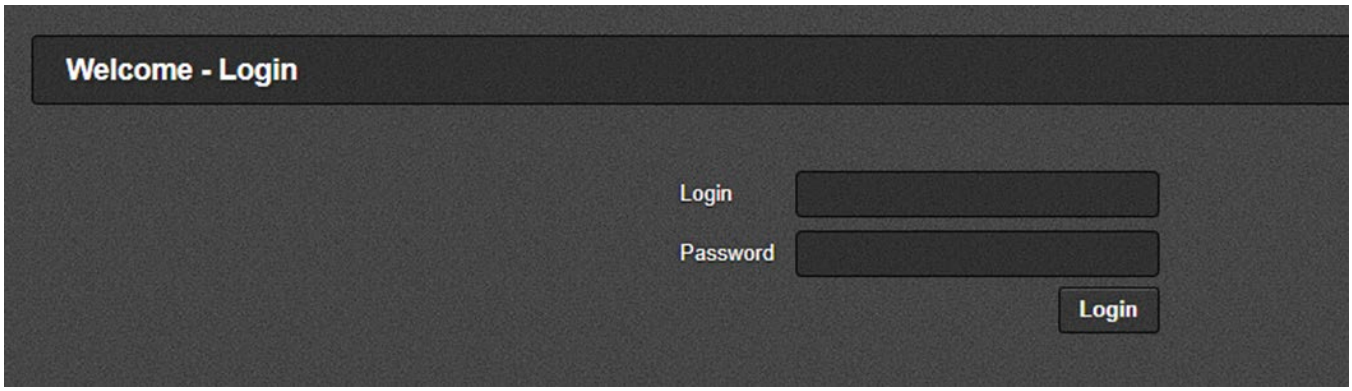

Figure 5-1 : WebEASY® - Login Menu

Login username and password is “root/evertz” or “admin/admin” or ‘customer/customer”.

On the web interface there are different types of menus as is shown in Figure 5-2.

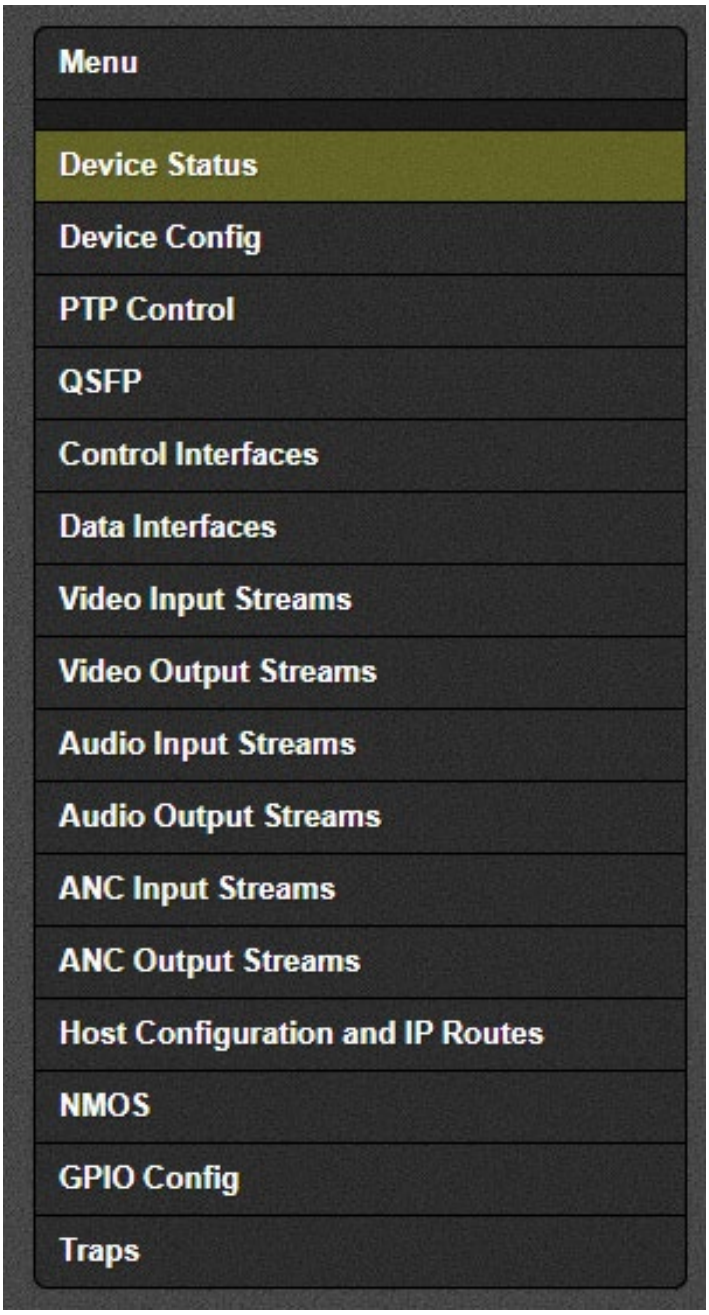

Figure 5-2 : WebEASY® - 570DSK-25G Main Menu

5.1. DEVICE STATUS

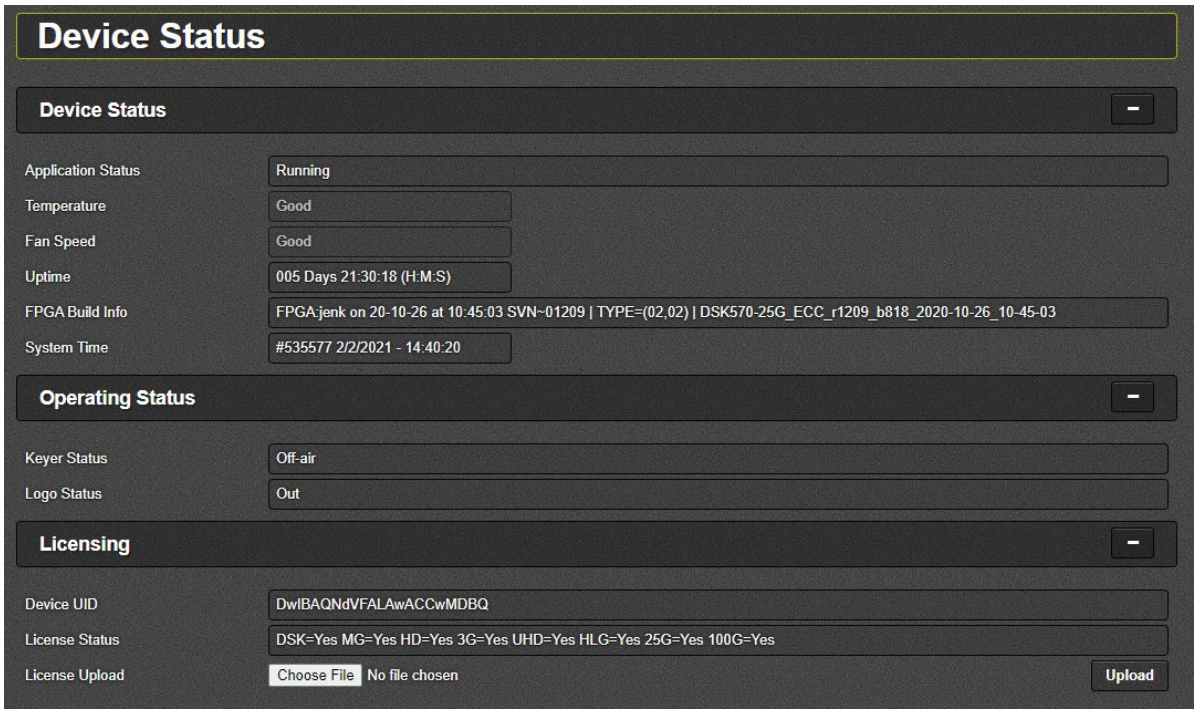

Figure 5-3 : WebEASY® - Device Status

Device Status:

- **Application Status:** Shows the status of the application running in the hardware.
- **Temperature:** Shows the current temperature of the device. If the temperature is running in normal operating range, "Good" will be displayed.
- **Fan:** This shows the state of the Fan running on the device. If the Fan is running in normal operating range, "Good" will be displayed.
- **Uptime:** This shows the amount of time that has elapse since the device was powered on. The format is Days:Hours:Minutes:Seconds.
- **FPGA Build Info:** Shows the FPGA version of the application running in the hardware.
- **System Time:** Shows the time of the hardware.

Operating Status:

- **Keyer Status:** Shows the status of the Keyer.
- **Logo Status:** Shows the status of the logo.

