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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Sep 2008
1.1	Expanded manual to cover all variations of the 7812 series products (UDX, XC, UC and HDC versions)	Jan 2009
1.2	Updated Ethernet section	Jan 2009
1.3	Extensive feature additions	Mar 2012
1.4	Updated Metadata Pinouts	Jan 2013
1.4.1	Updated specs and cable type in section 3.1	Mar 2015
1.4.2	Updated diagram in section 1	Dec 2016

1. OVERVIEW

The 7812 series of products are Broadcast Quality Up/Down/Cross Converters that convert between common SD/SMPTE 259M and HD/SMPTE 292M video signals. The 7812UDX-HD and 7812UDX-AES8-HD have full up/down/cross conversion capabilities whereas the 7812UC-HD/7812UC-AES8-HD has up-conversion capabilities and the 7812HDC-HD/7812HDC-AES8-HD have down-conversion capabilities. The following table outlines the basic functionality provided by each module. Note that with the –3G versions of these cards, convert between SD/SMPTE 259M, HD/SMPTE 292M and single link/dual link 1920x1080p59.94/50 video signals that are supported*.

Module	SD to HD	HD to SD	HD To HD (DF)	SD to SD (SF)	HD to HD (SF)	SD to 3G	HD to 3G	3G to SD	3G to HD	3G To 3G
7812UDX-HD 7812UDX-AES8-HD	•	•	•	•	•	OB	OB	OB	OB	OB
7812UDX-3G 7812UDX-AES8-3G	•	•	•	•	•	•	•	•	•	•
7812UC-HD 7812UC-AES8-HD	•	OB	OB	•	BY	OB	OB	OB	OB	OB
7812UC-3G 7812UC-AES8-3G	•	OB	OB	•	BY	•	•	OB	OB	BY
7812XC-HD 7812XC-AES8-HD	OB	OB	•	OB	•	OB	OB	OB	OB	OB
7812XC-3G 7812XC-AES8-3G	OB	OB	•	OB	•	OB	OB	OB	OB	BY
7812HDC 7812HDC-AES8-HD	OB	•	OB	•	BY	OB	OB	OB	OB	OB
7812HDC-3G 7812HDC-AES8-3G	OB	•	OB	•	BY	OB	OB	•	•	BY

• = Normal Operation
OB = Outputs Black
BY = Input to output bypass
SF = Same format (1080i to 1080i)
DF = Difference format (720p to 1080i or 1080i to 720p)

Table 1-1: Control Interface Differences between 7812 Converters Depending on Product Variation/Ordering Options

This manual will serve to cover the 7812UDX, the 7812UC, the 7812XC and the 7812HDC base products as well as the –AES8, –3G, and -F versions of these cards.

* References to 3G, SMPTE 424M/SMPTE 425 and single link 1080p59.94/50 refer 10 bit 4:2:2 1080p59.94/50 signals (Level A or B in SMPTE 425M) References to dual link 1080p59.94/50 refer to SMPTE 372M mapping for 1080p59.94/50 4:2:2 10 bit data format only. When set to output 372M dual link, PGM OUT1/2 are assigned for LINK A and PGM OUT3 is assigned to LINK B output. Initial release will not support +CF option for 1080p59.94/50 output signals

All 7812 series modules include integrated frame synchronization capabilities and have an external Genlock input for adjusting output video timing. In addition, the cards support FRAME REFERENCE inputs as supported on the 7700FR-G and the 7800FR. Upon loss of an input signal, the integrated frame synchronizers may be set to FREEZE on the last frame of good video or to output BLACK video or BLUE video. The 7812 series of converters incorporate a new generation of signal processing technology. Advanced Mosquito Noise Reduction (MNR) and Block Artifact Reduction (BAR) are supported in addition to per pixel motion adaptive spatial-temporal noise reduction. The 7812 series also incorporates new de-interlacing technology that features:

- Pixel adaptive motion processing that maintains maximum vertical resolution
- Advanced directional edge interpolation that minimizes “jaggies” typically seen when converting interlaced video to progressive video
- Advanced film mode processing that delivers mathematically lossless de-interlacing of video content with embedded 3:2 and 2:2 pull-down

The 7812 series supports broadcast quality scaling resources and provides standard as well as completely user defined aspect ratio conversions. In addition, these modules support AFD based steering of aspect ratio conversions and can re-stamp AFD signals on the output video. AFD driven transitions between particular ARC modes are frame accurate and glitch free. These modules support automatic colour space conversion (ITU rec. 709 ↔ ITU rec. 601) as appropriate for the particular conversion being performed. With the +F option, signals supplied to the second program input (PGM IN B) can be keyed into the un-used portions of the output image raster (i.e. side panels typically generated when converting 4:3 to 16:9). When operating in this mode, the FILL input signals are automatically frame synchronized so that pre-timing of FILL input signals are not required. Static and animated image side panels can be stored directly on the card and keyed with the +CF2G option. An internal compact flash is added and images can be up-loaded using the card’s Ethernet port. Up to 7 seconds of side panel animation can be supported. Evertz’s Overture Media Designer and Overture Media Manager software package is used to generate side panel animations and load content into 7812 series modules.

A wide range of YCbCr/RGB video proc capabilities are integrated into the 7812 series products. These include YCbCr gain and offset controls in addition to RGB based gain/colour legalization/gamma correction capabilities. Video level, Hue and Saturation controls are also available.

The 7812 series products support 16 channels of embedded audio. Embedded audio is processed with audio delay that matches video delay. Additional audio delay (up to +100ms) is also available. Full audio proc capabilities are supported including per channel audio gain, audio routing/channel swapping and inversion control. Surround sound (5.1 PCM) to stereo down-mixing is supported (Lt/Rt or LoRo). The -AES8 versions of the 7812 series modules support 8x discrete AES inputs and support 8x AES outputs. AES outputs carry the same audio that is being embedded. On –AES8 versions, stereo to 5.1 up-mixing is also supported with the +UMX option.

Summary of 7812 Series Features:

- Broadcast quality up/down/cross conversions between common SD/SMPTE 259M and HD/SMPTE 292M video formats
- Optional support to convert to/from common 1080p signal formats (-3G versions)
- Integrated frame sync capabilities and external reference input for phasing of output video
- Support for 7700FR-G and 7800FR FRAME REFERENCE inputs
- Upon loss of video frame syncs may set to FREEZE mode or output black or blue video
- Evertz proprietary detail enhancement for optimum picture sharpness
- Leading edge video noise reduction technologies:
    - 3D pixel adaptive spatial-temporal noise reduction
    - Mosquito Noise Reduction (MNR)
    - Block Artifact Reduction (BAR)
- Leading edge de-interlacing technologies:
    - Pixel adaptive motion processing to maintain maximum vertical resolution
    - Advanced directional edge interpolation to minimize “jaggies” typically seen when converting interlaced video to progressive video
    - Advanced film mode processing for mathematically lossless de-interlacing of video content with embedded 3:2 and 2:2 pull-down
- Wide range video proc functions including both RGB gains and YCbCr gains/offsets
- Internal RGB colour legalizer
- Overall and per component RGB video gamma correction controls
- Support for keying live FILL input signals from second program input into image side-panels (+F)
- Optional compact flash for on card storage of static or animated side-panel content (+CF2G)
- Dedicated Ethernet port for up-loading internal compact flash
- Supports all required colour space conversions (rec. 601 to 709)
- Supports standard and user defined aspect ratio conversions
- Fully AFD enabled with frame accurate and glitch free AFR driven transitions between ARC modes
- Supports 8 external AES inputs and 8 AES outputs (-AES8 version only)
- Audio delay tracks video delay
- Full audio proc and channel swapping
- Stereo to 5.1 surround sound up-mix (+UMX)
- 5.1 surround sound to stereo (Lt/Rt and Lo/Ro) down-mix
- Support for Dolby audio Encoding/Decoding
    - Dolby E encoder (-AES8, +DEE)
    - Dolby AC3 encoder (-AES8, +AC3E)
    - Dolby decoder (-AES8, +DD)
    - Dual Dolby decoders (+DD and +DD2)
    - Dolby metadata processing and authoring
- Support for 16 GPI/O’s (Using Binary Encoding) or 8 GPI/O’s (without binary encoding)
- Thumbnail streaming to VistaLINK® thumbnail server

* References to 3G, SMPTE 424M/SMPTE 425 and single link 1080p59.94/50 refer 10 bit 4:2:2 1080p59.94/50 signals (Level A or B in SMPTE 425M) References to dual link 1080p59.94/50 refer to SMPTE 372M mapping for 1080p59.94/50 4:2:2 10 bit data format only. When set to output 372M dual link, PGM OUT1/2 are assigned for LINK A and PGM OUT3 is assigned to LINK B output. Initial release will not support +CF option for 1080p59.94/50 output signals

1.1. FUNCTIONAL DESCRIPTION

SD or HD video can be supplied to the PGM A or PGM B input. Either PGM A or PGM B may be selected for video processing and up/down/cross conversion. With the –3G versions of these modules, single link or dual link 1920x1080p59.94/50 signals may be supplied to converter inputs. 7812 series modules support 10 bit 4:2:2, 1920x1080p59.94 single link signals with Level A or Level B formatting per SMPTE 425M. When configured to accept dual link SMPTE 372M signals, both PGM A and PGM B inputs are used. Nominally, PGM A is used to accept LINK A and PGM B is used to accept LINK B. Internally, 7812 modules have the ability to swap the source for LINK A and LINK B if required. When set to output dual link SMPTE 372M signals, PGM OUT 1/2 are assigned for LINK A and PGM OUT 3 is assigned for LINK B. All modules include integrated frame synchronization capabilities and have an external genlock input for adjusting output video timing. In addition, the cards support FRAME REFERENCE inputs as supported on the 7700FR-G and the 7800FR.

