



## 9821EMR-AG-HUB

# User Manual

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**EVERTZ MICROSYSTEMS LTD.**

5292 John Lucas Drive  
Burlington, Ontario  
Canada L7L 5Z9

Phone:	+1 905-335-3700	
Sales:	<a href="mailto:sales@evertz.com">sales@evertz.com</a>	Fax: +1 905-335-3573
Tech Support:	<a href="mailto:service@evertz.com">service@evertz.com</a>	Fax: +1 905-335-7571
Web Page:	<a href="http://www.evertz.com">http://www.evertz.com</a>	

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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 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**

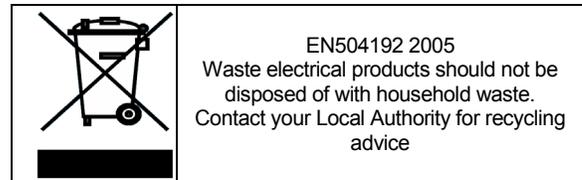
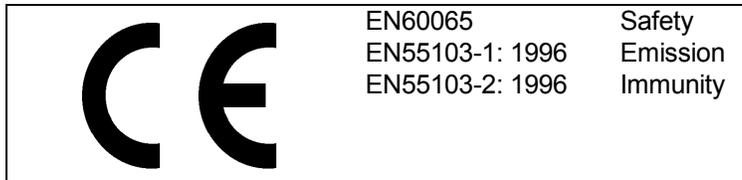
THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE

## 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.



## 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

<b>1. OVERVIEW .....</b>	<b>1</b>
<b>2. PHYSICAL CONNECTION .....</b>	<b>3</b>
<b>2.1. FRONT PANEL .....</b>	<b>3</b>
<b>2.2. REAR PANEL .....</b>	<b>3</b>
<b>2.3. SYSTEM WIRING .....</b>	<b>4</b>
2.3.1. Connections for the front of the unit .....	4
2.3.2. Connections for the Back of the unit .....	6
<b>3. CONFIGURATION .....</b>	<b>7</b>
<b>3.1. SETTING IPS ON FCS .....</b>	<b>7</b>
<b>4. 9821EMR-AG-HUB WEB INTERFACE .....</b>	<b>9</b>
<b>4.1. SYSTEM .....</b>	<b>10</b>
4.1.1. Control Port Configuration .....	10
4.1.2. Data Port Configuration .....	10
4.1.3. Data Port Monitor .....	11
4.1.4. SFP Control .....	12
4.1.5. Genlock Control .....	12
4.1.6. In-band Control .....	13
4.1.7. RPC Timeout .....	13
4.1.8. Time Management .....	13
4.1.9. Card Control .....	13
<b>4.2. PRODUCT FEATURES .....</b>	<b>13</b>
4.2.1. Product Features .....	13
4.2.2. License Control .....	13
<b>4.3. CROSSPOINT CONTROL .....</b>	<b>14</b>
4.3.1. Configuration Guide .....	14
4.3.2. Crosspoint Control .....	15
<b>4.4. SIGNAL INPUT .....</b>	<b>20</b>
4.4.1. Global Control .....	20
4.4.2. Link Monitoring .....	20
4.4.3. Channel Monitoring .....	21
<b>4.5. IP OUTPUT (S302M) .....</b>	<b>21</b>
4.5.1. Express IP Output .....	22
4.5.2. IP Output Control .....	22
4.5.3. IP Output Advanced Control .....	22
<b>4.6. IP OUTPUT (AES67) .....</b>	<b>22</b>
4.6.1. Global Control .....	23
4.6.2. Express IP Output .....	24
4.6.3. IP Output Control .....	24

- 4.6.4. IP Output Advanced Control..... 24
- 4.7. IP INPUT (S302M)..... 24**
  - 4.7.1. Global Control ..... 25
  - 4.7.2. Express IP Input..... 25
  - 4.7.3. IP Input Control ..... 25
  - 4.7.4. RTP Control ..... 26
- 4.8. IP INPUT (AES67)..... 26**
  - 4.8.1. Global Control ..... 26
  - 4.8.2. Express IP Input..... 26
  - 4.8.3. IP Input Control ..... 27
- 4.9. SIGNAL OUTPUT ..... 27**
  - 4.9.1. Output Control..... 27
  - 4.9.2. Channel Monitoring ..... 27
- 4.10. DEALY CONTROL..... 28**
  - 4.10.1. Global Delay Control ..... 28
- 4.11. PCR CONTROL ..... 29**
  - 4.11.1. PCR Output Control ..... 29
  - 4.11.2. PCR Input Control ..... 29
  - 4.11.3. Time Reference ..... 30
- 4.12. PTP CONTROL..... 30**
  - 4.12.1. PTP Control ..... 30
  - 4.12.2. PTP Monitor ..... 30
- 4.13. REFERENCE NOTIFY ..... 31**
  - 4.13.1. Reference Notify ..... 31
  - 4.13.2. PCR Notify ..... 32
  - 4.13.3. PTP Notify..... 32

4.14. NOTIFY .....	33
4.15. SNMP TRAP .....	34
5. 9821EMR-FC WEB INTERFACE .....	35
5.1. SYSTEM .....	35
5.2. NETWORK MANAGEMENT .....	35
5.3. TIME MANAGEMENT .....	36
5.4. SFP .....	37
5.5. MODULE .....	37
5.6. MODULE CONFIGURATION.....	38
6. FIRMWARE UPGRADE .....	43
6.1. 9821EMR-AG-HUB UPGRADE .....	43
6.2. 9821EMR-IO-DANTE-64 UPGRADE .....	43
6.3. 9821EMR-FC UPGRADE.....	44

## FIGURES

Figure 2-1 : 9821EMR-AG-HUB Front Panel Connections .....	3
Figure 2-2 : 9821EMR-AG-HUB Rear Panel Connections.....	3
Figure 4-1 : WebEASY® - Login Menu .....	9
Figure 4-2 : WebEASY® - 9821EMR-AG-HUB Main Menu .....	9
Figure 4-3 : WebEASY® - System (Part 1).....	10
Figure 4-4 : WebEASY® - System (Part 2).....	12
Figure 4-5 : WebEASY® - Product Features .....	13
Figure 4-6 : WebEASY® - Crosspoint Control\Configurable Guide.....	14
Figure 4-7 : Configuration Guide Diagram.....	15
Figure 4-8 : WebEASY® - Crosspoint Control\Dante to Dante, IP and TDM.....	16
Figure 4-9 : WebEASY® - Crosspoint Control\IP to DANTE, IP and TDM/MADI .....	16
Figure 4-10 : WebEASY® - Crosspoint Control\TDM to Dante, IP and TDM/MADI.....	17
Figure 4-11 : WebEASY® - Crosspoint Control\Dante ↔ TDM.....	18
Figure 4-12 : WebEASY® - Crosspoint Control\ AES67/S302M ↔ Dante .....	18
Figure 4-13 : WebEASY® - Crosspoint Control\ AES67/S302M ↔ TDM/MADI .....	19
Figure 4-14 : WebEASY® - Signal Input.....	20
Figure 4-15 : WebEASY® - IP Output (S302M).....	21
Figure 4-16 : WebEASY® - IP Output (AES67) .....	23
Figure 4-17 : WebEASY® - IP Input (S302M).....	25
Figure 4-18 : WebEASY® - IP Input (AES67).....	26
Figure 4-19 : WebEASY® - Signal Output.....	27
Figure 4-20 : WebEASY® - Delay Control .....	28
Figure 4-21 : WebEASY® - PCR Control .....	29
Figure 4-22 : WebEASY® - PTP Control .....	30
Figure 4-23 : WebEASY® - Reference Notify .....	31
Figure 4-24 : WebEASY® - Notify .....	33
Figure 4-25 : WebEASY® - SNMP Trap.....	34
Figure 5-1 : WebEASY® - 9821EMR-FC Main Menu .....	35

Figure 5-2 : WebEASY® - 9821EMR-FC\System ..... 35  
Figure 5-3 : WebEASY® - 9821EMR-FC\Network management ..... 36  
Figure 5-4 : WebEASY® - 9821EMR-FC\Time Management..... 36  
Figure 5-5 : WebEASY® - 9821EMR-FC\SFP ..... 37  
Figure 5-6 : WebEASY® - 9821EMR-FC\QSFP ..... 37  
Figure 5-7 : WebEASY® - 9821EMR-FC\Module ..... 38  
Figure 5-8 : WebEASY® - 9821EMR-FC\Module Configuration ..... 38  
Figure 5-9 : WebEASY® - 9821EMR-FC\Module Configuration ..... 39  
Figure 5-10 : WebEASY® - 9821EMR-FC\Dante Module Information ..... 40  
Figure 5-11 : WebEASY® - 9821EMR-FC\Dante TDM In and Out Status..... 41  
Figure 6-1 : WebEASY® - 9821EMR-AG-HUB Top Menu Bar..... 43  
Figure 6-2 : WebEASY® - 9821EMR-AG-HUB Firmware Upgrade..... 43  
Figure 6-3 : WebEASY® - 9821EMR-FC Top Menu Bar..... 43  
Figure 6-4 : WebEASY® - 9821EMR-IO-DANTE-64 Firmware Upgrade..... 44  
Figure 6-5 : WebEASY® - 9821EMR-FC Top Menu Bar..... 44  
Figure 6-6 : WebEASY® - 9821EMR-FC Upgrade Link ..... 44  
Figure 6-7 : WebEASY® - 9821EMR-FC Firmware Upgrade..... 45

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## REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary Release	June 2019

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## 1. OVERVIEW

The 9821EMR-AG-HUB is a 1RU platform that is optimized for operation in 10GbE and 25GbE IP SDVN environments, supporting SMPTE ST 302M, AES67\*, TDM, MADI and DANTE (up to 512x512 channels of Dante). With TDM connections it can externally support AA, AES, EQX embedded audio, HYDRA2 and ALINK.

The 9821EMR-AG-HUB provides a gateway to link IP infrastructures with discrete audio IO directly and by using any of the existing Evertz TDM enabled Audio interfaces. It has a number of functional use cases including translating between AoIP standards including SMPTE ST 302M, AES67\* and Dante, for audio bridging between devices supporting SMPTE ST 302M or AES67\* to a common core IP audio format. AES67 to AES67 for profile grooming. Bulk audio connection between audio systems such as connecting multiple mobile broadcast vehicles that are using EMR audio router modules.

The following are the use cases:

- AES67 to TDM/MADI and TDM/MADI to AES67
- S302M to TDM/MADI and TDM/MADI to S302M
- AES67 to Dante and Dante to AES67
- S302M to Dante and Dante to AES67
- TDM to Dante and Dante to TDM

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## 2. PHYSICAL CONNECTION

9821EMR-AG-HUB is occupying 1RU rack space and there are connections at the back and front of the unit for different purposes.

### 2.1. FRONT PANEL



Figure 2-1 : 9821EMR-AG-HUB Front Panel Connections

Front of the unit has the following connections:

**Number 1 and 2:** BNCs for reference in and loop out

**Number 3:** 18 SFP cages for mini din or fiber SFPs

**Number 4:** Two SFP cages for Main and Backup Q-SFPs

**Number 5:** Top FC for 9821EMR-AG-HUB communication and upgrade

**Number 6:** Bottom FC for Dante modules' communications and upgrade

**Number 7:** Main and backup PSUs

### 2.2. REAR PANEL



Figure 2-2 : 9821EMR-AG-HUB Rear Panel Connections

**Number 8:** Main and backup (optional) power supplies

**Number 9:** Top FC Ethernet port

**Number 10:** Bottom FC Ethernet port

**Number 11:** Dante module with main and backup ports

**Number 12:** Fan module



**This device must be power cycled after rebooting or upgrading either frame controller.**

### 2.3. SYSTEM WIRING

The unit can be wired based on the application; but in this section all possible connections will be described.

#### 2.3.1. Connections for the front of the unit

##### 2.3.1.1. SFPs

These SFPs are used for TDM or MAD I connections and the SFPs could be Fiber or Mini din. Assuming Mini din SFPs are plugged into SFP cages in the document.

- The letters at the top of each cage represent the following
  - o (B) TDM/MADI input
  - o (A) TDM/MADI output
- Number represents the TDM/MADI ports (1-10)
  - o SFPs 11-18 are for future use
- Connect TDM inputs (B) from 9821 to TDM output of ADMX
- Connect TDM outputs (A) from 9821 to TDM input of ADMX



**There is no redundancy for TDM or MADI connection.**

##### 2.3.1.2. Q-SFPs

There are two Q-SFPs, top is the main and bottom is the backup. These SFPs are used for SDVN in-band communication and AES67 or S302M routing.



**For EXE or IPX wiring any version below 68 needs to follow the following wiring.**



**In QSFP, Links 1 and 2 are used for M302S and links 3-4 are used for AES67.**

		Expected	Actual			EXE or IPX	
QSFP 1	Blue	RX1	1.1	1.1	Blue		QSFP1-RX1
	Aqua	TX1			Aqua		QSFP1-TX1
	Orange	RX2	1.2	2.1	Blue		QSFP2-RX1
	Pink	TX2			Aqua		QSFP2-TX1
	Green	RX3	1.3	1.2	Orange		QSFP1-RX2
	Violet	TX3			Pink		QSFP1-TX2
	Brown	RX4	1.4	1.3	Green		QSFP1-RX3
	Yellow	TX4			Violet	QSFP1-TX3	

		Expected	Actual			EXE or IPX	
QSFP 2	Blue	RX1	2.1	2.4	Brown		QSFP2-RX4
	Aqua	TX1			Yellow		QSFP2-TX4
	Orange	RX2	2.2	2.3	Orange		QSFP2-RX2
	Pink	TX2			Pink		QSFP2-TX2
	Green	RX3	2.3	2.2	Green		QSFP2-RX3
	Violet	TX3			Violet		QSFP2-TX3
	Brown	RX4	2.4	1.4	Brown		QSFP1-RX4
	Yellow	TX4			Yellow	QSFP1-TX4	

For version above 67 the mapping is one to one.

		Expected	Actual			EXE or IPX	
QSFP 1	Blue	RX1	1.1	1.1	Blue		RX1
	Aqua	TX1			Aqua		TX1
	Orange	RX2	1.2	1.2	Orange		RX2
	Pink	TX2			Pink		TX2
	Green	RX3	1.3	1.3	Green		RX3
	Violet	TX3			Violet		TX3
	Brown	RX4	1.4	1.4	Brown		RX4
	Yellow	TX4			Yellow	TX4	

		Expected	Actual			EXE or IPX	
QSFP 2	Blue	RX1	2.1	2.1	Blue		RX1
	Aqua	TX1			Aqua		TX1
	Orange	RX2	2.2	2.2	Orange		RX2
	Pink	TX2			Pink		TX2
	Green	RX3	2.3	2.3	Green		RX3
	Violet	TX3			Violet		TX3
	Brown	RX4	2.4	2.4	Brown		RX4
	Yellow	TX4			Yellow	TX4	

### **2.3.1.3. BNCs**

There are two BNCs for reference, only reference input 1 is functional, the second one is for future use.

## **2.3.2. Connections for the Back of the unit**

### **2.3.2.1. Dante Modules**

If the Dante modules are installed on the bottom row, looking from the back, the RJ45 on the right is the secondary and RJ45 on the left is primary Dante I/O.

