570EMR-AG-HUB
User Manual

© Copyright 2018

EVERTZ MICROSYSTEMS LTD.
5292 John Lucas Drive
Burlington, Ontario
Canada L7L 5Z9

Phone:	+1 905-335-3700	
Sales:	sales@evertz.com	Fax: +1 905-335-3573
Tech Support:	service@evertz.com	Fax: +1 905-335-7571
Web Page:	http://www.evertz.com	

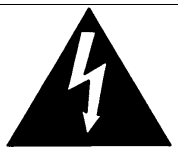
Version 1.0, June 2018

The material contained in this reference guide consists of information that is the property of Evertz Microsystems and is intended solely for the use of purchasers of the 570EMR-AG-HUB product. Evertz Microsystems expressly prohibits the use of this guide for any purpose other than the operation of the contained in this reference guide consists of information that is the property of Evertz Microsystems and is intended solely for the use of purchasers of the 570EMR-AG-HUB product. Due to on going research and development, features and specifications in this manual are subject to change without notice.

All rights reserved. No part of this publication may be reproduced without the express written permission of Evertz Microsystems Ltd. Copies of this manual can be ordered from your Evertz dealer or from Evertz Microsystems.

This page left intentionally blank

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 these instructions
- 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

CISPR 22 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 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.

CE

EN60065	Safety
EN55103-1: 1996	Emission
EN55103-2: 1996	Immunity

EN504192 2005
Waste electrical products should not be disposed of with household waste.
Contact your Local Authority for recycling advice

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.

TABLE OF CONTENTS

1. OVERVIEW 1

1.1. FEATURES & BENEFITS 1

1.2. SYSTEM I/O 1

2. SPECIFICATIONS 3

2.1. AUDIO INPUTS 3

2.2. ETHERNET INTERFACE 3

2.3. ELECTRICAL 3

2.4. FRAMES 3

3. INSTALLATION 5

3.1. FRONT AND REAR PLATE 5

3.1.1. Front Plate 5
3.1.2. Rear Plate 5
3.1.3. Rear Plate Mapping 6

4. HARDWARE INSTALLATION 7

5. CONFIGURING 570EMR THROUGH WEBEASY® 9

5.1. SYSTEM 10

5.1.1. Control Port Configuration 11
5.1.2. Data Port Configuration 11
5.1.3. Data Port Monitor 11
5.1.4. SFP Control 11
5.1.5. SFP Monitor 12
5.1.6. Genlock Control 12
5.1.7. InBand Control 12
5.1.8. RPC TimeOut 12
5.1.9. Card Control 12

5.2. PRODUCT FEATURES 13

5.3. SIGNAL INPUT 13

5.3.1. Global Control 14
5.3.2. Link Monitoring 14
5.3.3. Channel Monitoring 14

5.4. IP OUTPUT (S302M) 14

5.4.1. SFP Output 15
5.4.2. Express IP Output Control 15
5.4.3. IP Output Control 15
5.4.4. IP Output Advanced Control 15

5.5. IP OUTPUT (AES67) 16

5.5.1. AES67 packet Time 16

5.5.2. SFP Port Output 16
5.5.3. Express IP Output Control 16
5.5.4. IP Output Control 17
5.5.5. IP Output Advanced Control 17

5.6. IP INPUT (S302M) 17

5.6.1. Global Control 18
5.6.2. Express IP Input 18
5.6.3. IP Input Control 18
5.6.4. RTP Control 18

5.7. IP INPUT (AES67) 18

5.7.1. Global Control 19
5.7.2. Express IP Input 19
5.7.3. IP Input Control 19

5.8. SIGNAL OUTPUT 19

5.8.1. Output Control 19
5.8.2. Channel Monitoring 19

5.9. DELAY CONTROL 20

5.10. PCR CONTROL 21

5.10.1. PCR Output Control 21
5.10.2. PCR Input Control 21
5.10.3. Time Reference 21

5.11. PTP CONTROL 22

5.12. NOTIFY 22

6. APPENDIX 23

Figures

Figure 3-1 : 570EMR Front (left) and Rear Plate (right) 5
Figure 3-2 : 570EMR Main TDM/MADI Inputs & Outputs 6
Figure 5-1 : WebEASY® - System 10
Figure 5-2 : WebEASY® - Product Features 13
Figure 5-3 : WebEASY® - Signal Input 13
Figure 5-4 : WebEASY® - IP Output (S302M) 14
Figure 5-5 : WebEASY® - IP Output (AES67) 16
Figure 5-6 : WebEASY® - IP Input (S302M) 17
Figure 5-7 : WebEASY® - IP Input (AES67) 18
Figure 5-8 : WebEASY® - Signal Output 19
Figure 5-9 : WebEASY® - Delay Control 20
Figure 5-10 : WebEASY® - PCR Control 21
Figure 5-11 : WebEASY® - PTP Control 22
Figure 5-12 : WebEASY® - Notify 22

REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary Release	June 2018

Information contained in this reference guide is believed to be accurate and reliable. However, Evertz assumes no responsibility for the use thereof nor for the rights of third parties, which may be affected in any way by the use thereof. Any representations in this document concerning performance of Evertz products are for informational use only and are not warranties of future performance, either expressed or implied. The only warranty offered by Evertz in relation to this product is the Evertz standard limited warranty, stated in the sales contract or order confirmation form.

Although every attempt has been made to accurately describe the features, installation and operation of this product in this reference guide, no warranty is granted nor liability assumed in relation to any errors or omissions unless specifically undertaken in the Evertz sales contract or order confirmation. Information contained in this reference guide is periodically updated and changes will be incorporated into subsequent editions. If you encounter an error, please notify Evertz Customer Service department. Evertz reserves the right, without notice or liability, to make changes in equipment design or specifications.

This page left intentionally blank

1. OVERVIEW

The 570EMR-AG-HUB is Evertz 3rd generation low latency high density gateway audio card that enables distribution of TDM / MADI over IP. It has 10 TDM / MADI inputs and 10 TDM / MADI outputs and there is no redundancy for TDM / MADI Inputs and Outputs. Each TDM input carries 512 mono audio channels and MADI Input carries 64 mono audio channels. This card supports two Audio over IP standards ST302M and AES67. MADI feature can be enabled only through license (FK-MADI).

This module provides a gateway to link into IP infrastructures as well as a more efficient way to tie-line routers together. IP based audio packetized and transported over fiber will provide greater density and longer distances than coax based solutions would yield. TDM audio sources and destinations include all EMR audio modules plus EQX embedders, deembedders & frame-syncs. Each Transport Stream has 4 Audio channels and must have one dedicated Multicast Address associated with it. Each TDM input must have 128 dedicated multicast addresses of Transport Streams. The 570EMR-AG-HUB rear panel occupies 2 slots in 570 Frame and has 20 x DIN 1.0/2.3 connectors.

1.1. FEATURES & BENEFITS

- 10 TDM / MADI Inputs
- 10 TDM / MADI Outputs
- 8 x SFP+ 10GE trunk interfaces
- Supports TDM V2
- Supports pop Suppression
- Supports PCR and PTP
- Supports ST302M and AES67 audio over IP standards

1.2. SYSTEM I/O

20 TDM / MADI DIN Inputs/Outputs:

- 20 x DIN 1.0/2.3 Connectors
- Supports 512 Mono audio channels in each TDM Inputs and Outputs
- Supports 64 Mono audio channels in each MADI Inputs and Outputs
- According to the Rear Plate screening:
    - TDM Inputs - 1-10 DIN Connectors
    - TDM Outputs - 11-20 DIN Connectors

8 x 10GE SFP+ Ports:

- Support 128 Multicast addresses for each TDM Inputs and Outputs
- Support 16 Multicast addresses for each MADI Inputs and Outputs
- SFP 1 sends/receives ST302M audio for TDM Inputs 1-5 and TDM Outputs 11-15
- SFP 2 is the IP redundant of SFP 1.
- SFP 3 sends/receives ST302M audio for TDM Inputs 6-10 and TDM Outputs 16-20
- SFP 4 is the IP redundant of SFP 3

- SFP 5 sends/receives AES67 audio for TDM Inputs 1-5 and TDM Outputs 11-15
- SFP 6 is the IP redundant of SFP 5.
- SFP 7 sends/receives AES67 audio for TDM Inputs 6-10 and TDM Outputs 16-20
- SFP 8 is the IP redundant of SFP 7

InBand Control:

- SFP1, SFP2, SFP3, SFP5, SFP6, SFP7 is used for Main or Redundant Inband Control.