The video signal selected for processing (PGM A or PGM B) is routed through a number of advanced processing stages including frame synchronization, audio/Dolby metadata extraction, noise reduction, de-interlacing, aspect ratio conversion, up/down/cross conversion, video proc adjustment and detail enhancement. De-embedded audio and Dolby metadata is re-inserted into the outgoing video signal with audio delay matching video path processing delay.

One of the final stages of processing includes keying of the FILL input or embedded compact flash content onto the output image (+F or +CF2G option only). With the +F option, the PGM B input is used to supply a FILL input signal that can be keyed into unused portions of the output image raster (i.e. side panels typically generated when converting from 4:3 to 16:9). When operating in this mode, the FILL input signal is automatically frame synchronized so that pre-timing of FILL input signals ***is not*** required. With the +CF2G option, static or animated side panels may be stored in the on-board compact flash to be keyed into image side panels. Content for the compact flash is generated using Evertz's Overture Media Design and may be loaded to 7812 series modules using Overture Media Manager. Files may also be sent directly to the modules on-board compact flash using standard FTP techniques. As another alternative, the compact flash may also be physically extracted from the card, loaded remotely and then replaced again.

Note: FILL input signals are not up/down/cross converted so it must match the output resolution configured for the module.

Note: that when ordering the +CF2G option, the functionality delivered by the +F option is automatically included as well.

Within the audio processing block, audio delay is matched to track video delay. In addition, channel swapping, gain and inversion processing is available. Down-mixed audio is also generated in this block. 8x AES inputs and 8x AES outputs are supported on –AES8 versions of all modules. AES outputs carry the same audio that is being embedded. On –AES8 versions, stereo to 5.1 up-mixing is also supported with the +UMX option.

Figure 1-1, provides the block diagram for the UDX, the UC, the XC and the HDC variations of the 7812 series products. Figure 1-2 depicts the audio processing block on all -AES8 variations of the 7812 series products

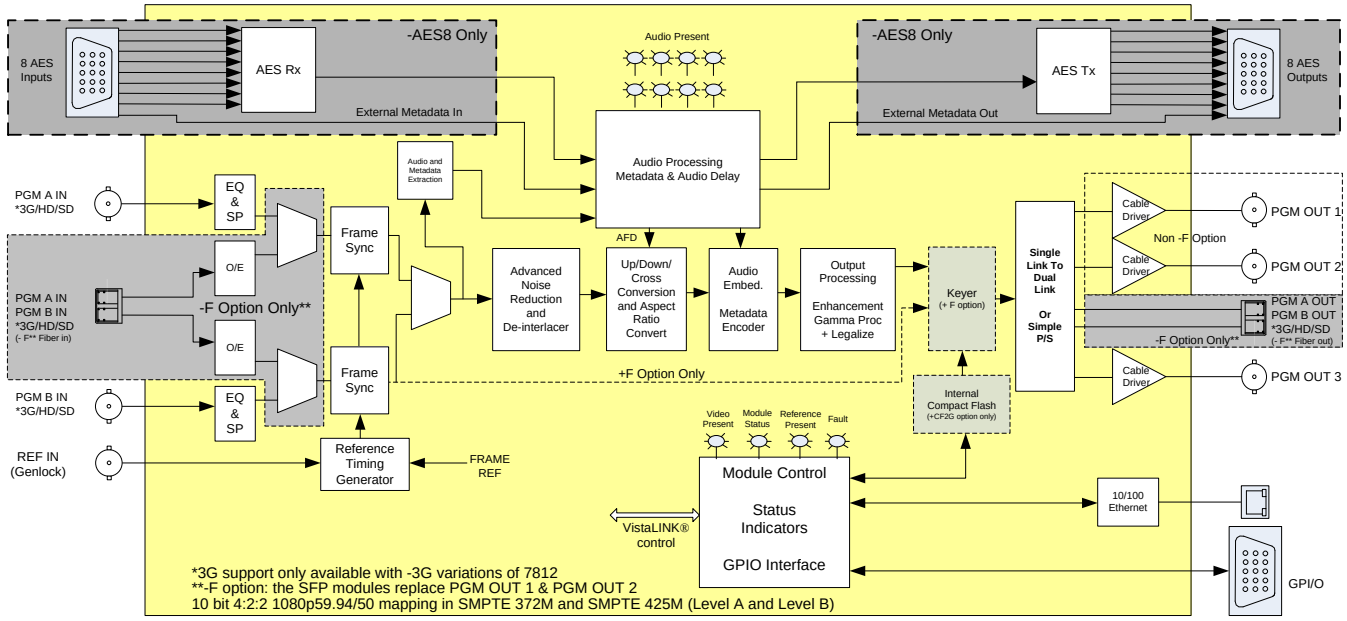

Figure 1-1: 7812 Series Block Diagram (-HD, -3G, -F and –AES8 Versions)

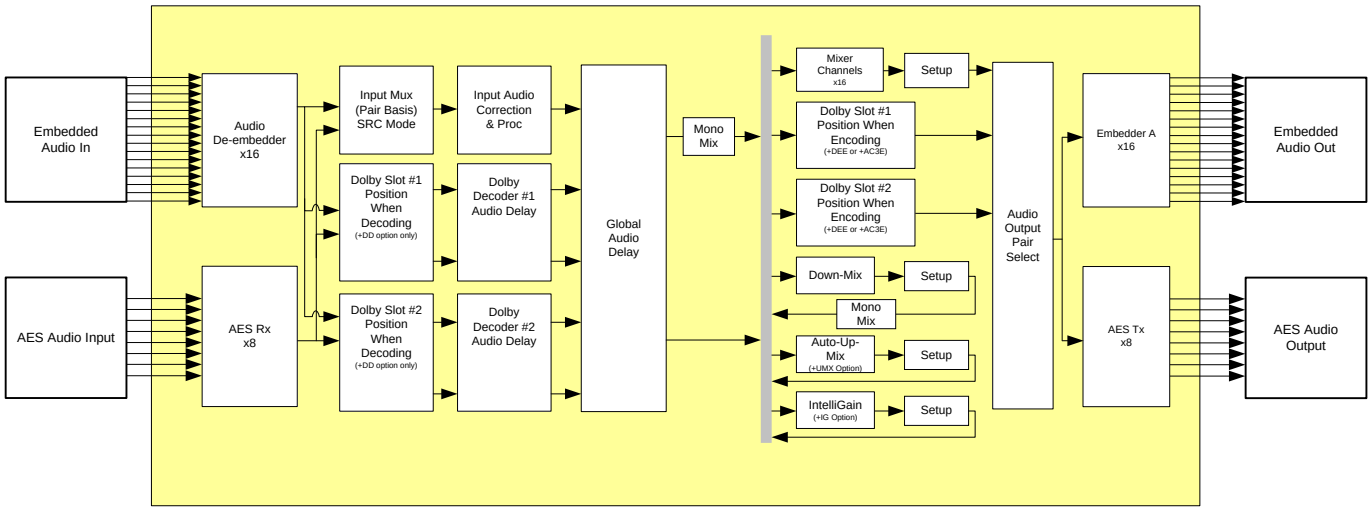

Figure 1-2: 7812 Series Audio Block Diagram (–AES8 Versions)

1.2. PRODUCT OPTIONS

This manual covers all variations and ordering options for the 7812 series platform. The majority of card controls are common across all products variations (7812UDX, 7812UC, 7812XC, 7812HDC) and ordering options. A small number of items change depending on the product variation and ordering option. The following chart provides a list of available product variations/ordering options and outlines what module control changes based on each.

Options	Description
-AES8	● **AUDIO** control tab "DMX Loss of Video Mode" control is available only with –AES8 versions ● **AUDIO INPUT** control tab AUDIO INPUT control tab is available only with –AES8 versions ● **AUDIO PROC CH1-CH4/CH 5-CH8/CH9-CH12/CH13-16** control tabs All selectable options under "Source X" and "Source Y" controls within AUDIO PROC CH1-CH4 control tab are labeled slightly differently than non-AES versions. In –AES8 versions, selectable options are labeled as *Channel 1…N* rather than *DMX Channel 1…N*. This is done to reflect that –AES8 versions of 7812 modules include an up-front audio selector that chooses whether to process de-embedded audio or AES audio for a particular channel pair. ● **AUDIO 5.1 DOWN MIX** control tab All selectable options in the "L Source", "R Source", "C Source", "LFE Source", "Ls Source", "Rs Source" controls within the AUDIO 5.1 DOWN MIX control tab are labeled slightly differently than non AES versions. In the –AES8 versions, selectable options are labeled as *Channel 1….N* rather than *DMX Channel 1….N*. This does not to reflect that the –AES8 versions of the modules include an up-front audio selector that chooses whether to process de-embedded audio or AES audio for a particular channel pair. ● **AUDIO/VIDEO TRAPS** control tab Traps for "AES 1" through "AES 8" audio inputs
-3G	● **VIDEO** control tab The "3G Dual Link Channel Swap"
-F	● **VIDEO** control tab Under the "*Video Input Source"* control, the option to select the Main PGM source and Backup PGM source.
+F	● **VIDEO** control tab Under the *"Video Input Source"* control, the option to select Main PGM in BNC + fill
+CF2G	**Note:** The +CF2G option also includes all functionality delivered by the +F option. (above) plus the following additional controls ● **PANEL LOGO** control tab This is used to control cueing and keying of side panel content stored in the internal compact flash. ● **IP** control tab The IP tab only appears when the +CF2G option is present. This is used to set the IP address of the card's dedicated Ethernet port (used for up-loading content to the internal compact flash)
+UMX	**Note:** The +UMX option is only valid on –AES variations of 7812 modules ● **AUDIO PROC CH1-4/CH5-8/CH9-12/CH13-16** control tabs Within the "Source X" and "Source Y" controls selection of Up Mix L Front, Up Mix R Front, Up Mix Centre, Up Mix LFE, Up Mix L Surround, Up Mix R Surround, Up Mix Delayed L In, Up Mix Delayed R In is supported only when the +UMX is present. ● **UP MIX CONTROL** tab The UP MIX control tab is only present with the +UMX option