Licensing:

- **Device UID:** Shows the device's Unique ID which is required to request license to enable the different feature keys.
- **License Status:** Shows the license's status for feature keys. "Yes" means license is present and "No" means license is absent.
- **License Upload:** Option to upload the license key by selecting "Choose File" button.

5.2. DEVICE CONFIG

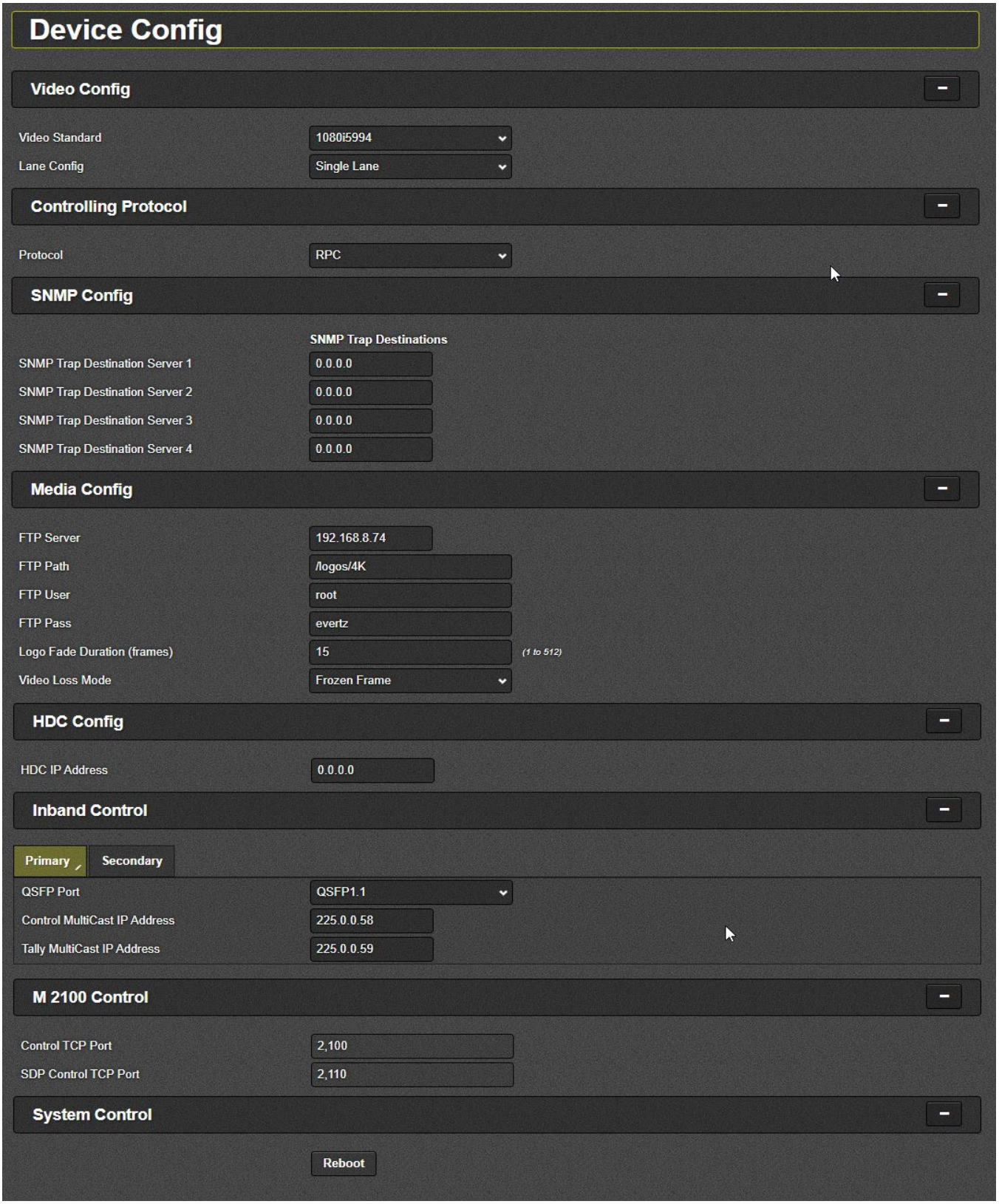

Figure 5-4 : WebEASY® - Device Config

Video Config:

- **Video Standard:** Allows user to choose the video standard for DSK to pass
- **Lane Config:** Allows user to choose Single Lane or Multi Lane
  - Single Lane – Ability to receive and transmit using QSFP 1.1 and QSFP 2.1
  - Multi Lane – Ability to receive and transmit using QSFP 1.1/1.2 and QSFP 2.1/2.2. it is a recommended setting for 12G single essence signal.

Controlling Protocol:

- **Protocol:** RPC / NMOS / M2100
  - RPC: Protocol used to control DSK using Magnum
  - NMOS: Protocol used to control DSK using third party controller
  - M2100: it is an automation interface protocol to control DSK

SNMP Config:

- **SNMP Trap Destination:** Allows user to set the trap ip address to receive the fault.

Media Config:

- **FTP Server:** Allows user to set the ip address of the FTP server
- **FTP Path:** Allows user to set the path where the logos are located in FTP server
- **FTP User:** Allows user to set the username to access the FTP server
- **FTP Pass (Password):** Allows user to set the password to access the FTP server
- **Logo Fade Duration:** Allows user to set the duration to fade in the logos
- **Video Loss Mode:** Allows user to choose the video loss options (Blue Screen, Black Screen & Frozen frame)

HDC Config:

- **HDC IP Address:** Allows user to set the ip address of the HDC hardware

Inband Control:

- **Primary & Secondary:** Shows the settings for Primary and Secondary Inband Control.
- **QSFP Port:** Allows user to view the QSFP lanes for primary and secondary Inband control port.
- **Control Multicast IP Address:** Allows user to view the Control multicast for primary and secondary Inband control.
- **Tally Multicast IP Address:** Allows user to view the Tally multicast for primary and secondary Inband control.

M2100 Control:

- **Control TCP Port:** Allows user to set the port# for M2100 control.
- **SDP Control TCP Port:** Allows user to set port# for SDP M2100 control.

System Control:

- **Reboot:** Allow user to reboot the DSK hardware

5.3. PTP CONTROL

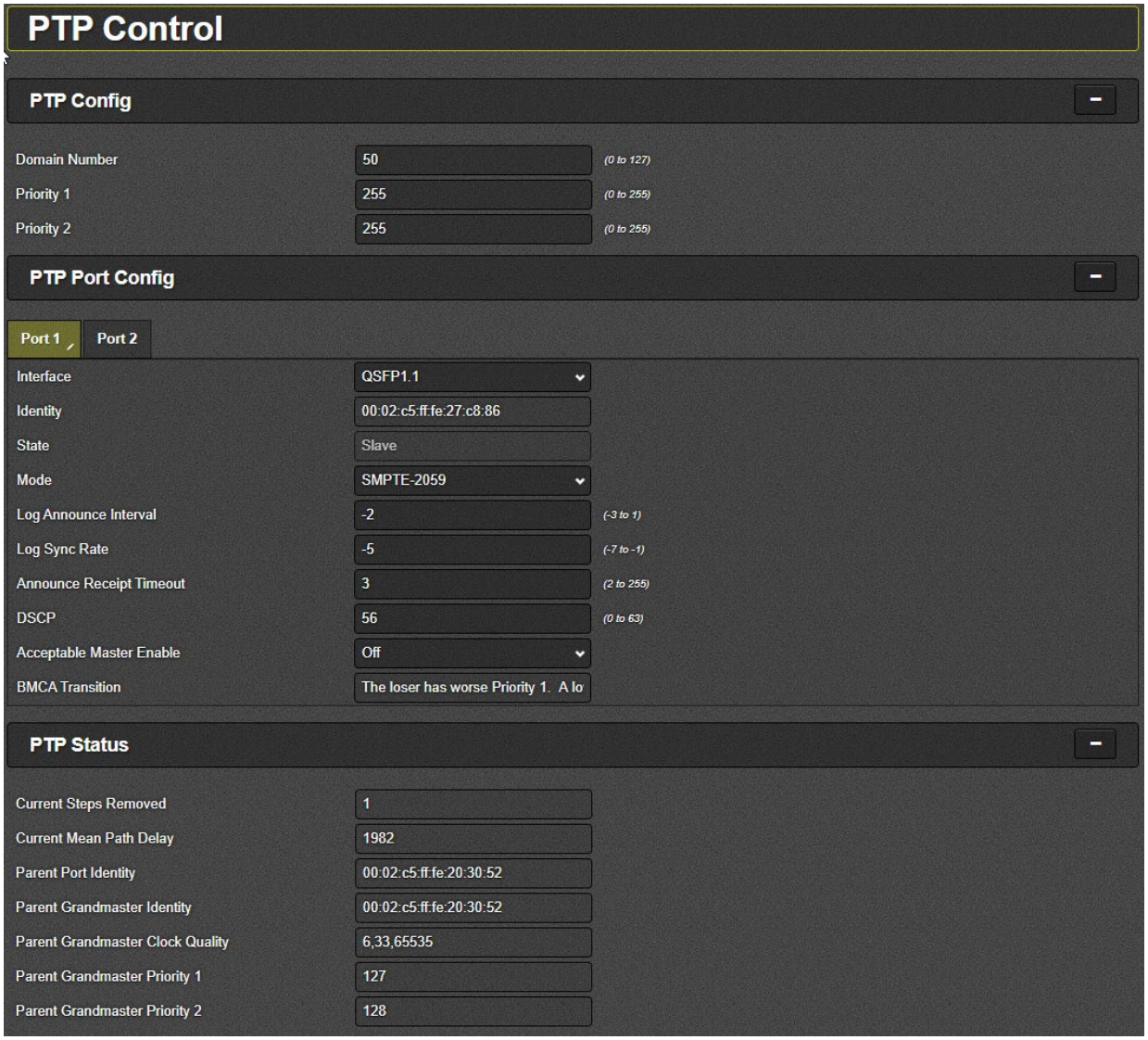

Figure 5-5 : WebEASY® - PTP Status

This section indicates the status of Precision Time Protocol (PTP), as well as the status and settings for PTP on each port connected to the 570DSK-25G.

PTP Config:

- **Domain Number:** Allow the user to set the domain number of the PTP
- **Priority 1:** Allows the user to set the Priority# 1 of the PTP
- **Priority 2:** Allows the user to set the Priority# 2 of the PTP

PTP Port Config:

- **Port 1 & Port 2:** Shows the main and backup PTP ports
- **Interface:** Allows user to choose the interface where the PTP is receiving from.
- **Identity:** Shows the MAC address of the interface user selected
- **State:** shows the state (Slave or Listening) of the PTP in DSK

- **Mode:** Allows the user to select the PT mode from IEEE-1588 or SMPTE2059 or AES67
- **Log Announce Interval:** Allows the user to set the announce interval. Announce interval must match with the PTP settings in PTP grandmaster clock.
- **Log Sync Rate:** Allows the user to set the Sync rate. Sync rate must match with the PTP settings in PTP grandmaster clock.
- **Announce Receipt Timeout:** Allows the user to set the Announce timeout. Announce timeout must match with the PTP settings in PTP grandmaster clock.
- **DSCP:** Allows the user to set the QoS (Quality of Service) value.
- **Acceptable Master Enable:** Allows the user to choose which PTP should be master. By default, settings should be off.
- **BMCA Transition:** Allows the user to view the BMC transition message

PTP Status:

- **Current Steps Removed:** Allows the user to view the current steps removed.
- **Current Mean Path Delay:** Allows the user to view the path delay between delay request and delay response.
- **Parent Port Identity:** Allows the user to view the MAC ID of the boundary clock or Grandmaster clock.
- **Parent Grandmaster Identity:** Allows the user to view the MAC ID of the Grandmaster Clock
- **Parent Grandmaster Clock Quality:** Allows the user view the quality of the Grandmaster Clock
- **Parent Grandmaster Priority 1:** Allows the user to view the Priority 1 set in Grandmaster
- **Parent Grandmaster Priority 2:** Allows the user to view the Priority 2 set in Grandmaster

5.4. QSFP

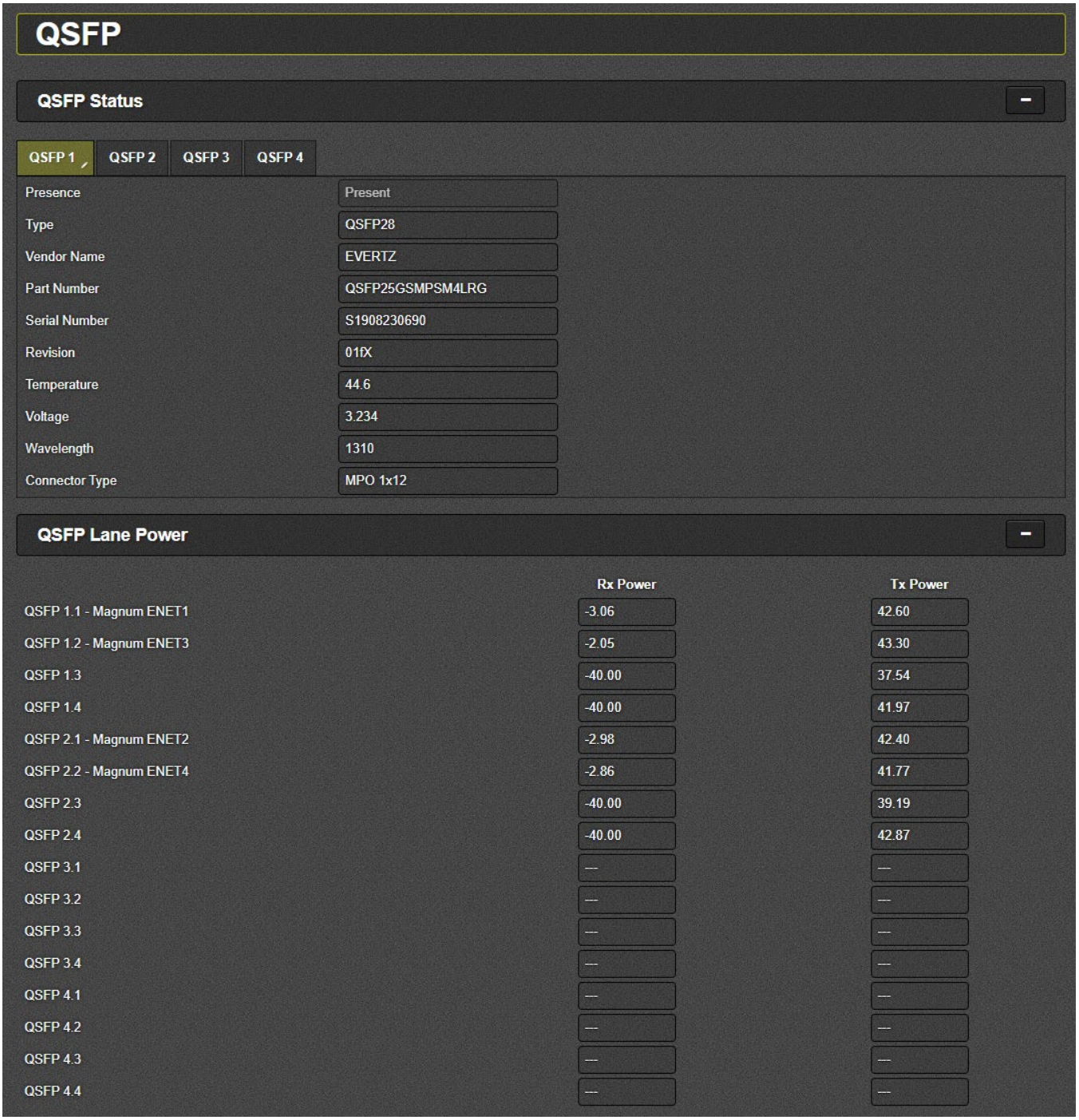

Figure 5-6 : WebEASY® - QSFP

QSFP sections shows the status and power levels of each QSFP lanes in each QSFP plugged in on DSK.

5.5. CONTROL INTERFACES

The 1G Ethernet section shows the current status of each connection.