RTP Control:

- Option to globally Enable or Disable the RTP header for the incoming TS's
- Incoming TS's doesn't have RTP header and AG card is set Enable for RTP
  There will be no audio in TDM Outputs.
- Incoming TS's has RTP header and AG card is set Enable for RTP
  There will be audio in TDM Outputs.
- Incoming TS's doesn't have RTP header and AG card is set Disable for RTP
  There will be audio in TDM Outputs.
- Incoming TS's has RTP header and AG card is set Disable for RTP
  There will be no audio in TDM Outputs.

2. SPECIFICATIONS

2.1. AUDIO INPUTS

Number of TDM / MADI Inputs	10 x DIN
Number of TDM / MADI Outputs	10 x DIN
Connector	DIN 1.0/2.3
Impedance	75 Ω terminating

2.2. ETHERNET INTERFACE

Number of SFP Ports	8 x 10GE SFP+ (Rest of them are for future development)

2.3. ELECTRICAL

Voltage	+12VDC
Power Consumption	70W

2.4. FRAMES

Frame and Slot Occupancy	570 Frame with 2 slot occupancy 570 Standalone Frame

This page left intentionally blank

3. INSTALLATION

3.1. FRONT AND REAR PLATE

Figure 3-1 : 570EMR Front (left) and Rear Plate (right)

3.1.1. Front Plate

The front plate of 570EMR-AG-HUB is equipped with 12 10GE SFP ports capable of passing/receiving 10GE of data per port. Only 8 x 10GE SFP ports are available to be used.

3.1.2. Rear Plate

The rear plate of 570EMR-AG-HUB is equipped with 20 DIN connectors. The 1-10 DIN connectors are used for TDM / MADI Inputs and 11-20 DIN connectors are used for TDM / MADI Outputs.

3.1.3. Rear Plate Mapping

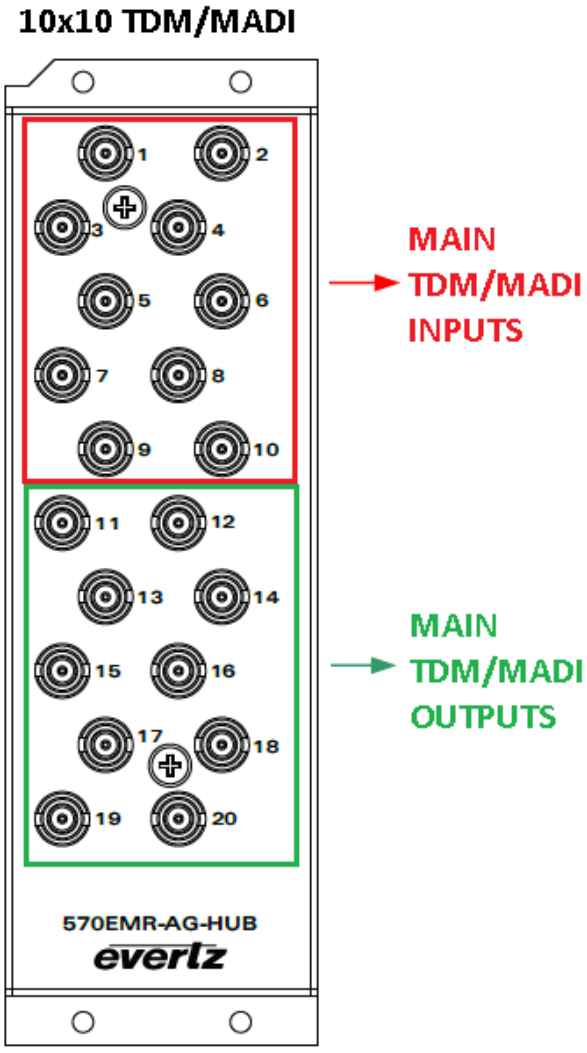


Figure 3-2 : 570EMR Main TDM/MADI Inputs & Outputs

4. HARDWARE INSTALLATION

570EMR-AG-HUB can be installed in one of the following two ways:

1. 570 Frame communication via Frame Controller

2. Standalone 570 Frame (Direct Communication)

Before handling the card, it is important to minimize the potential effects of static electricity. It is therefore recommended that an ESD strap to be worn.

Locate on the chassis two vacant slots. Unpack the 570EMR-AG-HUB and separate the rear panel from the main card. Locate on the rear of the rack the two slots and remove the blank panels. Insert the rear panel into the back of the chassis and secure using the screws provided. Now insert the 570EMR-AG-HUB card into the corresponding front slots ensuring the card lines up with the slot runners on the bottom and the top of the chassis. Push the card **firmly** into the slot ensuring that when it mates with the rear card it has been firmly pushed into a seated position. Do not connect any cables to the rear card (failure to do this could cause unwanted network issues) until the initial configuration has been completed. This procedure can be completed to all the other modules and is hot swappable allowing for the frame to be powered on while installing.

This page left intentionally blank

5. CONFIGURING 570EMR THROUGH WEBEASY®

The 570FC provides a built-in web interface that allows a user to interact with the 570FC as well as WebEASY® supported products using a standard Internet web browser. The 570FC web interface can be accessed by entering the IP address of the 570FC into the address bar of an Internet web browser. When first visit the 570FC web interface, the user will be asked to enter a Login and Password.

Username: root
Password: evertz

The home page of 570FC provides a list of all products currently under the control of the 570FC along with a menu that allows insight into specific *Product Location, Hardware*, *Software*, *SNMP V1 Community* strings, *SNMP V1 Trap* destinations and local *TRAP Management Faults* for the 570FC.

570EMR can receive IP address from 570FC through proxy mode. To receive the IP address from 570FC, Click "Software" tab from 570FC webpage and select the IP Configure Mode "*Static or DHCP*". Then select the "*Slot#*", where you see the 570EMR in 570 Menu Page and "Enable" the Proxy Mode under the selected Slot#, then it will displays three fields to enter the IP Address, Netmask and Gateway. After configuring three fields, Click "Apply" to save the settings and refresh the page to see the settings are saved.

Go back to 570FC Home Page, it will provide a list of all 570EMR currently in the frame. It will also provide the firmware version of each card in the frame. Cards that appear in white text do not support the WebEASY® interface and are therefore not configurable though the web interface. These cards must be configured using VistaLINK® or Serial Menu. Cards that support the WebEASY® interface will appear in yellow. Click on the yellow product name which is linked to the controls available for that card.

Refresh, Apply, and *Dynamic Apply* buttons on top of the page are used to apply changes to the config and refresh to check current status of the config. These function in the same manner as the in VistaLINK®.

5.1. SYSTEM

This tab provides the basic configurations/Monitoring of IP address, InBand Control, Data Port Monitoring and Reference.

