

TABLE OF CONTENTS

1.	OVE	ERVIEW	1
2.	INST	TALLATION OF 7800R4X2-3G	3
	2.1.	REAR PLATE DESCRIPTION	3
3.	SPE	ECIFICATIONS	4
	3.1.	SERIAL VIDEO INPUTS	4
	3.2.	SERIAL VIDEO OUTPUTS	4
	3.3.	GENLOCK	4
	3.4.	GENERAL PURPOSE INPUTS	4
	3.5.	ELECTRICAL	5
	3.6.	PHYSICAL (NUMBER OF SLOTS)	5
4	VICT		e
4.	131		0
	4.1.	GENERAL TAB	6
		4.1.1. Caro Name	٥ ه
		4.1.2. Finitiwale version	06 6
		4.1.3. Creation Date	6
		4.1.5. Board Revision	6
	4.2.	MODULE CONTROL TAB	7
		4.2.1. Switch Line	7
		4.2.2. Genlock	7
		4.2.3. Program Output (1,2)	7
		4.2.4. Preview Output (3,4)	7
		4.2.5. ACO Switch Mode	8
	4.3.	GPI CONTROL TAB	8
		4.3.1. GPI Mode	88 م
	4.4.	A 4.1 Video Loss Duration	9 10
		4.4.1. Video Loss Duration	10 10
		4.4.3 Freeze Duration	10
		4.4.4. Picture Noise Level	
		4.4.5. Audio Loss Duration	
		4.4.6. Audio Over Level	
		4.4.7. Audio Over Duration	10
		4.4.8. Audio Silence Level	11
		4.4.9. Audio Silence Duration	11



4.5.	INPUTS FAULT CONTROL	
	4.5.1. Fault Conditions	
	4.5.1.1. Logic	
	4.5.1.2. Fault Clear Duration	13
4.6.	PRESET CONTROL TAB	13
	4.6.1. Save	
	4.6.2. Load	13
4.7.	MONITOR TAB	14
4.8.	SYSTEM FAULT TRAPS	14
4.9.	FAULT TRAPS – INPUT 1 & INPUT 2	15

Figures

Figure 1-1: 7800R4x2-3G Block Diagram	2
Figure 2-1: 7800R4x2-3G Rear Plate	3
Figure 4-1: VistaLINK _® PRO General Tab	6
Figure 4-2: VistaLINK® PRO Module Control Tab	7
Figure 4-3: VistaLINK® PRO GPI Control Tab	8
Figure 4-4: VistaLINK® PRO Fault Control Tab	9
Figure 4-5: VistaLINK® PRO Inputs Fault Control Tab	12
Figure 4-6: VistaLINK® PRO Preset Control Tab	13
Figure 4-7: VistaLINK® PRO Monitor Tab	14
Figure 4-8: VistaLINK® PRO System Fault Traps Tab	14
Figure 4-9: VistaLINK _® PRO Fault Traps Tab	15



REVISION HISTORY

REVISION

DESCRIPTION

DATE

Sept 2011

1.0 First Release Firmware version 1.01b1; JAR version 48

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

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



This page left intentionally blank



1. OVERVIEW

Signal availability is critical to the operations of any facility. Evertz leads the industry with the most complete range of smart automatic protection changeovers. The 7800R4x2-3G provides users with the assurance that the program path is protected with a switch to a backup signal in the event of a fault.

This device:

- Provides four source inputs and four outputs (2 program and 2 preview)
- Provides automatic changeover protection between inputs 1 & 2
- Provides additional changeover protection for emergency inputs 3 & 4
- Provides real time preview of any input
- Provides essential audio and video fault monitoring for changeover criteria
- Provides a backup bypass relay protection
- Configuration via SNMP frame controller

Based on award winning, patented audio and video monitoring technology, this device can manually or automatically switch from the primary input to the backup input. Additionally this device offers two more emergency inputs (3&4) that can be switched to manually via GPI contact closure, network control panel and/or VistaLINK_®.