Usually all primary Dante's are connected to one common switch and secondary Dante are connected to a second common switch. These two switches are isolated from control network and only PC with Dante Controller software needs to have access to them.

### **2.3.2.2. Power**

There are two power connections as main and backup.

### **2.3.2.3. Ethernet**

There are two Ethernet ports between the two power connectors:

The top RJ45 will be used to access 9821EMR-AG-HUB, upgrading and out-band connection to SDVN.

The bottom RJ45 will be used to access 9821EMR-FC, the Dante modules and upgrading them.

### 3. CONFIGURATION

#### 3.1. SETTING IPS ON FCS

To set the top FC IP address, a micro USB needs to be connected from the front of the FC to the PC. In Teraterm, open a new connection to the com that appears after the above connection.

Speed	115200
Data	8-bit
Parity	None
Stop Bits	1 bit
Flow Control	None

Login as **customer/customer** and set the IP.

To set the bottom FC IP, connect the Micro USB to the bottom FC and open Teraterm. Login as root/evertz and then type "console" and from there change the IPs. Once the IP on both FCs are configured, reboot the entire unit for the changes to take effect.

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### 4. 9821EMR-AG-HUB WEB INTERFACE

9821EMR-AG-HUB is accessed via the top FC. It can be operated and controlled via Webeasy. To access the Webeasy page, simply type the IP address of the control port of 9821EMR-AG-HUB module in the web browser's address bar on your PC which is on management network.

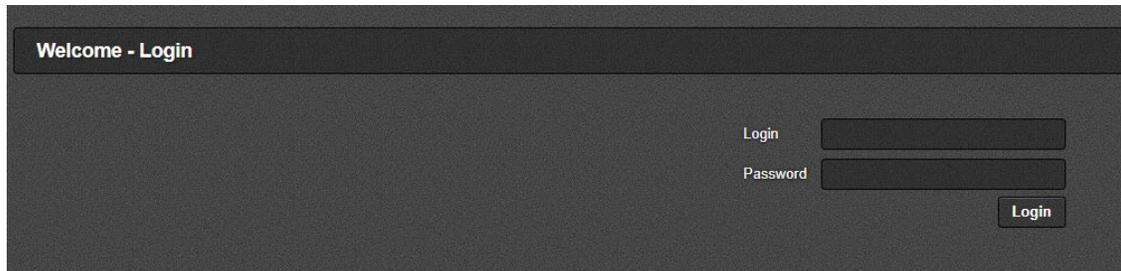


Figure 4-1 : WebEASY<sup>®</sup> - Login Menu

Login and password is **"customer"** or **"root/evertz"**.

On the web interface there are different types of menus highlighted in Figure 4-2.



Figure 4-2 : WebEASY<sup>®</sup> - 9821EMR-AG-HUB Main Menu

4.1. SYSTEM

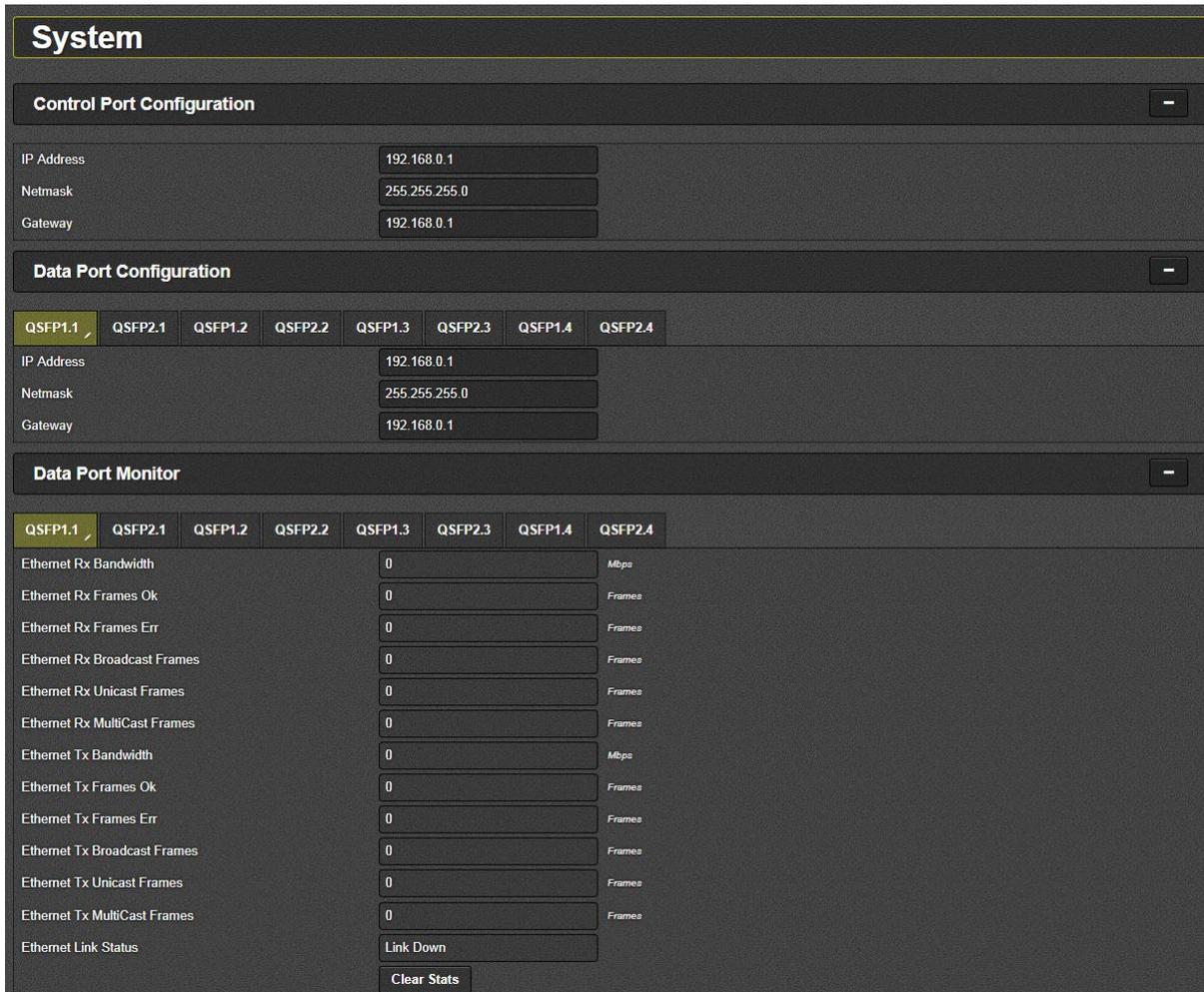


Figure 4-3 : WebEASY® - System (Part 1)

4.1.1. Control Port Configuration

This section allows the user to configure the Control IP address (FC) of the unit.

4.1.2. Data Port Configuration

This section allows the user to configure the Data Port IP addresses of the unit for in-band communication.

QSFP 1.1 and QSFP 1.2 are the main SFPs for S302M and QSFP 2.1 and QSFP 2.2 are the backup SFPs for S302M.

QSFP 1.3 and QSFP 1.4 are the main SFPs for AES67 and QSFP 2.3 and QSFP 2.4 are the backup SFPs for AES67.

### 4.1.3. Data Port Monitor

This section shows the link and data flow status for each connection.

**Ethernet Rx Bandwidth:** This parameter displays the received Ethernet Bandwidth in Mbps.

**Ethernet Rx Frames Ok:** This parameter displays the number of Error-Free frames received.

**Ethernet Rx Frames Err:** This parameter displays the number of Erroneous Frames received.

**Ethernet Rx Broadcast Frames:** This parameter displays the number of Broadcast Frames received.

**Ethernet Rx Unicast Frames:** This parameter displays the number of Unicast Frames received.

**Ethernet Rx MultiCast Frames:** This parameter displays the number of Multicast Frames received.

**Ethernet Tx Bandwidth:** This parameter displays the Transmitted Ethernet Bandwidth in Mbps.

**Ethernet Tx Frames Ok:** This parameter displays the number of Error-free Frames Transmitted.

**Ethernet Tx Frames Err:** This parameter displays the number of Erroneous Frames Transmitted.

**Ethernet Tx Broadcast Frames:** This parameter displays the number of Broadcast Frames Transmitted.

**Ethernet Tx Unicast Frames:** This parameter displays the number of Unicast Frames Transmitted.

**Ethernet Tx MultiCast Frames:** This parameter displays the number of Multicast Frames Transmitted.

**Ethernet Link Status:** This parameter displays the Ethernet port link status as either up or down.

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

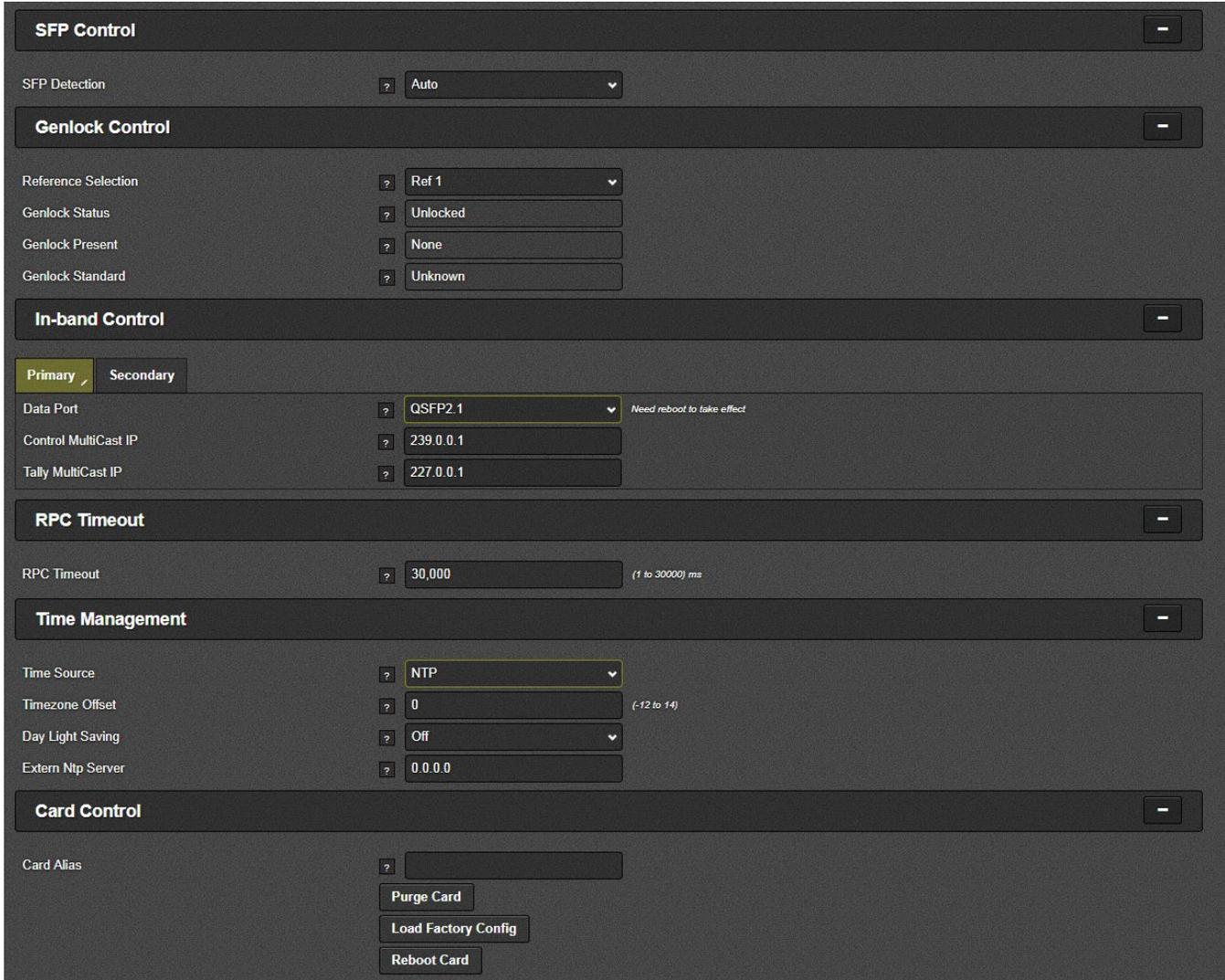


Figure 4-4 : WebEASY® - System (Part 2)

#### 4.1.4. SFP Control

In this section, the SFP detection can be set manually or set by magnum automatically.

#### 4.1.5. Genlock Control

In this section the user can select between reference 1 or 2. Currently only reference 1 is active.

**Reference Selection:** This parameter allows the user to select the reference from REF1 or REF2.

**Genlock Status:** This parameter displays if the selected reference is Locked or Unlocked.

**Genlock Present:** This parameter displays if the selected reference is Present or Absent.

**Genlock Standard:** This parameter displays the standard of the selected reference.

#### 4.1.6. In-band Control

In this section, the user can select the SFPs for main and backup in-band control.

E.g: QSFP1.1 and 2.1 are set as main and backup for S302M; 1.3 and 2.3 are set as main and backup for AES67.

**Data Port:** This dropdown allows the user to enable the Inband control on the selected SFP port (QSFP 1.1, 2.1, 1.2, 2.2, 1.3, 2.3, 1.4 and 2.4).

**Control Multicast IP:** This field allows the user to set receive multicast IP address.

**Tally Multicast IP:** This field allows the user to set tally multicast IP address.

#### 4.1.7. RPC Timeout

**RPC Timeout:** This field allows the user to set the RPC timeout.

#### 4.1.8. Time Management

This section allows the user to select the time source which can be local or NTP server.

#### 4.1.9. Card Control

This section allows the user to set the card Alias, purge the card, load factory config or reboot the card.

### 4.2. PRODUCT FEATURES

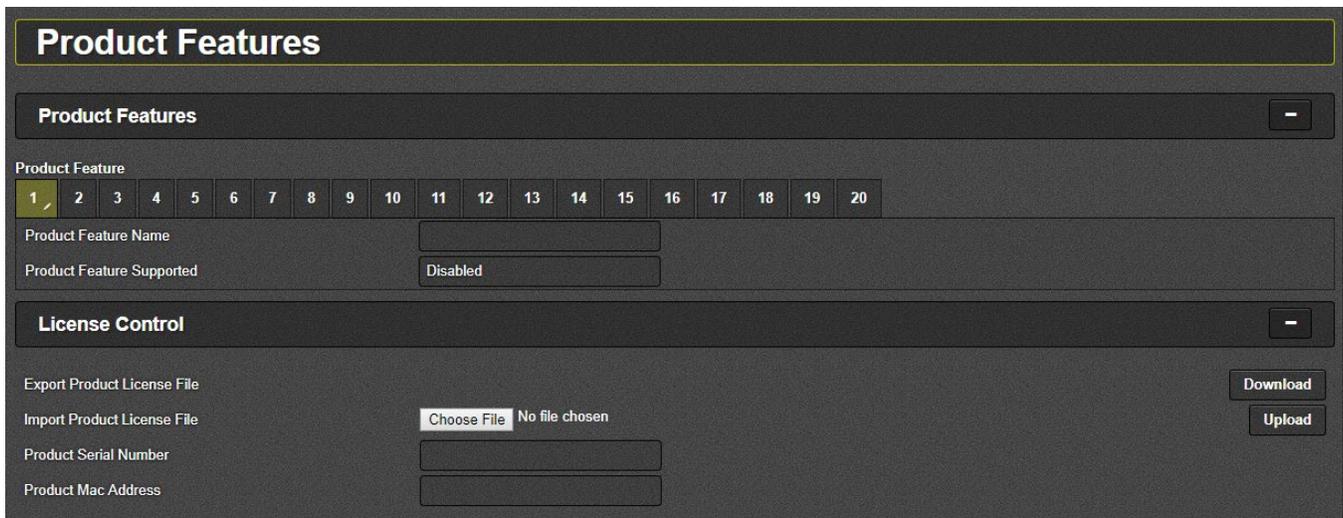


Figure 4-5 : WebEASY® - Product Features

#### 4.2.1. Product Features

This section indicates which features are enabled in the unit.