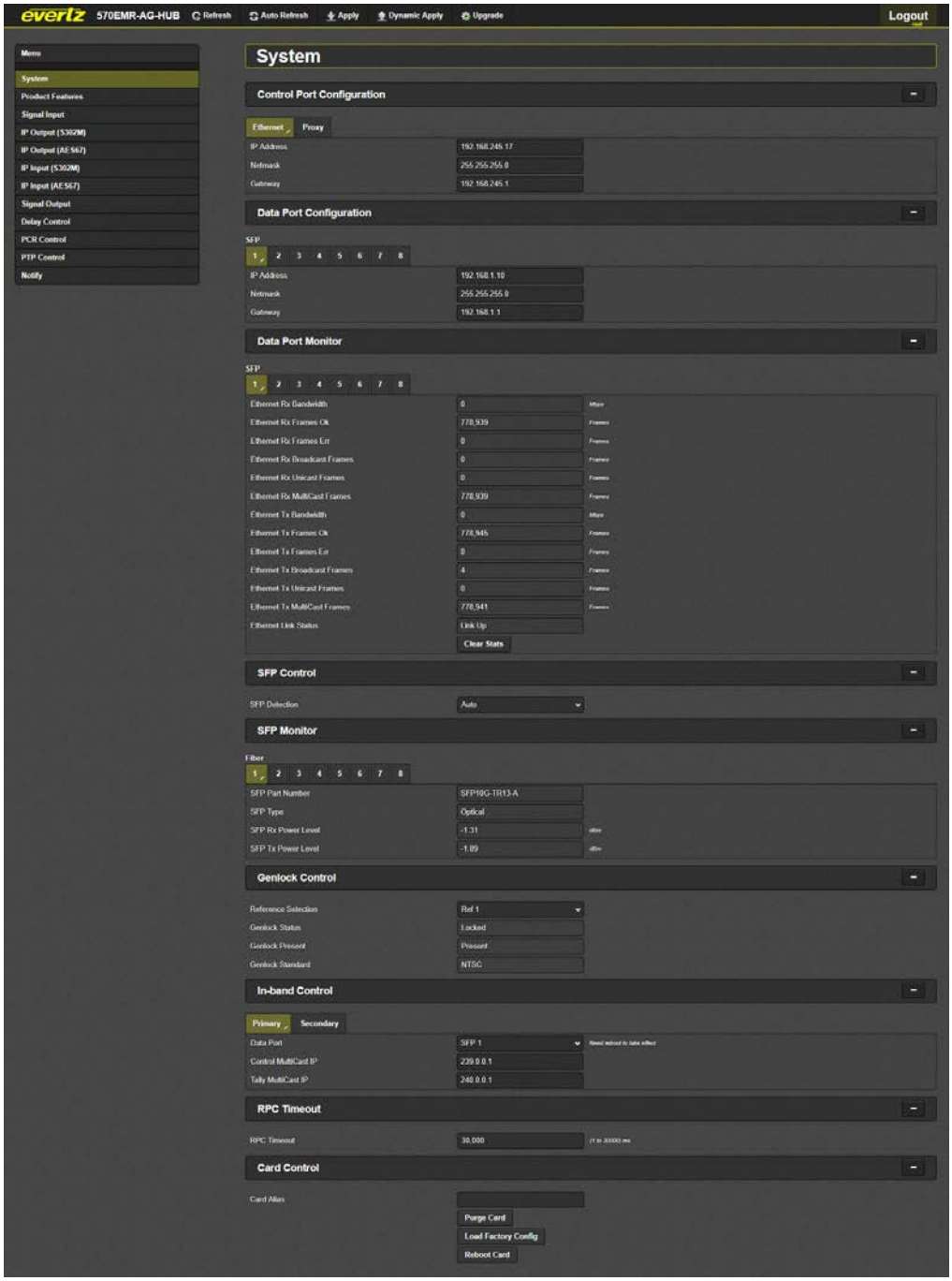


Figure 5-1 : WebEASY® - System

5.1.1. Control Port Configuration

Ethernet: Allows the user to set the IP Address, Netmask and Gateway. This IP Address is used for control and monitor, when 570EMR in standalone frame.

Proxy: This IP Address is received from 570FC through proxy. Doesn't allow the user to change the IP in 570EMR webpage but user can change the IP Address in 570FC Software tab page. This IP address is used for control and monitor when 570EMR in 570 Frame with 570FC.

5.1.2. Data Port Configuration

Only 8 SFPs are currently available and the user can set the following parameters on each SFPs. Make sure SFP's data ports must have different subnet IP address.

IP Address: This parameter allows the user to set the IP Address for the data port.

NetMask: This parameter allows the user to set the Netmask for the data port.

Gateway: This parameter allows the user to set the gateway for the data port.

5.1.3. Data Port Monitor

This section allows the user to monitor the following parameters on each SFP's.

Ethernet Rx Bandwidth: Displays the Received Ethernet Bandwidth displayed in Mbps.

Ethernet Rx Frames Ok: Displays the number of Error-Free Frames Received.

Ethernet Rx Frames Err: Displays the number of Erroneous Frames Received.

Ethernet Rx Broadcast Frames: Displays the number of Broadcast Frames Received.

Ethernet Rx Unicast Frames: Displays the number of Unicast Frames Received.

Ethernet Rx MultiCast Frames: Displays the number of Multicast Frames Received.

Ethernet Tx Bandwidth: Displays the Transmitted Ethernet Bandwidth displayed in Mbps.

Ethernet Tx Frames Ok: Displays the number of Error-free Frames Transmitted.

Ethernet Tx Frames Err: Displays the number of Erroneous Frames Transmitted.

Ethernet Tx Broadcast Frames: Displays the number of Broadcast Frames Transmitted.

Ethernet Tx Unicast Frames: Displays the number of Unicast Frames Transmitted.

Ethernet Tx MultiCast Frames: Displays the number of Multicast Frames Transmitted.

Ethernet Link Status: Displays the Ethernet port link status as either up or down.

Clear Stats: Allows the user to clear the Stats recorded above by pushing the button.

5.1.4. SFP Control

SFP Detection: This control allows the user to specify the type of cable used with the SFP. Options are Auto, Optical, Copper 3m and Copper 5m.

5.1.5. SFP Monitor

This option is available for only three SFPs. The user can view the following parameters on each SFP.

SFP Part Number: Displays the part number of the SFP.

SFP Type: Displays the type of the SFP.

SFP Rx Power Level: Displays the receiver power level of the SFP.

SFP Tx Power Level: Displays the transmitter power level of the SFP.

5.1.6. Genlock Control

Reference Selection: Allows the user to select the reference from REF 1 or REF 2.

Genlock Status: Displays if the selected reference is LOCKED or UNLOCKED.

Genlock Present: Displays if the selected reference is PRESENT or ABSENT.

Genlock Standard: Displays the standard of the selected reference.

5.1.7. InBand Control

Data Port: Enable the Inband control on the selected SFP port (SFP 1, 2, 3, 5, 6, 7).

Control Multicast IP: Allows the user to set the receiving RPC multicast IP address.

Tally Multicast IP: Allows the user to set the Tally IP address.

5.1.8. RPC TimeOut

This control allows the user to set the timeout for RPC Connection.

5.1.9. Card Control

Card Alias: Allows the user to set the name of the 570EMR-AG-HUB.

Purge Card: Allows the user to clear all the settings in 570EMR.

Load Factory Config: Allows the user to load the factory configuration.

Reboot Card: Allows the user to reboot the 570EMR.

5.2. PRODUCT FEATURES

This section provides whether the card has license for MADI feature.

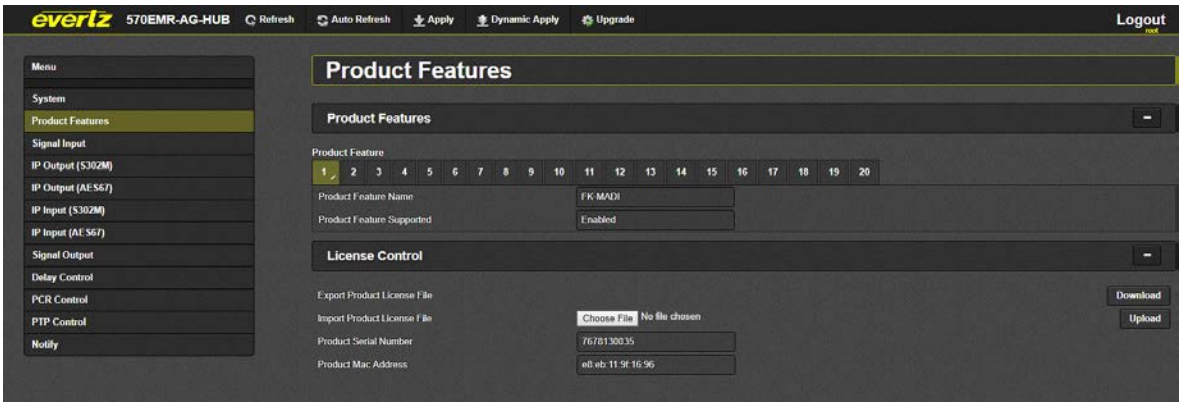


Figure 5-2 : WebEASY® - Product Features

5.3. SIGNAL INPUT

This section provides the information on TDM / MADI Link, TDM Source Identifier and TDM / MADI audio channel presence and also it detects the pop/clicks in the incoming TDM signal.