The 7800R4x2-3G is VistaLINK_® capable, offering remote monitoring, control and configuration capabilities via Simple Network Management Protocol (SNMP) giving the flexibility to manage operations, including signal monitoring and module configuration from SNMP capable control systems (Manager or NMS).

The 7800R4x2-3G occupies 1 card slot and can be housed in the 3RU 7800FR and 7800FR-QT frames which have a 15 slot capacity.

Features:

- Four 3G/HD/SD-SDI inputs (primary, backup and two additional emergency inputs)
- Four outputs (2 program and 2 preview outputs)
- Bypass relay protection between primary input 1 and program output 1
- Automatic smart switch based on essential audio and video monitoring
- Manual override to backup inputs
- Switch control via GPI, network control panel and SNMP
- Real time VistaLINK monitoring and trending
- High density approach offers 14 modules within 3RU

7700/7800 MultiFrame Manual 7800R4x2-3G 4x2 3G/HD/SD-SDI Smart Bypass Protection Router





Figure 1-1: 7800R4x2-3G Block Diagram



2. INSTALLATION OF 7800R4X2-3G

2.1. REAR PLATE DESCRIPTION

The 7800R4x2-3G comes standard with a companion +3RU rear plate and occupies 1 slot in a 7800FR frame. Figure 2-1 provides an illustration of the 7800R4x2-3G rear plate. For information on mounting the rear plate and inserting the module into the frame, see section 3 of the 7800FR manual.



Figure 2-1: 7800R4x2-3G Rear Plate



3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUTS

Number of Inputs:	4 Auto detect
Standard:	SMPTE 259M (525/625)
	SMPTE 292M (1080i/720p)
	SMPTE 424M (1080p)
Connector:	Din 1.0/2.3
Cable Equalization:	Automatic to >300m @270Mb/s
	>150m @1.5 Gb/s
	>100m @3 Gb/s
	Belden 1694A cable (or equivalent)
Return Loss:	>20dB up to 270MHz
	>15dB up to 1.5GHz
	>10dB up to 3GHz

3.2. SERIAL VIDEO OUTPUTS

Number of Outputs:	4 (2 program and 2 preview)
Standard:	Same as input
Connector:	Din 1.0/2.3
Signal Level:	800mV Nominal
DC Offset:	0V +/- 5V
Rise and Fall Time:	900ps nominal at 270Mb/s
	200ps nominal at 1.5Gb/s
	<135ps at 3 Gb/s
Overshoot:	<10% of amplitude
	<0.2UI at 1.5Gb/s
	<0.3UI at 3 Gb/s

3.3. GENLOCK

Туре:	Analog 525 or 625, Tri Level HD
Connector:	BNC per IEC 61169-8 Annex A
	(Frame reference selectable only)
Impedance:	75 Ω termination

3.4. GENERAL PURPOSE INPUTS

Number of Inputs:	5
Туре:	Opto-isolated, active low
	Internal pull-ups +5V or +12V
Connector:	2x6 Straight Box
	Terminal Strip (included)
Signal Level:	Closure to ground



3.5. ELECTRICAL

Voltage:	+12V DC
Power:	16W
EMI/RFI:	Complies with FCC Part 15 Class A EU EMC Directive

3.6. PHYSICAL (NUMBER OF SLOTS)

350FR:	1
7700FR-C:	1
7800FR:	1
7800FR-QT:	1



4. VISTALINK_® CONFIGURATION

4.1. GENERAL TAB

🖼 192.168.1.35, 7800R4X2-3G [2]: Configuration	царана и стади и ста
Refresh 🦣 🦣 1.0 Apply 🂵 🖳 Status	Logger
General \langle Module Control \langle GPI Control \langle Fault Control \langle Inputs Fault	t Control \langle Preset Control \langle Monitor \langle System Fault Traps \langle Fault Traps - Input 1 \langle Fault Traps - Input 2 \rangle
Card Status	1
Card Name	
Firmware Version	
Creation Date	
Board Name	
Board Revision	

Figure 4-1: VistaLINK® PRO General Tab

4.1.1. Card Name

General Card Name Indicates the product model number of the card (including installed options).

4.1.2. Firmware Version

General Firmware Version Indicates the currently installed firmware version.

