

7700/7800 MultiFrame Manual 7800IDA8-3G 3G/HD/SD-SDI Intelligent Distribution Amplifier (1x8)

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REVISION HISTORY

REVISION

DESCRIPTION

DATE

1.0 Released Version

Oct 09

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1. OVERVIEW

The 7800IDA8-3G Intelligent Distribution Amplifier is a high quality distribution amplifier of SD, HD and 3G signals.

The 77800IDA8-3G distribution amplifier can accommodate many of Evertz proprietary processing addon's to give extra features in addition to the high-quality distribution amplifier. This makes the 7800IDA8-3G an ideal choice as a cost-effective way to add these processing functions into the signal path. A list of currently supported options is provided below.

7800IDA8-3G Options:

- IntelliGain_® (+IG)
- IntelliTrak_® (+IT)
- Audio Down-Mix (+DMX)
- Audio Up-Mix (+UMX)
- IntelliGain_® with Audio Up-Mix (+UMX+IG)

The 7800IDA8-3G modules are VistaLINK_® Pro capable, offering remote monitoring, control and configuration via Simple Network Management Protocol (SNMP). The 7800IDA8-3G occupies one module slot within the 7700/7800 series 3RU frames, which will hold up to 15 modules or the 7701FR 1RU frame, which will hold up to three modules.



Figure 1-1: 7800IDA8-3G Block Diagram

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Figure 1-2: 7800IDA8-3G+IG Block Diagram







EVERTZ 7800IDA8-3G 3G/HD/SD-SDI Intelligent Distribution Amplifier (1x8) 7700/7800 MultiFrame Manual

0 3G/HD/SD-SDI Audio 3G/HD/SD-SDI 0 Parallel 0 Input Re-embedder Reclocker O Audio De-embed 4 0 8 Processed Group 1 3G/HD/SD-SDI Outputs 0 Audio De-embed Group 2 0 Audio De-embed Audio Proc/ Group 3 Shuffle/ 0 Mixer Audio De-embed 4 Group 4 O Upmix +UMX 6 IntelliGain +IG 1 🚫 2 🔆 VistaLINK HHHH Control Ç Interface anumeric Card Edge Status Display Card Edge Control

Figure 1-4: 7800IDA8-3G+UMX+IG Block Diagram







2. INSTALLATION

The 7800IDA8-3G comes with a companion rear plate that occupies one slot in the frame. For information on inserting the module into the frame see section 3 of the 7800FR chapter.





- **3G/HD/SD-SDI INPUT:** Input BNC connector for 10-bit serial digital video signals compatible with the 3Gb/s SMPTE 424M, 1.5Gb/sec SMPTE 292M, and 270Mb/s SMPTE 259M-C (525i/59.94 or 625i/50) standard.
- **3G/HD/SD-SDI OUTPUT:** There are eight DIN 1.0/2.3 connectors with reclocked serial component video outputs, compatible with the 3Gb/s SMPTE 424M, 1.5Gb/sec SMPTE 292M, and 270Mb/s SMPTE 259M-C (525i/59.94 or 625i/50) standard.

ETHERNET: The Ethernet port has no functionality at this time.



3. **SPECIFICATIONS**

3.1. SERIAL VIDEO INPUT

Standard:	Auto-detects standard 3Gb/s SMPTE 424M, 1.5Gb/sec SMPTE 292M, 270Mb/s
	SMPTE 259M-C (525i/59.94 or 625i/50)
Connector:	1 BNC per IEC 61169-8 Annex A
Input Equalization:	Automatic to 100m @ 3Gb/s, 200m @ 1.5Gb/s & 400m @ 270Mb/s (Belden 1694A cable)
Return Loss:	> 20dB up to 1.5Gb/s > 13dB for 1.5 - 3Gb/s

3.2. SERIAL VIDEO OUTPUTS

Standard:	Auto-detects standard 3Gb/s SMPTE 424M, 1.5Gb/sec SMPTE 292M, 270Mb/s SMPTE 259M-C (525i/59.94 or 625i/50)
Number of Outputs:	8
Connector:	DIN 1.0/2.3 connector
Signal Level:	800mV nominal
DC Offset:	0V ±0.5V
Rise and Fall Time:	100ps nominal for HD-SDI
	600ps nominal for SD-SDI
Overshoot:	< 10% of amplitude
Return Loss:	> 20dB up to 1.5Gb/s
	> 10dB for 1.5 - 3Gb/s
Alignment Jitter:	< 0.20 UI for SMPTE 259M and 292M
-	< 0.3 UI for SMPTE 424M

3.3. ELECTRICAL

Voltage:	+ 12VDC
Power:	9 Watts
EMI/RFI:	Complies with FCC regulations for class A devices
	Complies with EU EMC directive

3.4. PHYSICAL

Number of slots: 1



4. STATUS LEDS

The 7800IDA8-3G has eight LED Status indicators on the front card edge to show operational status of the card at a glance. Figure 7-1 shows the location of the LEDs.