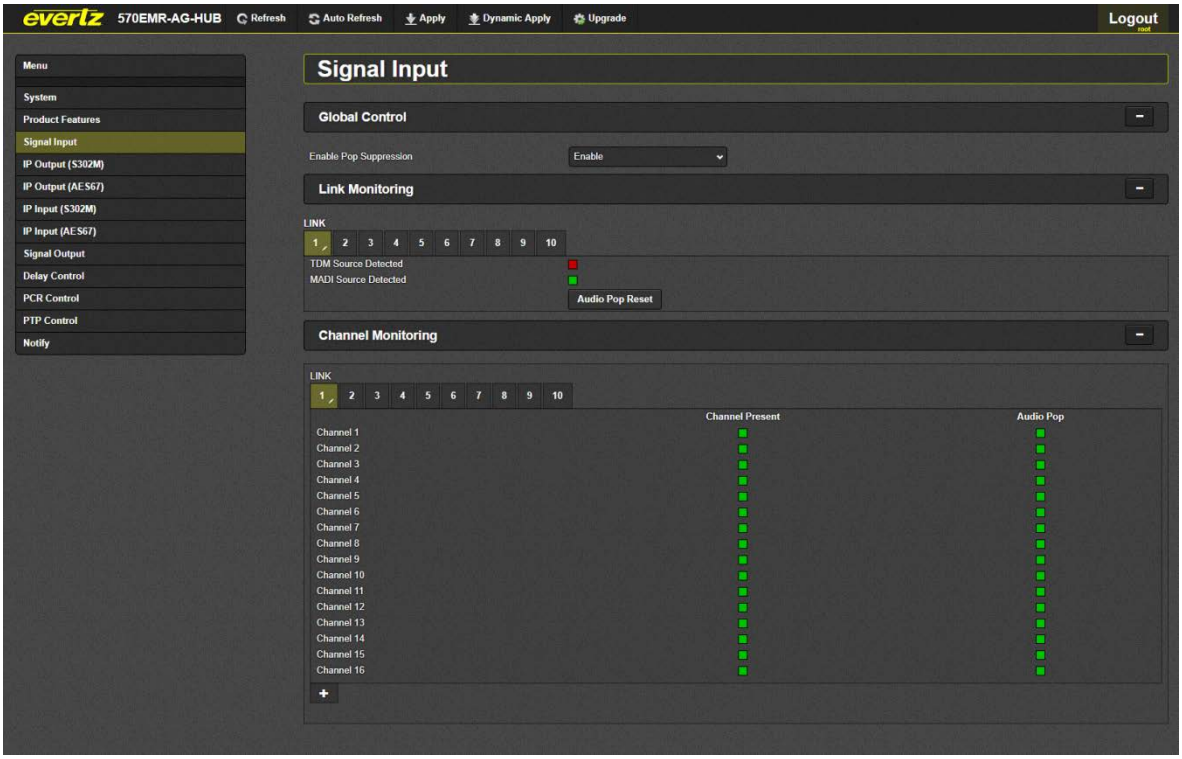


Figure 5-3 : WebEASY® - Signal Input

5.3.1. Global Control

Enable Pop Suppression: This section allows the user to enable or disable the Pop suppression globally. Pop suppression is used for reducing the pop/click sound when the audio switch happens in upstream path.

5.3.2. Link Monitoring

For each of 10 TDM inputs, the user can view the following parameters.

TDM Source Detected: Displays the status of the TDM Input Presence.

TDM Source Identifier: Displays where the TDM input source comes from.

MADI Source Detected: Displays the status of the MADI Input Presence.

5.3.3. Channel Monitoring

User can monitor all 512 channel presence in each TDM Inputs and MADI Inputs. User can expand to view the status of all 512 channels by clicking this button "**+**". If MADI Input is connected, first 64 audio channels responds to the MADI signals and rest of the audio channels shows red.

5.4. IP OUTPUT (S302M)

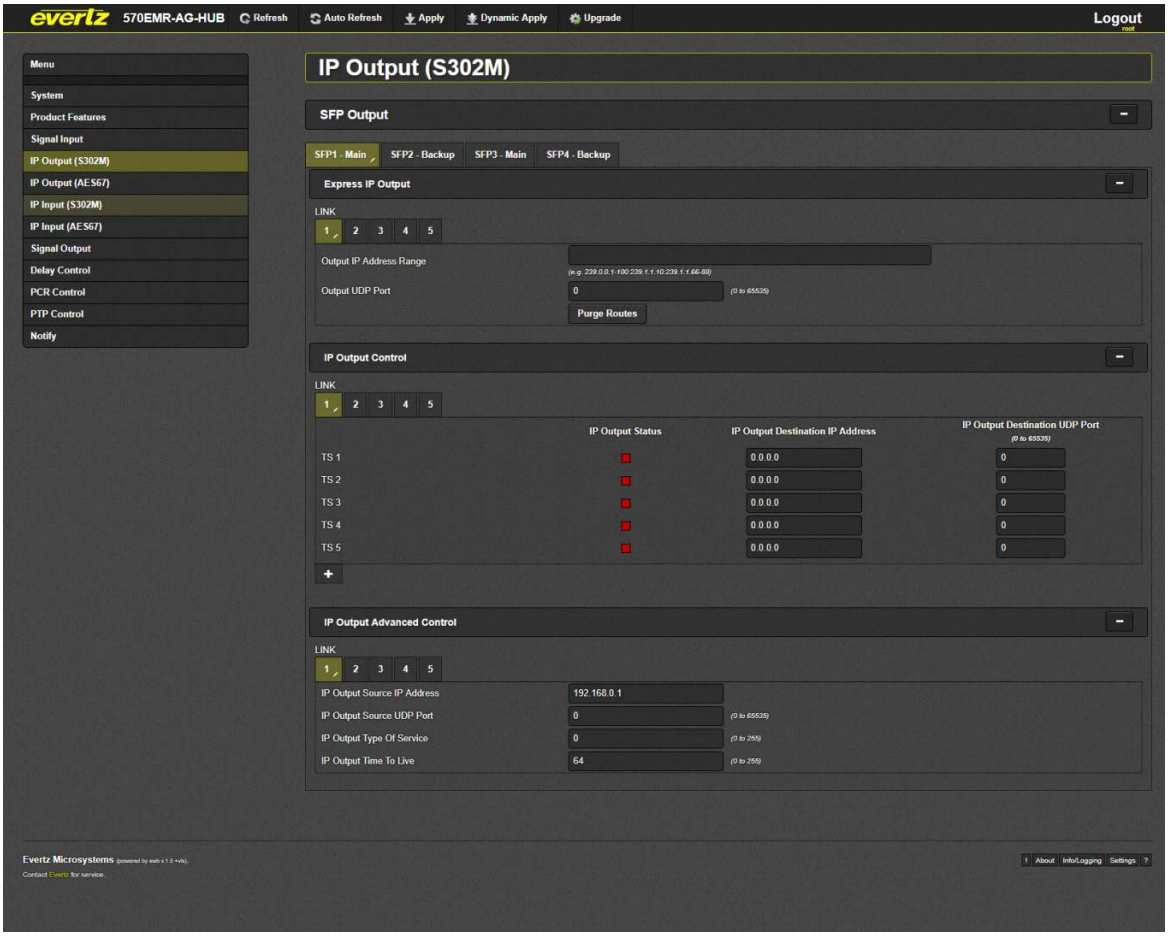


Figure 5-4 : WebEASY® - IP Output (S302M)

5.4.1. SFP Output

SFP2 is the backup of SFP1 and SFP4 is the backup of SFP3. Clicking each SFP's button shows the status, Multicast address and Port# for each Transport Streams.