4.1.3. Creation Date

General Creation Date Indicates the build date of the firmware version.

4.1.4. Board Name

General Board Name Indicates the product hardware version of the module.

4.1.5. Board Revision

General

Board Revision

Indicates the hardware version of the module.



4.2. MODULE CONTROL TAB

📾 192.168.1.35, 7800R4X2-3G [2]: Configuration 🖉 🖉 🗵			
Refresh 🦣 🧶 1.0 Apply 🎚	Status 🚳 Logger 📰		
General Module Control G	१ Control 🕆 Fault Control 🖞 Inputs Fault Control 🖞 Preset Control 🖞 Monitor 👌 System Fault Traps 🌾 Fault Traps - Input 1 🌾 Fault Traps - Input 2		
Switch Settings			
Switch Line	50		
Genlock	No Genlock -		
Program Output (1,2)	ACO -		
Preview Output (3,4)	ACO		
ACO Switch Mode	Auto		

Figure 4-2: VistaLINK_® PRO Module Control Tab

4.2.1. Switch Line

Мс	odule Control
0	Switch Line
	1 to 1125

Sets switch line number. The available range is from lines 1 and 1125.

4.2.2. Genlock

 Module Control
 Enables the user to set the input for Genlock.

 Genlock
 Select "No Genlock" to have the card free-run.

 No Genlock
 Select "Reference Input 1" or "Reference Input 2" to utilize the respective frame reference bus.

4.2.3. Program Output (1,2)

Module Control
Program Output (1,2)
ACO
Input 1
Input 2
Input 3
Input 4

Enables the user to set the *Program Output* to "ACO" or "Input 1" – "Input 4".

When set to "ACO", the module will automatically switch between Input 1 and Input 2 depending on the fault condition.

4.2.4. **Preview Output (3,4)**

N	Module Control			
	Preview Output (3,4)			
_	ACO			
	Input 1			
	Input 2			
	Input 3			
	Input 4			

Enables the user to set the *Preview Output* to "ACO" or "Input 1" – "Input 4".

When set to "ACO", the module will automatically switch between Input 1 and Input 2 depending on the fault condition.



4.2.5. ACO Switch Mode

Module Control

ACO Switch Mode

Auto Auto Switch Back Sets the switching behaviour of the 7800R4x2-3G.

Auto – The module will be in auto switch mode. It will retain its current route state until that signal becomes invalid, at which point it will switch to the other input.

Auto Switch Back – The module will be in auto switch back mode. Input 1 is the primary input. If it becomes invalid, the output will switch to Input 2. If Input 1 returns to valid, then the output will switch back to Input 2.

4.3. GPI CONTROL TAB

🎟 192.168.1.35, 7800R4X2-3	G [2]: Configuration	r _r N. F
Refresh 🧶 🧶 1.0 Apply 📗	🖇 🏬 Status	S Logger
General (Module Control) G	PI Control \Fault Control \Inputs Fault	It Control \langle Preset Control \langle Monitor \langle System Fault Traps \langle Fault Traps - Input 1 \langle Fault Traps - Input 2 \rangle
GPI Settings		1
GPI Mode	Disabled 👻	
GPI 1	Disabled 👻	
GPI 2	Disabled 👻	
GPI 3	Disabled 👻	
GPI 4	Disabled 👻	
GPI 5	Disabled 👻	

Figure 4-3: VistaLINK_® PRO GPI Control Tab

4.3.1. GPI Mode

GPI Control GPI Mode Disabled Level Sensitive Momentary

Sets the GPI Operation Mode.

Disabled – The module will not be controlled by GPI's.

Level Sensitive – The GPI's will be activated when brought ground.

Momentary – The GPI's will be activated on a level change.*

* Not implemented at this time



For brevity, only *GPI 1* will be discussed in the manual. *GPI 2* to *GPI 5* have the same menu.