+DD **+DD2**	**Note:** The +DD and +DD2 option is only valid on –AES variations of 7812 modules **● DOLBY DECODER CONTROL tab** The Dolby Decoder Control tab contains configurations for the Decoder source from incoming AES or DMX audio. Video sync sources, Dolby delay compensation, Dolby switch suppression, user preset recalls on present/missing incoming Dolby and Dolby audio channel delay. **Note: There are two Dolby decoder/Encoder module slots on the 7812XXX-AES8 version of the module. +DD indicates the first Dolby slot and +DD2 indicates the second Dolby slot.**
+DDE **+DDE2**	**Note:** The +DDE and +DDE2 options are only valid on –AES variations of 7812 modules **● DOLBY E ENCODER CONTROL tab** The Dolby E Encoder control tab contains the configurations for Dolby encoder line phase adjustments, Auto program configuration delay compensation and data width **● DOLBY E ENCODER MIXER CH1–CH4/CH5-CH8 control tab** All selectable options under “Source X” and “Source Y”, channel gain controls, and channel inversion **Note: There are two Dolby decoder/Encoder module slots on the 7812XXX-AES8 version of the module. +DDE indicates the first Dolby slot and +DDE2 indicates the second Dolby slot.**
+AC3E **+AC3E2**	**Note:** The +AC3E and +AC3E2 options are only valid on –AES variations of 7812 modules **● DOLBY AC3 ENCODER CONTROL tab** The Dolby AC3 Encoder control tab contains the configurations for auto mode program, metadata program selection AC-3 bit rate control Final ACMOD and delay compensation **● DOLBY AC3 ENCODER MIXER CH1–CH4/CH5-CH8 control tab** All selectable options under “Source X” and “Source Y”, channel gain controls, and channel inversion **Note: There are two Dolby decoder/Encoder module slots on the 7812XXX-AES8 version of the module. +AC3E indicates the first Dolby slot and +AC3E2 indicates the second Dolby slot.**
+IG	**Note:** The +IG option is only valid on –AES variations of 7812 modules **● INTELLIGAIN CONFIGURATION control tab** The IntelliGain™ control tab displays the top-level IntelliGain™ control interface. There are a number of parameters that control both the Intelligent leveler and the on-board dynamic processor (compander, expander, limiter) **● IG PROGRAM CONTROL tab** igChannel1, igChannel2, igChannel3, igChannel4, igChannel5, igChannel6, igChannel7, and igChannel8 are valid only when +IG and -AES8 appear in the card name.
+ICL	**● COLOUR LEGALIZE control tab** The Colour Legalize control tab displays the control for Soft Clip, Max RGB, Min RGB, High Knee, Low Knee, Negative Compression and Compression Ratio Controls
+OP4247	**● WST OP42/47 control tab** Contain Input and Output WST controls along with Monitoring Traps

Table 1-2: Control Interface Differences between 7812 Converters Depending on Product Variation/Ordering Options

The following can assist in the customization and ordering options:
7812 {UDX/UC/HDC/XC} [-AES8] {-HD / -3G} [-F] [+F/+CF2G] [(+UMX)] [+ICL] [(+IG)] [+OP4247] [(+DD)/(+DDE)/(+AC3E)] [(+DD2)/(+DDE2)/(+AC3E2)]
Explanation of notation: / = or, { } = mandatory, [ ] = optional, ( ) = option requires -AES8

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2. INSTALLATION

All 7812 series modules come with a companion rear plate and occupy two slots in the 7800FR frame or three slots in the 7700FR-C. If a 7812 series module is installed in a 7700FR-C without the "slot blocker" installed, the card will not power-up and will show RED on its main status LED. For information on mounting the rear plate and inserting the module into the frame see section 3 of the 7700FR manual. Refer to section 6.4 of this manual for more information on the 7812 series slot blocker. Refer to Figure 2-1 for 7812 series rear plate layouts.

Note: For proper operation in the 7700FR-C, the on-board "slot blocker" *must be* installed in order for the card to power-up.

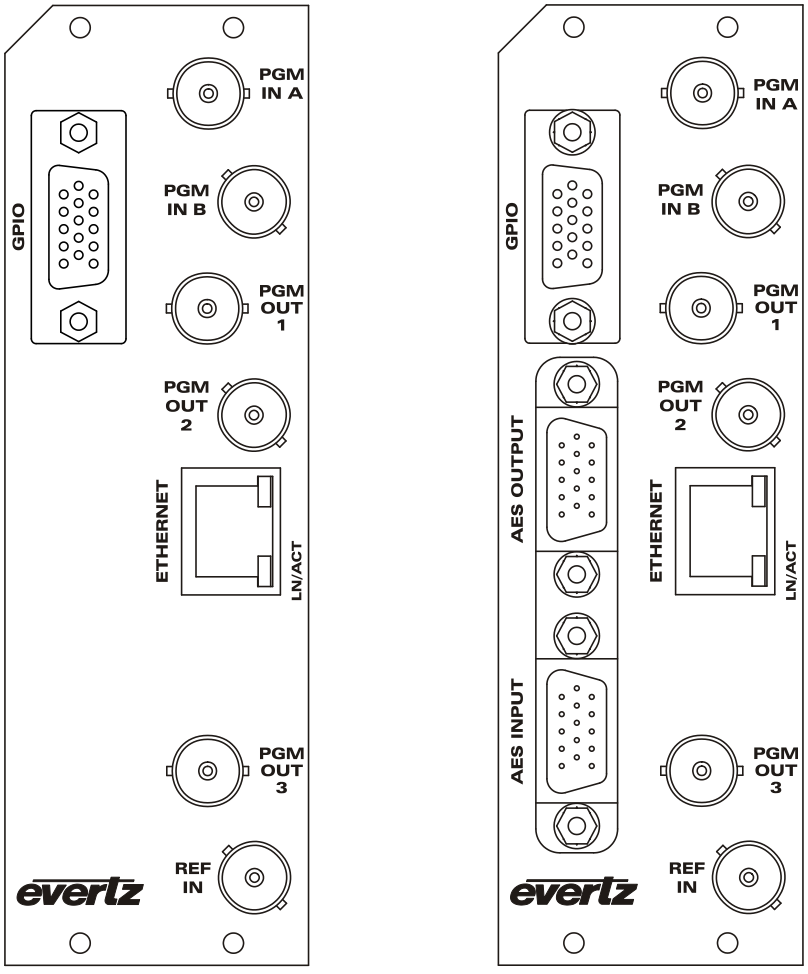


Figure 2-1: 7812XXX-XX Rear Plate Layout & 7812XXX-AES8-XX Rear Plate Layout

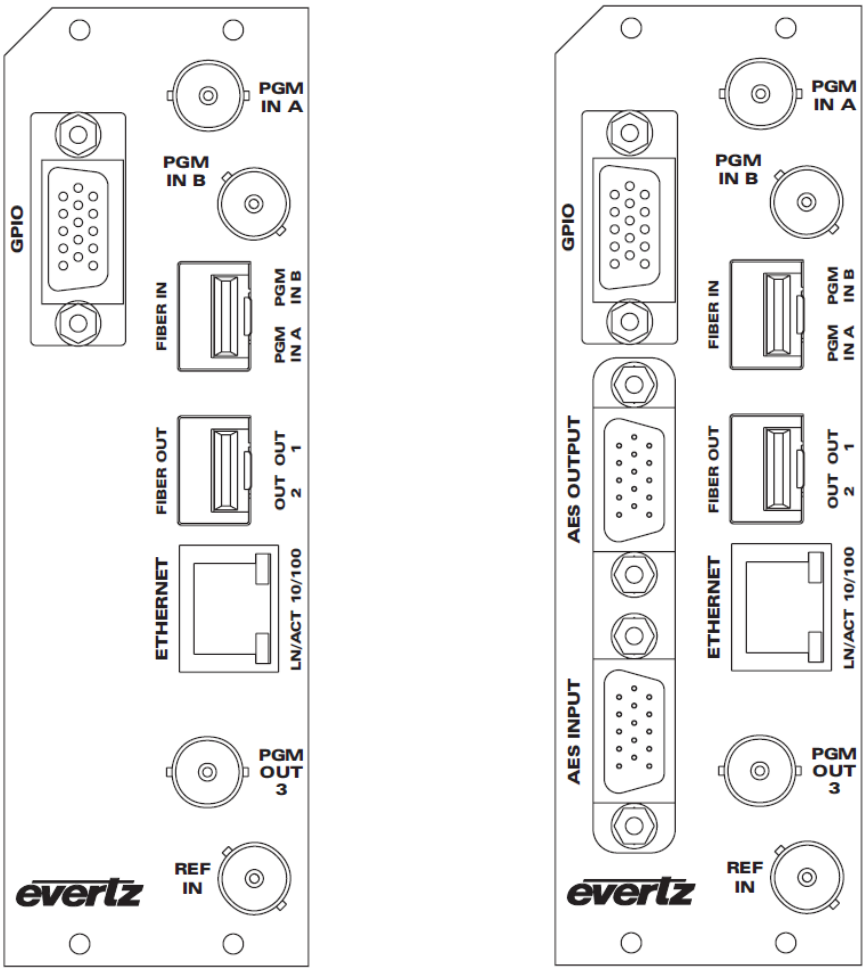


Figure 2-2: 7812XXX-XX-F Rear Plate Layout & 7812XXX-AES8-XX-F Rear Plate Layout

2.1. INPUT/OUTPUT CONNECTIONS

PGM IN A: Accepts a 10-bit serial digital video signal. –HD versions have inputs compatible with both SMPTE 259M and SMPTE 292M standards. –3G versions have inputs compatible with SMPTE 259M, SMPTE 292M, SMPTE 372M and SMPTE 425M*. The module can be set to receive a specific video standard or set to automatically detect supplied input video standard. PGM A or PGM B can be selected for subsequent video processing.