5.4.2. Express IP Output Control

This section allows the user to set the Multicast Address and Port# for each TDM by selecting the individual TDM Ports.

5.4.3. IP Output Control

This section allows the user to see or set the Multicast Address and UDP Port# for each Transport Stream in each TDM Inputs. Also it displays the status of the IP Output.

NOTE: All the multicast addresses are set automatically via SDVN. Manual setup is for exceptional cases.

5.4.4. IP Output Advanced Control

IP Output Source IP Address: This field allows the user to set the Source IP Address of each TDM Input.

IP Output Source UDP Port: This field allows the user to set the Source UDP Port of each TDM Input.

IP Output Type Of Service: This field allows the user to set the ToS. If the network doesn't support ToS, *use zero as default*.

IP Output Time To Live: This field allows the user to set the Time To Live (TTL) value.

5.5. IP OUTPUT (AES67)

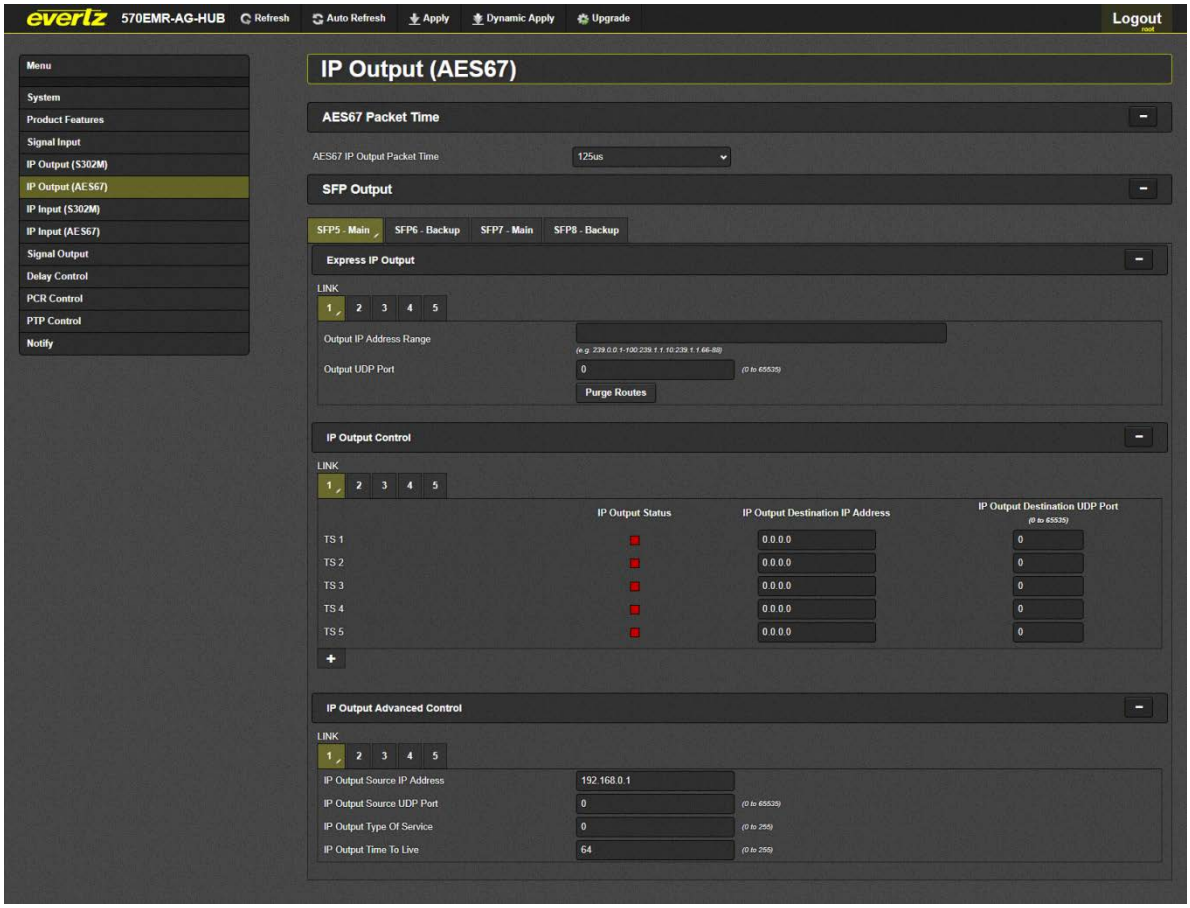


Figure 5-5 : WebEASY® - IP Output (AES67)

5.5.1. AES67 packet Time

Packet time is the real-time duration of the media data contained in a media packet. Given the sampling rate and packet time, the number of samples per packet can be calculated. Short packet times allow for lower latency but introduce overhead and high packet rates that may overtax some devices or networks. Long packet times imply higher latency and require additional buffering which may not be available on memory-constrained devices.
AG-HUB supports 1ms and 125µs packet time for AES67.

5.5.2. SFP Port Output

SFP6 is the backup of SFP5 and SFP8 is the backup of SFP7. Clicking each SFP's button shows the status and Multicast address and Port# for each Transport Streams.

5.5.3. Express IP Output Control

This section allows the user to set the Multicast Address and Port# for each TDM by selecting the individual TDM Ports.

5.5.4. IP Output Control

This section allows the user to see or set the Multicast Address and UDP Port# for the each Transport Stream in each TDM Inputs. Also it displays the status of the IP Output.

NOTE: All the multicast addresses are set automatically via SDVN. Manual setup is for exceptional cases.

5.5.5. IP Output Advanced Control

IP Output Source IP Address: Allows the user to set the Source IP Address of each TDM Input.

IP Output Source UDP Port: Allows the user to set the Source UDP Port of each TDM Input.

IP Output Type Of Service: Allows the user to set the ToS, if the network doesn't support ToS, *use zero as default*.

IP Output Time To Live: Allows the user to set the Time to Live (TTL) Value.