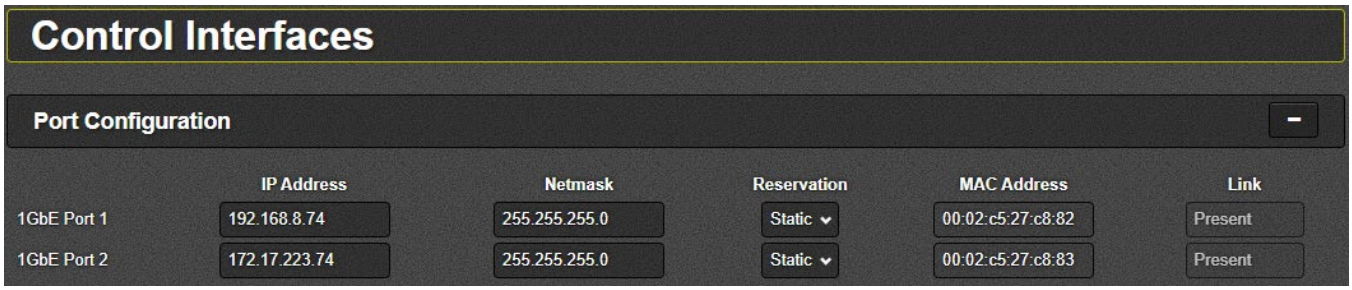

Figure 5-7 : WebEASY® - 1G Ethernet

- **IP Address:** Allows user to set and view the IP address of each control interfaces.
- **Netmask:** Allows user to set and view the netmask of each control interfaces.
- **Reservation:** Allows user to set or view whether it is Static or DHCP.
- **MAC Address:** Allows the user to view the MAC address of each control interfaces.
- **Link:** Allows the user to view the link status of each control interfaces.

5.6. DATA INTERFACES

The 25G Ethernet section shows the current status of each connection.

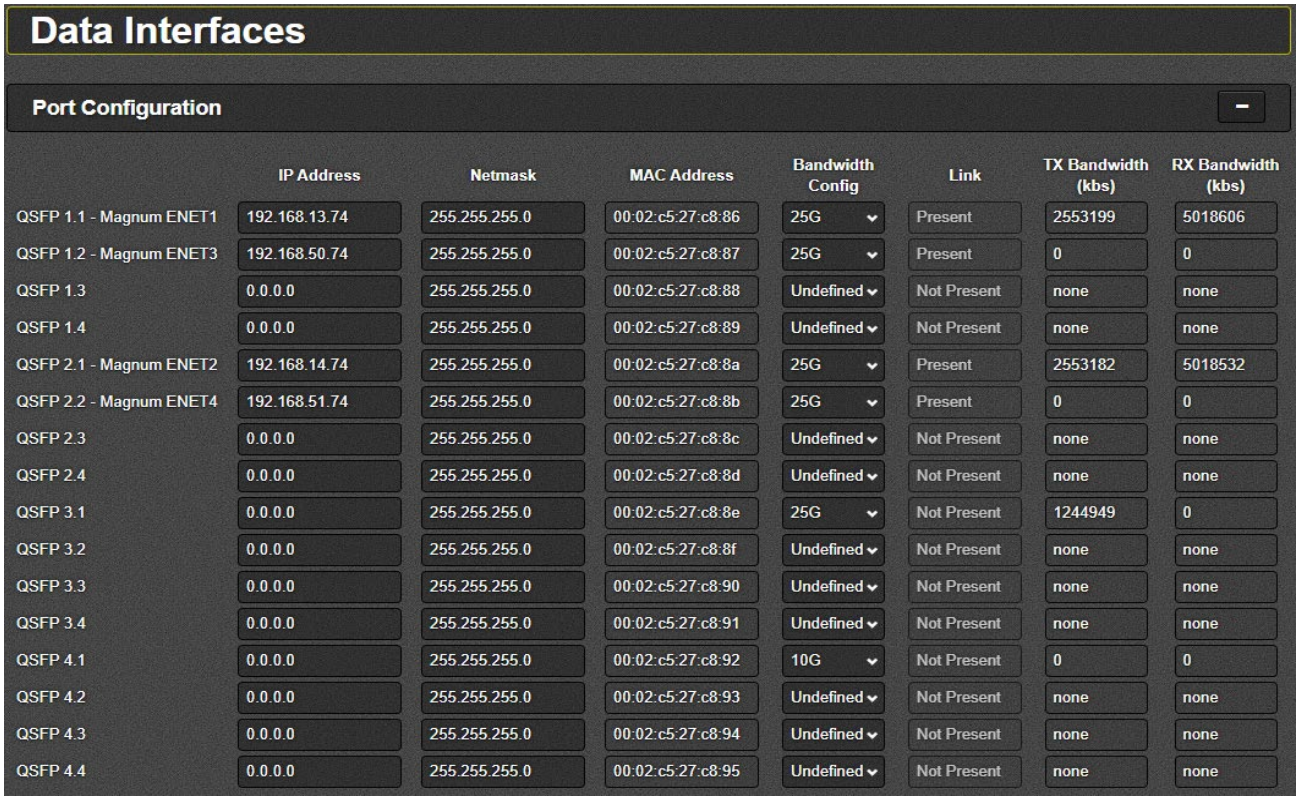

Figure 5-8 : WebEASY® - 25G Ethernet

- **IP Address:** Allows user to view the IP address for each of the 25G lanes in QSFP.
- **Netmask:** Allows user to view the Netmask for each 25G lanes in a QSFP

- **MAC Address:** Allows user to view This displays the MAC address for each of the 25G lanes
- **Bandwidth Config:** Allows user to config the link speed of the 25G lanes.
- **Link:** This shows the status of each of the network ports indicating if a connection is made.
- **TX Bandwidth:** This shows the bandwidth of outgoing data for the Port.
- **RX Bandwidth:** This shows the bandwidth of incoming data for the Port.

5.7. VIDEO INPUT STREAMS

The Input Streams section shows the current status and details of each Input Stream.

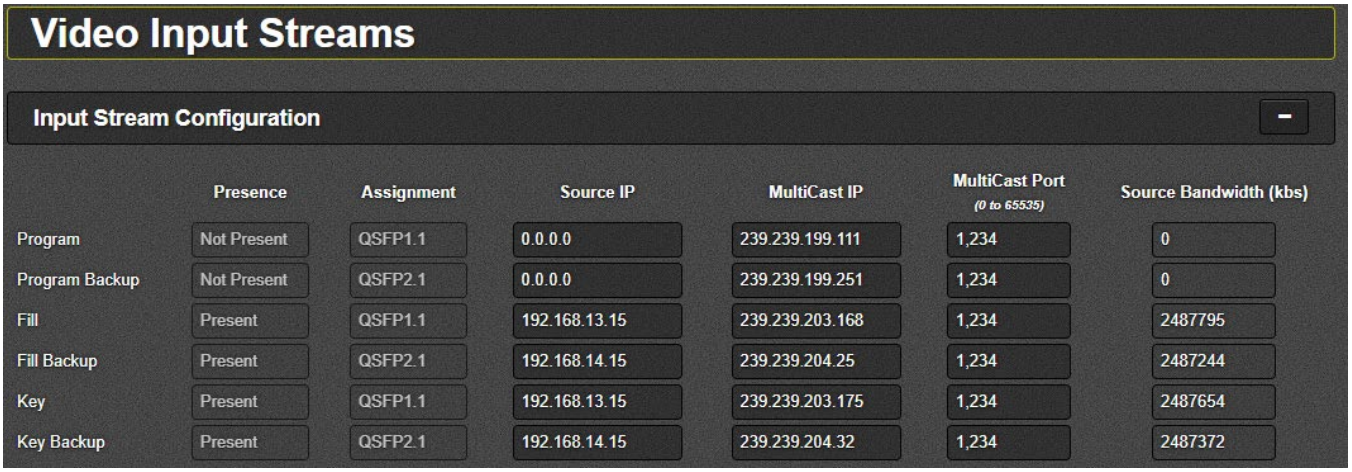

Figure 5-9 : WebEASY® - Input Streams

- **Presence:** Allows user to view the status of each input streams indicating is there is a valid source detected or not.
- **Assignment:** Allows user to view the QSFP lanes where each ip input streams are receiving from.
- **Source IP:** Allows user to view the source IP address associated with the Multicast address.
- **Multicast IP:** Allows user to view the multicast address of the source.
- **Multicast Port:** Allows user to view the multicast port# of the source.
- **Source Bandwidth:** Allows user to view the bandwidth of the source for each of the Input streams.

5.8. VIDEO OUTPUT STREAMS

The Output Streams section shows the current status and details of each Output Stream.