4.3.2. GPI Mode

GPI Control	Sets the operation of the selected GPI.
GPI 1	
Disabled	Disabled – The GPI will have no effect.
ACO to PGM	
Input 1 to PGM	ACO to PGM(PREV) - The ACO output will be routed to the
Input 2 to PGM	PGM(PREV) output.
Input 3 to PGM	
Input 4 to PGM	Input 1-4 to PGM(PREV) – The selected Input will be routed to the
ACO to PREV	PGM(PREV) output.
Input 1 to PREV	
Input 2 to PREV	Load Preset 1-10 – The selected Preset will be loaded.
Input 3 to PREV	
Input 4 to PREV	
Load Preset 1	
Load Preset 2	
Load Preset 3	
Load Preset 4	
Load Preset 5	
Load Preset 6	
Load Preset 7	
Load Preset 8	
Load Preset 9	
Load Preset 10	

4.4. FAULT CONTROL TAB

192.168. 1	1.35, 7800R4X2-3G	[2]: Conf	iguration							r s
Refresh 🧶	2 1.0 Apply	Statu	IS				Logger			
General \ M	odule Control \ GPI	Control	Fault Control	Inputs Fault	t Control \	Preset Co	ntrol \ Monitor	System Fault Traps	Fault Traps - Input 1	Fault Traps - Input 2
 └Video Fault	s									
Video Los	s Duration	r			50 frame	es				
Black Dura	ation	<u> </u>			200 fram	nes				
Freeze Du	ration				2 frames	5				
Picture No	ise Level				10					
Audio Los	s Duration				50 frame	es				
Audio Ove	r Level				0.00 dbF	s				
Audio Ove	r Duration				50 samp	ples				
Audio Sile	nce Level				-20.00 d	bFS				
Audio Sile	nce Duration)		25.0 sec	s				

Figure 4-4: VistaLINK® PRO Fault Control Tab



4.4.1. Video Loss Duration

Fai	.14	2	ntra
Fai	ш	(λ)	,,,,,

ol Video Loss Duration 0 to 900

Sets the number for frames of a video loss before a video loss alarm is raised.

4.4.2. Black Duration

ŀ	Fault Control				
	E	Black Duration			
		4 to 9996			

Sets the number for frames of black video detected before a black video alarm is generated.

4.4.3. Freeze Duration

Fault Control	Sets the number for frames of picture freeze before a picture freeze
Freeze Duration	alarm is generated.
6 to 9998	

4.4.4. Picture Noise Level

ŀ	-a	ault Control				
	Picture Noise Level					
		1 to 10				

The Picture Noise Level slider sets the approximate level of noise expected in the video signal feed, it is used by the freeze detect feature to distinguish motion from background noise on top of a video feed.

As a guide, the range of options available from min to max is: 1 = digital freeze (no noise on top of frozen picture) 10 = 40 dB SNR

4.4.5. Audio Loss Duration

F	Fault Control				
	1	Audio Loss Duration			
		0 to 300			

Sets the number for frames of an audio loss before an audio loss alarm is raised.

4.4.6. Audio Over Level

F	Fault Control						
	ł	Audio Over Level					
-		-30 to 0					

Sets the audio level that is considered as 'over' ranging from -30dBFS to 0dBFS.

4.4.7. Audio Over Duration

F	Fault Control					
	Audio Over Duration					
		3 to 255				

Sets the maximum duration of audio over ranging from 3 samples to 255 samples.



4.4.8. Audio Silence Level

|--|

•	u		
Audio Silence Level			
-96 to -20			

Sets the audio level that is considered as 'silence' ranging from -96dBFS to -20dBFS.

4.4.9. Audio Silence Duration

Fault Control				
Audio Silence Duration				
	0.5 to 127			

Sets the maximum duration of audio silence ranging from 0.5 seconds to 127 seconds.



4.5. INPUTS FAULT CONTROL

The *Inputs Fault Control* tab enables the user to select the fault trigger conditions for *Input 1* and *Input 2* as illustrated in Figure 4-5. If the selected fault occurs, an alarm will be sent to the user. As well, the user can control the duration and logic relationship of selected fault triggers.