Two large Module Status LEDs on the front of the board indicate the general health of the module:

- **LOCAL FAULT:** This Red LED indicates poor module health and will be On during the absence of a valid input signal or if a local input power fault exists (i.e.: a blown fuse). The LOCAL FAULT indication can also be reported to the frame through the FRAME STATUS jumper.
- **MODULE OK:** This Green LED indicates good module health. It will be On when a valid input signal is present, and board power is good.

There are 18 small LEDs that indicate additional status of the module. Figure 4-1 identifies the function of some of the status LEDs present on the board.



Figure 4-1: Status LEDs

5. CARD EDGE MODULE CONTROL

5.1. CARD-EDGE CONTROL

The 7800IDA8-3G is equipped with a push-button shaft encoder and a four character dot matrix display to control various functions on the card. The push-button shaft encoder is used to navigate through a menu system to set and monitor various parameters for the module. When not in the menu system the four character dot matrix display rotates through the module name, firmware version and IP address.

5.1.1. Navigating the Card-Edge

You can use the push-button shaft encoder to move up and down the list of available parameters to adjust. To adjust any parameter, use the shaft encoder to move up or down to the desired parameter and then press the shaft encoder in. If the parameter is a numerical value, the number will increase if you rotate the shaft encoder clockwise and decrease if you rotate the shaft encoder counter-clockwise. If the parameter contains a list of options, you can cycle through the list by rotating the shaft encoder in either direction. The parameter values are changed as you cycle through the list.

When you have stopped at the desired value, depress the shaft encoder. This will return you to the parameter, select the menu item that you are setting (the display shows the parameter name you were setting). To change another parameter, rotate the shaft encoder to select other parameters. If neither the toggle switch nor pushbutton is operated for several seconds the card edge control will exit the menu system and return to an idle state.

Throughout the descriptions of the Menu items, default values are shown with bolded text.

5.2. CARD-EDGE MENU STRUCTURE

The following is a brief description of the top level of the menu tree that appears when you enter the ON screen menu. Selecting one of these items will take you down into the next menu level to set the value of that parameter.

DPSL	Sets the orientation of the four-digit LED display
PRST	Allows the saving or recalling of presets
VID	Displays or sets the operating video standard
QUIT	Exits the menu

5.3. SETTING THE DISPLAY ORIENTATION

The **DSPL** parameter controls the display orientation of the four digit LED display.

HORZ	The display will be shown horizontally (ideal when installed in a 1RU or standalone frame).
VERT	The display will be shown vertically (ideal when installed in a 3RU frame).



5.4. PRESET PARAMETERS

The **PRST** menu option enters into a selection menu to either recall or save a preset.

SAVE	Menu option to save current module state to a selected preset.
LOAD	Menu option to load to the module a selected preset.

5.4.1. Saving Presets

The **SAVE** parameter will save the current module settings to a selected preset number. The user can save the settings by assigning a preset number (ie. Preset 02), which can later be recalled using the *load* parameter.

01-10 Selects the preset to save the current module settings to.	
---	--

5.4.2. Loading Presets

The *LOAD* parameter will load the settings saved in the preset to the current module settings. The user can recall and load a saved preset by selecting the desired preset number (ie. Preset 02).

FACT	Loads the factory default settings into the module.
01-10	Selects the preset from which to load settings from.

5.5. VIDEO PARAMETERS

The *VID* menu option enters into a selection menu to view the current video standard or set a forced video standard.

SELV	Menu option to select a forced video standard
DETV	Menu option to view the current detected video standard

5.5.1. Forcing a Video Standard

The **SELV** parameter will force the module into operating with a specific video standard. It is recommended to leave this setting in AUTO mode.

AUTO
270M
1.5G
3G A
3G B

5.5.2. Viewing the Input Video Standard

The **DETV** parameter will display the currently detected input video standard. It will display one of the standard listed in section 5.5.1 if present, otherwise it will display NONE.



6. VISTALINK® MODULE CONTROL

This section describes the VistaLINK $_{\odot}$ control and monitoring available on the 7800IDA8-3G. For illustration purposes, the +UMX+IG option is shown. Special mention will be noted in the title if that section applies only to specific option versions of the module (i.e. +UMX only).

6.1. GENERAL

The *General* tab shows miscellaneous parameters of the module. These parameters are listed below:

Card Name:	Indicates the product model number of the card (including installed options).
Firmware Version:	Indicates the currently installed firmware version.
Creation Date:	Indicates the build date of the firmware version.
Board Name:	Indicates the product hardware version of the module.
Board Revision:	Indicates the hardware version of the module.
Board Serial Number:	Indicates the physical serial number of the module.