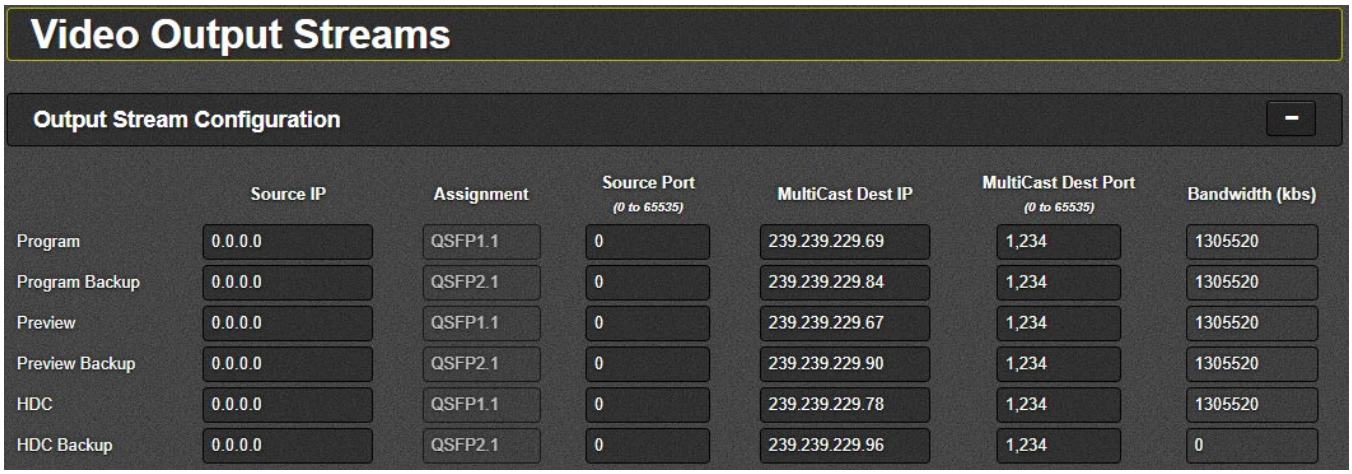

Figure 5-10 : WebEASY® - Output Streams

- **Source IP:** Allows user to set the source Ip address needs to be associated with multicast address.
- **Assignment:** Allows user to view the QSFP lanes where each ip output streams of DSK are transmitting to.
- **Source Port:** Allows user to set the source port#.
- **Multicast Destination IP:** Allows user to set the multicast address for each DSK IP outputs.
- **Multicast Destination Port:** Allows user to set the multicast port# for each DSK IP outputs.
- **Bandwidth:** Allows user to view the bandwidth of each DSK ip output streams in kbps.

5.9. AUDIO INPUT STREAMS

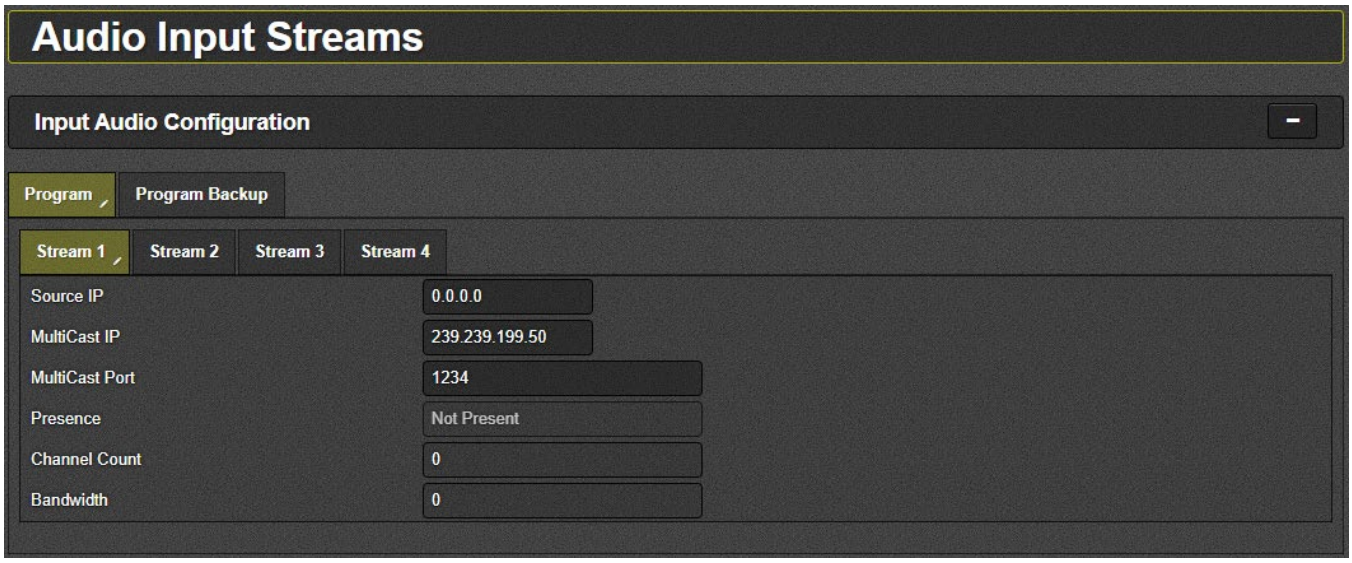

Figure 5-11 : WebEASY® - Audio Input Streams

The Audio Input Streams section shows the details of each audio ip input stream.

Input Audio Configuration

- **Program & Program Backup:** Allows user to configure the audio ip input streams in program and program backup section.
- **Stream:** Each stream supports 4 audio channels per multicast address.
- **Source IP:** Allows user to set the source ip address associated with the audio multicast address.
- **Multicast IP:** Allows user to set the multicast address for each stream
- **Multicast Port:** Allows user to set the multicast port# for each stream
- **Presence:** Allows user to view the status of audio multicast address.
- **Channel Count:** Allows user to view the count of audio channels present in audio multicast address.
- **Bandwidth:** Allows user to view the bandwidth of incoming audio stream

5.10. AUDIO OUTPUT STREAMS

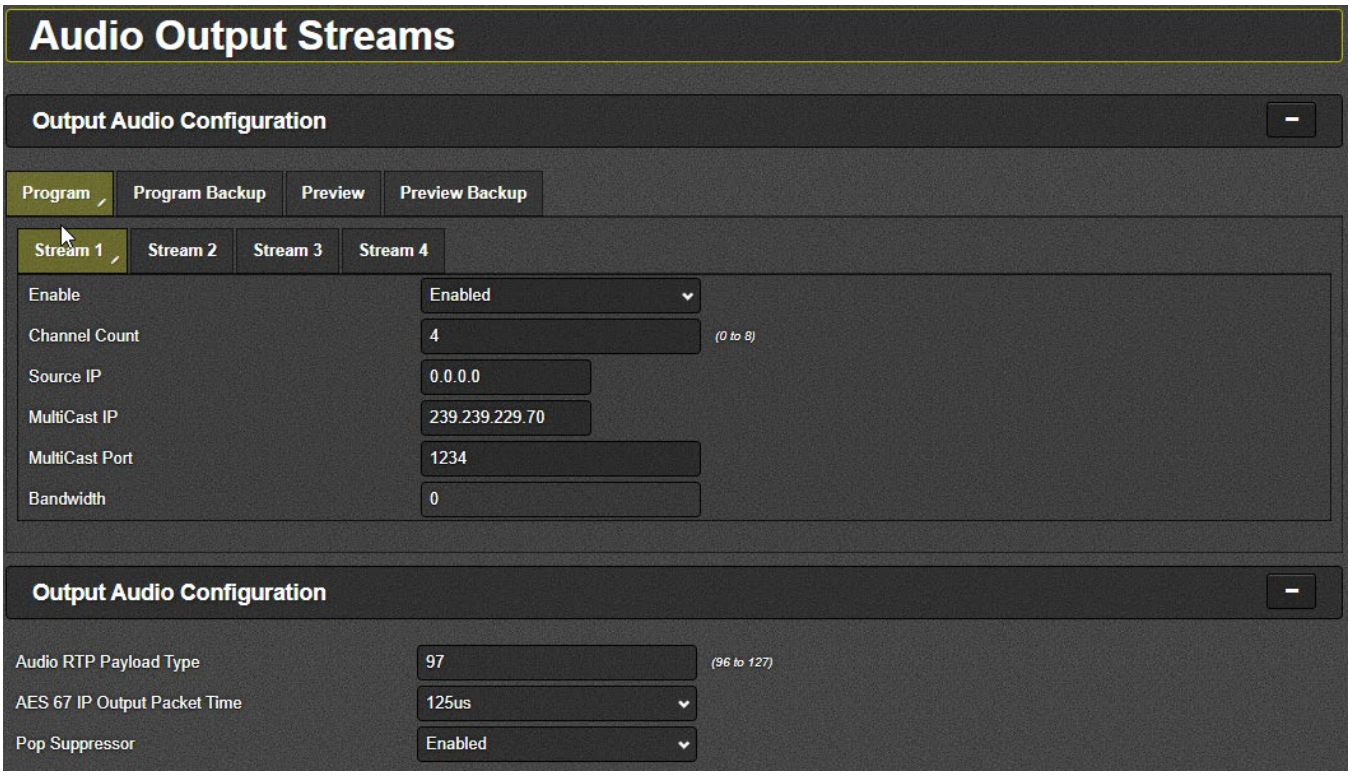

Figure 5-12 : WebEASY® - Audio Output Streams

The Audio Output Streams section shows the details of each Audio output stream:

- **Program and Preview Audio Outputs:** Allow user to configure main and backup of program and preview audio ip outputs.
- **Stream:** Each stream supports 4 audio channels per multicast address
- **Enable:** This control is only for troubleshooting purposes. BY default, keep it “Enabled”
- **Channel Count:** Allows user to configure how many audio channels can be transmitted per multicast address.
- **Source IP:** Allows user to set the source ip address to be associated with the audio multicast address.
- **Multicast IP:** Allows user to set the multicast address for each stream

- **Multicast Port:** Allows user to set the multicast port# for each stream
- **Bandwidth:** Allows user to view the bandwidth of the transmitting audio ip output stream.
- **Audio RTP Payload Type:** Allows user to set the audio RTP payload type. By default, keep it as 97
- **AES67 IP Output Packet Time:** Allows user to set the audio packet time.
- **Pop Suppressor:** Allows user to enable or disable the pop suppression.