🖬 192.168.1.35, 7800R4X2-3G [2]: Configuration							
Refresh 🦣 🐙 1.0 Apply 🎼 Status							
General \bigwedge Module Control \bigwedge GPI Control \bigwedge Fault Control \bigwedge Inputs Fault Control \bigwedge Preserved to the term of term o	General 🕻 Module Control 🖞 GPI Control 🕆 Fault Control 👌 Inputs Fault Control 🏌 Preset Control 🖞 Monitor 🖞 System Fault Traps 👌 Fault Traps - Input 1 🖞 Fault Traps - Input 2 🔪						
_Input 1	_ Input 2						
Fault Triggers	Fault Triggers						
Video Black	Video Black						
Video Freeze	Video Freeze						
Audio Loss - Group 1	Audio Loss - Group 1						
Audio Loss - Group 2	Audio Loss - Group 2						
Audio Loss - Group 3	Audio Loss - Group 3						
Audio Loss - Group 4	Audio Loss - Group 4						
Audio Over - Channel 1/2	Audio Over - Channel 1/2						
Audio Over - Channel 3/4	Audio Over - Channel 3/4						
Audio Over - Channel 5/6	Audio Over - Channel 5/6						
Audio Over - Channel 7/8	Audio Over - Channel 7/8						
Audio Over - Channel 9/10	Audio Over - Channel 9/10						
Audio Over - Channel 11/12	Audio Over - Channel 11/12						
Audio Over - Channel 13/14	Audio Over - Channel 13/14						
Audio Over - Channel 15/16	Audio Over - Channel 15/16						
Audio Silence - Channel 1/2	Audio Silence - Channel 1/2						
Audio Silence - Channel 3/4	Audio Silence - Channel 3/4						
Audio Silence - Channel 5/6	Audio Silence - Channel 5/6						
Audio Silence - Channel 7/8	Audio Silence - Channel 7/8						
Audio Silence - Channel 9/10	Audio Silence - Channel 9/10						
Audio Silence - Channel 11/12	Audio Silence - Channel 11/12						
Audio Silence - Channel 13/14	Audio Silence - Channel 13/14						
Audio Silence - Channel 15/16	Audio Silence - Channel 15/16						
Fault Conditions	Fault Conditions						
Logic OR 🗸	Logic OR -						
Fault Clear Duration 50	Fault Clear Duration 50						

Figure 4-5: VistaLINK_® PRO Inputs Fault Control Tab



4.5.1. Fault Conditions

4.5.1.1. Logic

Ir	Inputs Fault Control			
	Logic			
_	OR			
	AND			

Enables the user to set the fault trigger. Selecting "OR" will trigger a fault if any of the selected fault conditions occurs. Selecting "AND" will trigger a fault when all the selected fault conditions occurs.

4.5.1.2. Fault Clear Duration

I	Inputs Fault Control				
	1	Fault Clear Duration			
		1 to 254			

Defines how long the fault condition will be held after the fault condition is no longer true. The setting ranges from 1 to 254 frames.

4.6. PRESET CONTROL TAB

-	🖼 192.168.1.35, 7800R4X2-3G [2]: Configuration 🗾 🗹 🗹					
	Refresh 🧶 🧶 1.0 Apply	Status	Logger			
Ì	General \ Module Control \	GPI Control \langle Fault Control \langle Inputs Fault C	Control Verset Control Version Costem Fault Traps Version Control Version Cont			
	Presets					
	Save	Cancel -				
	Load	Cancel				

Figure 4-6: VistaLINK® PRO Preset Control Tab

4.6.1. Save

Preset Control			
	Save		
	Cancel		
		Preset 1 to Preset 10	

Allows the user to save the current configuration to a user preset.

4.6.2. Load

F	Preset Control			
	Load			
	Cancel			
	Factory Defaults			
	Preset 1 to Preset 10			

Allows the user to load and recall configurations from a user preset. The user can also recall a factory default preset.



4.7. MONITOR TAB

The video status and the ACO status are shown in the *Monitor* tab as illustrated in Figure 4-7.