📟 192.168.77.2, 7800IDA8-3G	+UMX+IG [6]: Configuration			r ^k ⊠ ⊠
Refresh 🙋 🙋 1.0 Apply 🌉	₩ /_			
Preset Control \ Faults \ Inte Upmix Control \ IntelliGain Co General \ Video Control \ A	lliGain Fault Traps \ onfiguration \Program 1 \Program 1 udio Control \Mixer Control Ch 1-4	2 \ Program 3 \ Program 4 4 \ Mixer Control Ch 5-8	Program 5 Program 6 Mixer Control Ch 9-12	Program 7 Program 8 Mixer Control Ch 13-16
Card Status]		
Card Name	7800IDA8-3G+UMX+IG			
Firmware Version	1.01 build 584			
Creation Date	Wed Sep 30 10:35:22 2009			
Board Name	7700IDA8			
Board Revision	2			
Board Serial Number	1821170494			

Figure 6-1: General Tab



6.2. VIDEO CONTROL

The *Video Control* tab is used to force a video standard and read back the currently detected video standard on the input.

6.2.1. Selecting the Video Standard

The Select Video Standard drop down menu provides the following options:

- Auto
- 270M
- 1.5G
- 3G A
- 3G B

6.2.2. Viewing the Detected Video Standard

The *Detected Video Standard* field displays the currently detected input video standard.

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Refresh 🧞 🗞 1.0 Apply 🌉 🎉
Preset Control \ Faults \ IntelliGain Fault Traps \ Upmix Control \ IntelliGain Configuration \ Program 1 \ Program 2 \ Program 3 \ Program 4 \ Program 5 \ Program 6 \ Program 7 \ Program 8 \ General \ Video Control \ Audio Control \ Mixer Control Ch 1-4 \ Mixer Control Ch 5-8 \ Mixer Control Ch 9-12 \ Mixer Control Ch 13-16 \ Video Settings Select Video Standard Auto \ Detected Video Standard None

Figure 6-2: Video Control Tab



6.3. AUDIO CONTROL (+UMX, +UMX+IG, +IG AND +DMX ONLY)

The Audio Control tab is used to set the C-bit state in the output video's embedded audio.

6.3.1. C-bit Control

The *C-bit Control* drop down menu provides the following two options:

- **Preserve**, which will pass through the state of the bit.
- **Replace**, which will set the state of the bit to Active.

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Refresh 🧞 췭 1.0 Apply 🌉	¥/_			
Preset Control \ Faults \ Intellio	Gain Fault Traps	Program 2 Program 4	Program 5 Program 6	Program 7 Program 9
General Video Control Aud	dio Control Mixer Control Ch 1-4	Mixer Control Ch 5-8	Mixer Control Ch 9-12	Mixer Control Ch 13-16
Audio Settings				
C-bit Control P	reserve 🔻			

Figure 6-3: Audio Control Tab



6.4. MIXER CONTROL (+UMX, +UMX+IG, +IG AND +DMX VERSIONS ONLY)

The Mixer Control tabs control the output audio. There are 16 individual channel mixers to control. These Output Channel mixers perform audio inversion, audio gain adjustment and audio channel swapping for each of the 16 output audio channels. Using the X and Y inputs of each Output Channel Mixer an additional level of mono-mixing is also available for each channel of output audio.

For the sake of brevity, only the *Mixer Control Ch1-4* control tab will be discussed in this manual. Control tabs for *Mixer Control Ch5-8*, *Mixer Control Ch9-12* and *Mixer Control Ch13-16* are identical in their operation. Furthermore, the controls for Channel 1 will be described in detail, as the controls for Channel 2, Channel 3 and Channel 4 operate in an identical fashion.

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Refresh 🧞 🗞 1.0 Apply 🌉 🏨			
Preset Control \ Faults \ IntelliGain Fault Traps \ Upmix Control \ IntelliGain Configuration \ Program 1 \ Program 2 \ Pri General \ Video Control \ Audio Control \ Mixer Control Ch 1-4 \ N	ogram 3 \Program 4 \Program 5 \Program 6 \Program 7 \Program 8 \ Mixer Control Ch 5-8 \Mixer Control Ch 9-12 \Mixer Control Ch 13-16 \		
Channel 1	Channel 2		
Source Select - X Demux Ch 1	Source Select - X Demux Ch 2		
Source Select - Y Mute -	Source Select - Y Mute		
Gain Adjust - X 0.0 dB	Gain Adjust - X 0.0 dB		
Gain Adjust - Y 0.0 dB	Gain Adjust - Y 0.0 dB		
Invert Enable - X Normal O Invert 	Invert Enable - X Normal O Invert 		
Invert Enable - Y Normal O Invert 	Invert Enable - Y Normal O Invert 		
Channel 3	Channel 4		
Source Select - X Demux Ch 3	Source Select - X Demux Ch 4		
Source Select - Y Mute -	Source Select - Y Mute		
Gain Adjust - X 0.0 dB	Gain Adjust - X 0.0 dB		
Gain Adjust - Y 0.0 dB	Gain Adjust - Y 0.0 dB		
Invert Enable - X Normal O Invert 	Invert Enable - X Normal O Invert 		
Invert Enable - Y Normal O Invert 	Invert Enable - Y Normal O Invert 		