#### 4.2.2. License Control

In this section, the user can export or import the license.

### 4.3. CROSSPOINT CONTROL

#### 4.3.1. Configuration Guide

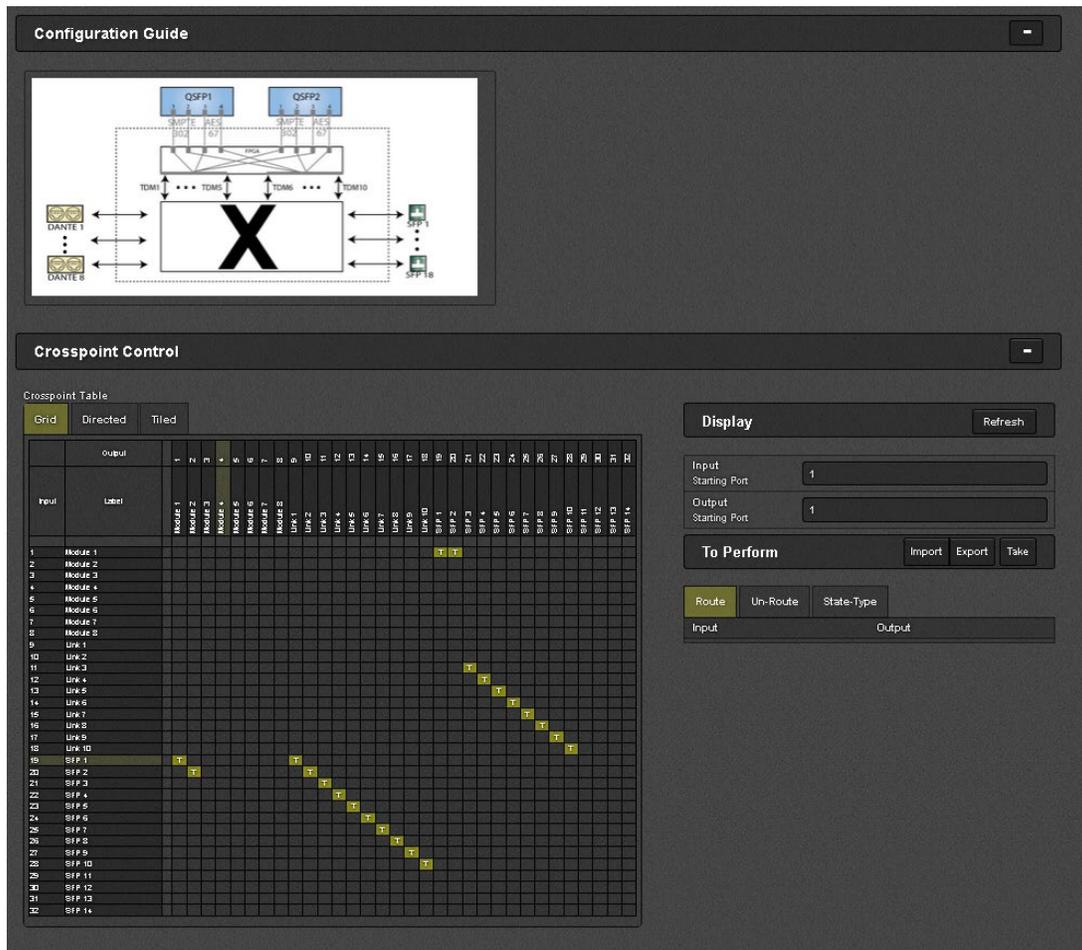
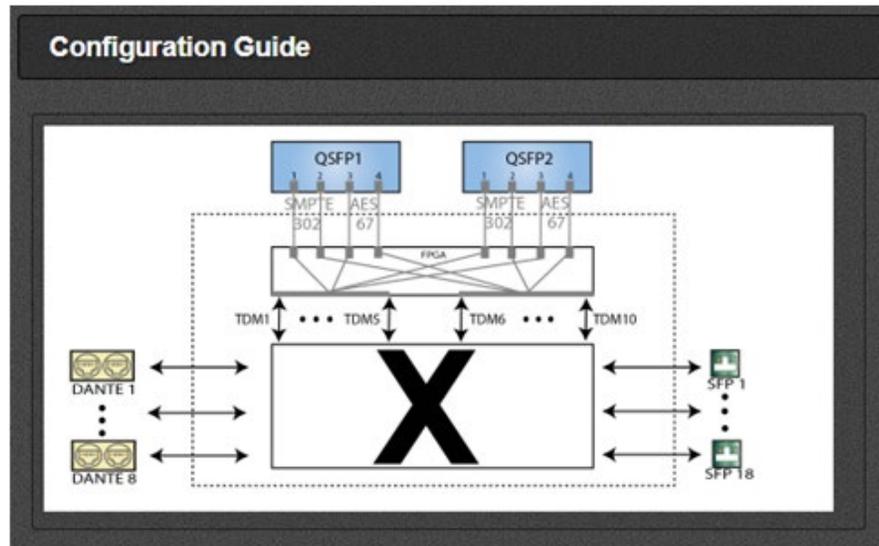


Figure 4-6 : WebEASY® - Crosspoint Control\Configurable Guide

Figure 4-7 shows the signal follow “from” and “to” the unit. If the signal flow is from Dante to TDM or vice versa, the TDM input and output status will not report under signal input and signal output. Whenever the path is going through FPGA then the status will report correctly.



**Figure 4-7 : Configuration Guide Diagram**

**4.3.2. Crosspoint Control**

In this section, the user needs to configure the correct crosspoint based on the system requirement. The left column shows the sources and the top row shows the destination. An input can be routed any output and multiple outputs can have the same input at the same time.

**Label description:**

Modules = Dante

Links = QSFP

SFPs = Fiber or Din SFPs for TMD or MADI

Following are the possible unidirectional routes:

Dante to Dante

Dante to AES67 or S302M

Dante to TDM



**Only 8 Dante modules can be installed in a single 9821 unit.**

When TDM or AES67/S302M is routed to Dante or from Dante, only 8 crosspoints need to be set. For non Dante paths 10 crosspoints need to be set under Crosspoint Control.

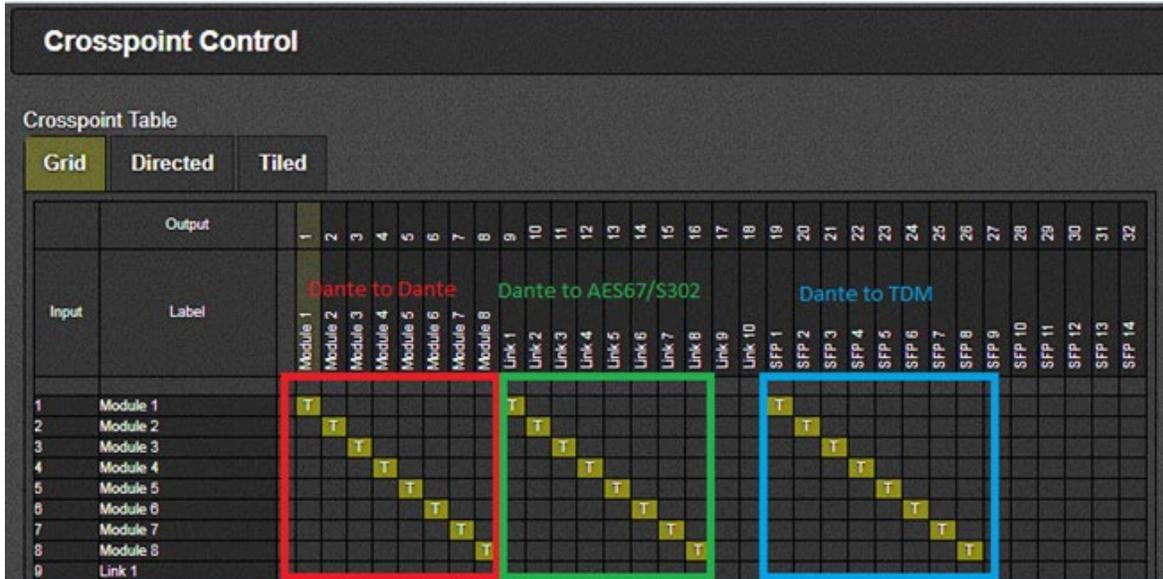


Figure 4-8 : WebEASY® - Crosspoint Control\Dante to Dante, IP and TDM

AES67 or S302M to Dante

AES67 or S302M to AES67 or S302M

AES67 or S302M to TDM/MADI

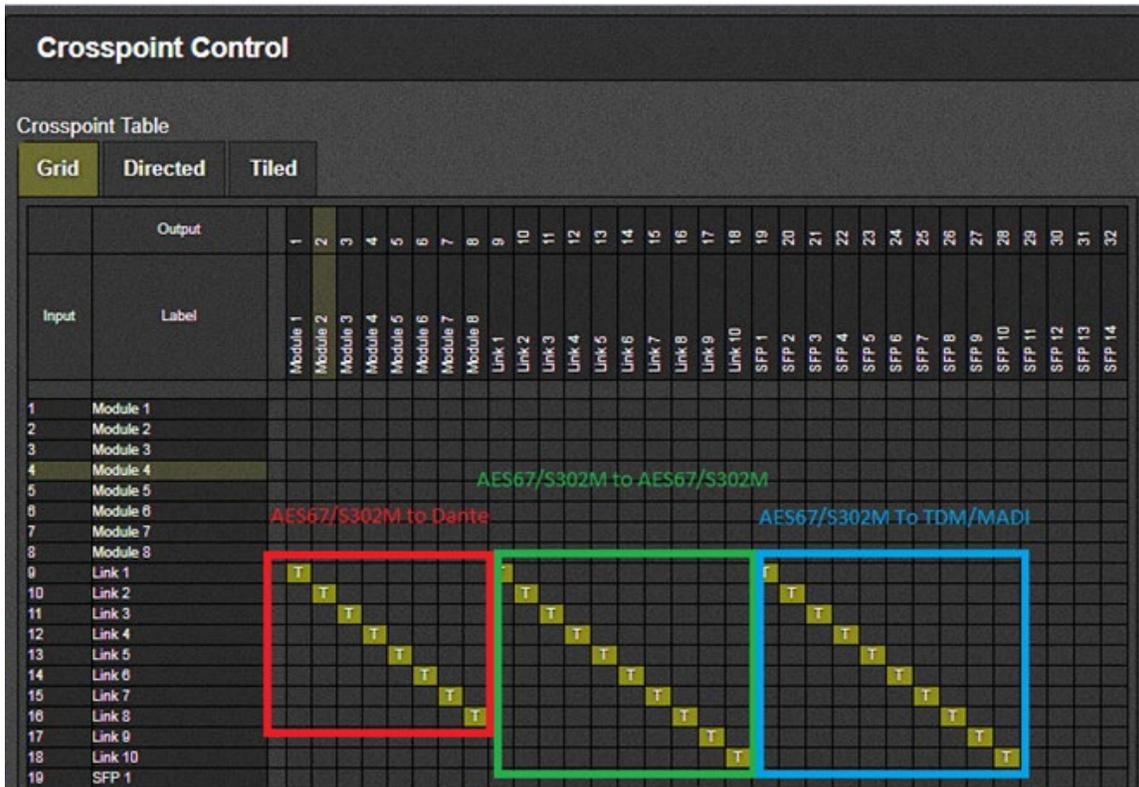


Figure 4-9 : WebEASY® - Crosspoint Control\IP to DANTE, IP and TDM/MADI

TDM to DANTE

TDM or MADI to AES67 or S302M

TDM to TDM or MADI to MADI

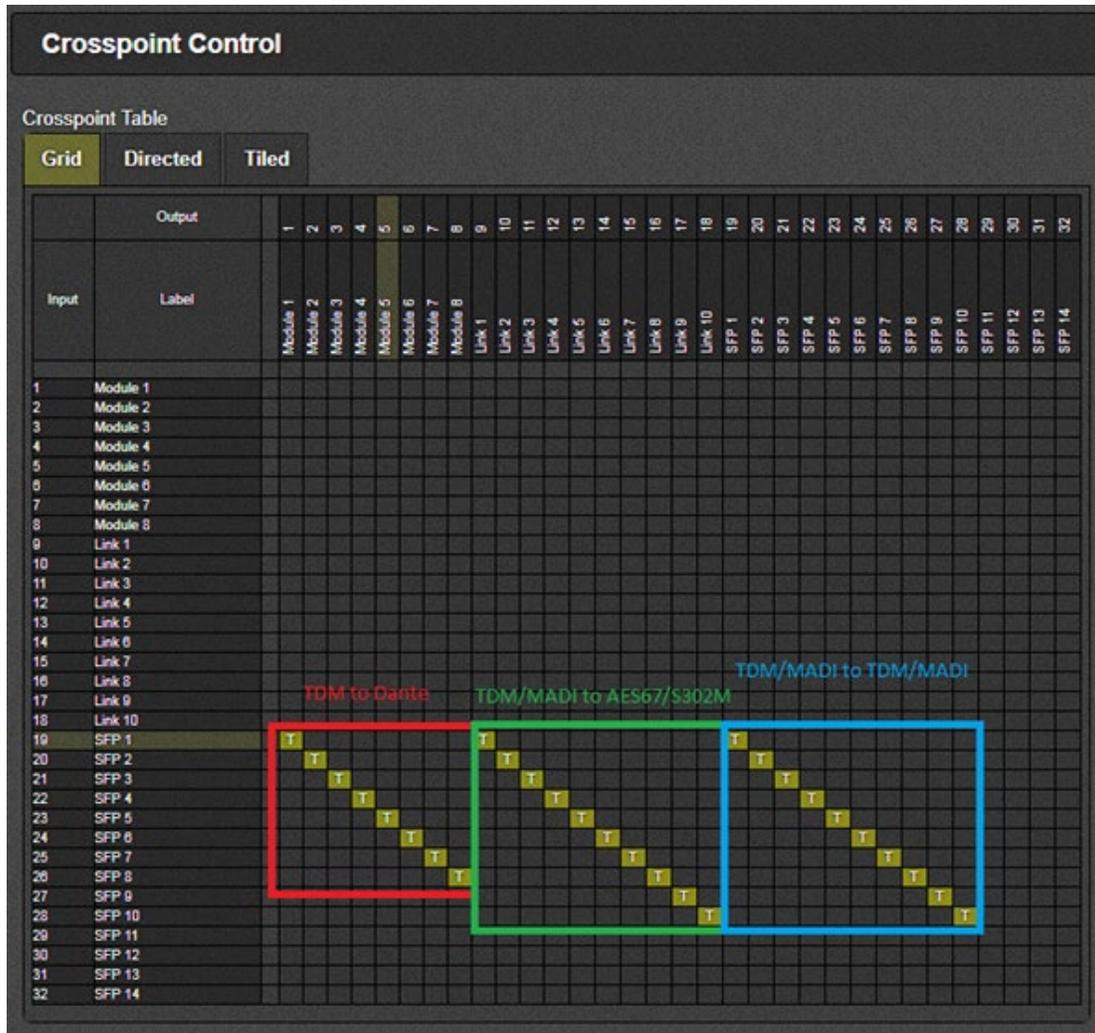


Figure 4-10 : WebEASY® - Crosspoint Control\TDM to Dante, IP and TDM/MADI



**MADI to Dante or Dante to MADI is not currently supported.**

Following are the possible bidirectional routes:

Dante ↔ TDM

AES67/S302M ↔ Dante

AES67/S302M ↔ TDM/MADI



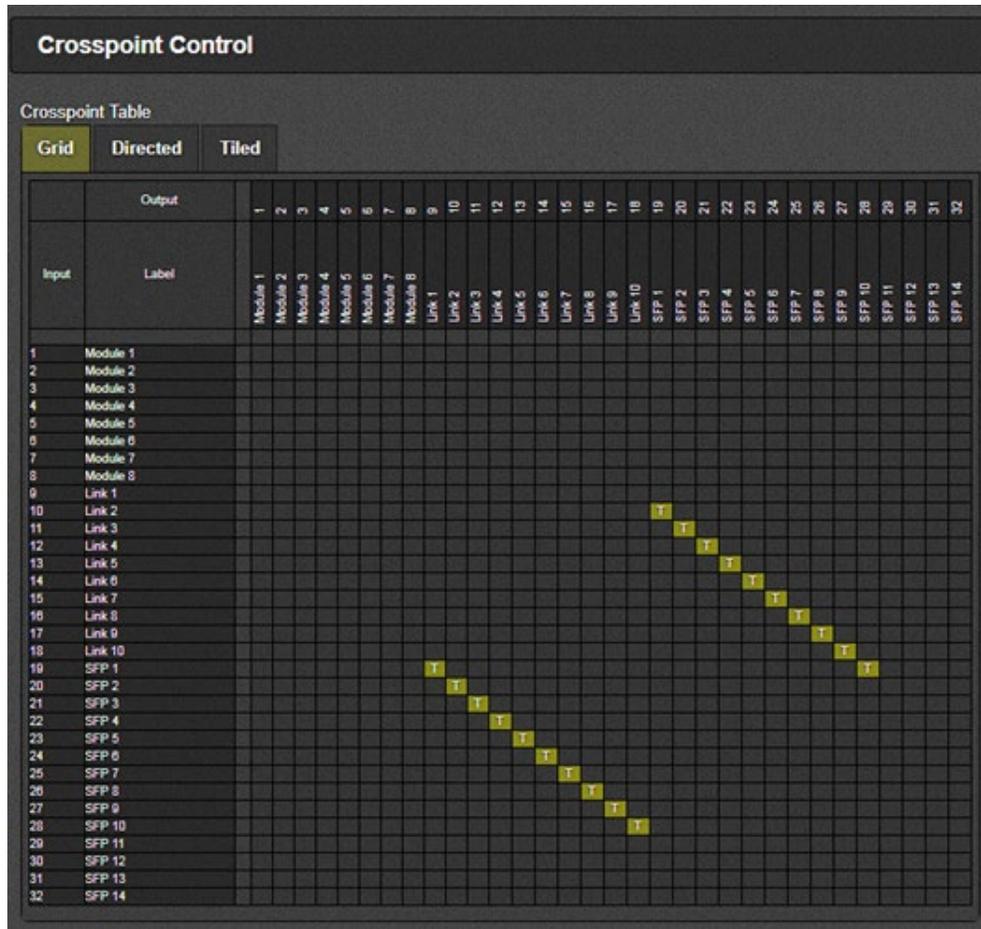


Figure 4-13 : WebEASY® - Crosspoint Control\ AES67/S302M ↔ TDM/MADI

The unidirectional routes can be combined to accomplish multi-directional routes e.g.:

Dante → TDM → AES67

TDM → Dante → AES67



**To be able to make route to or from 9821, user may need to use both SDVN and CH to accomplish all. In CH, 9821 needs to be inside EMR container and modeled as different device.**

#### 4.4. SIGNAL INPUT

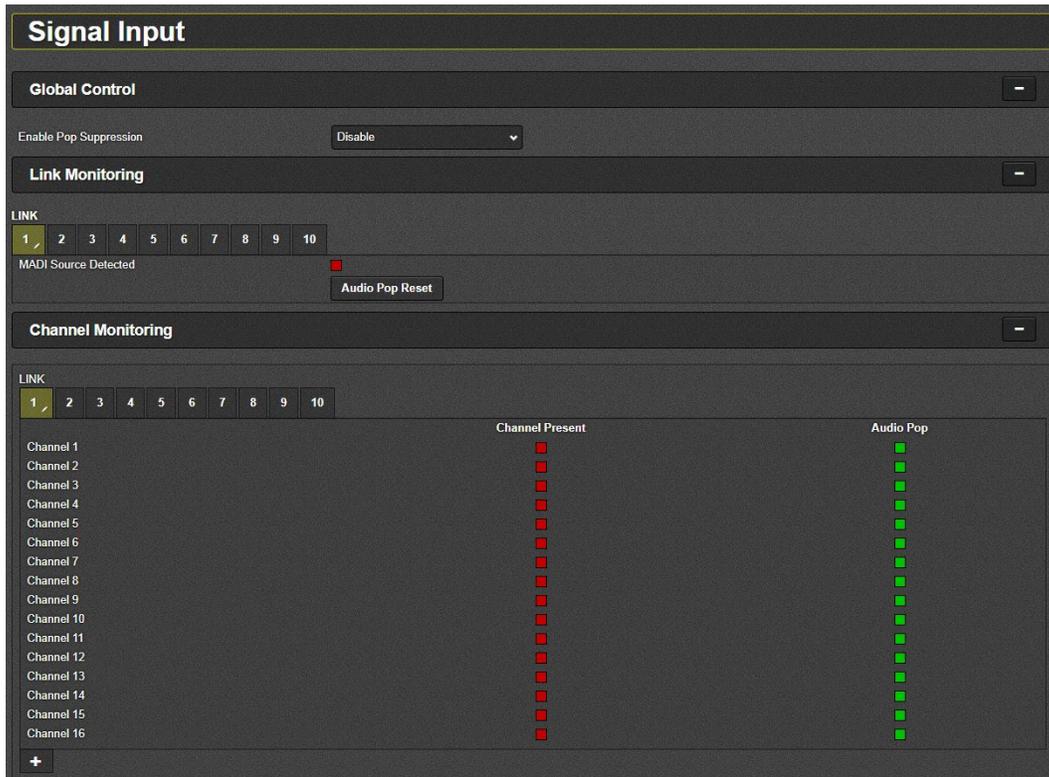


Figure 4-14 : WebEASY® - Signal Input

##### 4.4.1. Global Control

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.

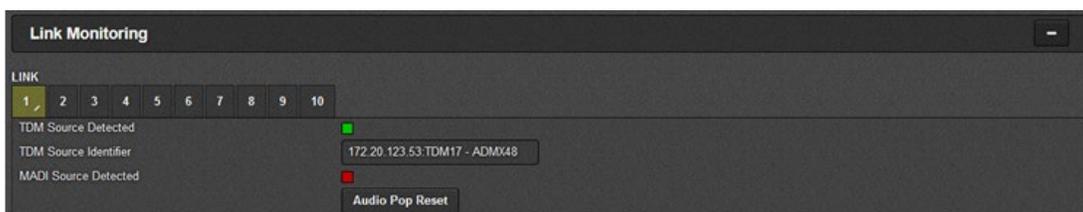
##### 4.4.2. Link Monitoring

This section allows the user to monitor the link status for TDM or MADI inputs. The detection of TDM or MADI is automatically done.



**The link status only works when the routes under Crosspoint Control are set to go through FPGA.**

E.g. Dante → AES67/S302M or TDM/MADI → AES67/S302M



**TDM Source Detected:** This parameter displays the status of the TDM Input Presence

**TDM Source Identifier:** This parameter displays the TDM Input Source comes from.

**MADI Source Detected:** This parameter displays the status of the MADI Input Presence.

### 4.4.3. Channel Monitoring

This section shows the status of mono audio channels over 10 X TDM (512 per TDM) or MADI (64 per MADI) inputs. This section only works when the signal path is going through FPAG.

### 4.5. IP OUTPUT (S302M)

This section shows the output multicast addresses for QSFP 1.1& 1.2 (Main) and 2.1& 2.2 (Backup).



**All the addresses are set automatically by Magnum-SDVN.**

There are total of 10 links and each link carries 128 TS. QSFP 1.1 (Main) and 2.1 (Backup) are responsible for links 1- 5 and QSFP 1.2 (main) and 2.2 (Backup) are responsible for links 6-10. QSFP1.1, 2.1, 1.2 and 2.2 are only for S302M standard.

#### IP Output (S302M)

**SFP Output** -

QSFP1.1 - Main
QSFP2.1 - Backup
QSFP1.2 - Main
QSFP2.2 - Backup

**Express IP Output** -

LINK 1 2 3 4 5

Output IP Address Range  (e.g. 239.0.0.1-100.239.1.1,10.239.1.1,66-88)

Output UDP Port  (0 to 65535)

**IP Output Control** -

LINK 1 2 3 4 5

	IP Output Status	IP Output Destination IP Address	IP Output Destination UDP Port <small>(0 to 65535)</small>
TS 1	■	<input type="text" value="0.0.0.0"/>	<input type="text" value="0"/>
TS 2	■	<input type="text" value="0.0.0.0"/>	<input type="text" value="0"/>
TS 3	■	<input type="text" value="0.0.0.0"/>	<input type="text" value="0"/>
TS 4	■	<input type="text" value="0.0.0.0"/>	<input type="text" value="0"/>
TS 5	■	<input type="text" value="0.0.0.0"/>	<input type="text" value="0"/>

+

**IP Output Advanced Control** -

LINK 1 2 3 4 5

IP Output Source IP Address

IP Output Source UDP Port  (0 to 65535)

IP Output Type Of Service  (0 to 255)

IP Output Time To Live  (0 to 255)

**Figure 4-15 : WebEASY® - IP Output (S302M)**

#### 4.5.1. Express IP Output

Allows the user to set the Multicast address range and port# for each individual TDM port and purge it.

#### 4.5.2. IP Output Control

This section displays the current Multicast addresses and UDP ports.

#### 4.5.3. 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, *zero is used as default.*

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

#### 4.6. IP OUTPUT (AES67)

This section shows the output multicast addresses for QSFP 1.3& 1.4 (Main) and 2.3& 2.4 (Backup).



**All the addresses are set automatically by Magnum-SDVN.**

There are total of 10 links and each link carries 128 TS. QSFP 1.3 (M) and 2.3 (B) are responsible for links 1- 5 and QSFP 1.4 (M) and 2.4 (B) are responsible for links 6-10. QSFP1.3, 2.3, 1.4 and 2.4 are only for AES67 standard.

### IP Output (AES67)

**Global Control** -

AES67 IP Output Packet Time:

IP Output Mute if PTP unlocked:

**SFP Output** -

**Express IP Output** -

LINK:

Output IP Address Range:

(e.g. 239.0.0.1-100.239.1.1, 10.239.1.1, 66-88)

Output UDP Port:  (0 to 65535)

**IP Output Control** -

LINK:

	IP Output Status	IP Output Destination IP Address	IP Output Destination UDP Port <small>(0 to 65535)</small>
TS 1	■	<input type="text" value="0.0.0.0"/>	<input type="text" value="0"/>
TS 2	■	<input type="text" value="0.0.0.0"/>	<input type="text" value="0"/>
TS 3	■	<input type="text" value="0.0.0.0"/>	<input type="text" value="0"/>
TS 4	■	<input type="text" value="0.0.0.0"/>	<input type="text" value="0"/>
TS 5	■	<input type="text" value="0.0.0.0"/>	<input type="text" value="0"/>

**IP Output Advanced Control** -

LINK:

IP Output Source IP Address:

IP Output Source UDP Port:  (0 to 65535)

IP Output Type Of Service:  (0 to 255)

IP Output Time To Live:  (0 to 255)

Figure 4-16 : WebEASY® - IP Output (AES67)

#### 4.6.1. Global Control

**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. 9821EMR-AG-HUB supports 1ms and 125µs packet time for AES67.

**IP Output Mute If PTP is Unlocked:** This option allows the user to mute AES67 audio output when PTP is not converged. This option can be disabled, but the Delay Control has to be set to manual in order for this function to work.



The audio will be muted or will not be clean when PTP is not present.



When "IP Output Mute If PTP is Unlocked" option is disabled, the Delay control has to be set to manual.

#### 4.6.2. Express IP Output

This section allows the user to set the Multicast Addresses range and UDP Ports for each TDM and purge it.

#### 4.6.3. IP Output Control

This section displays the current multicast addresses and UDP ports set for each link.

#### 4.6.4. 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, *zero is used as default*.

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

#### 4.7. IP INPUT (S302M)

This section allows the user to view or modify some of the information or parameters for S302M incoming signal.

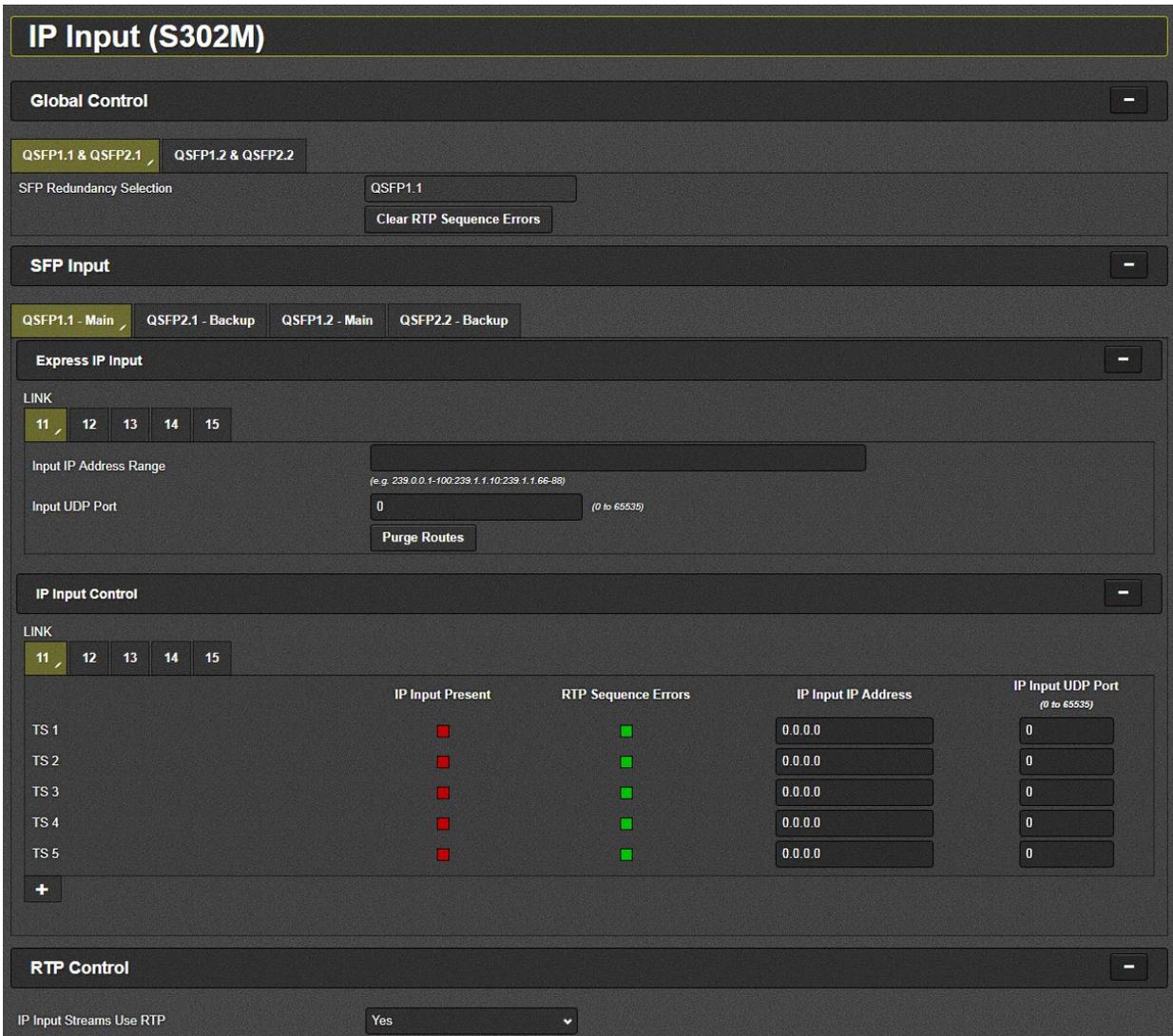


Figure 4-17 : WebEASY® - IP Input (S302M)

#### 4.7.1. Global Control

**SFP Redundancy Selection:** This field allows the user to see whether the traffic for **IP to TDM Output** path is on **QSFP1.1** or **QSFP2.1**, **QSFP1.2** or **QSFP2.2**

#### 4.7.2. Express IP Input

This section allows the user to set the Multicast Address range and Port number for each TDM and Purge it.