🖼 192.168.1.35, 7800R4X2-3G [2]: Configuration								
Refresh 🦣 🦣 1.0 Apply 🎼 Status								
General 🕻 Module Control 🖞 GPI Control 🏌 Fault Control 🖞 Inputs Fault Control 🖞 Preset Control 🕽 Monitor 🖞 System Fault Traps 🕆 Fault Traps - Input 1 🌾 Fault Traps - Input 2 🔪								
Video Status								
Input 1	Unknown	Program Output (1,2)	Input 1					
Input 2	Unknown	Preview Output (3,4)	Input 1					
Input 3	Unknown							
Input 4	Unknown							
ACO Status ACO Output								

Figure 4-7: VistaLINK® PRO Monitor Tab

4.8. SYSTEM FAULT TRAPS

The System Fault Traps tab enables the user to set system fault traps and monitor the trap status as illustrated in Figure 4-8. To enable a particular trap, simply click the box located beside each trap so that a check-mark appears. When a check-mark is present, the trap is enabled. When a check-mark is not present, the trap is disabled.

The *Trap Status* section defines whether a trap is a normal condition or a fault condition. Green indicates a normal condition and red indicates a fault condition.



Figure 4-8: VistaLINK_® PRO System Fault Traps Tab



4.9. FAULT TRAPS – INPUT 1 & INPUT 2

The *Fault Traps* tabs enable the user to set video and audio traps and monitor trap statuses as illustrated in Figure 4-9. These parameters are applicable to both *Fault Traps – Input 1* and *Fault Traps – Input 2*. For the sake of brevity, only *Fault Traps – Input 1* will be discussed in the manual. To enable a particular trap, simply click the box located beside each trap so that a check-mark appears. When a check-mark is present, the trap is enabled. When a check-mark is not present, the trap is disabled.

The *Trap Status* section defines whether a trap is a normal condition or a fault condition. Green indicates a normal condition and red indicates a fault condition.

192 .	🛲 192.168.1.35, 7800R4X2-36 [2]: Configuration 🗾 🗹 🗹							
Refresh	Refresh 🦣 🕷 1.0 Apply 🂵 Status							
Genera	General 🕻 Module Control 🖞 GPI Control 🖞 Fault Control 🖞 Inputs Fault Control 🖞 Preset Control 🖞 Monitor 🎖 System Fault Traps 🥈 Fault Traps - Input 1 🌾 Fault Traps - Input 2 🔪							
Trap E	nable	Trap S	tatus					
	Video Loss		Video Loss					
	Video Black		Video Black					
	Video Freeze		Video Freeze					
	Audio Loss Group 1		Audio Loss Group 1					
	Audio Loss Group 2		Audio Loss Group 2					
	Audio Loss Group 3		Audio Loss Group 3					
	Audio Loss Group 4		Audio Loss Group 4					
	Audio Over Ch1/Ch2		Audio Over Ch1/Ch2					
	Audio Over Ch3/Ch4		Audio Over Ch3/Ch4					
	Audio Over Ch5/Ch6		Audio Over Ch5/Ch6					
	Audio Over Ch7/Ch8		Audio Over Ch7/Ch8					
	Audio Over Ch9/Ch10		Audio Over Ch9/Ch10					
	Audio Over Ch11/Ch12		Audio Over Ch11/Ch12					
	Audio Over Ch13/Ch14		Audio Over Ch13/Ch14					
	Audio Over Ch15/Ch16		Audio Over Ch15/Ch16					
	Audio Silence Ch1/Ch2		Audio Silence Ch1/Ch2					
	Audio Silence Ch3/Ch4		Audio Silence Ch3/Ch4					
	Audio Silence Ch5/Ch6		Audio Silence Ch5/Ch6					
	Audio Silence Ch7/Ch8		Audio Silence Ch7/Ch8					
	Audio Silence Ch9/Ch10		Audio Silence Ch9/Ch10					
	Audio Silence Ch11/Ch12		Audio Silence Ch11/Ch12					
	Audio Silence Ch13/Ch14		Audio Silence Ch13/Ch14					
	Audio Silence Ch15/Ch16		Audio Silence Ch15/Ch16					

Figure 4-9: VistaLINK_® PRO Fault Traps Tab



This page left intentionally blank