Figure 6-4: Mixer Control 1-4 Tab

6.4.1. Source X/Y

The **Source X/Y** control enables the user to route one of the 16 internally processed input audio channels to the X/Y input of the Channel 1 mixer. The user can select the channel source by selecting the desired channel from the *Source X/Y* drop down menu as shown in Figure 6-5.



Demux Ch 1	•
Demux Ch 1	•
Demux Ch 2	
Demux Ch 3	
Demux Ch 4	
Demux Ch 5	
Demux Ch 6	
Demux Ch 7	
Demux Ch 8	Ŧ

Figure 6-5: Source Select Drop Down Menu

The full set of available channels is listed below.

Source X/Y Input	Demux Ch 1	
	Demux Ch 2	
	Demux Ch 3	
	Demux Ch 4	
	Demux Ch 5	
	Demux Ch 6	
	Demux Ch 7	
	Demux Ch 8	
	Demux Ch 9	
	Demux Ch 10	
	Demux Ch 11	
	Demux Ch 12	A.II.
	Demux Ch 13	All
	Demux Ch 14	
	Demux Ch 15	
	Demux Ch 16	
	Demux Mono Mix Ch 1 and 2	
	Demux Mono Mix Ch 3 and 4	
	Demux Mono Mix Ch 5 and 6	
	Demux Mono Mix Ch 7 and 8	
	Demux Mono Mix Ch 9 and 10	
	Demux Mono Mix Ch 11 and 12	
	Demux Mono Mix Ch 13 and 14	
	Demux Mono Mix Ch 15 and 16	
	IntelliGain Ch 1	
	IntelliGain Ch 2	
	IntelliGain Ch 3	
	IntelliGain Ch 4	+IG
	IntelliGain Ch 5	+UMX+IG
	IntelliGain Ch 6	
	IntelliGain Ch 7	
	IntelliGain Ch 8	
	Down Mix Ch L	
	Down Mix Ch R	+DWX
	Up Mix Ch L	
	Up Mix Ch R	
	Up Mix Ch C	
	Up Mix Ch LFE	+UMX
	Up Mix Ch Ls	+UMX+IG
	Up Mix Ch Rs	
	Up Mix Stereo Pass L	
	Up Mix Stereo Pass R	
	Mute	All



6.4.2. Gain Adjust X

The *Gain Adjust X/Y* control enables the user to set the value of the gain for the selected source. The user can adjust the gain of the selected source by moving the associate slider control left to decrease the value or right to increase the value. The value range for the gain adjustments is -24 dB to +24 dB. Gain is incremented or decremented in 0.1 dB steps.

6.4.3. Invert Enable X

The *Invert Enable X* enables the user to invert the phase or pass the selected audio channel. The *Invert Enable X/Y* drop down menu appears as follows:

Normal	-
Normal	
Invert	

Normal	Passes the audio channel through with no processing.
Invert	Inverts the phase of the audio channel.



6.5. PRESET CONTROL

The *Preset Control* tab allows the saving and recalling of presets.

6.5.1. Saving Presets

The **Save Preset** drop down menu will save the current module settings to a selected preset number. The user can save the settings by assigning a preset number (ie. Preset 02), which can later be recalled using the *load* parameter.

01-10	Selects the preset to save the current module settings to.
CANCEL	Cancels the selection.

6.5.2. Loading Presets

The *Load Preset* drop down menu will load the settings saved in the preset to the current module settings. The user can recall and load a saved preset by selecting the desired preset number (ie. Preset 02).

FACT	Loads the factory default settings into the module.		
01-10	Selects the preset from which to load settings from.		
Cancel	Cancels the selection.		

🎟 192.168.77.2, 7800IDA8-3G+UMX+IG [6]: Configuration 📈 🗹 🗵
Refresh 🧞 🗞 1.0 Apply 👺 🖳
Preset Control \ Faults \ IntelliGain Fault Traps \ Upmix Control \ IntelliGain Configuration \ Program 1 \ Program 2 \ Program 3 \ Program 4 \ Program 5 \ Program 6 \ Program 7 \ Program 8 \ General \ Video Control \ Audio Control \ Mixer Control Ch 1-4 \ Mixer Control Ch 5-8 \ Mixer Control Ch 9-12 \ Mixer Control Ch 13-16 \
Preset Control
Save Preset Cancel
Load Preset Cancel

Figure 6-6: Preset Control Tab



6.6. DOWN MIX CONTROL (+DMX ONLY)

The *Down Mix* Control tab is used to perform a 5.1 PCM to stereo (LtRt, LoRo or custom) down mix.