#### 4.7.3. IP Input Control

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

#### 4.7.4. 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 packets don't have RTP Header, and does want to pass audio through TDM Outputs, then select "NO" for "IP Input streams use RTP".

#### 4.8. IP INPUT (AES67)

This section allows the user to view or modify some of the information or parameters for AES67 incoming signal.

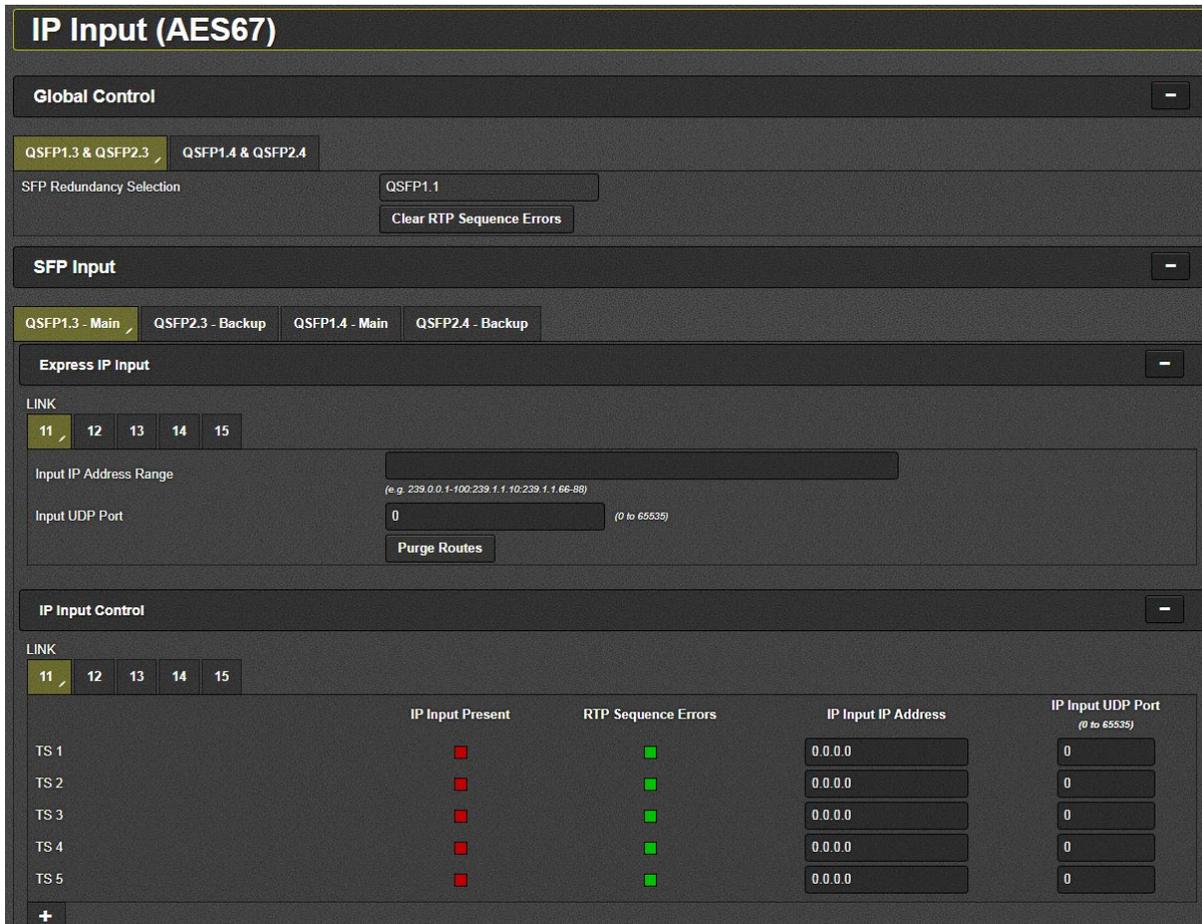


Figure 4-18 : WebEASY® - IP Input (AES67)

##### 4.8.1. Global Control

**SFP Redundancy Selection:** This field allows the user to see whether the traffic for IP to TDM Output path is on QSFP1.3 or QSFP2.3, QSFP1.4 or QSFP2.4.

##### 4.8.2. Express IP Input

This section allows the user to set the Multicast Address range and Port number for each TDM and purge it.

### 4.8.3. 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 Link. Also it displays the status of the IP Input and RTP Sequence Errors.

### 4.9. SIGNAL OUTPUT

This section allows the user to modify the input source type and output mode, also allows the user to monitor the out presence.

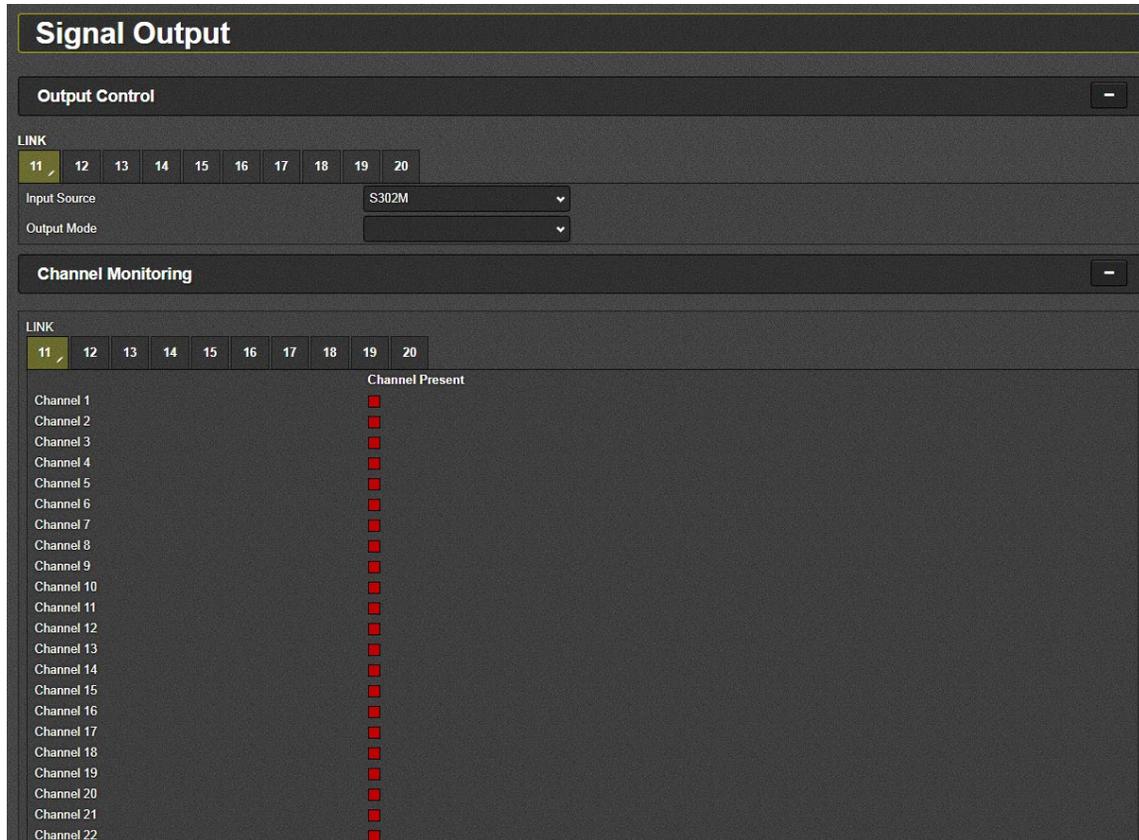


Figure 4-19 : WebEASY® - Signal Output

#### 4.9.1. Output Control

User has to select the correct Input source format and output mode based on QSFP port connection and application. Source formats can be ST302M (QSFP 1.1/2.1 and 1.2/2.2) or AES67 (QSFP 1.3/2.3 and 1.4/2.4) and output Mode can be TDM or MADI.

#### 4.9.2. 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 the rest of the audio channels are not valid.

#### 4.10. DEALY CONTROL

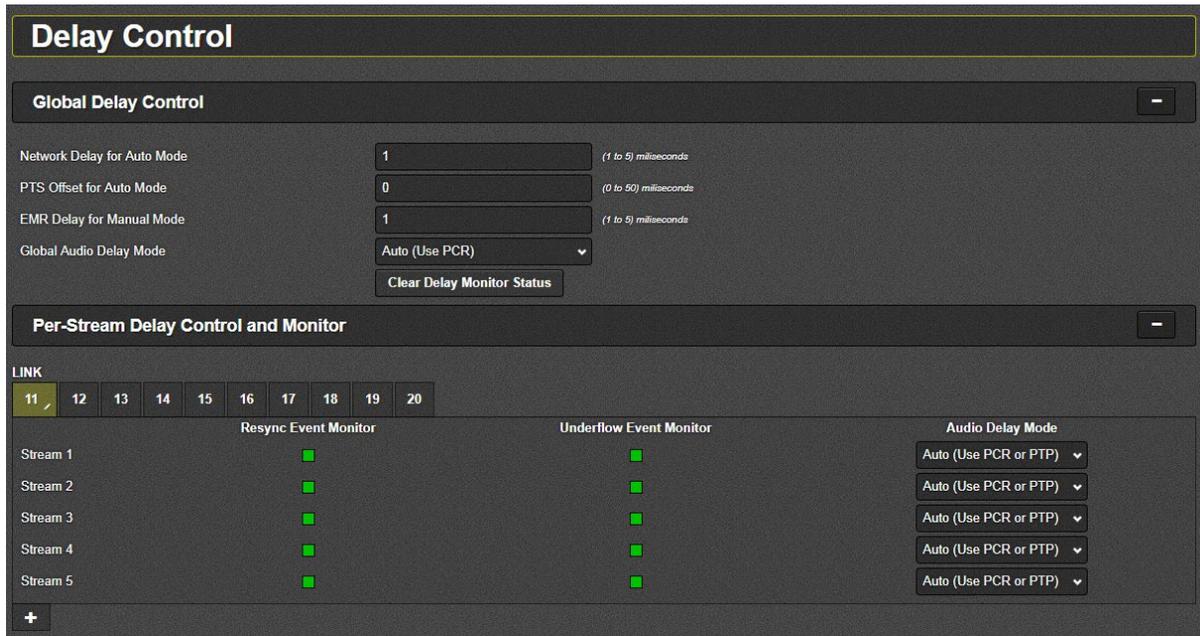


Figure 4-20 : WebEASY® - Delay Control

##### 4.10.1. Global Delay Control

**Network Delay for Auto Mode:** Adjusts for end-to-end delay from Encap to Decap. Audio streams take minimum 3ms to be Encap'd, travel thru network, reach Decap unit, and go into memory, before they can be played out as TDM. Minimum recommended value for this setting is 3ms.

**PTS Offset for Auto Mode:** This field is meant to compensate for compressed streams that typically have a huge POSITIVE offset added to their PTS. These PTS values will be far ahead of running PTP, so the card cannot sync to it unless incoming timestamps advancement is known. In any regular operation this setting has to be set to 0.

**EMR Delay for Manual Mode:** This field specifies how much latency we want thru the EMR, i.e., how long we want audio samples to stay in memory, before we play them out. In this case we don't care about network delay, how long it takes for audio streams to travel from Encap card to Decap card are all irrelevant. Samples are stored in memory, and read out N[ms] later as per user setting.

## 4.11. PCR CONTROL

Figure 4-21 : WebEASY® - PCR Control

### 4.11.1. PCR Output Control

In this section the user can set the device to generate PCR stream.

**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 RTP header.

### 4.11.2. PCR Input Control

In this section the user can set the main and backup ports and other parameters for incoming PCR.

**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.

### 4.11.3. Time Reference

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

## 4.12. PTP CONTROL

In this section, the user can set the SFP ports, Domain Number, Priority1 and 2 for incoming PTP also the incoming PTP status can be monitored.