* References to 3G, SMPTE 424M/SMPTE 425 and single link 1080p59.94/50 refer 10 bit 4:2:2 1080p59.94/50 signals (Level A or B in SMPTE 425M) References to dual link 1080p59.94/50 refer to SMPTE 372M mapping for 1080p59.94/50 4:2:2 10 bit data format only.

PGM IN B: Accepts a 10-bit serial digital video signal. –HD versions have inputs compatible with both SMPTE 259M and SMPTE 292M standards. –3G versions have inputs compatible with SMPTE 259M, SMPTE 292M, SMPTE 372M and SMPTE 425M*. The module can be set to receive a specific video standard or set to automatically detect supplied input video standard. PGM A or PGM B can be selected for subsequent video processing.

* References to 3G, SMPTE 424M/SMPTE 425 and single link 1080p59.94/50 refer 10 bit 4:2:2 1080p59.94/50 signals (Level A or B in SMPTE 425M) References to dual link 1080p59.94/50 refer to SMPTE 372M mapping for 1080p59.94/50 4:2:2 10 bit data format only.

PGM OUT1-3: These BNC connectors are used to output video as serial component video. –HD versions have outputs compatible with SMPTE 292M or SMPTE 259M standard. –3G versions have outputs compatible with SMPTE 292M or SMPTE 259M or SMPTE 372M or SMPTE 425M*.

* When set it to output SMPTE72M dual link 1920x1080p50/59.94 video, PGM OUT1 and PGM OUT2 provide LINK A and PGM OUT3 provides LINK B.

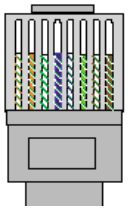
REF IN: This BNC is for connecting a bi-level or tri-level reference. Reference format auto-detected by the module. Output video can be timed with respect to the supplied reference using the *H Phase Offset* and *V Phase Offset* module controls. When no reference is provided, the output video is timed with respect to the input video. Reference may also be supplied via the 7700FR-G and 7800FR FRAME REFERENCE inputs. VLPRO is used to select either the card's external reference or the FRAME REFERENCE BNC.

2.2. ETHERNET CONNECTIONS

Static or side panel content can be uploaded to the card's internal compact flash using this port. All 7812 series modules are designed to use either 10Base-T (10 Mbps) or 100Base-TX (100 Mbps) also known as *Fast Ethernet*, twisted pair Ethernet cabling systems. When connecting for 10Base-T systems, category 3, 4, or 5 UTP cable as well as EIA/TIA – 568-100Ω STP cable may be used. When connecting for 100Base-TX systems, category 5 UTP cable is required. Make the network connection by plugging one end of a "straight through" cable into the RJ-45 receptacle of the 7812 modules and the other end into a port of the supporting hub. If you are connecting the 7812 series module directly to an Ethernet port on a computer, you will have to use a "crossover" cable.

Straight-through RJ-45 cables can be purchased or can be constructed using the pin out information in Table 2-1. A colour code-wiring table is provided in Figure 2-3 for the current RJ-45 standards (AT&T 258A or EIA/TIA 258B colour coding shown). Also, refer to the notes following the table for additional wiring guide information.

Pin 1



Pin #	Signal	EIA/TIA 568A	AT&T 258A or EIA/TIA 568B	10BaseT or 100BaseT
1	Transmit +	White/Green	White/Orange	X
2	Transmit –	Green/White or White	Orange/White or Orange	X
3	Receive +	White/Orange	White/Green	X
4	N/A	Blue/White or Blue	Blue/White or Blue	Not used (required)
5	N/A	White/Blue	White/Blue	Not used (required)
6	Receive –	Orange/White or Orange	Green/White or Green	X
7	N/A	White/Brown	White/Brown	Not used (required)
8	N/A	Brown/White or Brown	Brown/White or Brown	Not used (required)

Figure 2-3: Colour Code Wiring for the Current RJ 45 Standards

Note the following cabling information for this wiring guide:

- Only two pairs of wires are used in the 8-pin RJ 45 connector to carry Ethernet signals.
- Even though pins 4, 5, 7 and 8 are not used, it is mandatory that they be present in the cable.
- 10BaseT and 100BaseT use the same pins; a crossover cable made for one will work with the other.
- Pairs may be solid colours and not have a stripe.
- Category 5 cables must use Category 5 rated connectors.

The maximum cable run between the 7812 series modules and the supporting hub is 300 ft (90 m).

Note that the two LEDs on the Ethernet connector are not used and will not light up when connected to an Ethernet network. Ethernet functionality is not impacted by the lack of these LEDs lighting up.

2.3. GPIO CONNECTOR

There are 4 General Purpose Inputs/Outputs (GPIOs) on the 7812 series modules. Each GPIO may be configured to be an input or configured to be an output. These GPIOs are interfaced using a 15-pin DB connector and an associated breakout cable (cable part # WPAES8-BNCM-9W-6F). NOTE: The GPIO breakout cable is not included with the module when purchased. Table 2-1 shows the Pin-out of this connector is as follows:

GPIO DB CONNECTOR			
DB-15 Pin	**Name**	**Description**	**Colour**
1	GPIO1	General Purpose Input /Output #1	Red
2	LTC out	External LTC out	Green
3	GPIO2	General Purpose Input /Output #2	Blue
4	GPIO4	General Purpose Input /Output #4	Purple
5	LTC IN2/6 Hz	External LTC IN 2 / 6 Hz	Orange
6	LTC IN1	External LTC IN 1	White
7	GND	General Purpose Input /Output #6	A2 BNC PIN
8	GPIO3	General Purpose Input /Output #3	Yellow
9	GND	Ground	- -
10	GND	Ground	- -
11	GPIO5	General Purpose Input /Output #5	A1 BNC PIN
12	GND	Ground	- -
13	GND	Ground	- -
14	GND	General Purpose Input /Output #8	A4 BNC PIN
15	GND	General Purpose Input /Output #7	A3 BNC PIN
Shell	GND	Ground	- -

Table 2-1: GPIO Connector Pin out

When a particular GPIO is configured to be a GPI, the following interface shall apply:

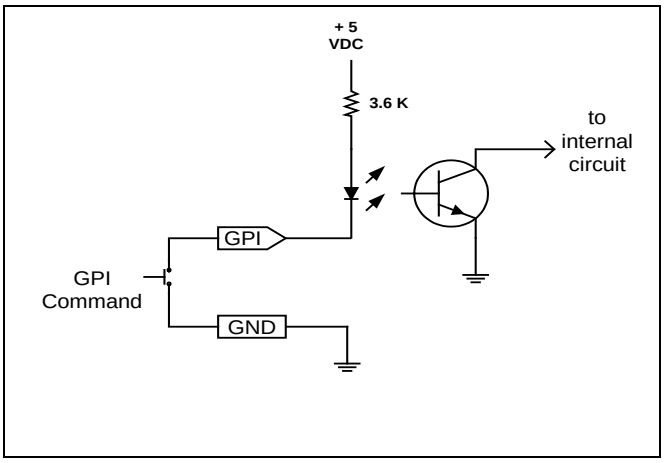


Figure 2-4: GPI Input Circuitry

When a particular GPIO is configured to be a GPO, the interface shown below shall apply. The GPO is active low with internal pull up (10k Ohm) resistors to +5V. When the output goes low, it is able to sink up to 10mA. When high, the signal will go high (+5V). **Do not draw more than 100µA from the output.** Figure 2-5 shows the circuit for the general-purpose output.

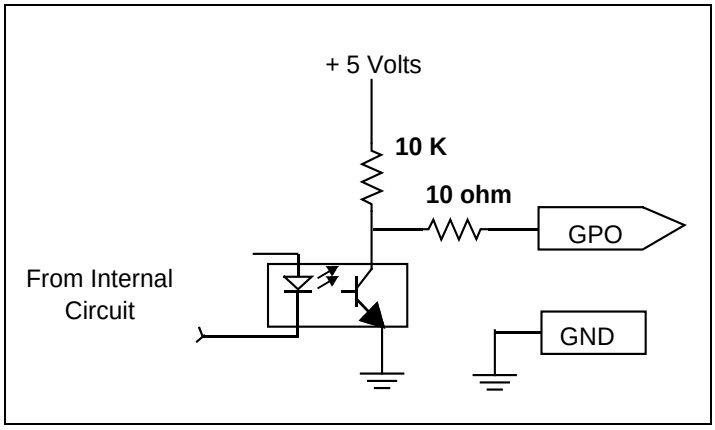
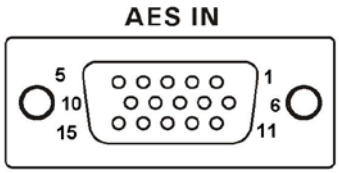


Figure 2-5: GPO Output Circuitry

2.4. AES INPUTS

The –AES8 versions of 7812 series modules support 8x AES inputs and are interfaced using a DB15 connector and a breakout cable. The part number for the cable is # WPAES8-BNCM-6F. Two cables (one for AES input and one for AES outputs) are included when the –AES8 option is ordered. The pin-out of DB15 connector is shown in Table 2-2. The pin-out of the breakout cable is shown in Table 2-3.