🖼 192.168.77.2, 7800IDA8-30	3+DMX [2]: Configuration		sk ⊠₁ ⊠			
Refresh 🧞 🗞 1.0 Apply 🖳						
Mixer Control Ch 13-16 Preset Control Faults General Video Control Audio Control Downmix Control Mixer Control Ch 1-4 Mixer Control Ch 5-8 Mixer Control Ch 9-12						
Source Select		Type Control				
L Source	Channel 1 👻	Output Scaling Mode	Output Gain 👻			
R Source	Channel 2 👻	Output Gain	0.0 dB			
C Source	Channel 3 👻	LFE Mixing	LFE Gain 👻			
LFE Source	Channel 4 👻	LFE Gain	0.0 dB			
Ls Source	Channel 5 🔹	Surround Phase	🔿 0 degree) 90 degree			
Rs Source	Channel 6 🔹	Down Mix Type	Custom 👻			
Custom Coefficient]				
Lr_lev 📼	0.000	ı				
C_lev 📼	0.000					
Ls_lev_L 📼	0.000					
Rs_lev_L 📼	0.000					
Ls_lev_R 💳	0.000					
Rs_lev_R 📼	0.000					

Figure 6-7: Downmix Control Tab

6.6.1. Setting the Source Select Controls

The **Source Select** section enables the user to assign a particular channel to be used as a particular audio source in the down mix. There are five sources of audio that feeds the down-mixing process: L Source, R Source, C Source, LFE Source, Ls Source, and Rs Source. Each of these sources can be assigned a specific channel of audio using the appropriate drop down menu. For sake of brevity, only the L Source selection process is shown.



To assign a channel to *L* Source, navigate to the source and select a channel from the adjacent drop down menu. The following sources of audio are available:

Channel 1	Select Channel 1 for the L Source
Channel 2	Select Channel 2 for the L Source
Channel 3	Select Channel 3 for the L Source
Channel 4	Select Channel 4 for the L Source
Channel 5	Select Channel 5 for the L Source
Channel 6	Select Channel 6 for the L Source
Channel 7	Select Channel 7 for the L Source
Channel 8	Select Channel 8 for the L Source
Channel 9	Select Channel 9 for the L Source
Channel 10	Select Channel 10 for the L Source
Channel 11	Select Channel 11 for the L Source
Channel 12	Select Channel 12 for the L Source
Channel 13	Select Channel 13 for the L Source
Channel 14	Select Channel 14 for the L Source
Channel 15	Select Channel 15 for the L Source
Channel 16	Select Channel 16 for the L Source

6.6.2. Setting the Down Mix Type Controls

6.6.2.1. Setting the Output Scaling Mode

The **Output Scaling** Mode controls whether the down mix matrix is normalized or not. Select Overflow Scaling from the drop down menu to normalize the matrix coefficients. Normalization of matrix coefficients will avoid any possibility of overflow, but it tends to lower the loudness level when compared against the original 5.1 input. If no normalization is applied, the stereo down-mix usually sounds at similar levels as the 5.1 audio input, but clipping may occur when the input sound level is close to 0dB FS. The *Output Scaling Mode* drop down provides the following options:

No Scaling	-
No Scaling	
Overflow Scaling	

No Scaling	If no normalization is applied, the stereo down-mix usually sounds at the similar levels as the 5.1 audio input, but clipping may occur when input sound level is close to 0dB FS.		
Overflow Scaling	Select Overflow Scaling to normalize the matrix coefficients. Normalization of matrix coefficients will avoid any possibility of overflow, but it tends to lower the loudness level when compared against the original 5.1 input.		

6.6.2.2. Setting the Output Gain

The **Output Gain** control enables the user to configure the output gain. To adjust the output gain control, drag the slider right to increase the gain value or drag the slider left to decrease the gain control. The output gain ranges from -20 dB to +20 dB in 0.1 dB increments.



6.6.2.3. Setting the LFE Mixing Control

The *LFE Mixing* control enables the user to control whether the LFE channel is included or not in the audio down-mixing. Note that the LFE Gain control is in effect only when LFE Gain is selected. The LFE Mixing Control drop down menu provides the following options:

No Mixing	-
No Mixing	
LFE Gain	

No Mixing	The LFE channel will not be included in the down-mix.
LFE Gain	The LFE channel will be included in the down-mix with gain for the LFE channel defined by the LFE Gain control.