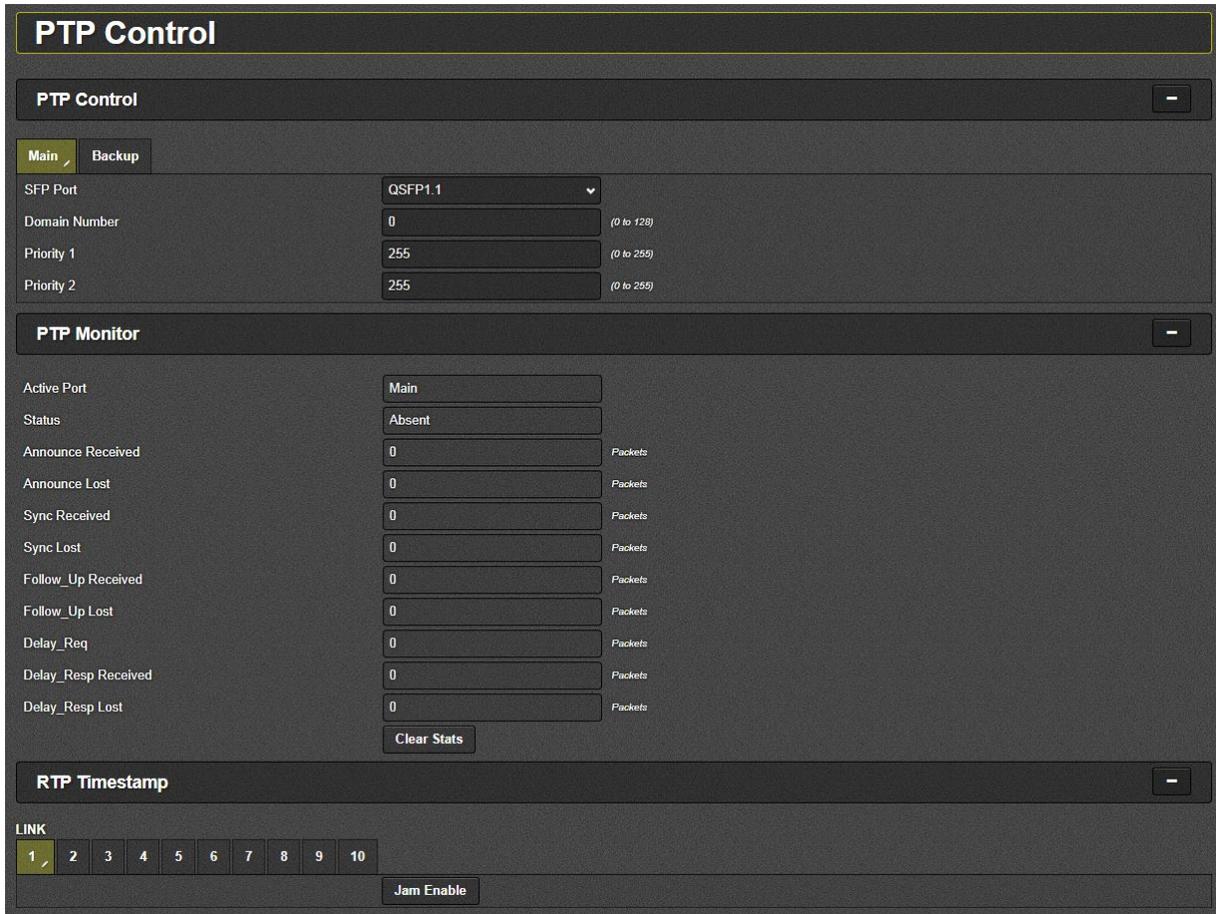


Figure 4-22 : WebEASY® - PTP Control

### 4.12.1. PTP Control

**SFP Port:** The user needs to select the correct SFP port from which the PTP stream is coming

**Domain Number:** This Domain number has to match the PTP source domain number.

**Priority 1:** Priority 1 has to match the priority 1 of PTP source or set to 255 for all.

**Priority 2:** Priority 2 has to match the priority 2 of PTP source or set to 255 for all.

### 4.12.2. PTP Monitor

**Active Port:** Shows if PTP is coming from Main or Backup SFP.

**Status:** Shows if the device is converged to the incoming PTP or not.

**Announce Received:** Shows the numbers of PTP announcements have been received.

**Announce Lost:** Shows if any announcement has been lost. It should be zero.

**Sync Received:** Shows the number of PTP sync has been received.

**Sync Lost:** Shows if any sync has been last.

**Follow\_up Received:** Shows the number of follow\_up requests received.

**Follow\_up Lost:** Shows if any follow\_up request has been lost.

**Delay\_Req:** Shows the number of Delay has been requested.

**Delay\_Resp Received:** Shows the number of Delay has been received. Delay\_Req and Delay\_Resp Receive have to match; if it doesn't there is a misconfiguration with PTP route.

**Delay\_Resp Lost:** Shows if any Delay response has been lost.

### 4.13. REFERENCE NOTIFY

In this section, the user can enable or disable traps for types of references.

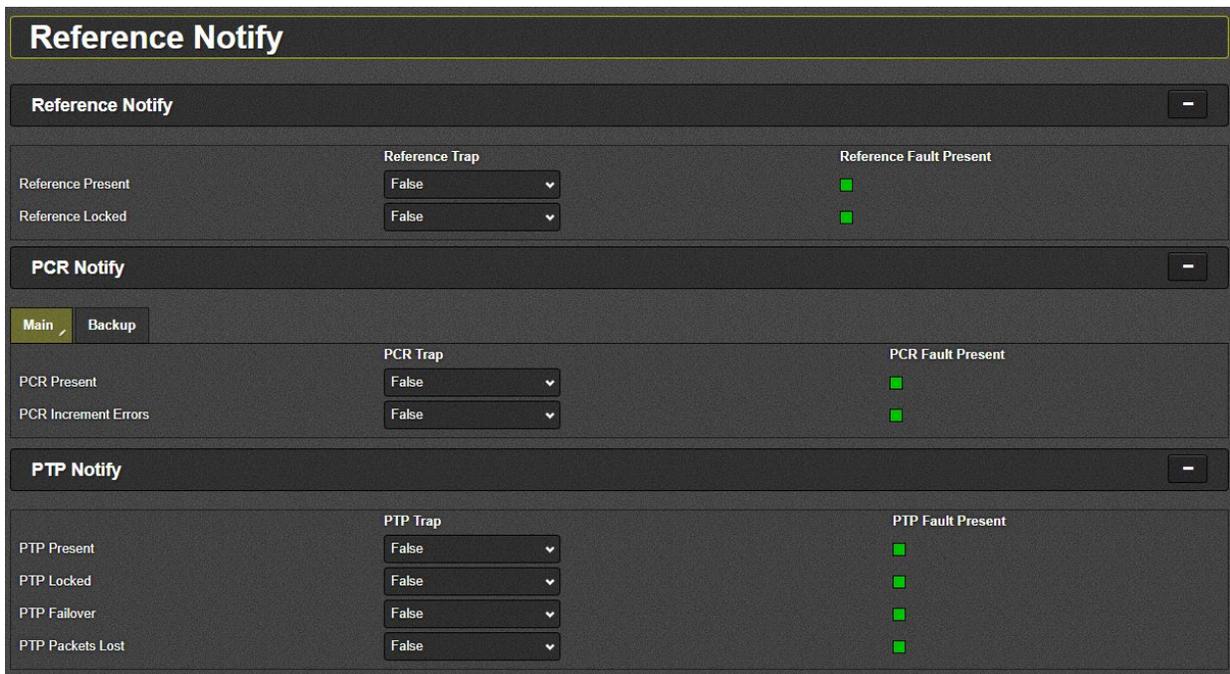


Figure 4-23 : WebEASY® - Reference Notify

#### 4.13.1. Reference Notify

**Reference Presence:** Allows the user to set the trap for Reference Present to True or False.

**Reference Locked:** Allows the user to set the trap for Reference Locked to True or False.

#### 4.13.2. PCR Notify

**PCR Present:** Allows the user to set the trap for PCR Present to True or False for main and backup paths.

**PCR Increment Errors:** Allows the user to set the trap for PCR Increment Errors to True or False for main and backup path.

#### 4.13.3. PTP Notify

**PTP Present:** Allows the user to set the trap for PTP Present to True or False.

**PTP Locked:** Allows the user to set the trap for PTP Locked to True or False.

**PTP Failover:** Allows the user to set the trap to True or False during PTP Failover.

**PTP Packet Lost:** Allows the user to set the trap to True or False when there is PTP Packet Loss.

#### 4.14. NOTIFY

In this section, the user can set the following:

Temperature Threshold for trap

Set the trap to true or false for Board Temperature

Set the trap to True or False for Ethernet and Input Signal Fault

**Notify**

---

**Temperature** -

TRAP Temperature Threshold  (-100 to 100) degree

---

**Board Notify** -

	<b>Board Trap</b>	<b>Board Fault Present</b>
Temperature	<input type="text" value="False"/>	<input checked="" type="checkbox"/>

---

**Ethernet Fault** -

	Ethernet Trap	Ethernet Fault Present
Port Link Status QSFP1.1	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
Port Link Status QSFP2.1	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
Port Link Status QSFP1.2	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
Port Link Status QSFP2.2	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
Port Link Status QSFP1.3	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
Port Link Status QSFP2.3	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
Port Link Status QSFP1.4	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
Port Link Status QSFP2.4	<input type="text" value="False"/>	<input checked="" type="checkbox"/>

---

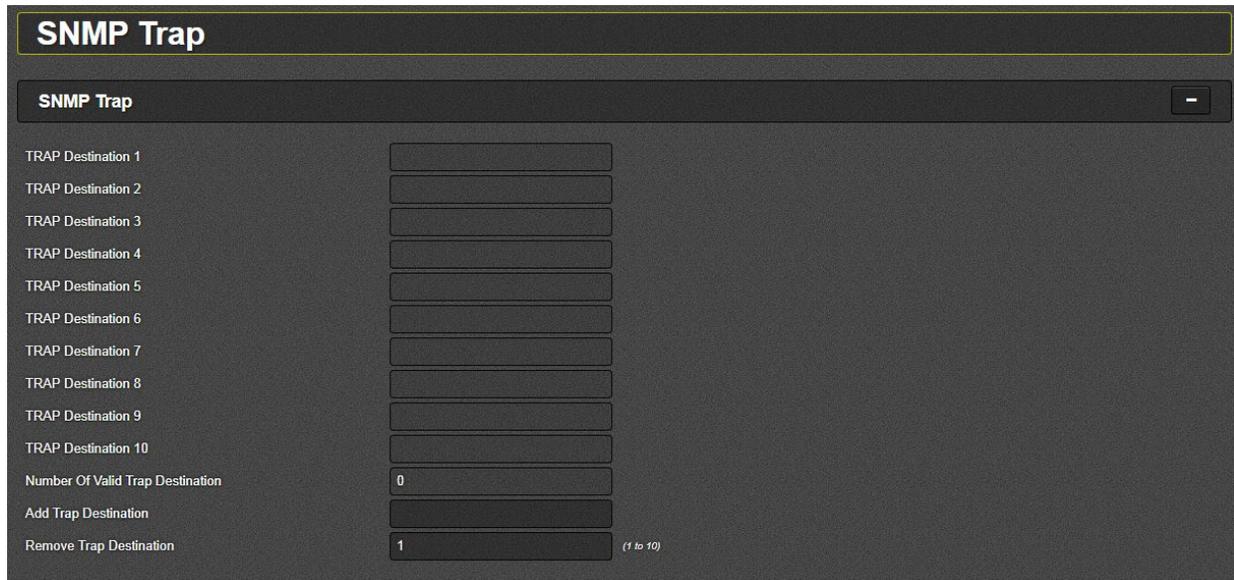
**Input Signal Fault** -

	Signal Trap	Signal Fault Present
LINK1 Signal	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
LINK2 Signal	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
LINK3 Signal	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
LINK4 Signal	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
LINK5 Signal	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
LINK6 Signal	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
LINK7 Signal	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
LINK8 Signal	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
LINK9 Signal	<input type="text" value="False"/>	<input checked="" type="checkbox"/>
LINK10 Signal	<input type="text" value="False"/>	<input checked="" type="checkbox"/>

Figure 4-24 : WebEASY® - Notify

#### 4.15. SNMP TRAP

In this section the user can view, add or remove trap destinations.



The screenshot shows the 'SNMP Trap' configuration page in the WebEASY interface. The page has a dark grey background with white text. At the top, there is a header 'SNMP Trap' with a minus sign icon on the right. Below the header, there is a list of ten 'TRAP Destination' entries, each with a corresponding input field. Below the list, there are three more input fields: 'Number Of Valid Trap Destination' (value: 0), 'Add Trap Destination', and 'Remove Trap Destination' (value: 1). A small note '(1 to 10)' is visible next to the 'Remove Trap Destination' field.

Label	Value
TRAP Destination 1	
TRAP Destination 2	
TRAP Destination 3	
TRAP Destination 4	
TRAP Destination 5	
TRAP Destination 6	
TRAP Destination 7	
TRAP Destination 8	
TRAP Destination 9	
TRAP Destination 10	
Number Of Valid Trap Destination	0
Add Trap Destination	
Remove Trap Destination	1

Figure 4-25 : WebEASY® - SNMP Trap

## 5. 9821EMR-FC WEB INTERFACE

9821EMR-FC is the bottom FC and the web-easy can be access by typing the IP address of the FC in address bar of the browser.

The following menus are available on the web-easy page:

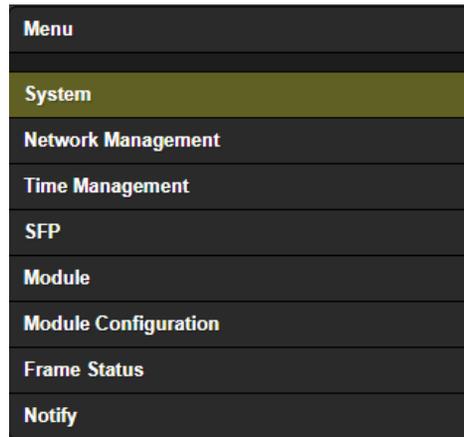


Figure 5-1 : WebEASY® - 9821EMR-FC Main Menu

### 5.1. SYSTEM

In the section the user can view the Product name, Firmware version and Serial number, also the Alias name, Import/Export preset, System reboot and Factory reset can be done here.

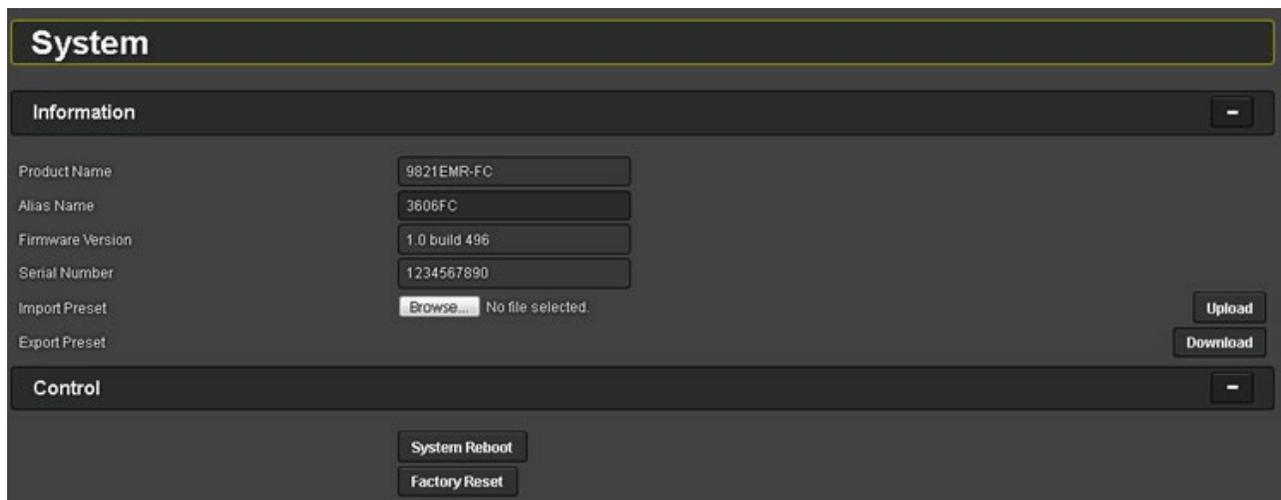


Figure 5-2 : WebEASY® - 9821EMR-FC\System

### 5.2. NETWORK MANAGEMENT

In this section the user can:

- Set the Control, Netmask and Gateway IP addresses for the module.
- Set the Trap Destination
- The “Magnum Control” section is currently not being configured or used