5.11. ANC INPUT STREAMS

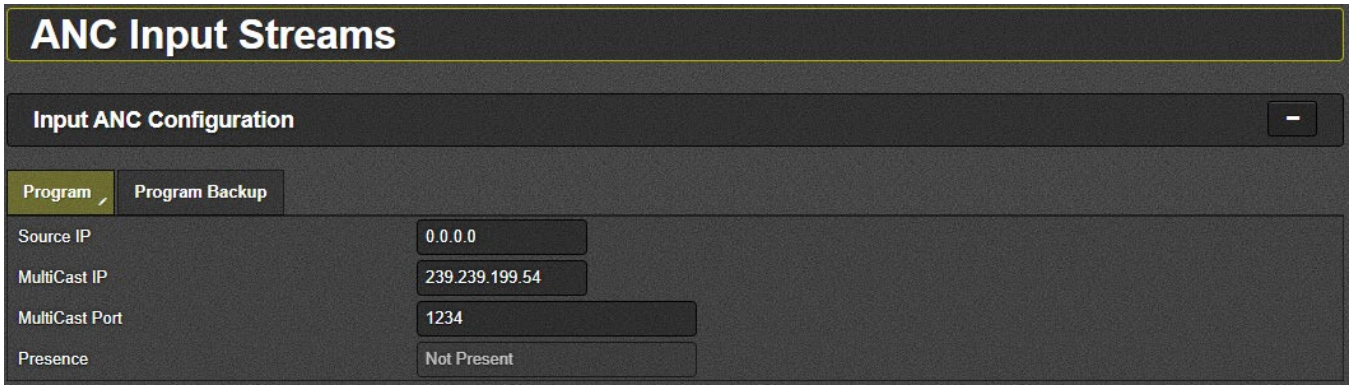

Figure 5-13 : WebEASY® - ANC Input Streams

The ANC Input Streams section shows the details of each anc input stream.

- **Program & Program Backup:** Allows user to configure the anc ip input streams in program and program backup section.
- **Source IP:** Allows user to set the source ip address associated with the anc multicast address.
- **Multicast IP:** Allows user to set the multicast address for each stream
- **Multicast Port:** Allows user to set the multicast port# for each stream
- **Presence:** Allows user to view the status of anc multicast address.

5.12. ANC OUTPUT STREAMS

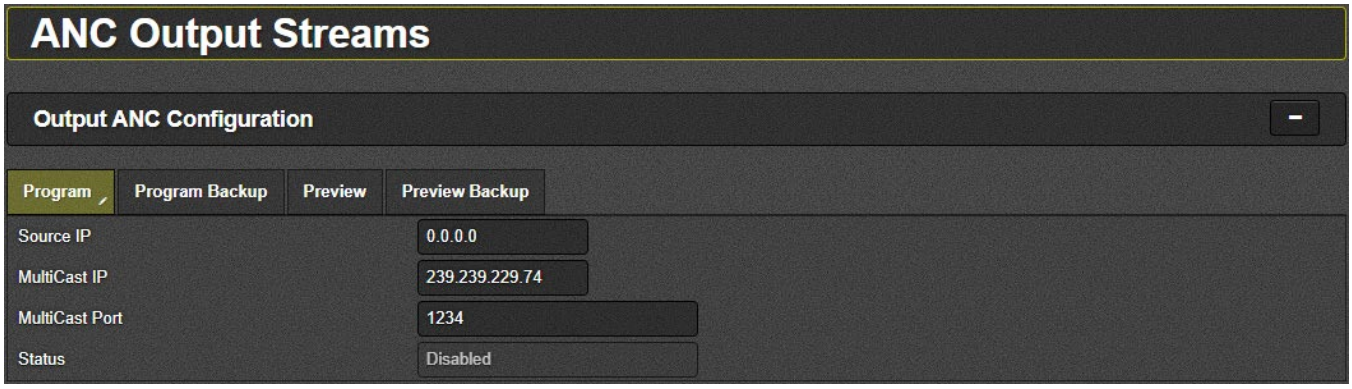

Figure 5-14 : WebEASY® - ANC Output Streams

The ANC Output Streams section shows the details of each anc output stream.

- **Program and Preview Audio Outputs:** Allow user to configure the main and backup program and preview audio ip outputs.
- **Source IP:** Allows user to set the source ip address to be associated with the anc multicast address.
- **Multicast IP:** Allows user to set the multicast address for each stream
- **Multicast Port:** Allows user to set the multicast port# for each stream
- **Status:** Allows user to view the status of the transmitting anc ip output stream.

5.13. HOST CONFIGURATION AND IP ROUTES

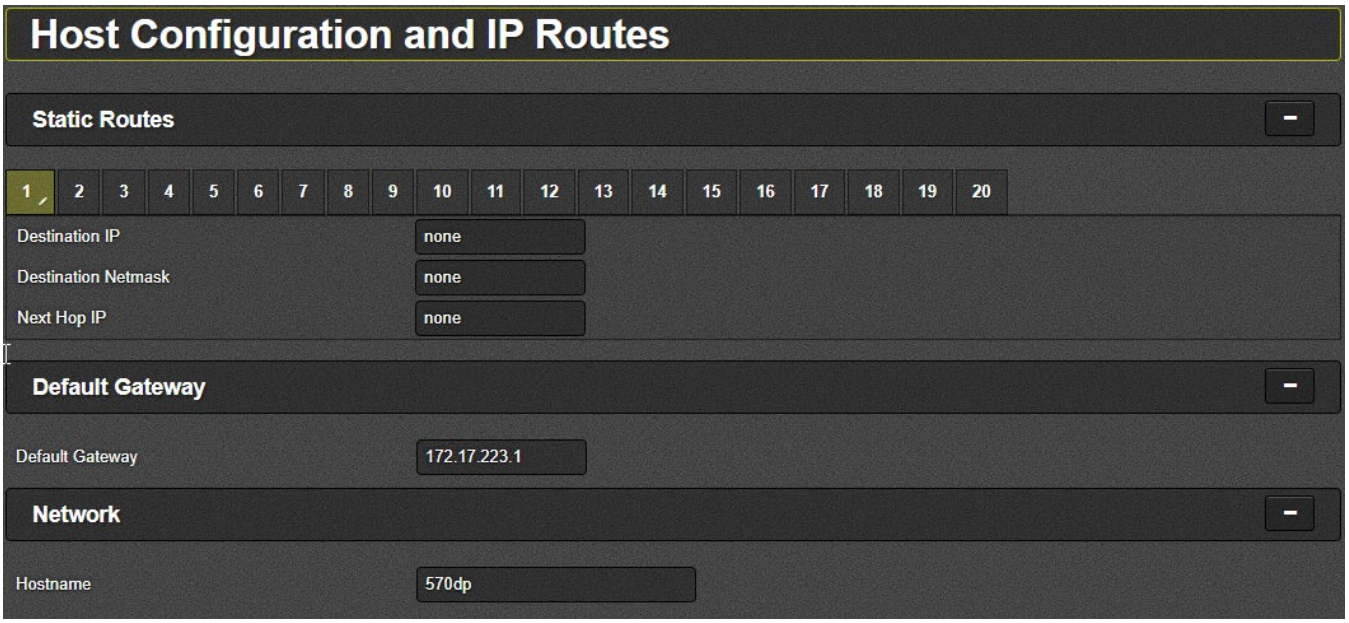

Figure 5-15 : WebEASY® - Host Configuration and IP Routes

The host configuration and ip routes page allows the user to set of static ip routes, default gateway and hostname of the device.