6.6.2.4. Setting the Surround Phase Control

The **Surround Phase** control manages whether or not a 90 degree phase shift is applied to the surround channels before being passed to down-mix matrix. Select 0 degree if no 90-degree phase shift is needed. It is required that surround channels are 90-degree phase shifted for Dolby Prologic I decoding, but if surround channels in the 5.1 audio input are already 90-degree phase shifted, then the user should select 0 degree to avoid double 90-degree phase shifting. Normally, the 90 degrees phase shift is applied. The *Surround Phase* radio button menu appears as follows:



6.6.2.5. Setting the Down Mix Type Control

The **Down Mix Type** control enables the user to set the type of audio down-mixing that will be performed. The user may select from LoRo (Left Only and Right Only), LtRt (Left Total and Right Total) Prologic I and LtRt (Left Total and Right Total) Prologic II OR may choose to perform a Custom down-mix.

Custom	•
Lo/Ro	
Lt/Rt (Pro Logic I)	
Lt/Rt (Pro Logic II)	
Custom	



LoRo	When set to <i>LoRo</i> , the down-mixer will generate Left Only and Right Only (LoRo) stereo audio.
LtRt (Prologic I)	When set to <i>LtRt (Prologic I)</i> , the down-mixer will generate Left Total and Right Total (LtRt) Prologic I compatible stereo audio.
LtRt (Prologic II)When set to LtRt (Prologic II), the down-mixer will generate Left To Right Total (LtRt) Prologic II compatible stereo audio.	
Custom	When set to <i>custom</i> , the down-mixer will generate Left and Right channels of audio using the custom down-mixing equations.

6.6.2.5.1. Custom Down Mix Type Control Settings

When the **Down Mix Type** is set to Custom the following equation will be used to generate the downmixed audio.

 $L = (LR_lev * L + C_lev * C + Ls_lev_L * Ls\{0^{\circ}/90^{\circ}\} + Rs_lev_L * Rs\{0^{\circ}/90^{\circ}\} + Ife_gain * LFE) * gain / norm R = (LR_lev * R + C_lev * C + Ls_lev_R * Ls\{0^{\circ}/90^{\circ}\} + Rs_lev_R * Rs\{0^{\circ}/90^{\circ}\} + Ife_gain * LFE) * gain / norm R = (LR_lev * R + C_lev * C + Ls_lev_R * Ls\{0^{\circ}/90^{\circ}\} + Rs_lev_R * Rs\{0^{\circ}/90^{\circ}\} + Rs_lev_R * Rs_lev_R *$

Where **Ife_gain** is controlled by LFE Mixing and LFE Gain, **gain** is controlled by Output Gain, **norm** is controlled by Output Scaling Mode and where **LR_lev**, **C_lev**, **Ls_lev_L**, **Rs_lev_L**, **Ls_lev_R** and **Rs_lev_R** are custom specified user coefficients. These custom down-mixing coefficients are controlled using the appropriate slider bars in the *Down Mix Type* control section as shown below.



LR_lev:	Ranges from 1.000 to -1.000 in increments of .001 increments.
C_lev:	Ranges from 1.000 to -1.000 in increments of .001 increments.
Ls_lev_L:	Ranges from 1.000 to -1.000 in increments of .001 increments.
Rs_lev_L:	Ranges from 1.000 to -1.000 in increments of .001 increments.
Ls_lev_R:	Ranges from 1.000 to -1.000 in increments of .001 increments.
Rs lev R:	Ranges from 1.000 to -1.000 in increments of .001 increments.



6.7. UPMIX CONTROL (+UMX AND +IG+UMX ONLY)

The *Upmix* Control tab is used to perform a stereo to 5.1 PCM audio up mix. The module has the capability to detect between stereo and 5.1 incoming content to ensure there is a constant 5.1 output.

📟 192.168.77.2, 7800IDA8-3G+UM)	X+IG [6]: Configuration			r 🖉 🗵
Refresh 🧞 🗞 1.0 Apply 比				
Preset Control \ Faults \ IntelliGain Fault Traps \ Upmix Control \ IntelliGain Configuration \ Program 1 \ Program 2 \ Program 3 \ Program 4 \ Program 5 \ Program 6 \ Program 7 \ Program 8 \ General \ Video Control \ Audio Control \ Mixer Control Ch 1-4 \ Mixer Control Ch 5-8 \ Mixer Control Ch 9-12 \ Mixer Control Ch 13-16 \				
Upmix Control			Audio Source Select	
Upmix Mode Au	uto Up Mix 👻		5.1/2.0 L	Demux Ch 2 👻
Centre Width 📼		3	5.1/2.0 R	Demux Ch 4 👻
Surround Depth 💳		3	5.1 C	Demux Ch 6 👻
Surround Delay		4.000 ms	5.1 LFE	Demux Ch 8 💌
LFE Gain Control	lute 👻		5.1 Ls	Demux Ch 10 👻
Sound Direction Detect Rate 📼		4	5.1 Rs	Demux Ch 12 👻
Soft Switch Duration 📃		40 ms	Stereo L	Demux Ch 14 👻
Stereo Or 5.1	Stereo		Stereo R	Demux Ch 16 👻
Upmix Status	Up Mix		Upmix Source	5.1/2.0 L and R 🔹