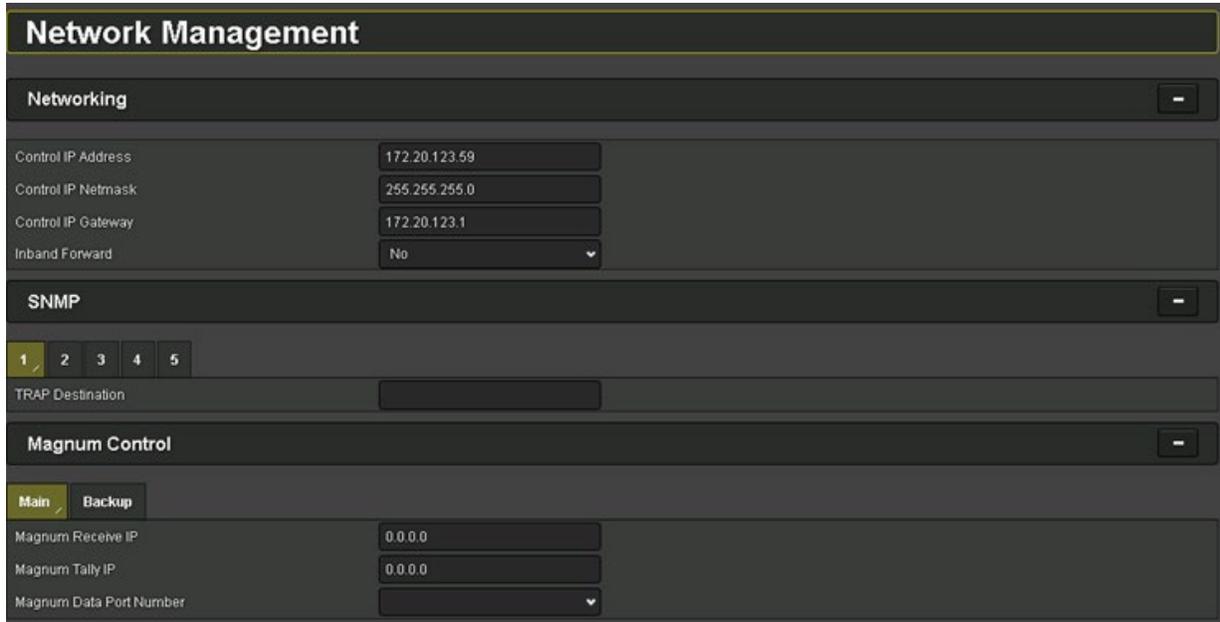


Figure 5-3 : WebEASY® - 9821EMR-FC\Network management

### 5.3. TIME MANAGEMENT

In this section the user can set the time source to local or NTP server. The Time Zone offset and DLS can be manually set whether the time source is set to local or NTP.

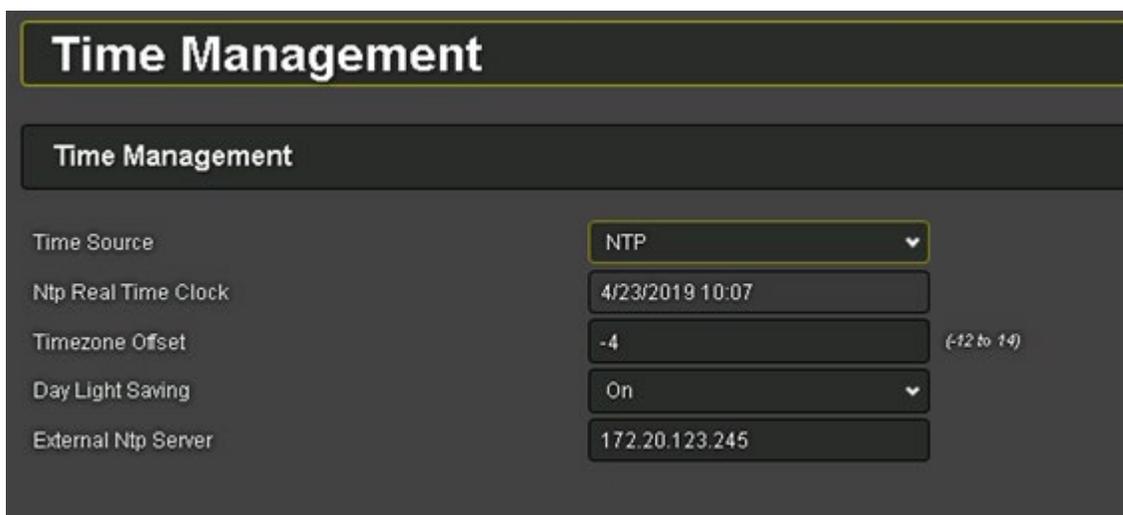


Figure 5-4 : WebEASY® - 9821EMR-FC\Time Management

### 5.4. SFP

In this section both the regular SFPs and QSFPs status are monitored. For SFPs there are 18 slots and each slot there is information about the SFP Presence, Connector type, Name, Serial Number, firmware version temperature and supply voltage. Channels Status is not currently being used.

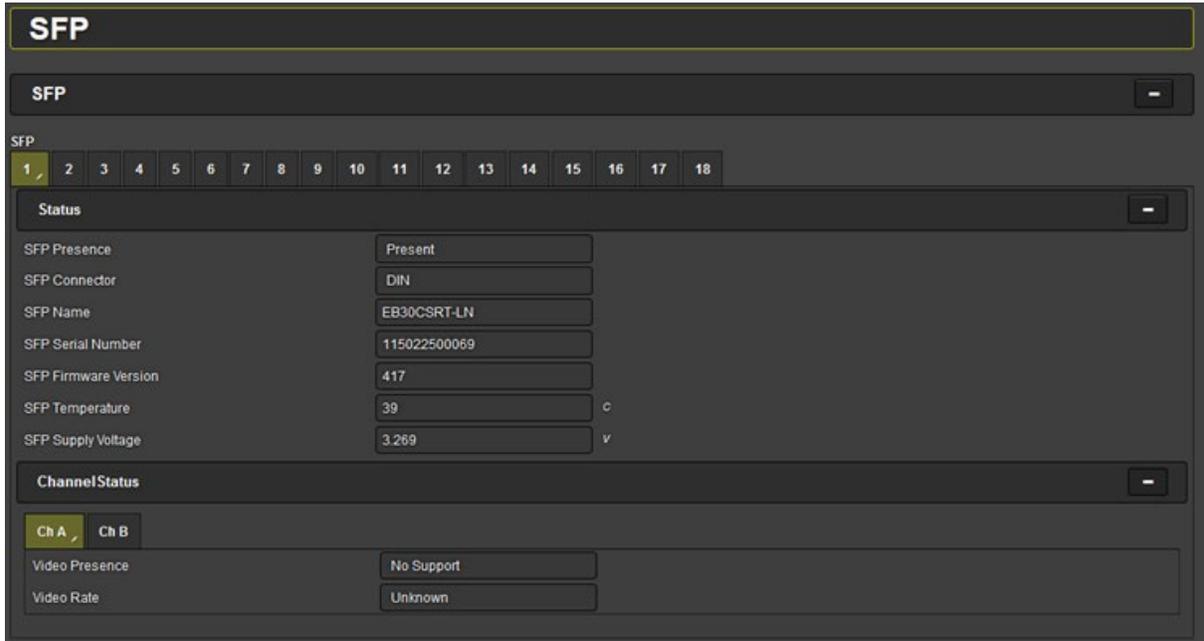


Figure 5-5 : WebEASY® - 9821EMR-FC\SFP

For QSFP there are 2 slots (main and backup) and each slot provides information about QSFP presence, Name, Serial number, firmware version, connector type and Wave length.

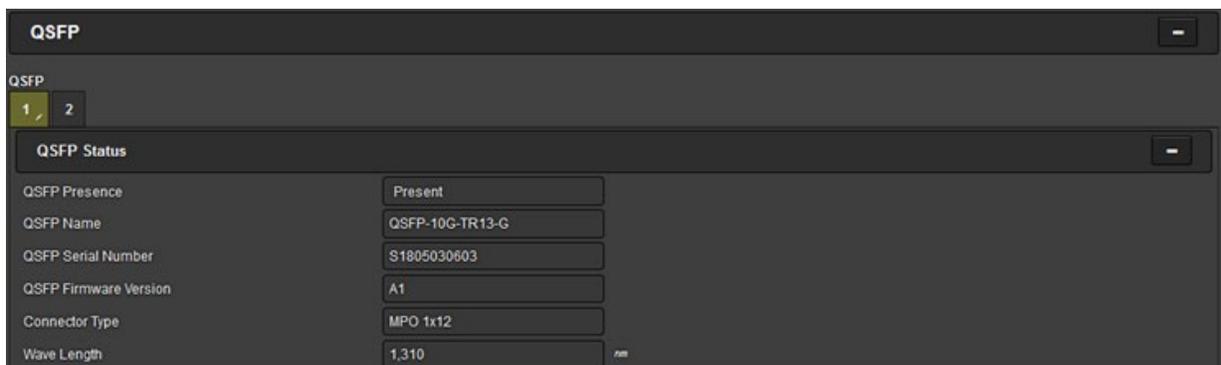


Figure 5-6 : WebEASY® - 9821EMR-FC\QSFP

### 5.5. MODULE

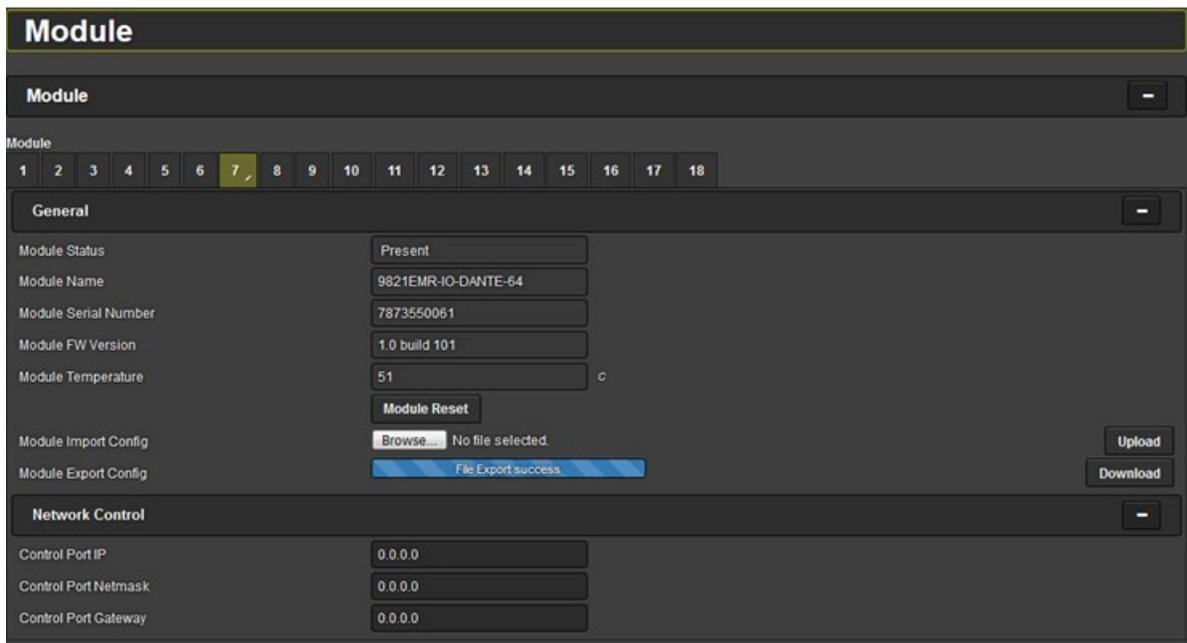
In this section there are slots for 18 modules, but a Dante module occupies two slots and only 8 Modules can be fitted in a single unit.

Slot 1 and 2 are reserved.

Dante module 1 will occupy slots 3 and 5, but only slot 3 shows status.  
 Dante module 2 will occupy slots 4 and 6, but only slot 6 shows status.  
 Dante module 3 will occupy slots 7 and 9, but only slot 7 shows status.  
 Dante module 4 will occupy slots 8 and 10, but only slot 10 shows status.  
 Dante module 5 will occupy slots 11 and 13, but only slot 11 shows status.  
 Dante module 6 will occupy slots 12 and 14, but only slot 14 shows status.  
 Dante module 7 will occupy slots 15 and 17, but only slot 15 shows status.  
 Dante module 8 will occupy slots 16 and 18, but only slot 18 shows status.

The active slots will show the modules' Status, Name, Serial number Firmware version and Temperature, also the user can download and upload each module's config.

Network Control is not being used currently.



**Figure 5-7 : WebEASY® - 9821EMR-FC\Module**

**5.6. MODULE CONFIGURATION**

In this section the overview of the Dante module allocations are being presented.



**Figure 5-8 : WebEASY® - 9821EMR-FC\Module Configuration**

When user click on the active Dante module, the status window for that module will open and provide information on Module's Name, firmware version of the 9821EMR-IO-Dante-64, Temperature, Status, TDM connection to and from Module and Genlock presence.

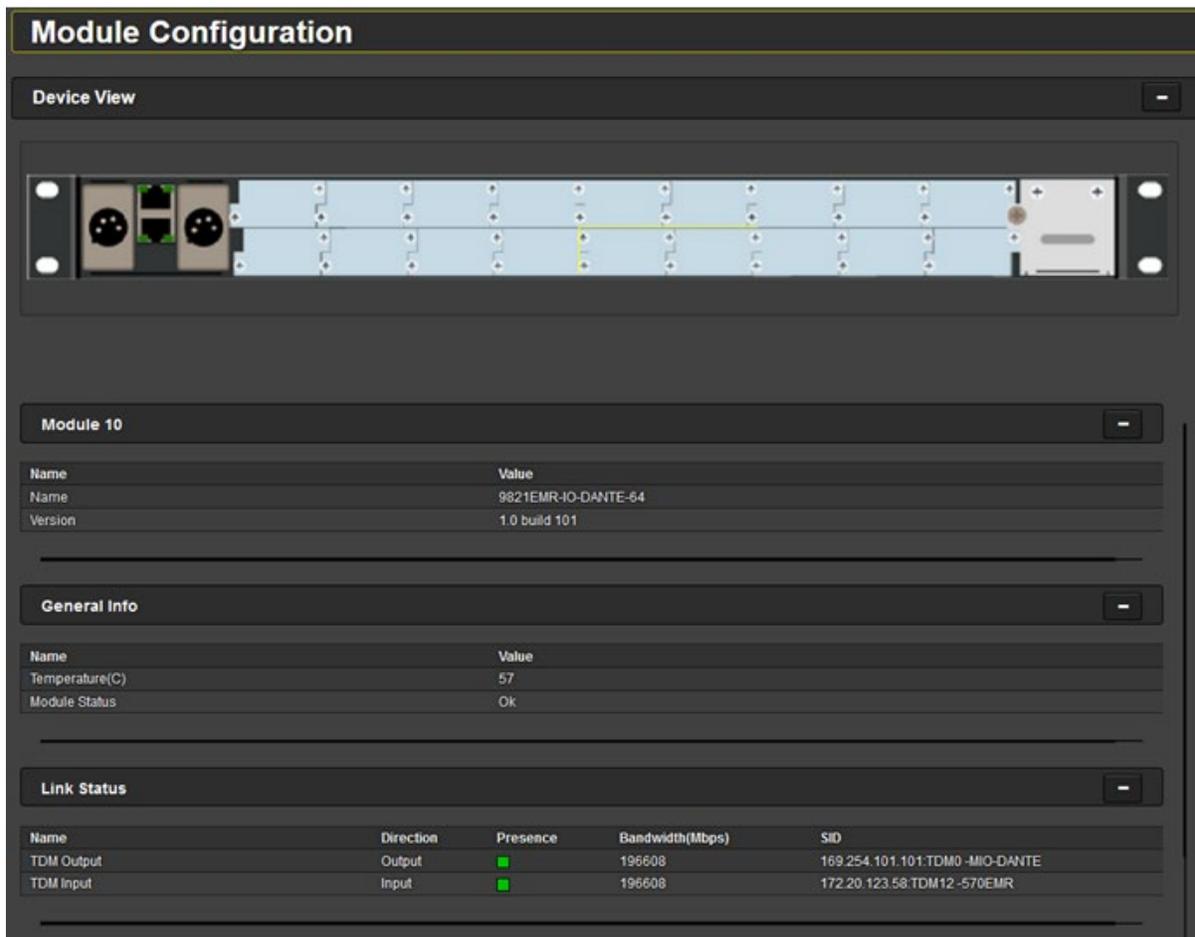


Figure 5-9 : WebEASY® - 9821EMR-FC\Module Configuration

**Dante 1 Module Information:** In section the firmware and software version of the Dante card itself is being shown as well.

