# 570EMR-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: sales@evertz.com Tech Support: service@evertz.com Web Page: http://www.evertz.com

Fax: +1 905-335-3573 Fax: +1 905-335-7571

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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**

# <u>NOTE</u>

## **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.



EN60065 EN55103-1: 1996 EN55103-2: 1996

Safety Emission 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.**

## <u>NOTE</u>

## 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.



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# **REVISION HISTORY**

REVISION

0.1

**DESCRIPTION** Preliminary Release DATE

June 2018

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# 1. OVERVIEW

The 570EMR-AG-HUB is Evertz 3<sup>rd</sup> 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:
  - o TDM Inputs 1-10 DIN Connectors
  - o 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

Number of TDM / MADI Inputs	10 x DIN
Number of TDM / MADI Outputs	10 x DIN
Connector	DIN 1.0/2.3
Impedance	75 $\Omega$ 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	



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# 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

10x10 TDM/MADI



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.



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# 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<sub>®</sub> 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<sub>®</sub> interface and are therefore not configurable though the web interface. These cards must be configured using VistaLINK<sub>®</sub> or Serial Menu. Cards that support the WebEASY<sub>®</sub> 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<sub> $\otimes$ </sub>.



#### 5.1. SYSTEM

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

EVERIZ 570EMR-AG-HUB C Refresh	🕃 Auto Refresh 🛓 Apply 👲 Dynamic Apply	🖨 Upgrade	Logo	out
	Custom			_
	System			
System	1			
Product Features	Control Port Configuration			
Signal Input	Ethernel Proce			
IP Output (S302M)	IP Address	192 168 245 17		
IP Compart (A2:SS/7)	Netmask	266,266,246,8		
II' Input (5307M)	Contractor	192 158 245 1		
Survey (Action)				
Dedex Control	Data Port Configuration			
PCR Control	GDP			
PTP Control	2345578			
Notiv	P Address	192 168 1 10		
	Netmask	255 255 255 0		
	Catmeny	192 168 1 1		
	Data Port Monitor			
	STP			
	2 3 4 5 6 7 8			
	Ethernet Rx Bandwidth			
	Ethernet Rx Frames Ok			
	Ethemet Rx Frames Err			
	Ethernet Rx Broadcast Frames			
	Ethernet Rx Unicast Frames	0	Farms	
	Elbernet Re MulliCast Frames	778,939		
	Ethernet Tx Bandwidth			
	Ethernet Tx Frames Ok	778,945	France	
	Ethernet Tx Frames Err	0	France	
	Ethernet Ta Droadcast Frames			
	Ethernet Tx Unicast Frames			
	Ethernel Tx MultiCast Frames	778.541	Farme	
	Ethemet Liek Status	Link Up		
		Clear Stats		
	SPP CONDO			
	SFP Detection	Ada		
	SFP Monitor			
	Fiber			
	2345678			
	SEP Part Number	SFP10G-TR13-A		
	SFP Type	Optical		
	SFP Rx Power Level			
	SFP Tx Power Level			
	Ganlack Control			
	Contraction			
	Reference Selection	Ref 1 👻		
	Geniock Status			
	Genlock Present	Prosent		
	Genlock Standard	NTSC		
	In-band Control		10	
	Primary Secondary			
	Data Parl	SFP 1 🗸	Need wheel is late effect	
	Control MultiCast IP	239.0 0.1		
	Taly MultiCast IP	240.0.0.1		
	RPC Timeout			
	HPC Image	36.000		
	Card Control			
	Card Alars			
		Purge Card		
		Loed Factory Config		
		Reboot Card		

Figure 5-1 : WebEASY $_{\ensuremath{\mathbb{R}}}$  - 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 Broadcast Frames: Displays the number of Broadcast 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 Unicast Frames: Displays the number of Unicast Frames Transmitted. Ethernet Tx MultiCast Frames: Displays the number of Multicast Frames Transmitted. Ethernet Tx MultiCast Frames: Displays the number of Multicast Frames Transmitted. Ethernet Tx MultiCast Frames: Displays the number of Multicast 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

EVERIZ 570EMR-AG-HUB C Refresh	S Auto Refresh 👲 Apply 👲 Dynamic Apply 🎄 Upgrade	Logout
Menu	Product Features	
System		
Product Features	Product Features	
Signal Input	Product Eastern	
IP Output (S302M)	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	
IP Output (AE \$67)	Desher Fashers Name EV MARY	
IP Input (S302M)	Product Factors Presented Factors	
IP Input (AE S67)	ставле офрания	
Signal Output	License Control	
Delay Control		
PCR Control	Export Product License File	Download
PTP Control	Import Product License File Choose File No file chosen	Upload
Notify	Product Serial Number 7678130035	
	Product Mac Address e8 eb: 11 91 16 96	

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.