Figure 6-8: Upmix Control Tab

6.7.1. Setting the Upmix Mode

The Upmix Mode control sets the operating mode of the upmixing engine. It has the following options:

Auto Up Mix	-
Auto Up Mix	
Force Up Mix	
Disable Up Mix	

Auto Up Mix	When set to <i>Auto Up Mix</i> , the upmix processor will pass-through 5.1 content if present otherwise it will upmix the audio pair chosen from the <i>Upmix Source</i> option.
Force Up Mix	When set to <i>Force Up Mix</i> , it will upmix the audio pair chosen from the <i>Upmix Source</i> option and use the upmix channels on the output.
Disable Up Mix	When set to Disable Up Mix, the upmix processor will pass-through 5.1 content.

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6.7.2. Setting the Centre Width

The **Centre Width** controls the width of front centre sound in the perceived sound image when listening to up-mixed audio. It mainly affects the perception of speech and dialog. Narrower centre width will cause the front centre sound primarily coming from the centre speaker. Wider centre width causes the front centre sound coming from the centre, left and right speakers. To adjust the centre width of the up mix control, drag the slider right to increase the value of the centre width or drag the slider left to decrease the value of the centre width. The value range is 0 to 7 in increments of 1. The default value is 3.

6.7.3. Setting the Surround Depth

The *Surround Depth* controls the depth of surround sound in the perceived sound image when listening to up-mixed audio. More sound will be directed to the front speakers (centre, left and right speakers) if a shallower surround depth is selected. If a deeper surround depth is selected, more sound will be shifted to the surround speakers. To adjust the depth of the surround, drag the slider right to increase the depth or drag it left to decrease the depth. The value range is 0 to 7 in increments of 1. The default value is 3.

6.7.4. Setting the Up Mix Surround Delay

This **Up Mix Surround Delay** controls the amount of time that the surround sound will be delayed against other channels. Proper amount of surround delay will provide a good perception of surround sound. To adjust the delay of the up mix surround, drag the slider to the right to increase the delay or drag it to the left to decrease the delay in milliseconds.

The value range is 4 ms to 20ms in increments of .021 ms. The default value is 10 ms.

6.7.5. Setting the LFE Gain

The *LFE Gain* controls the LFE channel gain after audio is up-mixed. Use the drop down menu to select the appropriate source.

Mute	Mute the LFE channel in the up-mixed audio.
+ 0 dB	Apply 0 dB gain to the generated LFE channel.
-1.5 dB	Apply –1.5 dB gain to the generated LFE channel.
-3.0 dB	Apply –3.0 dB gain to the generated LFE channel.
-4.5 dB	Apply –4.5 dB gain to the generated LFE channel.
-6.0 dB	Apply –6.0 dB gain to the generated LFE channel.
-7.5 dB	Apply –7.5 dB gain to the generated LFE channel.
-9.0 dB	Apply –9.0 dB gain to the generated LFE channel.



6.7.6. Setting the Sound Direction Detect Rate

The **Sound Direction Detect Rate** controls the detection rate of sound direction. The up-mixer constantly calculates the sound image that would be perceived from the stereo audio input. If the sound direction shifts in the sound image, the up-mixer changes the output sound direction accordingly by switching the amount of sound going to different speakers. If a faster detection rate is selected, the sound direction switching may sound more dramatic, but may also be felt as unnatural. On the other hand, slower detection rate would sound dull and uninteresting. To adjust the detection rate of the sound direction, drag the slider to the right to increase the rate or drag it to the left to decrease the rate.

The value range is 0 to 7 in increments of 1. The default is level 4.

6.7.7. Setting the Soft Switch Duration

The Soft Switch Duration controls the muting interval between a transition from incoming 5.1 to upmixed 5.1 and vice versa. The SoftSwitchTM does a cross fade mute to reduce audio switching artifacts ('popping'). A longer duration will give a greater chance of having no artifacts, but cause a more noticeable mute in the transition.

The value range is 5 ms to 200 ms in increments of 1 ms. The default is 20 ms.

6.7.8. Audio Source Select

The *Audio Source Select* section enables the user to assign a specific channel to be used as a particular audio source for both the 5.1 pass-through or stereo to be put through the upmix. In addition, it controls the audio channels to be used for detection of 5.1 content.