Female

PIN #	Name	Description
1	Not used	Reserved for future use
2	RX + Primary	Primary Dolby Metadata RX+
3	Not used	Reserved for future use
4	Reserved	Reserved for future use
5	Not used	Reserved for future use
6	RX- Primary	Primary Dolby Metadata RX-
7	AES In 2	AES Input 2 – Unbalanced
8	Reserved	Reserved for future use
9	AES In 6	AES Input 6 – Unbalanced
10	AES In 5	AES Input 5 – Unbalanced
11	AES In 1	AES Input 1 – Unbalanced
12	AES In 8	AES Input 8 – Unbalanced
13	AES In 7	AES Input 7 – Unbalanced
14	AES In 4	AES Input 4 – Unbalanced
15	AES In 3	AES Input 3 – Unbalanced
Shell	GND	Ground

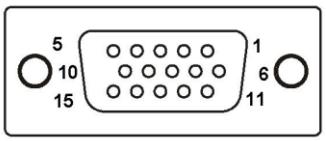
Table 2-2: AES Input Audio Connector Pin out

High Density DB-15 PIN (male)	Breakout Cable Connector	Ground/ Shield Connection	Labelled Name
1	Red Wire	None	W1 RED
2	Green Wire	None	W2 GREEN
3	Blue Wire	None	W3 BLUE
4	Purple Wire	None	W6 PUR
5	Orange Wire	None	W7 ORG
6	White Wire	None	W4 WHITE
7	Coax BNC Male	Soldered to Shell	AES A2
8	Yellow	None	W5 YELLOW
9	Coax BNC Male	Soldered to Shell	AES B2
10	Coax BNC Male	Soldered to Shell	AES B1
11	Coax BNC Male	Soldered to Shell	AES A1
12	Coax BNC Male	Soldered to Shell	AES B4
13	Coax BNC Male	Soldered to Shell	AES B3
14	Coax BNC Male	Soldered to Shell	AES A4
15	Coax BNC Male	Soldered to Shell	AES A3
Shell	Brown Wire	Soldered to Shell	GND BR
Shell	Black Wire	Soldered to Shell	GND BK

Table 2-3: AES Audio Input Breakout Cable (Evertz Part # WPAES8-BNCM-9W-6F)

2.5. AES OUTPUTS

The –AES8 versions of 7812 series modules support 8x AES outputs and are interfaced using a DB15 connector and a breakout cable. The part number for the cable is # WPAES8-BNCM-6F. Two cables (one for AES input and one for AES outputs) are included when the –AES8 option is ordered. The pin-out of DB15 connector is shown in Table 2-4. The pin-out of the breakout cable is shown in Table 2-5.



Female

PIN #	Name	Description
1	Not used	Reserved for future use
2	TX+ Primary	Primary Dolby Metadata TX+
3	Not used	Reserved for future use
4	Reserved	Reserved for future use
5	Not used	Reserved for future use
6	TX- Primary	Primary Dolby Metadata TX-
7	AES Out 2	AES Output 2 – Unbalanced
8	Reserved	Reserved for future use
9	AES Out 6	AES Output 6 – Unbalanced
10	AES Out 5	AES Output 5 – Unbalanced
11	AES Out 1	AES Output 1 – Unbalanced
12	AES Out 8	AES Output 8 – Unbalanced
13	AES Out 7	AES Output 7 – Unbalanced
14	AES Out 4	AES Output 4 – Unbalanced
15	AES Out 3	AES Output 3 – Unbalanced
Shell	GND	Ground

Table 2-4: AES Output Audio Connector Pin out

High Density DB-15 PIN (male)	Breakout Cable Connector	Ground/ Shield Connection	Labelled Name
1	Red Wire	None	W1 RED
2	Green Wire	None	W2 GREEN
3	Blue Wire	None	W3 BLUE
4	Purple Wire	None	W6 PUR
5	Orange Wire	None	W7 ORG
6	White Wire	None	W4 WHITE
7	Coax BNC Male	Soldered to Shell	AES A2
8	Yellow	None	W5 YELLOW
9	Coax BNC Male	Soldered to Shell	AES B2
10	Coax BNC Male	Soldered to Shell	AES B1
11	Coax BNC Male	Soldered to Shell	AES A1
12	Coax BNC Male	Soldered to Shell	AES B4
13	Coax BNC Male	Soldered to Shell	AES B3
14	Coax BNC Male	Soldered to Shell	AES A4
15	Coax BNC Male	Soldered to Shell	AES A3
Shell	Brown Wire	Soldered to Shell	GND BR
Shell	Black Wire	Soldered to Shell	GND BK

Table 2-5: AES Audio Output Breakout Cable (Evertz Part # WPAES8-BNCM-9W-6F)

3. SPECIFICATIONS

3.1. SERIAL DIGITAL VIDEO INPUT

Standard:	270 Mb/sec SMPTE 259M 1.485 Gb/sec SMPTE 292M (1080i/720 @ 59.94 or 50 Hz) 2.970 Gb/sec SMPTE 425M* (-3G versions only)
Number of Inputs:	2 (PGM A and PGM B)
Connector:	BNC per IEC 61169-8 Annex A
Signal Level:	1V nominal
Input Equalization:	Automatic to 250m @ 270 Mbs with Belden 1694A or equivalent Automatic to 100m @ 1.485 Gbs with Belden 1694A or equivalent Automatic to 80m @ 2.970 Gbs with Belden 1694A or equivalent (-3G version only)
Return Loss:	> 15 dB to 1.5 GHz > 10 dB to 3.0 GHz

3.2. SERIAL DIGITAL VIDEO OUTPUT

Standard:	270 Mb/sec SMPTE 259M 1.485 Gb/sec SMPTE 292M (1080i/720 59.94 or 50 Hz) 2.970 Gb/sec SMPTE 425M* (-3G versions only)
Number of Outputs:	3
Connector:	BNC per IEC 61169-8 Annex A
Signal Level:	800 mV nominal
SD Rise/Fall Times:	740 ps nominal
HD Rise/Fall Times:	200 ps nominal
Return Loss:	> 15 dB to 1.5 GHz > 10 dB to 3.0 GHz

3.3. REFERENCE VIDEO INPUT

Type:	HD Tri-Level sync, NTSC or PAL Colour Black 1 V p-p
Connector:	BNC per IEC 61169-8 Annex A
Termination:	75 ohm

* References to 3G, SMPTE 424M/SMPTE 425 and single link 1080p59.94/50 refer 10 bit 4:2:2 1080p59.94/50 signals (Level A or B in SMPTE 425M) References to dual link 1080p59.94/50 refer to SMPTE 372M mapping for 1080p59.94/50 4:2:2 10 bit data format only. When set to output 372M dual link, PGM OUT1/2 are assigned for LINK A and PGM OUT3 is assigned to LINK B output. Initial release will not support +CF option for 1080p59.94/50 output signals

3.4. GENERAL PURPOSE INPUTS AND OUTPUTS

Number:	4 (configurable as inputs or outputs)
Type:	Opto-isolated, active low with internal pull-ups to +5 V
Connector:	DB 15
Signal Level:	Closure to ground
Input Function:	User preset select or side pane fill on/off
Output Function:	Panel on/off tally

3.5. AES INPUTS

Number:	8x AES inputs
Standard	SMPTE 276M, synchronous or asynchronous
Connector:	DB 15
Input Type:	Unbalanced
Impedance:	75 Ω
Signal Level	1 V p-p
Sampling Rate	48 KHz

3.6. AES OUTPUTS

Number:	8x AES outputs
Standard	SMPTE 276M, synchronous
Connector:	DB 15
Input Type:	Unbalanced
Impedance:	75 Ω
Signal Level	1 V p-p
Sampling Rate	48 KHz.

3.7. ELECTRICAL

Voltage:	+12VDC
Power:	26.5 Watts
EMI/RFI:	Complies with FCC regulations for class A devices. Complies with EU EMC directive.

3.8. PHYSICAL

Number of slots

7800FR Frame:	2
7700FR-C Frame:	3 (slot blocker must be installed for proper operation)

4. STATUS LEDS

4.1. MODULE STATUS LEDS –AES8 VERSION AND NON –AES8 VERSIONS

Figure 4-1 depicts status LEDs for the 7812UDX-3G and 7812UDX-AES-3G series modules. LEDs are in the same position and perform the same function for all variations of the 7812 including UDX, UC, XC and HDC versions.

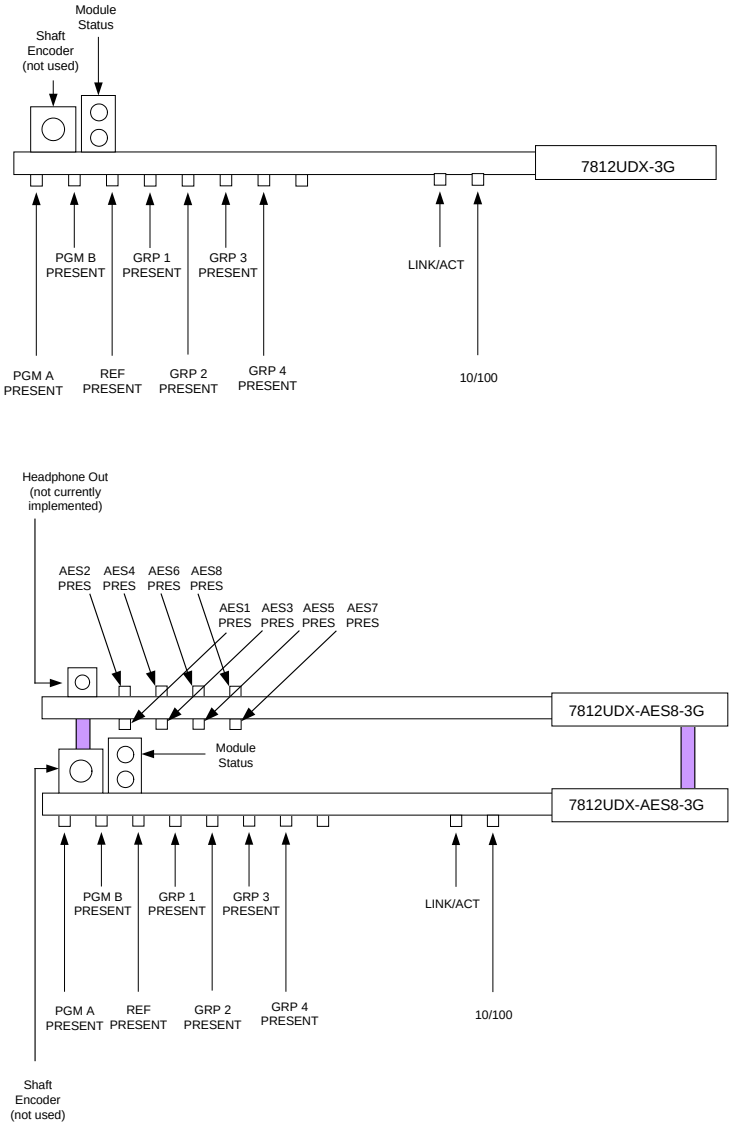


Figure 4-1: Status LEDs

MODULE STATUS: This Green LED will be On when the module is operating properly.