<b>EVERIZ</b> 570EMR-AG-HUB (	Refresh 😋 Auto Refresh 🛓 Apply 🛓 Dynamic Apply 🔹 Upgrade		Logout
	Circu al Innut		
	Signal input		
System			
Product Features	Global Control		
Signal Input			
IP Output (S302M)	Enable Pop Suppression Enable		
IP Output (AES67)	Link Monitoring		
IP Input (S302M)			
IP Input (AES67)			
Signal Output			
Delay Control	MADI Source Detected		
PCR Control	Audio Pop	Reset	
PTP Control			
Notify	Channel Monitoring		
		Channel Present	Audio Pon
	Channel 1		
	Channel 2		
	Channel 3 Channel 4		
	Channel 5		
	Channel 6		
	Channel 7		
	Channel 8 Channel 9		
	Channel 10		
	Channel 11		
	Channel 12		
	Channel 13 Channel 14		
	Channel 15		
	Channel 16		

Figure 5-3 : WebEASY<sub>®</sub> - 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)

lenu	IP Output (S302M	)		
ystem				
roduct Features	SFP Output			
ignal Input				
P Output (S302M)	SFP1 - Main SFP2 - Backup SFP3	- Main SFP4 - Backup		
Output (AES67)	Express IP Output			
Input (S302M)	LINK			
Input (AES67)	1, 2 3 4 5			
gnal Output	Output IB Address Daws			
lay Control	Output in Address Range	(e.g. 239.0.0 1-100.239.1.1.10.239.1.1.6	£ 89j	
CR Control	Output UDP Port	0	(0 to 65535)	
P Control		Purge Routes		
tify				
	IP Output Control			
	LINK			
	1, 2 3 4 5			
		IP Output Status	IP Output Destination IP Address	IP Output Destination UDP Port
			0.0.0.0	0
	TS 2		0.0.0.0	0
	TS 3		0000	0
	TS 4		0000	0
	185		0000	0
	IP Output Advanced Control			
	LINK			
	IP Output Source IP Address	192.168.0.1		
	IP Output Source UDP Port	0	(0 to 65535)	
	IP Output Type Of Service	0		
	IP Output Time To Live	64		
tz Microsystems (powered by metry 1.5 +vfs).				1 About Into/Logging S

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)

EVERIZ 570E	MR-AG-HUB (	Refresh	😋 Auto Refresh	🛨 Apply	🎍 Dynamic Apply	🍄 Upgrade		Logout
		-						
Menu		-	IP Outp	out (Al	ES67)			
System		li, hisi						
Product Features			AES67 Pack	et Time				
Signal Input								
IP Output (S302M)			AES67 IP Output Pa	cket lime		125us		
IP Output (AES67)			SFP Output					
IP Input (\$302M)								
IP Input (AES67)		1.0-	SFP5 - Main	FP6 - Backup	SFP7 - Main SFF	28 - Backup		
Signal Output		U 14	Express IP Out	put				
Delay Control			LINK					
PCR Control			1, 2 3					
PTP Control		1. 4. 199	Output IP Addroom	Danco				
Notify		a na	Output in Address	srvange		(e.g. 239.0.0 1-100 239 1 1 10 239 1 1 66-88		
			Output UDP Port			0	(0 to 65535)	
						Purge Routes		
			IP Output Cont	rol				
			LINK					
			1, 2 3	4 5				
						IP Output Status	IP Output Destination IP Address	P Output Destination UDP Port (0 to 65535)
							0.0.0	0
							0.0.0.0	0
							0.0.0.0	0
							0.0.0.0	0
							0.0.0.0	
			+					
			IP Output Adva	inced Control				
			LINK					
			1, 2 3					
			IP Output Source	IP Address		192.168.0.1		
			IP Output Source	UDP Port		0	(0 to 65535)	
			IP Output Type Of	Service		0		
			IP Output Time To	Live		64		

Figure 5-5 : WebEASY<sub>®</sub> - 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)