- **Static Routes:** Allows user to set the static IP routes.
- **Default Gateway:** Allows user to set the default gateway for the control interfaces.
- **Hostname:** Allows user to change the hostname of the device.

5.14. NMOS

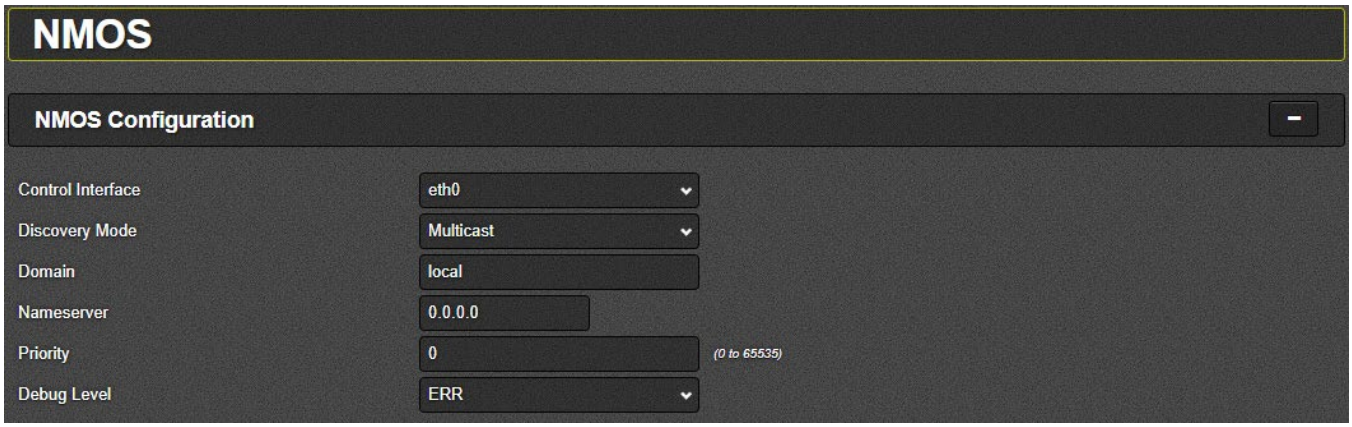

Figure 5-16 : WebEASY® - NMOS

- **Control Interface:** Allows user to set the NMOS control interface for controlling the 570DSK.
- **Discovery Mode:** Allows user to set the discovery mode to discover the device in NMOS controller. User can set to Multicast DNS or Unicast DNS mode. If it is set Unicast DNS mode user need to set Domain and Nameserver address to get device discovered in control system.
- **Domain:** Allows user to set the domain name of the unicast DNS server. By default, set local as domain name.
- **Nameserver:** Allows user to set the name server ip address of the DNS server, By default, set the nameserver ip address as 0.0.0.0
- **Priority:** Allows user to set the priority of the nmos device.
- **Debug level:** This control is for engineering purposes for troubleshooting and get the logs in different level.

5.15. GPIO CONFIG

The GPIO control enables the user to configure the General Purpose Inputs and Outputs.

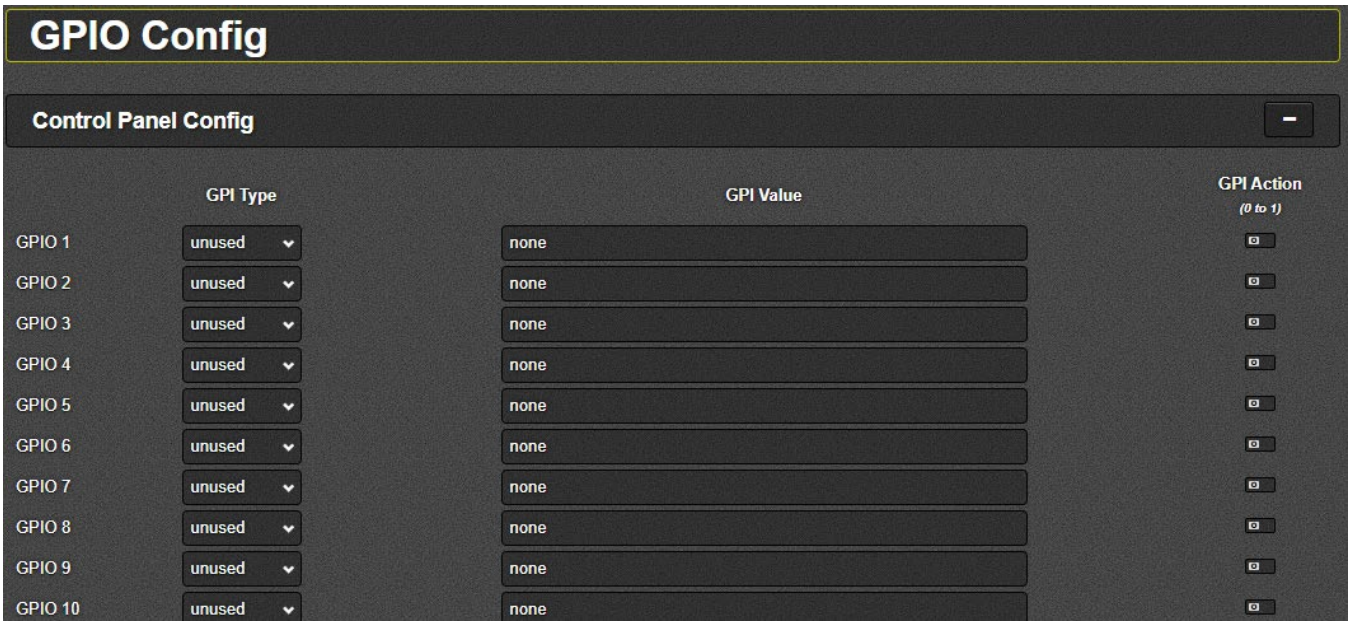

Figure 5-17 : WebEASY® - GPIO Config

6. UPGRADE PROCEDURES

6.1. FIRMWARE UPGRADE

The webpage is the fast and recommended way to load the firmware onto the 570DSK-25G.

Open up the 570DSK's webpage by typing out its control IP address into the browser.

Login as:
Username: root
Password: evertz

On the top of the web page there's a button labeled "Upgrade".
The Upgrade button is used to check current firmware version and to upload the latest firmware (Figure 6-1).

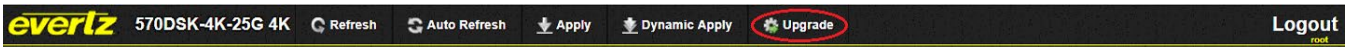

Figure 6-1 : WebEASY® - Upgrade Button on Top Menu Bar

Clicking on the Upgrade button, will take the user to Figure 6-2 where the current firmware version is shown.

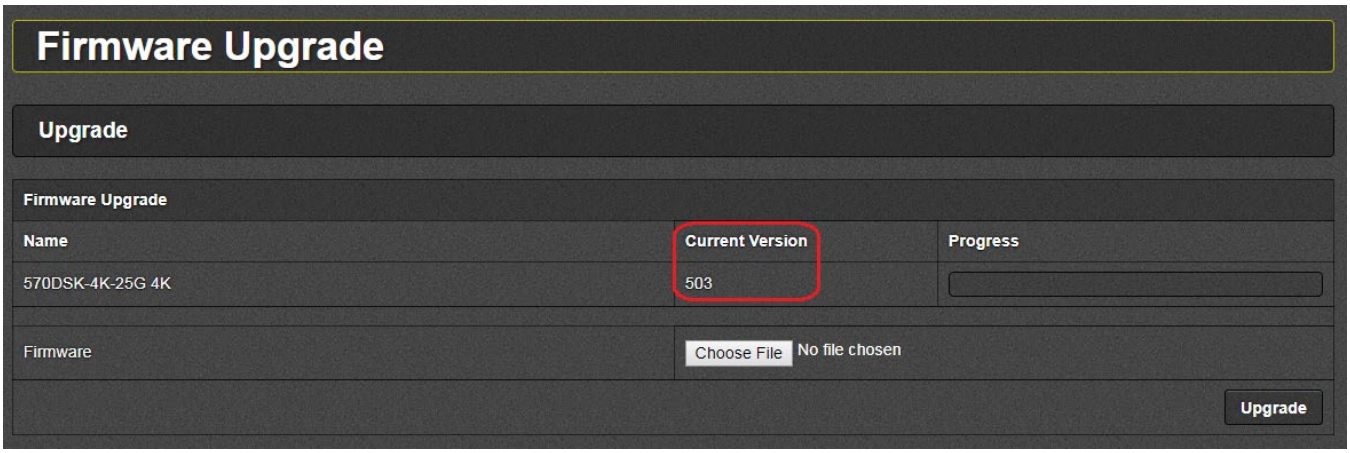

Figure 6-2 : WebEASY® - Firmware Upgrade Menu

If the firmware version is outdated, the user can upgrade by clicking the "Choose File" button, then browsing to the desired firmware file (example: "570DSK-25G.tar.gz") then clicking the "open" button:

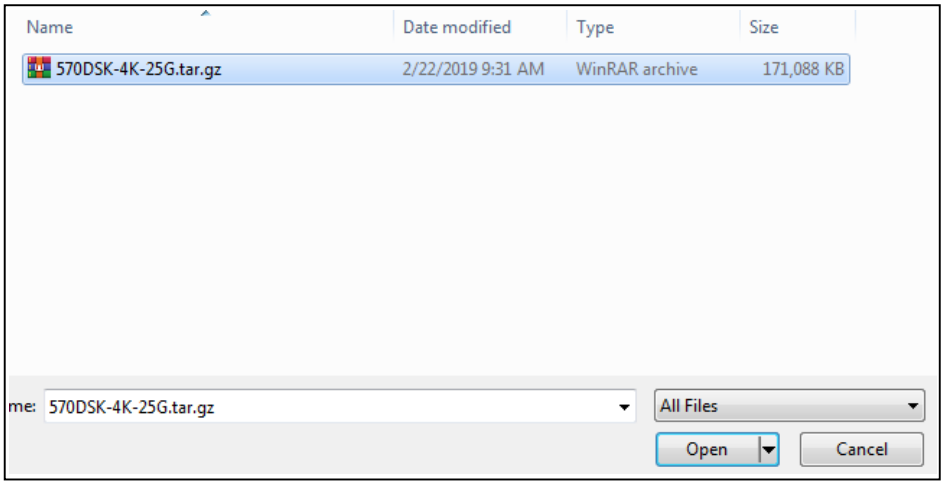

Figure 6-3 : Firmware File Select

Then click on the “upgrade” button. You can then watch the progress bar status:

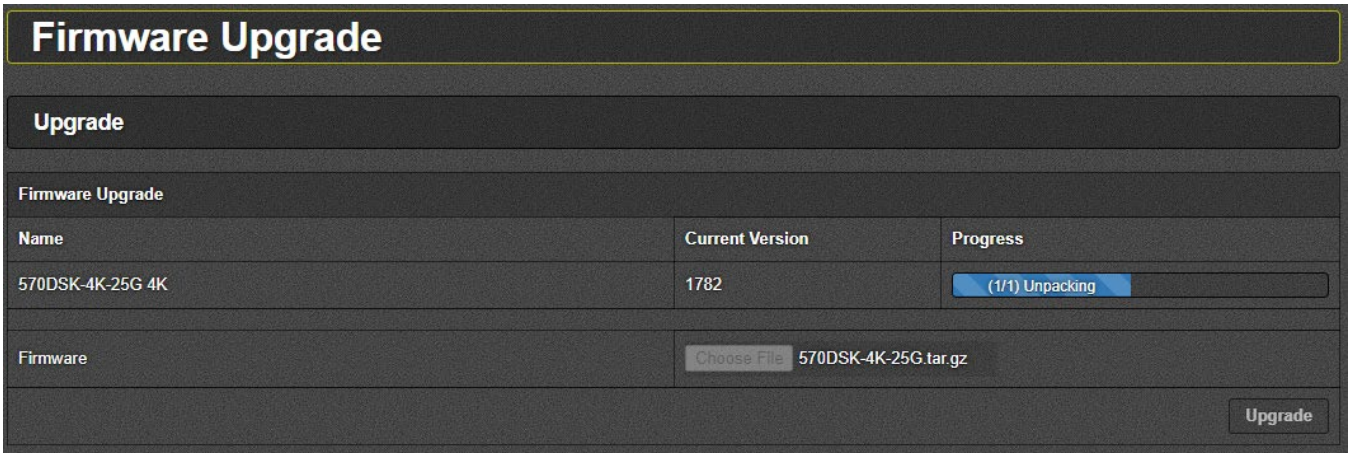

Figure 6-4 : WebEASY® - Firmware Upgrade Menu

Once completed, the device will automatically reboot. The entire process can take more than 5 minutes. Please be patient.

Note: If you see any error messages generated by the browser, just click “wait”.

After the card reboots, log back into the webpage and verify the firmware was loaded correctly by clicking on the “upgrade” button and checking the listed firmware version.

If still the same firmware listed after the card rebooted, then the upgrade failed. Please repeat the same steps above.

7. DEFINITIONS

4:2:2: The sampling ratio used in the HDTV digital video signal. For every 4 samples of luminance there are 2 samples each of R-Y (Red minus Luminance) and B-Y (Blue minus Luminance).

16X9: A widescreen television format such as HDTV in which the aspect ratio of the screen is 16 units wide by 9 high as opposed to the 4x3 of normal TV.

Aspect Ratio: The ratio of width to height in a picture. Theatre screens generally have an aspect ratio of 1.85 to 1, widescreen TV (16x9) is 1.77 to 1, and normal TV (4x3) is 1.33 to 1.

CCIR (International Radio Consultative Committee): An international standards committee. (This organization is now known as ITU)

CCIR-601: See ITU-R601.

Cliff effect: (Also referred to as the "digital cliff") This is a phenomenon found in digital video systems that describes the sudden deterioration of picture quality when due to excessive bit errors, often caused by excessive cable lengths. The digital signal will be perfect even though one of its signal parameters is approaching or passing the specified limits. At a given moment however, the parameter will reach a point where the data can no longer be interpreted correctly, and the picture will be totally unrecognizable.

Drop Frame: In NTSC systems, where the frame rate is 29.97002618 frames per second, the drop frame mode permits time of day indexing of the frame numbers by dropping certain frame numbers. Specifically frames 0, and 1 at the beginning of each minute except minutes 0,10,20,30,40, & 50, are omitted, to compensate for an approximate timing error of 108 frames (3 seconds 18 frames) per hour. A flag bit is set in the time code to signal when the drop frame mode is in effect.

ITU: The United Nations regulatory body governing all forms of communications. ITU-R (previously CCIR) regulates the radio frequency spectrum, while ITU-T (previously CCITT) deals with the telecommunications standards.

ITU-R601: An international standard for standard definition component digital television from which was derived SMPTE 125M and EBU 3246-E standards. ITU-R601 defines the sampling systems, matrix values and filter characteristics for Y, B-Y, R-Y and RGB component digital television signals.

Letterbox: Placing a wide screen image on a conventional TV by placing black bands at the top and bottom of the screen.

NTSC: National Television Standards Committee established the television and video standard in use in the United States, Canada, Japan and several other countries. NTSC video consists of 525 horizontal lines at a field rate of approximately 60 fields per second. (Two fields equal one complete Frame). Only 487 of these lines are used for picture. The rest are used for sync or extra information such as VITC and Closed Captioning.

PAL: Phase Alternating Line. The television and video standard in use in most of Europe. Consists of 625 horizontal lines at a field rate of 50 fields per second. (Two fields equal one complete Frame). Only 576 of these lines are used for picture. The rest are used for sync or extra information such as VITC and Teletext.

Pixel: The smallest distinguishable and resolvable area in a video image. A single point on the screen. In digital video, a single sample of the picture. Derived from the words *picture element*.

Serial Digital: Digital information that is transmitted in serial form. Often used informally to refer to serial digital television signals.

SMPTE (Society of Motion Picture and Television Engineers): A professional organization that recommends standards for the film and television industries.

SMPTE 12M: The SMPTE standard for Time and address code. SMPTE 12M defines the parameters required for both linear and vertical interval time codes.

SMPTE 125M: The SMPTE standard for bit parallel digital interface for component video signals. SMPTE 125M defines the parameters required to generate and distribute component video signals on a parallel interface.

SMPTE 272M: The SMPTE standard for embedding audio in serial digital standard definition (SMPTE 259M-C) video signals.

SMPTE 274M: The SMPTE standard for bit parallel digital interface for high definition component video signals with an active picture of 1080 lines x 1920 pixels.

SMPTE 292M: The SMPTE standard for high definition serial digital component interfaces.

TRS: Timing reference signals used in composite digital systems. (It is four words long).

TRS-ID: Abbreviation for "Timing Reference Signal Identification". A reference signal used to maintain timing in composite digital systems. (It is four words long.)