LOCAL FAULT: This Red LED will be On when an essential module input is missing or the module has another fault.

PGM A PRESENT: The PGM A PRESENT LED will be green when a valid input signal is present on the PGM A BNC. It will be red when missing an input signal. It will blink between red and green when an invalid input signal is presented.

PGM B PRESENT: The PGM B PRESENT LED will be green when a valid input signal is present on the PGM B BNC. It will be red when missing an input signal. It will blink between red and green when an invalid input signal is presented.

REF PRESENT: The REF PRESENT LED will be green when a valid reference signal is present on the REF IN BNC. It will be red when missing a reference signal. It will blink between red and green when an invalid genlock signal is presented. This LED will also be red when genlocking is turned off (lock to video).

GRP1 PRESENT: This LED will be Green when embedded audio Group 1 is present and Red when embedded audio Group 1 is not present.

GRP2 PRESENT: This LED will be Green when embedded audio Group 2 is present and Red when embedded audio Group 2 is not present.

GRP3 PRESENT: This LED will be Green when embedded audio Group 3 is present and Red when embedded audio Group 3 is not present.

GRP4 PRESENT: This LED will be Green when embedded audio Group 4 is present and Red when embedded audio Group 4 is not present.

AES1 PRES: This LED will be Green when AES1 is present and Red when AES1 is not present.

AES2 PRES: This LED will be Green when AES2 is present and Red when AES2 is not present.

AES3 PRES: This LED will be Green when AES3 is present and Red when AES3 is not present.

AES4 PRES: This LED will be Green when AES4 is present and Red when AES4 is not present.

AES5 PRES: This LED will be Green when AES5 is present and Red when AES5 is not present.

AES6 PRES: This LED will be Green when AES6 is present and Red when AES6 is not present.

AES7 PRES: This LED will be Green when AES7 is present and Red when AES7 is not present.

AES8 PRES: This LED will be Green when AES8 is present and Red when AES8 is not present.

LINK/ACT This LED will be green when an Ethernet link is connected or flashing with activity

10/100 This LED will be green if 100Mb connection is used or off if a 10 Mb connection is used

5. MODULE CONTROL

The 7812 series of products are controlled using VistaLINK® Pro. VistaLINK® PRO operates using Ethernet and SNMP control protocols. The 7812 series modules DO NOT HAVE card edge controls. As a result, 7700FC modules must be installed in all frames that house 7812 series modules. Refer to the Evertz website for the most recent firmware for the 7700FC. When using VistaLINK® PRO it is also important to ensure that the most recent 7812 series ".JAR" control file is installed. Refer to the Evertz website for the most recent 7812 series ".JAR" file.

For the sake of brevity, the following sections describe module controls in terms of the parameters found within the VLPRO screens for the 7812UDX-AES8-3G-F+CF2G+F+UMX+ICL+IG+OP4247+DEE+AC3E2. The vast majority of controls are the same for the UC, the XC and HDC versions of 7812 series modules. Exceptions to this are outlined in section 1.2 of this manual. As additional features and options are released, additional sections will be appended to this manual to show those control screens.

5.1. CONTROL CATEGORIES

Within *Vista*LINK®, the 7812 series of products have the following main control tabs:

CONTROL TAB	DESCRIPTION
Video	Configuration for the source of video, the input and output video standards, the source of video reference and frame sync output timing. In addition the source of time code, time code read/write lines and FS operating modes are defined within this control tab. The status of several monitored video and AFD parameters are also reported in this control tab.
Card Reference	Configuration of the source of video reference, and the prioritized reference fail over, duration for reference valid/invalid timeouts, and reference priority selections.
Audio	Configuration for enabling and disabling audio embedders, setting audio delay and setting sample rate converter (SRC) operating modes. In addition, C bit processing and default audio operating modes are specified within this control tab. The status of several monitored audio parameters are also reported in this control tab.
Audio Input	Configuration for selecting which channels of audio (AES or embedded) are processed internally within the card. Selection of which audio is processed to be done on a pair-by-pair basis.
Audio Output	Configuration for selecting the audio output pair sources including mixer outputs or Dolby Encoded outputs (+DEE or + AC3E only)
Audio Proc	**Channels 1 - 4 -** Configuration for channel swapping, audio gain, audio inversion and mono mixing for outbound audio channels CH1, CH2, CH3, CH4. **Channels 5 - 8 -** Configuration for channel swapping, audio gain, audio inversion and mono mixing for outbound audio channels CH5, CH6, CH7, CH8. **Channels 9 - 12 -** Configuration for channel swapping, audio gain, audio inversion and mono mixing for outbound audio channels CH9, CH10, CH11, CH12. **Channels 13 - 16 -** Configuration for channel swapping, audio gain, audio inversion and mono mixing for outbound audio channels CH13, CH14, CH15, CH16.
Audio Input Correction	**Channel 1 - 8 -** Configuration for user correction of the audio input for Ch1 – Ch8 including Gain, inversion and Channel delay **Channel 9 - 16 -** Configuration for user correction of the audio input for Ch9 – Ch16 including Gain, inversion and Channel delay

De-interlacer Control	Configuration for setting key operating modes and key thresholds for the internal video de-interlacer.
Video Proc	Configuration for setting video proc controls including RGB gains, YCbCr gains/offsets, Hue, Saturation, Video Level, Gamma and RGB colour legalization.
Colour Legalize (+ICL option)	Configuration for Colour Legalizer controls including soft clip enable/disable, Max RGB, Min RGB, high knee, low knee, negative compression, and compression ratio
Image Enhancement	Configuration for the image enhancement process including enhancement enable/disable, detail gain, enhancement limit, horizontal band, vertical intensity, luma floor and the detail noise floor.
Scaler	Configuration for setting the scaler aspect ratio conversion (ARC) mode, the default AFD stamping mode and the default side panel colours. In addition, scaler filter bandwidths and H/V edge processing controls are defined in this control tab. **Note that when automatic steering of ARC modes based on AFD is enabled (within the AFD control tab); the ARC conversion controls within the SCALER control tab are disabled. Refer to the AFD Control and AFD ARC control tabs for more information.** **Note that when the AFD Stamp Source is set to 'Use Scaler' in the AFD Control tab, the AFD Stamp control within the Scaler control tab is disabled. Refer to the AFD Control and AFD ARC control tabs for more information.**
CC Control	Configuration for the closed captioning translation process including service level mapping and HD write lines.
Utilities Control	Configuration for managing card presets including storing configurations to specific user presets, recalling specific user presets and enabling/disabling Auto Recall Presets functionality.
Change Product	Some options can be purchased from sales and added to the 7812 without hardware upgrades.
VANC Bypass	Configuration used to bypass VANC data
SD Aperture Control	Configuration for setting the SD Aperture to be used when performing scaling and ARC operations including independent settings for both Clean and Production Apertures.
AFD Control	Configuration for setting how the card will process and respond to AFD. **Note that when automatic steering of ARC modes based on AFD is enabled, the ARC conversion controls within the SCALER control tab are disabled.** **Note that when the AFD Stamp Source is set to 'Use Scaler', the AFD Stamp control within the Scaler control tab is disabled.**
WSS – ETSI EN 300 294	Configuration used for Wide Screen Signaling copyrighting controls including Enable/Disable, WSS copyright and WSS generation.
AFD Monitor	**SMPTE2016-1 Monitor -** Monitoring tab used to display the incoming/outgoing Active Format Description (AFD) **WSS – ITU-R.1119-2 Monitor -** Monitoring tab used to display the incoming/outgoing Wide Screen Signaling Code (WSS). **VI – RP186 Monitor -** Monitoring tab used to display the incoming/outgoing Video Index Information Coding (VI)

AFD ARC	Configuration for defining what aspect ratio conversions will be performed in response to incoming AFD values. Each incoming AFD code can select from the predefined list of ARC modes or a user defined ARC mode. These responses are defined within this control tab.
Noise Control	Configuration for setting noise reduction. Individual configuration for Mosquito Noise Reduction, Block Artifact Reduction and Motion Adaptive Spatial-Temporal Noise Reduction.
SCTE104	Configuration for passing or deleting incoming SCTE 104 packets and further specifying the HD write line when passing SCTE 104 packets.
CC Fault Traps	Configuration for enabling and disabling specific Close Captioning fault traps and viewing Close Captioning trap status.
Audio/Video Traps	Configuration for enabling and disabling specific Video and Audio fault traps and viewing Video and Audio trap status.
GPIO Control	**GPIO1 – 4 -** Configuration for defining the four (4) card GPIOs as a GPI or a GPO and further defining the function of each GPIO. **GPIO5 – 8 -** Configuration for defining the four (4) card GPIOs as a GPI or a GPO and further defining the function of each GPIO **GPIO9 – 12 -** Configuration for defining the four (4) card GPIOs as a GPI or a GPO and further defining the function of each GPIO **GPIO13 – 16 -** Configuration for defining the four (4) card GPIOs as a GPI or a GPO and further defining the function of each GPIO
Panel Logo	Configuration for cueing, playing and looping embedded side panel logos. Logo status is also reported in this control tab.
IP	Configuration for defining the IP address, subnet mask and default gateway for the card's Ethernet port. At the time of this manual's writing the Ethernet port is only used for uploading side panel content to the card's internal compact flash and for use with a mini-agent for VistaLINK®.
Audio 5.1 Down Mix	Configuration for defining the source audio channels for the 5.1 down-mix process and further defining the down mix type and level parameters.
Dolby Metadata	Configures high-level Dolby Metadata encoder parameters including output line, DID, SDID, program configuration and encoding type (Method A or Method B)
Dolby Metadata Presets	Configuration used to define the Dolby Metadata Presets including Dolby Metadata Preset Source, Dolby Metadata Present Preset Trigger, Dolby Metadata Missing Trigger and Program Config Assert and De-Assert controls.
Dolby Metadata Author–	**Program 1&2, 3&4, 5&6, 7&8 -** Configures the Dolby Metadata Encoder for Program 1&2, 3&4, 5&6, 7&8, including bitstream modes, center mix level, surround mix level, surround modes, dial norm function, room type, copyrighting, down mix configurations, Dolby surround EX control, DC filter LFE low pass filter Surround Phase shifting surround attenuation RF overmod protect, RF mode line mode and Audio Coding Mode.
Up Mix Control	Configures the source audio channel for stereo to 5.1 up-mixing and further defining key up-mix algorithm parameters. Auto Up-mix will automatically detect whether a stereo or 5.1 audio is applied at the input
IntelliGain Configuration (+IG Only)	Configuration used to set up the IntelliGain controls including Program Configuration Source, Content Attack and Release times, Compander Attack and Release Times and IntelliGain Audio Sources.