**Dante 1 Module Control and Status:** The switch mode should be set to Redundant since there is main and redundant Ethernet port for each module.

**Ethernet Port IP Control:** The user can set the IP address for primary and Secondary Dante modules. Once the desired IP is set Enter has to be pressed for the changes to be applied.

The DHCP can be set to true if there is a DHCP server otherwise it has to be set to False.

**Primary/Secondary Ethernet Port Status and Statistic:** This section provides information on whether the link for primary or secondary Ethernet port is Up and also show the speed and Duplex mode of the connection.

**Dante 1 Module Information** -

Name	Value
Presence	<span style="color: green;">■</span>
Software Version	4.0-7
Firmware Version	4.0-2

---

**Dante 1 Module Control & Status** -

Name	Value
Switch Mode	Redundant <span style="font-size: small;">▼</span>
Clear	<input type="button" value="Clear"/>

---

**Ethernet Port IP Control** -

Name	IP Address	Netmask Address	Gateway Address	DHCP
Primary	169.254.101.101	255.255.255.0	0.0.0.0	False <span style="font-size: small;">▼</span>
Secondary	192.168.101.101	255.255.255.0	0.0.0.0	False <span style="font-size: small;">▼</span>

---

**Primary Ethernet Port Status & Statistic** -

Name	Value
Link	Up
Speed	1Gbps
Duplex	Full

---

**Secondary Ethernet Port Status & Statistic** -

Name	Value
Link	Up
Speed	1Gbps
Duplex	Full

Figure 5-10 : WebEASY® - 9821EMR-FC\Dante Module Information

**Audio Control & Status:** In this section it shows whether the Module receives or transmits audio. If “TDM 1 Audio Channel XX Output” is green, it means the Dante Module is receiving Dante from a Dante device and sending it to 9821 as TDM. This TDM could be converted to an IP stream or TDM source.

If “TDM2 Audio Channel XX input” is green it means 9821 is sends Audio to Dante module as TDM. This TDM could be coming from and IP stream or from a TDM source.



**Dante is limited to 64 mono audio input and output channels.**

Audio Control & Status		
Name	Direction	Presence
TDM 1 Audio Channel 1	Output	■
TDM 1 Audio Channel 2	Output	■
TDM 1 Audio Channel 3	Output	■
TDM 1 Audio Channel 4	Output	■
TDM 1 Audio Channel 5	Output	■
TDM 1 Audio Channel 6	Output	■
TDM 1 Audio Channel 7	Output	■
TDM 1 Audio Channel 8	Output	■
TDM 1 Audio Channel 9	Output	■
TDM 1 Audio Channel 10	Output	■
TDM 1 Audio Channel 11	Output	■
TDM 1 Audio Channel 12	Output	■
TDM 1 Audio Channel 13	Output	■
TDM 1 Audio Channel 14	Output	■
TDM 1 Audio Channel 15	Output	■
TDM 1 Audio Channel 16	Output	■
TDM 1 Audio Channel 17	Output	■
TDM 1 Audio Channel 18	Output	■
TDM 1 Audio Channel 60	Output	■
TDM 1 Audio Channel 61	Output	■
TDM 1 Audio Channel 62	Output	■
TDM 1 Audio Channel 63	Output	■
TDM 1 Audio Channel 64	Output	■
TDM 2 Audio Channel 1	Input	■
TDM 2 Audio Channel 2	Input	■
TDM 2 Audio Channel 3	Input	■
TDM 2 Audio Channel 4	Input	■
TDM 2 Audio Channel 5	Input	■
TDM 2 Audio Channel 6	Input	■
TDM 2 Audio Channel 7	Input	■
TDM 2 Audio Channel 8	Input	■
TDM 2 Audio Channel 9	Input	■
TDM 2 Audio Channel 10	Input	■
TDM 2 Audio Channel 11	Input	■
TDM 2 Audio Channel 12	Input	■
TDM 2 Audio Channel 13	Input	■
TDM 2 Audio Channel 14	Input	■
TDM 2 Audio Channel 15	Input	■
TDM 2 Audio Channel 16	Input	■

Figure 5-11 : WebEASY® - 9821EMR-FC\Dante TDM In and Out Status

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## 6. FIRMWARE UPGRADE

### 6.1. 9821EMR-AG-HUB UPGRADE

To upgrade the card, the user needs to log as admin/admin or root/evertz to gain access to upgrade menu.



Figure 6-1 : WebEASY® - 9821EMR-AG-HUB Top Menu Bar

Once the upgrade option is selected, the upgrade page will open and display the current firmware version installed.

To upgrade or downgrade the unit, user needs to click on the Browser button and locate the “9821EMR-AG-HUB-Vxxxxxxx-00xx.img” file. Once the file is selected, press the Upgrade button. The image file will be uploaded and installed and at the end of the upgrade the unit will reboot automatically.

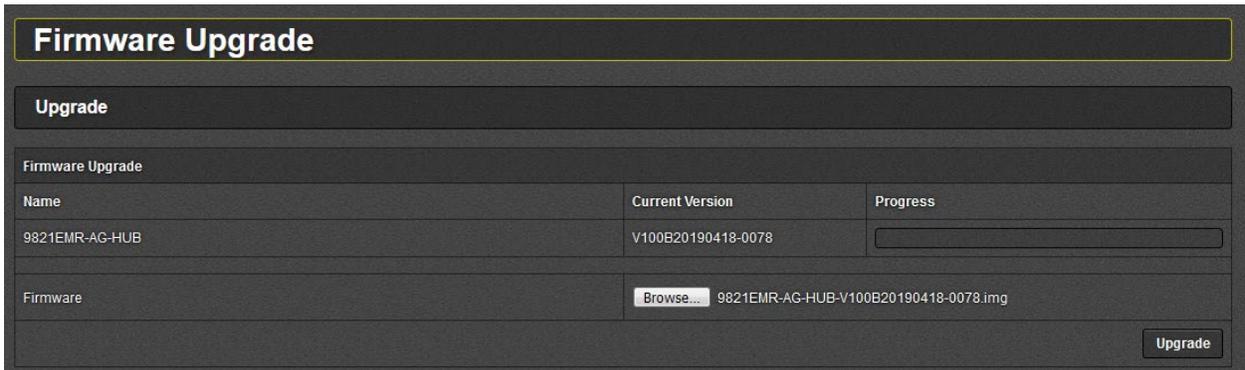


Figure 6-2 : WebEASY® - 9821EMR-AG-HUB Firmware Upgrade

### 6.2. 9821EMR-IO-DANTE-64 UPGRADE

To upgrade the EMR-IO-DANTE-64, the user needs to log as admin/admin or root/evertz into 9821EMR-FC to gain access to upgrade menu.



Figure 6-3 : WebEASY® - 9821EMR-FC Top Menu Bar

Once the upgrade option is selected, the upgrade page will open and display the installed 9821EMR-IO-DANTE-64 modules and their current firmware version.

To upgrade or downgrade the Dante modules, user needs to click on the Browser button and locate the “3606DANTE-X-XX-XXX.tar.gz” file. Once the file is selected, toggle the upgrade buttons for the modules that need to be upgraded and then press the Upgrade button. The “tar.gz” file will be uploaded and installed and at the end of the upgrade the modules will reboot automatically.

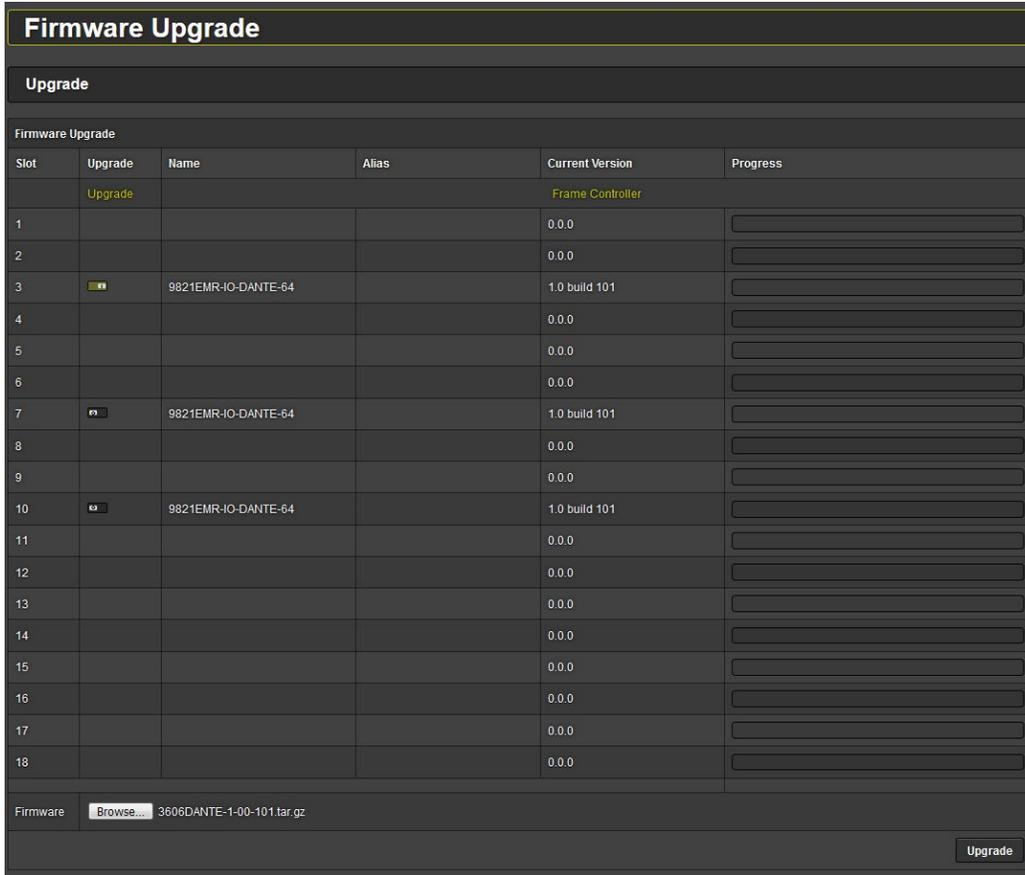


Figure 6-4 : WebEASY® - 9821EMR-IO-DANTE-64 Firmware Upgrade

### 6.3. 9821EMR-FC UPGRADE

To upgrade the 9821EMR-FC, the user needs to log as admin/admin or root/evertz to gain access to upgrade menu.

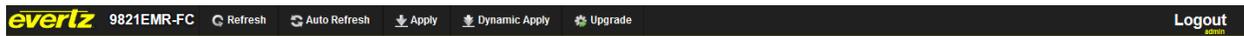


Figure 6-5 : WebEASY® - 9821EMR-FC Top Menu Bar

Once the upgrade option is selected, the upgrade page will open and display the installed FC modules.

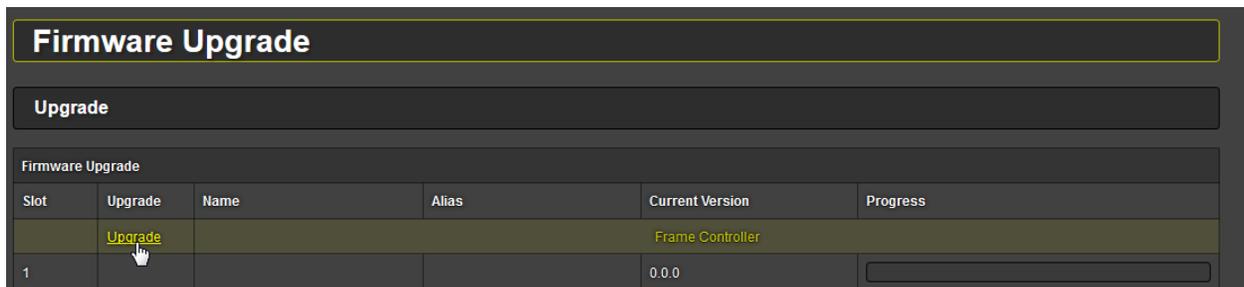
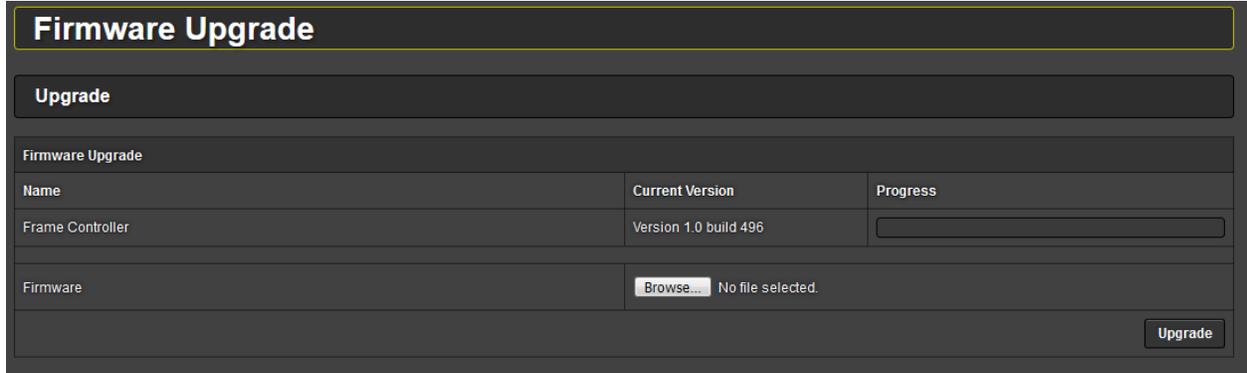


Figure 6-6 : WebEASY® - 9821EMR-FC Upgrade Link

To upgrade or downgrade the FC modules, user needs to click on the Browser button and locate the “9821EMR-FC\_XXXVXXXX\_BXXX.tar.gz” file. Once the file is selected, press the Upgrade button. The “tar.gz” file will be uploaded and installed and at the end of the upgrade the modules will reboot automatically.



Firmware Upgrade		
Upgrade		
Firmware Upgrade		
Name	Current Version	Progress
Frame Controller	Version 1.0 build 496	<input type="text"/>
Firmware	<input type="button" value="Browse..."/> No file selected.	
<input type="button" value="Upgrade"/>		

Figure 6-7 : WebEASY® - 9821EMR-FC Firmware Upgrade

Once all the modules are upgraded it is recommended to reboot the entire system.

*End of Document*