EVERIZ 570EMR-AG-HUB C Refresh	🕄 Auto Refresh 👲 Apply 👲 Dynamic Apply	42s Upgrade			Logout
Menu	IP Input (S302M)				
System					
Product Features	Global Control				
Signal Input			SO NUMBER OF STREET		
IP Output (\$302M)	SFP1 & SFP2 _ SFP3 & SFP4				
IP Output (AES67)	SFP Redundancy Selection	SEP 1			
IP Input (S302M)		Clear RTP Sequence Erro	215		
IP Input (AE S67)	(Instantion of the second s				
Signal Output	SFP Input				
Delay Control	STD1 Male STD2 Daskan STD2 Male S	CD4 Darkun			
PCR Control	arra man, arra dattap arra mani a	nre backap			
PTP Control	Express IP Input				
Notify	LINK				
	11, 12 13 14 15				
	Input IP Address Range				
		pe y 209 0.0 1 100 209 1 1 10 209	r 1 48-50)		
	Input UDP Port	0	(0 10 65535)		
		Purge Routes			
	IP Input Control				-1
	- IPAPort pair assignments must be unique per SI	P. Setting an IP/Port pair whic	h already exists on the same SFP v	vill tai!	
	LINK 11 12 13 14 15				
		IP Input Present	RTP Sequence Errors	IP Input IP Address	IP Input UDP Port
				0000	0
				0000	0
				0000	0
	TS 4			0000	0
	TS 5			0000	0
	RTP Control				
	IP Input Streams Use RTP	Yes	•		
تسريكي لللبين القرابات وتؤريها	~ 모양 ~ 사망님, 것 방법 않고 데는 것보다.				

Figure 5-6 : WebEASY<sub>®</sub> - 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)

evertz 5	70EMR-AG-HUB	C Refresh	😋 Auto Refresh	🛨 Apply	👲 Dynamic Apply	🏠 Upgrade	e de la companya de	n n Sala	Logout
Menu		- Links P	IP Inpu	t (AES	567)				
System									
Product Features			Global Cont	rol					
Signal Input			SEP5 & SEPS	SEP7 & SEP8					
IP Output (S302M)		- 1131	SEP Redundancy S	election		SEP 5			
IP Output (AES67)						Clear RTP Sequence Erro	ors		
IP Input (AE \$67)		- Minkers							
Signal Output	and the Court		SFP Input						
Delay Control			CEDE Main		6007 Main 60	D9 Darker			
PCR Control			STPS-Main	SFF6 - Backup	STPT - Maili St	го - Баскир			
PTP Control		The strength	Express IP Inp	ut					
Notify			LINK						
			11 , 12 1	3 14 1	5				
			Input IP Address	Range		lea 239.00 1-100 239 1 1 10 239	1.1.65-80		
			Input UDP Port			0	(0 to 65535)		
						Purge Routes			
			IP Input Contro	ol.					
			- IP/Port pair	assignments	must be unique per SFF	. Setting an IP/Port pair whic	th already exists on the same SFP w	vill fail!	
			LINK						
			11 , 12 1	3 14 1	5				
						IP Input Present	RTP Sequence Errors	IP Input IP Address	IP Input UDP Port (0 to \$5535)
								0.0.0	0
								0.0.0.0	0
								0.0.0.0	0
								0.0.0	0
								0.0.0.0	0
			+						

Figure 5-7 : WebEASY<sub>®</sub> - 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

<b>EVERLZ</b> 570EMR-AG-HUB C Refre	sh 💲 Auto Refresh 🛨 Apply 🍷 Dynamic Apply 🦚 Upgrade	Logou
Menu	Signal Output	
System		
Product Features	Output Control	
Signal Input		
IP Output (S302M)	UNK 11 12 13 14 15 16 17 18 16 20	
IP Output (AE S67)	12 13 14 13 16 17 16 17 20	
IP Input (\$302M)	Input Source \$302M +	
IP Input (AE \$67)	Cutput Mode MADI +	
Signal Output	Channel Monitoring	- 1
Delay Control		
PCP Control	LINK	
nth Control	11 12 13 14 15 16 17 18 19 20	
PIP Collator	Channel Present	
	Channel 1       Channel 2.       Channel 3       Channel 4       Channel 6       Channel 7       Channel 7       Channel 8       Channel 9       Channel 9       Channel 10       Channel 11       Channel 12       Channel 13       Channel 14       Channel 15       Channel 16	

Figure 5-8 : WebEASY<sub>®</sub> - 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