5.6. IP INPUT (S302M)

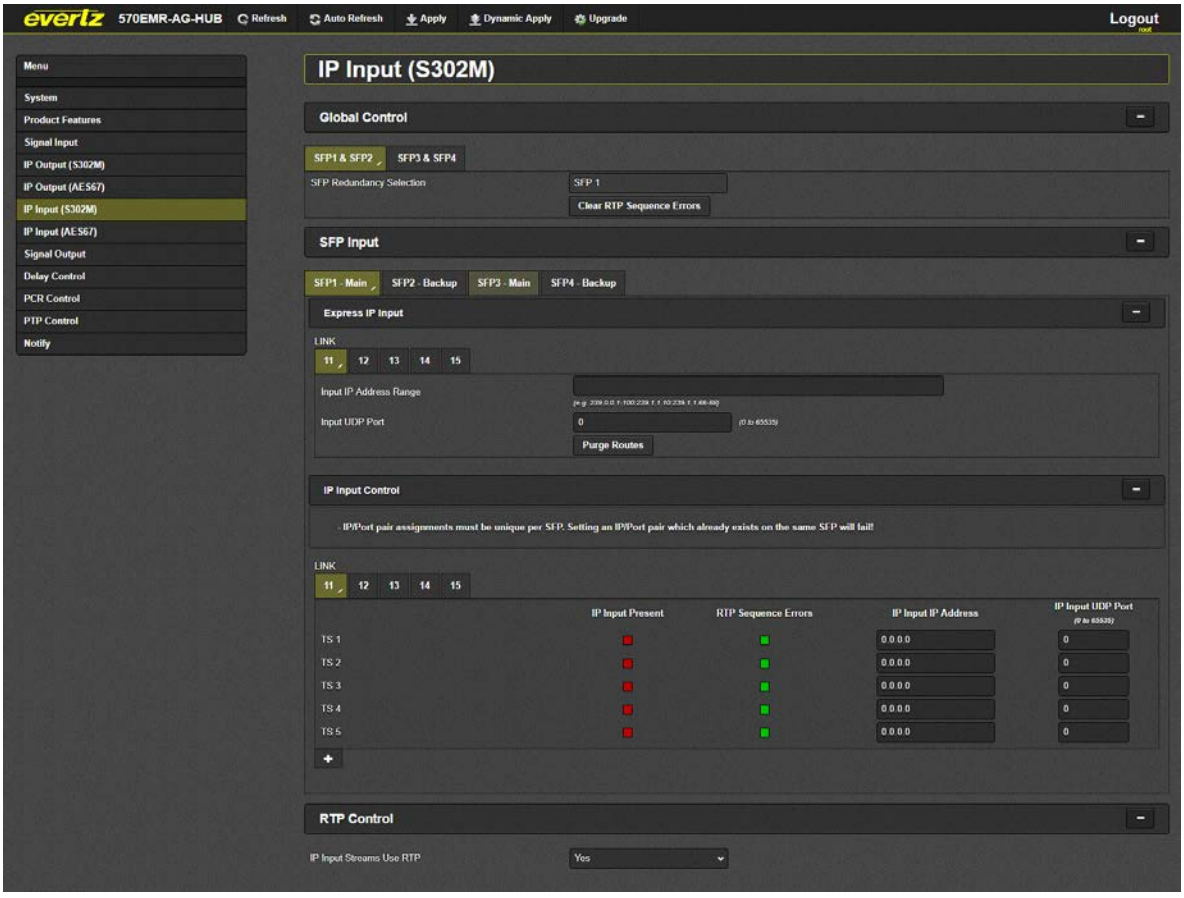


Figure 5-6 : WebEASY® - IP Input (S302M)

5.6.1. Global Control

SFP redundancy Selection: Allows the user to see whether the traffic for **IP to TDM Output** path is on **SFP1** or **SFP2, SFP3** or **SFP4.**

5.6.2. Express IP Input

This section allows the user to set the Multicast Address and Port# for each TDM by selecting the individual TDM Ports.

5.6.3. IP Input Control

This section allows the user to see and set the Multicast Address and UDP Port# for the each Transport Stream in each TDM Inputs. Also it displays the status of the IP Input and RTP Sequence Errors.

5.6.4. RTP Control

This mode is used for filtering the RTP header and it is applied for entire TDM Outputs. For instance, if the incoming IP packet doesn't have RTP Header, and does want to pass audio through TDM Outputs, then select "NO" for "IP Input streams use RTP".

5.7. IP INPUT (AES67)

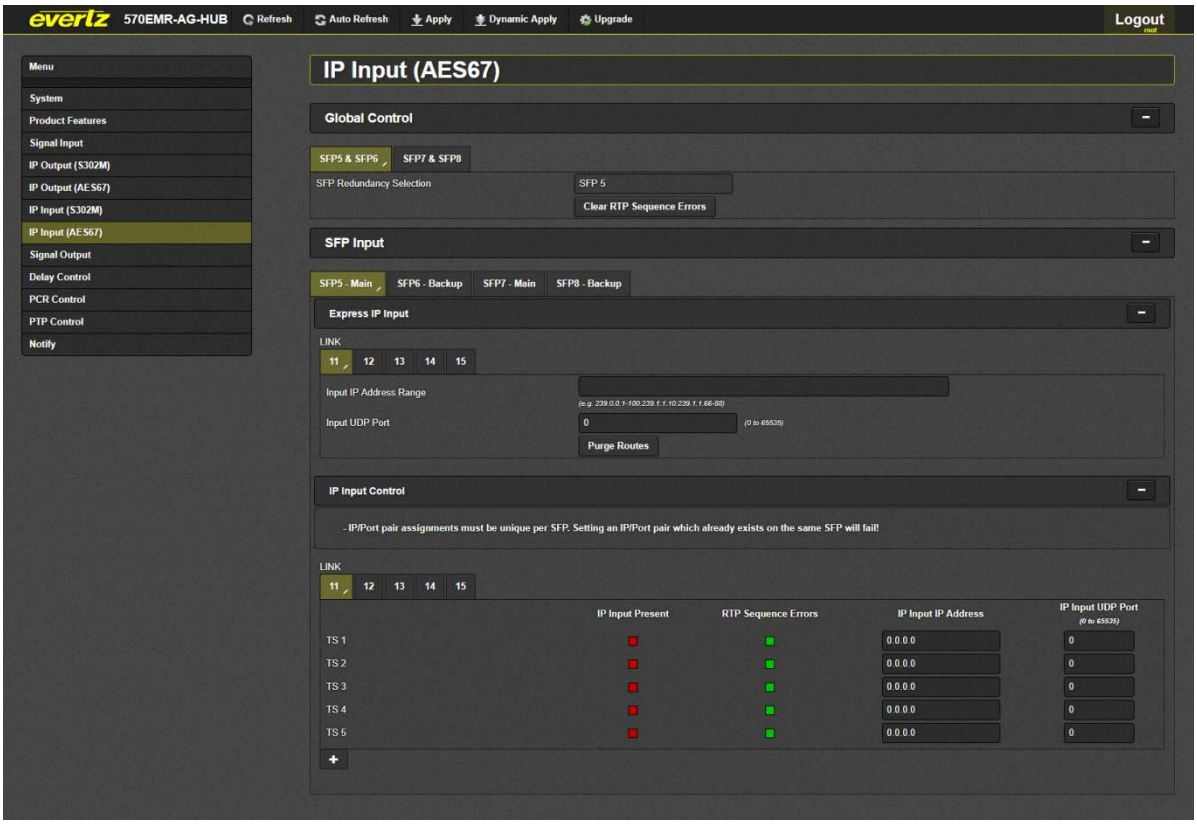


Figure 5-7 : WebEASY® - IP Input (AES67)

5.7.1. Global Control

SFP redundancy Selection: This field allows the user to see whether the traffic for **IP to TDM Output** path is on **SFP1** or **SFP2, SFP3** or **SFP4.**

5.7.2. Express IP Input

This section allows the user to set the Multicast Address and Port# for each TDM by selecting the individual TDM Ports.

5.7.3. IP Input Control

This section allows the user to see and set the Multicast Address and UDP Port# for each Transport Stream in each TDM Inputs. Also it displays the status of the IP Input and RTP Sequence Errors.