IntelliGain Program Control (+IG Only)	As IntelliGain™ detects valid audio programs, the VistaLINK® program configuration tabs will become activated. The user interface and program configuration tabs are identical. **IG-Program 1, 2, 3, 4, 5, 6, 7, 8 –** Configures the IntelliGain™ Program 1, 2, 3, 4, 5, 6, 7, 8 settings, including IntelliGain state, Leveler Controls, Compander controls, Peak limiter, Maximum Gain, threshold settings and Monitoring.
IntelliGain Traps (+IG Only)	The IntelliGain Traps are used to alert VistaLINK of all the traps for Minor, Major and Critical loudness for each of the IntelliGain programs.
Dolby Decoder Control (+DD, +DD2)	The 7812 series module can decode Dolby AC3 and Dolby E with the Dolby Decode options. There can be up to two Dolby decode modules. **Decoder A and B –** Configurations for Dolby decoder controls, including decoder source from incoming AES or DMX audio. Video sync sources, Dolby delay compensation, Dolby switch suppression, user preset recalls on present/missing incoming Dolby and Dolby audio channel delay.
Dolby E Encoder Control (+DEE and/or +DEE2 Only)	**Encoder A/B–** The Dolby E Encoder control tab contains the configurations for Dolby encoder line phase adjustments, Auto program configuration delay compensation and data width
Dolby E Encoder Mixer (+DEE and/or +DEE2 Only)	**Encoder A/B–** Both Dolby E Mixer controls for +DDE and +DDE2 can be controlled from this tab. The displayed configurations will be for the selected radial button. If the radio button is grayed out this option is not installed **Ch1 – Ch4/Ch5 – Ch8 -** All selectable options under “Source X” and “Source Y”, channel gain controls, and channel inversion
Dolby AC3 Encoder Control (+AC3E and/or +AC3E2 Only)	**Encoder A/B–** The Dolby AC3 Encoder control tab contains the configurations for auto mode program, metadata program selection AC-3 bit rate control Final ACMOD and delay compensation
Dolby AC3 Encoder Mixer (+AC3E and/or +AC3E2 Only)	**Encoder A/B –** Both Dolby AC3 Mixer controls for +AC3E and +AC3E2 can be controlled from this tab. The displayed configurations will be for the selected radial button. If the radio button is grayed out this option is not installed **Ch1 – Ch4/Ch5 – Ch8 -** All selectable options under “Source X” and “Source Y”, channel gain controls, and channel inversion
Blur (If available)	**Blur –** Configurations for controlling the blur level, including blur enable/disable control and blue level control
WST OP42/47 (+OP4247 Option)	**WST OP42/47 –** Configurations for Operational Practices 42 and 47, including input WST 1 – 5 enable/disable, line select and monitoring status, output WST 1 – 5 enable/disable, line select with continuous and Double transmission enable/disable controls, and WST traps.
AVM Control	**AVM Control –** Configurations for setting the audio silence level and duration
AVM Presets	**AVM Presets –** Configurations for asserting and de-asserting Presets on audio silence.
AVM Traps	**AVM Traps –** Controls for reporting audio silent traps back to VLPro on a by channel basis.
Thumbnails	**Thumbnails –** Configurations for thumbnail controls including Thumbnail transfer enable/disable, thumbnail size, and server IP address.

5.2. CONFIGURING THE VIDEO CONTROLS

The *Video* control tab is mainly used to configure the source of video, the input and output video standards, the source of video reference and frame sync output timing. In addition, the source of time code source, time code read/write lines and FS operating modes are defined within this control tab. The status of several monitored video and AFD parameters are also reported in this control tab.

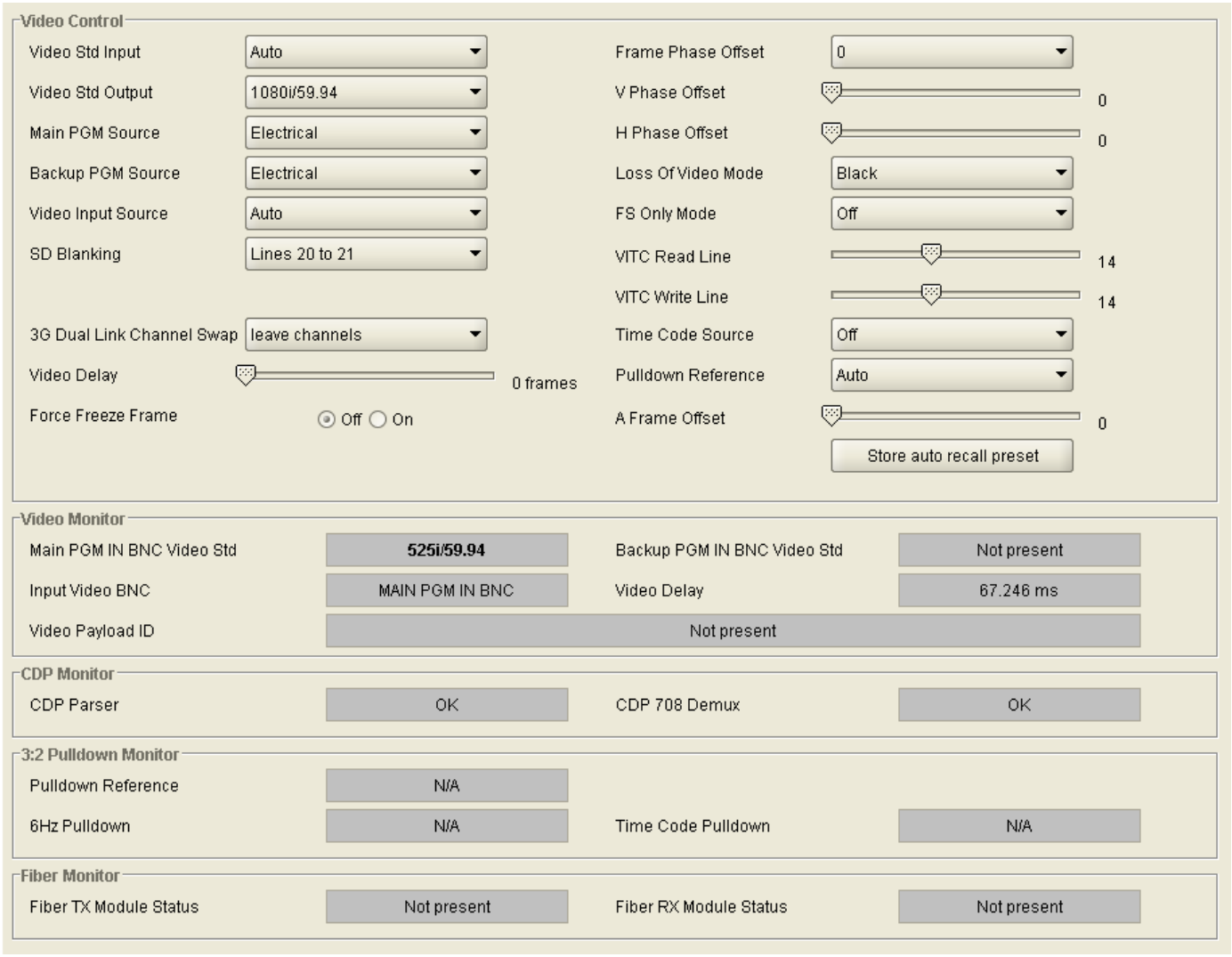
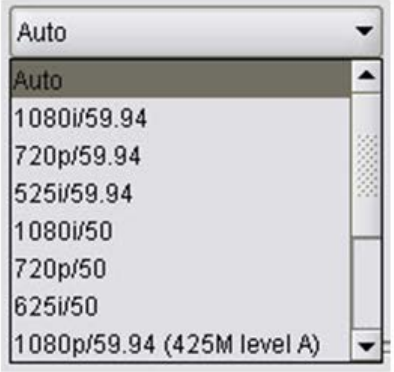


Figure 5-1: Video Tab

5.2.1. Video Control

5.2.1.1. Video Standard Input

This option selects the input video standard being used. Interlaced video formats are shown with the number of fields per second. Progressive formats are shown with the number of frames per second. The module is not capable of converting between 59.94/60 Hz and 50 Hz related frame rates. The drop down menu for ***Video Std Input*** appears as follows:

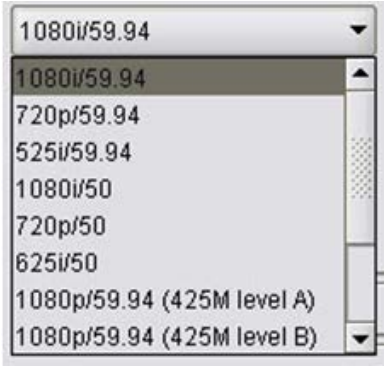


When the input standard is set to *Auto*, the module will auto detect the video standard.
The full set of available input video standards includes:
* For -3G versions only.