6.7.8.1. Audio Channel Source Selections

There are six sources of audio that comprise a 5.1 audio pass-through: 5.1/2.0L, 5.1/2.0R, 5.1 C, 5.1 LFE, 5.1 Ls, and 5.1 Rs. There are two channels which can be assigned as the stereo pair: Stereo L and Stereo R. Each of these sources can be assigned a specific channel of audio using the appropriate drop down menu. For sake of brevity, only the *5.1/2.0L Source* selection process is shown.

To assign a channel to 5.1/2.0L Source, navigate to the source and select a channel from the adjacent drop down menu. The following sources of audio are available:

Demux Ch 1
Demux Ch 2
Demux Ch 3
Demux Ch 4
Demux Ch 5
Demux Ch 6
Demux Ch 7
Demux Ch 8
Demux Ch 9
Demux Ch 10
Demux Ch 11
Demux Ch 12
Demux Ch 13
Demux Ch 14



Demux Ch 15
Demux Ch 16
Demux Mono Ch 1 and 2
Demux Mono Ch 3 and 4
Demux Mono Ch 5 and 6
Demux Mono Ch 7 and 8
Demux Mono Ch 9 and 10
Demux Mono Ch 11 and 12
Demux Mono Ch 13 and 14
Demux Mono Ch 15 and 16

6.7.8.2. Upmix Source Select

The Upmix Source controls the mode of operation for detecting 5.1 audio presence.



5.1/2.0 L and R	When set to <i>5.1/2.0 L and R</i> , if all of the 5.1 C, Lfe, Ls and Rs channels are mute, then it will use the 5.1/2.0 L and R channels for the upmix.
Stereo L and R	When set to Stereo L and R, if all of the 5.1 C, Lfe, Ls and Rs channels are mute, then it will use the Stereo L and R channels for the upmix.

6.8. INTELLIGAIN® CONFIGURATION (+IG AND +UMX+IG ONLY)

Please refer to the IntelliGain® User Manual (version 1v1) for instructions on configuring IntelliGain®.

6.9. INTELLITRAK® CONFIGURATION (+IT ONLY)

Please refer to the IntelliTrak® User Manual for instructions on configuring IntelliTrak®.



7. JUMPERS AND USER ADJUSTMENTS



Figure 7-1: LED and Jumper Locations

7.1. SELECTING WHETHER LOCAL FAULTS WILL BE MONITORED BY THE GLOBAL FRAME STATUS

The FRAME STATUS jumper J3, located at the front of the module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700/7800 series frame's global status bus.

FRAME STATUS: To monitor faults on this module with the frame status indicators (on the power supply's FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper in the On position.

When this jumper is installed in the Off position local faults on this module will not be monitored.

7.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE: The UPGRADE jumper J5 located at the front of the module near the card ejector, is used when firmware upgrades are being done to the module. For normal operation it should be installed in the *RUN* position. See the *Upgrading Firmware* section in the front of the binder for more information.

To upgrade the firmware in the module unit pull it out of the frame. Move Jumper J16 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto header J6. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* section in the front of the binder. Once the upgrade is complete, remove the module from the frame, move J5 to the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

8. VISTALINK® REMOTE MONITORING/CONTROL

8.1. WHAT IS *VISTA*LINK_®?

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

There are 3 components of SNMP:

- 1. An SNMP manager also known as a Network Management System (NMS) is a computer running special software that communicates with the devices in the network. Evertz *Vista*LINK_® Pro Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *Vista*LINK_® enabled products.
- 2. Managed devices, each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz VistaLINK_® enabled 7700/7800 series modules reside in the 3RU 7800FR MultiFrame and communicate with the manager via the 7700FC VistaLINK_® frame controller module, which serves as the Agent.
- 3. A virtual database known as the Management Information Base (MIB) lists all the variables being monitored, which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

For more information on connecting and configuring the *Vista*LINK® network, see the 7700FC Frame Controller chapter.

8.2. *VISTA*LINK® MONITORED PARAMETERS

The following parameters can be remotely monitored through the VistaLINK® interface.

Parameter	Description
Card Name	Indicates the product model number of the card (including installed options).
Firmware Version	Indicates the currently installed firmware version.
Creation Date	Indicates the build date of the firmware version.
Board Name	Indicates the product hardware version of the module.
Board Revision	Indicates the hardware version of the module.
Board Serial Number	Indicates the physical serial number of the module.
Detected Video Standard	Indicates the detected video standard.

Table 8-1: VistaLINK® Monitored Parameters



8.3. VISTALINK® CONTROLLED PARAMETERS

Parameter	Description
Video Standard	Sets the current video standard that you wish to lock to.
Save Preset	Saves the current module settings to the selected preset number.
Load Preset	Loads the settings contained in selected preset number to the module.

Table 8-2: VistaLINK® Controlled Parameters

8.4. *VISTA*LINK® TRAPS

Тгар	Description
Video Present	Triggers when there is no video lock.

Table 8-3: VistaLINK® Traps