5.8. SIGNAL OUTPUT

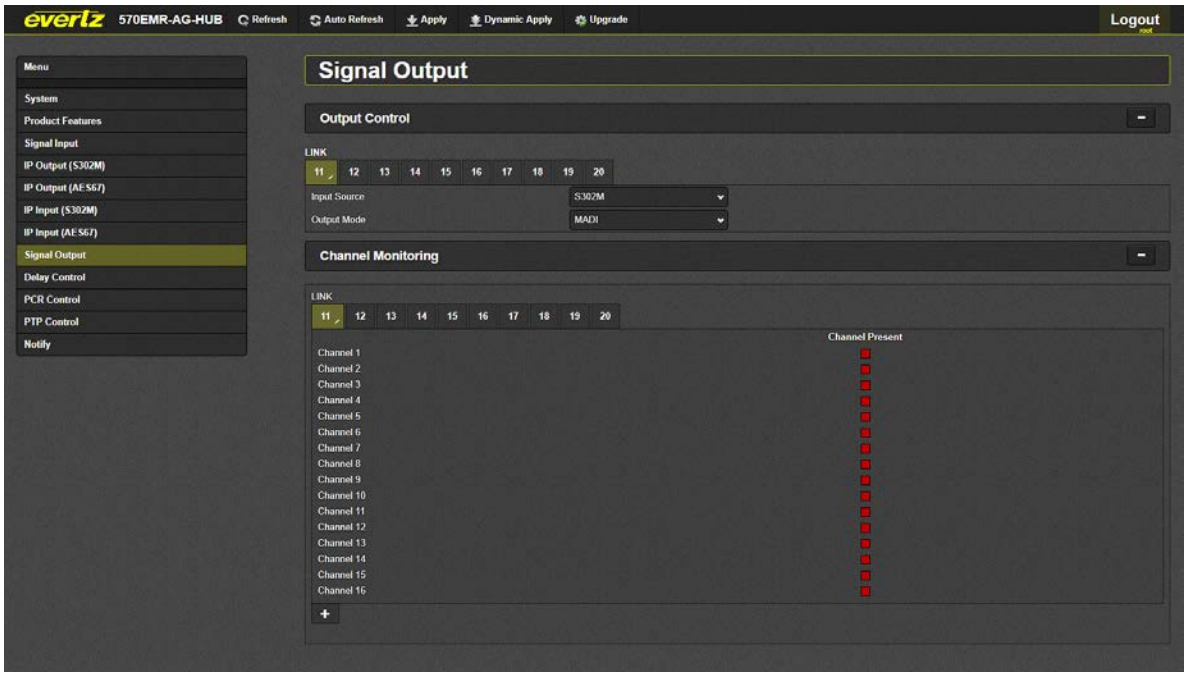


Figure 5-8 : WebEASY® - Signal Output

5.8.1. Output Control

The user must select the input source from ST302M or AES67 and output Mode from TDM or MADI.

5.8.2. Channel Monitoring

User can monitor all 512 channel/carrier presence in each TDM Outputs. User can expand to view the status of all 512 channels by clicking this button "**+**". If user expecting MADI output, then first 64 channels responds to the MADI Outputs and rest of the audio channels shows Red.

5.9. DELAY CONTROL

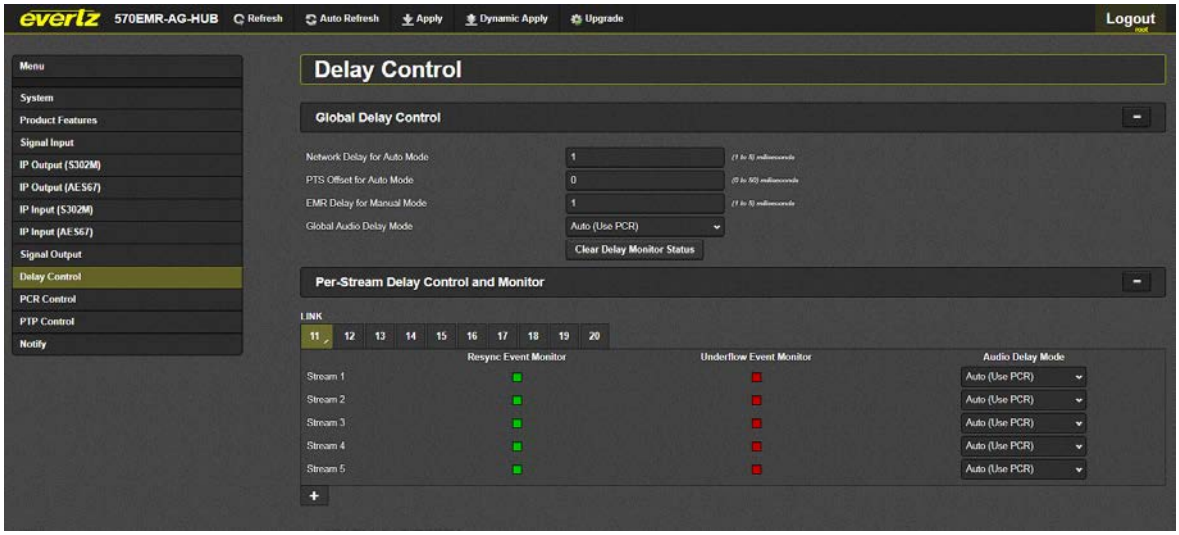


Figure 5-9 : WebEASY® - Delay Control

Manual and Auto Mode

In AUTO Mode:

* "**Network Delay**", i.e., this control allows the user to set the upper limit on time for audio to reach AG-HUB from upstream source (in this case IPG), usually 1ms enough.

* "**PTS Offset**", i.e., if sending device is adding any offset to Master PCR, before stamping the PTS value on its output audio. 570IPG does not add any offset, so this can/should be 0 in your case. But some compressed (JPG/MPG) devices add Codec Latency value, and that offset should be told to AG-HUB. Otherwise AG-HUB will get audio packets that are too far 'in the future', and it won't know how to store them.

In MANUAL mode:

* User only needs to specify how much input-to-output delay you want thru the AG-HUB. Jamming will bring both counters close enough to permit proper sync. They should never go out of sync again, as long they're running off the same Ref.

5.10. PCR CONTROL

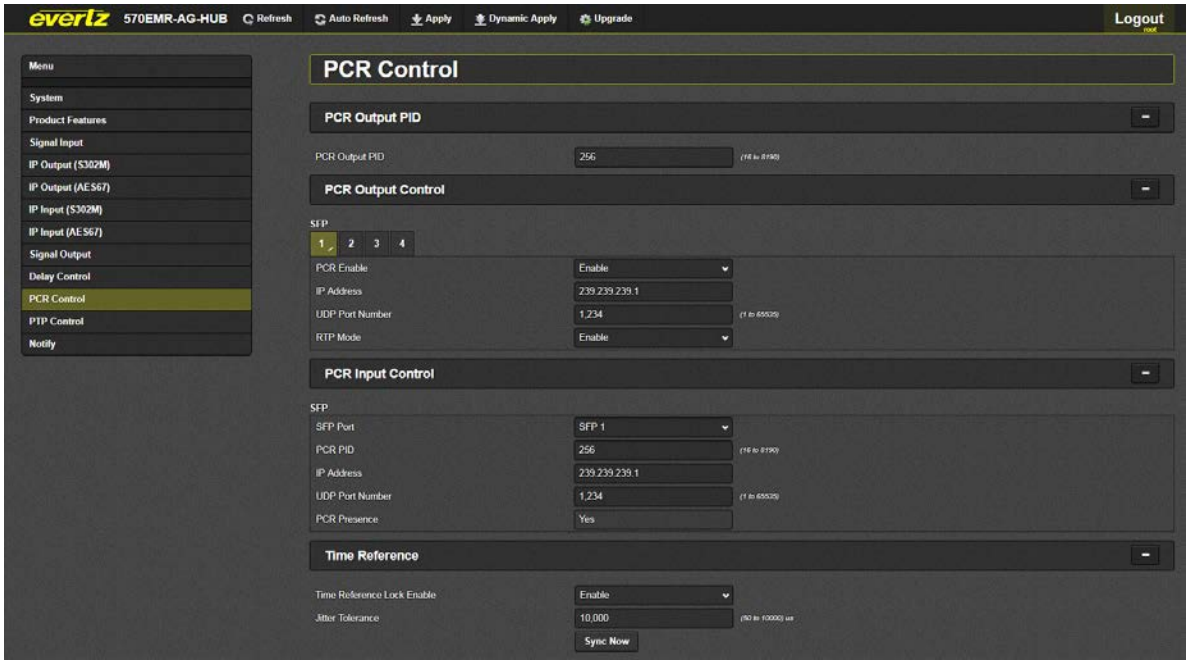


Figure 5-10 : WebEASY® - PCR Control

5.10.1. PCR Output Control

PCR Output PID: This parameter allows the user to set the time reference PCR PID.