EVERIZ 570EMR-AG-HUB C Refresh	😋 Auto Refresh 👲 Apply 🎍 Dynamic Apply	🏠 Upgrade	Logout
Menu	Delay Control		
System			
Product Features	Global Delay Control		
Signal Input			
IP Output (S302M)	Network Delay for Auto Mode	1 () for R) and second to	
IP Output (AES67)	PTS Offset for Auto Mode	0 (7 de 50) milionande	
IP Input (S302M)	EMR Delay for Manual Mode	1 (7 in 5) millionards	
IP Input (AE S67)	Global Audio Delay Mode	Auto (Use PCR) +	
Signal Output		Clear Delay Monitor Status	
Delay Control	Per-Stream Delay Control and Monitor		-
PCR Control			
PTP Control	LINK		
Notify	11, 12 13 14 15 16 17 18	19 20	
	Resync Event Monit	or Underflow Event Monitor	Audio Delay Mode
	Stream 1		Auto (Use PCR) 🗸
	Stream 2		Auto (Use PCR) 🗸
	Stream 3		Auto (Use PCR) 🗸
	Stream 4	1919년 - 1929년 1929년 <mark>-</mark> 2019년 1월	Auto (Use PCR) 🗸
	Stream 5		Auto (Use PCR) 🗸
	+		

Figure 5-9 : WebEASY<sub>®</sub> - 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

EVERIZ 570EMR-AG-HUB C Refresh	😋 Auto Refresh 👲 Apply 👲 Dynamic Apply	🖨 Upgrade		Logout
Menu	PCR Control			
System				
Product Features	PCR Output PID			
Signal Input				
IP Output (S302M)	PCR Output PID	256	(14 = 315)	
IP Output (AES67)	PCR Output Control			
IP Input (\$302M)				
IP Input (AES67)	STP.			
Signal Output				
Delay Control	PCR Enable	Enable		
PCR Control	P Address	239 239 239 1		
PTP Control	UDP Port Number	1,234	(1 6 63528)	
Notify	KTP Mode	Enable		
	PCR Input Control			
	SFP			
	SEP Port	SFP 1 🛩		
	PCR PID	256		
	IP Address	239,239,239.1		
	UDP Port Number	1,234	(1 to 65528)	
	PCR Presence	Yes		
	Time Reference			
	Time Reference Lock Enable	Enable 🗸		
	Jitter Tolerance	10,000	au (0000) us	
		Sync Now		

Figure 5-10 : WebEASY<sub>®</sub> - 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

EVERIZ 570EMR-AG-HUB C Refresh	😋 Auto Refresh 👲 Apply 👲 Dyr	namic Apply 🛛 🎄 Upgrade	n de la sectión de l'Angel de la State	Logout
Menu	PTP Control			
System				
Product Features	PTP Control			
Signal Input				
IP Output (\$302M)	SFP Port	SFP 5		
IP Output (AES67)	Status	Absent		
IP Input (S302M)	Domain Number	50		
IP Input (AES67)	Priority 1	255		
Signal Output	Priority 2	255		
Delay Control	Offset Seconds Tx	0	(-2147483647 to 2147483647)	
PCR Control	Offset Nano Seconds Tx	0	(-2147483647 to 2147483647)	
PTP Control	Offset Seconds Rx	0	(-2147483647 to 2147483647)	
Notify	Offset Nano Seconds Rx	0	(-2147483647 to 2147483647)	
	Offset Micro Seconds Tx 48 K	-805	(-2147483647 to 2147483647)	
	Offset Micro Seconds Rx 48 K	-11,100	(-2147483647 to 2147483647)	
	RTP Timestamp			
	LINK 1, 2 3 4 5 6 7 8	8 9 10		
		Jam Enable		

Figure 5-11 : WebEASY<sub>®</sub> - 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

EVERIZ 570EMR-AG-HUB C Refresh	😋 Auto Refresh 👲 Apply 👲 Dynamic Apply	4 Upgrade	Logout
Menu	Notify		
System			
Product Features	Temperature		
Signal Input			
IP Output	TRAP Temperature Threshold	85 (-100 to 100) degree	
IP Input	Board Notify		
Signal Output			
Delay Control		Board Trap Board Fault Present	
PCR Control	Temperature		
PTP Control	Ethernet Fault		
Notify			
		Ethernet Trap Ethernet Fault Present	
	Port Link Status SFP1	True	
	Port Link Status SFP2	True	
	Port Link Status SFP3	True	
	Port Link Status SFP4	True	
	Input Signal Fault		-
		Signal Trap Signal Fault Present	
	LINK1 Signal	True 🔹	
	LINK2 Signal	True 🔹	
	LINK3 Signal	True 🔹	
	LINK4 Signal	True	
	LINK5 Signal	True 🗸	
	LINK6 Signal		
	LINK7 Signal	True 🗸	
	LINK8 Signal	True	

Figure 5-12 : WebEASY $_{\ensuremath{\mathbb{R}}}$  - 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 lowdelay, 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