PCR Enable: This parameter allows the user to Enable/Disable the PCR generation.

IP Address: This parameter allows the user to set the PCR Multicast Address.

UDP Port Number: This control allows the user to set the port number for UDP traffic.

RTP Mode: This parameter allows the user to Enable/Disable the PTR header.

5.10.2. PCR Input Control

PCR PID: This parameter allows the user to set the time reference PCR PID.

IP Address: This parameter allows the user to set the PCR Multicast Address.

UDP Port Number: This control allows the user to set the port number for UDP traffic.

PCR Presence: This parameter displays if there is a PCR detected.

5.10.3. Time Reference

Lock Enable: This parameter allows the user to enable/disable time reference lock.

Jitter Tolerance: This parameter allows the user to set the jitter tolerance.

Sync Now: This parameter allows the user to sync the time reference.

5.11. PTP CONTROL

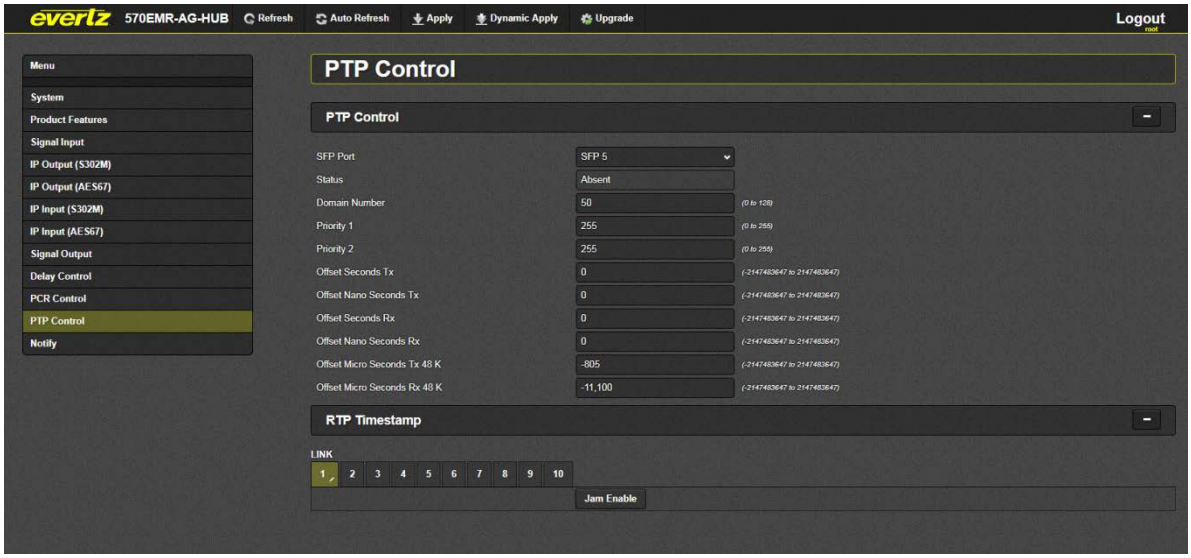


Figure 5-11 : WebEASY® - PTP Control

PTP is used to distribute time and timebase to every device in the system. Senders mark each packet of video, audio or ANC with an “RTP Timestamp” that indicates the “sampling time” (or equivalent). Receivers compare these timestamps in order to properly align the different essence parts to each other.

5.12. NOTIFY

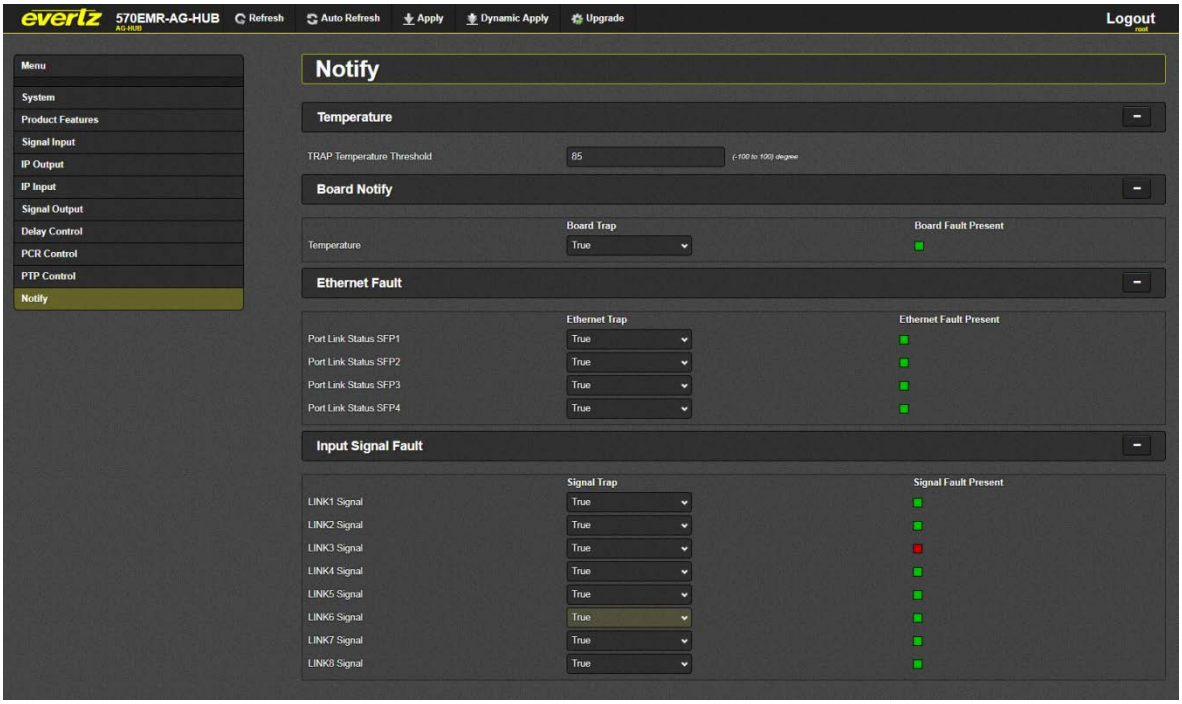


Figure 5-12 : WebEASY® - Notify

6. APPENDIX

Real-Time Transport Protocol (RTP): The use of RTP is recommended as it provides services such as time stamping, sequence numbering and delivery monitoring which can be beneficial for real-time delivery systems.

Time To Live (TTL): TTL is a mechanism that limits the life span of data in a network. Using the Multicast IP protocol, the TTL value indicates the scope or range in which a packet may be forwarded. By convention:

0 is restricted to the same host
1 is restricted to the same subnet

32 is restricted to the same site

64 is restricted to the same region

128 is restricted to the same continent

255 is unrestricted

Type of Service (ToS): The ToS field could specify a datagram's priority and request a route for low-delay, high-throughput, or highly-reliable service. Based on these ToS values, a packet would be placed in a prioritized outgoing queue or take a route with appropriate latency, throughput, or reliability. If the network doesn't support ToS, use zero as default.

Program Clock Reference (PCR): Synchronization of the Receiver System Time Clock (STC) with the Transmitter STC depends on transmitting PCRs through a constant-delay portion of the system. Thus, PCRs are inserted following the encoder buffer and extracted before the receiver buffer. PCRs are inserted with a maximum interval of 100ms.

Packet Time (AES67): Packet time is the real-time duration of the media data contained in a media packet. Given the sampling rate and packet time, the number of samples per packet can be calculated. Short packet times allow for lower latency but introduce overhead and high packet rates that may overtax some devices or networks. Long packet times imply higher latency and require additional buffering which may not be available on memory-constrained devices.

Packet time is determined by the sender and negotiated through connection management. Senders shall not change packet time for the duration of a session. Receivers may assume that packet time does not change for the duration of a session. To enable interoperation with standard RTP implementations, receivers should not rely on the presence or accuracy of any packet time description. Receivers should be able to determine packet time based on the timestamps in received packets.

End of Document