Auto
1080i/59.94
720p/59.94
525i/59.94
1080i/50
720p/50
625i/50
1080p/59.94 (425M level A) *
1080p/59.94 (425M level B) *
1080p/59.94 (372M dual link) *
1080p/50 (425M level A) *
1080p/50 (425M level B) *
1080p/50 (372M dual link) *
1080p/23.98sF

5.2.1.2. Video Standard Output

The ***Video Std Output*** control selects the output standard desired. Note that only conversions within the same frame rate family are supported. The module is not capable of converting between 59.94/60 Hz and 50 Hz related frame rates (i.e. standards conversion is not possible). The drop down for ***Video Std Output*** appears as follows:

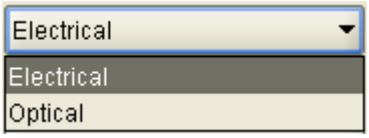


The full set of available output video standards includes:
* For –3G versions only

1080i/59.94
720p/59.94
525i/59.94
1080i/50
720p/50
625i/50
1080p/59.94 (425M level A) *
1080p/59.94 (425M level B) *
1080p/59.94 (372M dual link) *
1080p/50 (425M level A) *
1080p/50 (425M level B) *
1080p/50 (372M dual link) *
1080p/23.98sF

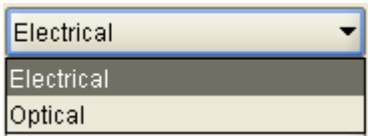
5.2.1.3. Main PGM Source (-F option only)

The ***Main PGM Source*** control selects whether the Main PGM source will be on the PGM IN A BNC or from the PGM IN A SFP (fiber) module. In this control, select *Electrical* to process video supplied on PGM IN A BNC through the main up/down/cross conversion path. Select *Optical* to process video supplied on PGM IN A SFP input through the main up/down/cross conversion path. The drop down for ***Main PGM Source*** appears as follows:



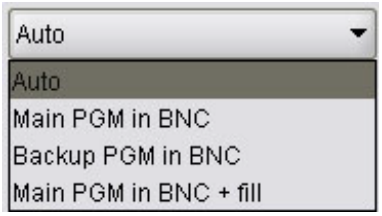
5.2.1.4. Backup PGM Source (-F option only)

The ***Backup PGM Source*** control selects whether the Backup PGM source will be on the PGM IN B BNC or from the PGM IN B SFP (fiber) module. In this control, select *Electrical* to process video supplied on PGM IN B BNC through the main up/down/cross conversion path. Select *Optical* to process video supplied on PGM IN B SFP input through the main up/down/cross conversion path. The drop down for ***Backup PGM Source*** appears as follows:



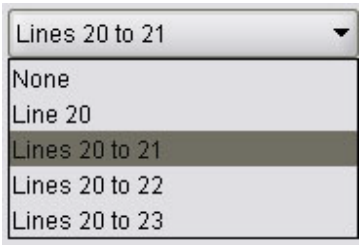
5.2.1.5. Video Input Source (+F or +CF2G option only)

The ***Video Input Source*** control selects whether the source of input video will be the PGM IN A or the PGM IN B BNC. In this control, select *Main PGM in BNC* to process video supplied on PGM IN A through the main up/down/cross conversion path. Select *Backup PGM in BNC* to process video supplied on PGM IN B through the main up/down/cross conversion path. Select *Backup PGM in + fill BNC* to process video supplied on PGM IN A through the up/down/cross conversion path and use content supplied on the PGM IN B as the FILL input for the cards input downstream keyer. Select *Auto* to enable the card to automatically fail-over to the alterative input BNC should video on the BNC in active use become invalid for any reason. The drop down for ***Video Input Source*** appears as follows:



5.2.1.6. SD Blanking

With this control, you can adjust which standard definition lines will be blanked prior to processing SD input signals. It is customary to blank line 21 where closed caption information may be present. Note that the caption translation process will still occur as expected even when line 21 is blanked. This control simply prevents caption waveforms from being processed as video. The drop down for ***SD Blanking*** appears as follows:



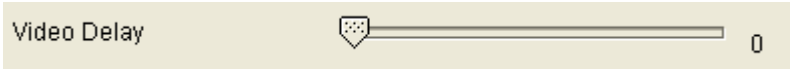
5.2.1.7. 3G Dual Link Channel Swap

This control is used when operating with dual link 1920x1080p input signals per SMPTE 372M. When *leave channels* is selected, LINK A should be applied to PGM IN A and LINK B should be applied to PGM IN B. When *swap channels* is selected, LINK A should be applied to PGM IN B and LINK B should be applied to PGM IN A. The module will internally swap the inputs so that proper processing can occur internally. When set to *auto,* the module will automatically determine if LINK A is supplied to PGM IN A or PGM IN B based on embedded video payload ID information. Use the drop down menu as shown below to select the operating mode.

leave channels	When the *leave channels* option is selected, LINK A should be applied to PGM IN A and LINK B should be applied to PGM IN B.
swap channels	When the *swap channels* option is selected, LINK A should be applied to PGM IN B and LINK B should be applied to PGM IN A. The module will internally swap the inputs so that proper processing can occur internally.
auto	When set to *auto*, the module will automatically determine if LINK A is supplied to PGM IN A or PGM IN B based on embedded video payload ID information.

5.2.1.8. User Added Video Delay

This slider control is used to add additional user delay to the video. Up to an additional 25 frames of delay can be added.

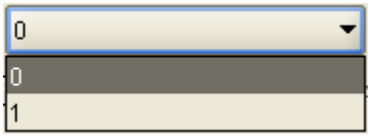


5.2.1.9. Force Freeze Frame

This control Enables or Disables *Force Freeze Frame*. It is a manual user control to freeze the output of the card. When off the module will run as expected. When enabled the output picture will freeze

5.2.1.10. Frame Phase Offset

This control is used to set the frame timing of the output video with respect to the reference input.



0	When set to 0, there will be a 0 frame offset
1	When set to 1, there will be a 1 frame offset

5.2.1.11. Vertical Phase Offset

With this control, you can set the vertical timing of the output video with respect to the reference input set by the *Reference Select* control. There are separate settings of *V phase offset* for each output video type. Setting this control to 0 keeps the output video frame aligned with the reference.

Increasing the value will delay the output video in one-line increments of the output video standard. In order to advance the vertical timing of the output video with respect to the reference, set the control to the maximum total number of lines of the output video minus the number of lines that you wish to advance the output video. (I.e. for 1080i/59.94 output video, the total number of lines is 1125, so to advance the output video 5 lines set the value to 1120.) When increasing the *V Phase Offset* value causes it to go beyond the limit of the frame buffer, the *V Phase Offset* will wrap to the beginning of the frame buffer, resulting in a change of one frame of throughput delay between the SD input and the video output.

Note: The slider is available for selecting *H* and *V Phase Offsets*. To increment, click on the right hand side of the slider. To decrement click on the left hand side of the slider. The slider can also be selected and dragged across the available range if gross movement is desired.

5.2.1.12. Horizontal Phase Offset

With this control, you can set the horizontal timing of the output video with respect to the reference input set by the *Reference Select* control. There are separate settings of H phase offset for each output video type. Setting this control to 0 keeps the output video line aligned with the reference.

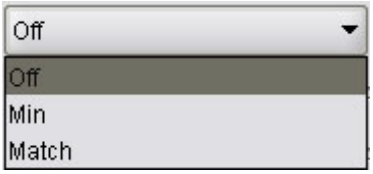
Increasing the value will delay the output video in one-sample increments. In order to advance the horizontal timing of the output video with respect to the genlock video, set the control to the maximum number of samples per line for the output video standard minus the number of samples that you wish to advance the output video. (I.e. for 1080i/59.94 input video the total number of samples per line is 2200, so to advance the output video 5 samples set the value to 2195.)

5.2.1.13. Loss of Video Mode

This control defines the action that will be taken when the input video is lost. You can choose to freeze the output video on the last good frame of input video, force the output video to black or force the output video to blue. The *Loss of Video Mode* drop down menu appears as follows:

5.2.1.14. FS Only Mode

The *FS Only Mode* controls the response of the converter when the input and output formats are the same. When set to ***Min*** the converter will operate purely as a frame synchronizer and will introduce the minimum possible delay in the signal path. When set to ***Match***, the converter will operate as a frame synchronizer AND will maintain the same delay through the signal path that was present before the input standard changes to match the selected output standard. When set to ***Off***, video processing (i.e. ARC processing and video proc controls) will be enabled even when input and output video standards are the same. Select the operating mode using the drop down menu as shown below.



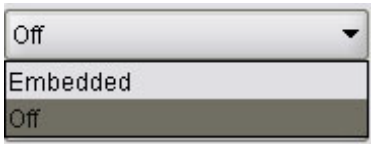
Off	When set to *Off*, the frame sync only mode will be disabled and video processing (i.e. ARC processing and video proc controls) will be enabled even when input and output video standards are the same.
Min	When set to *Min,* the converter will operate purely as a frame synchronizer and will introduce the minimum possible delay in the signal path.
Match	When set to Match, the converter will operate as a frame synchronizer AND will maintain the same delay through the signal path that was present before the input standard changes to match the selected output standard.

5.2.1.15. VITC Reader and VITC Writer Lines

Using the *VITC Read* control, the user can select the line number from which VITC will be read on the input video. Using the *VITC Write* control, the user can select the line number where VITC will be written on the output video. The range for both controls is Line 10 through Line 18.

5.2.1.16. Time Code Source

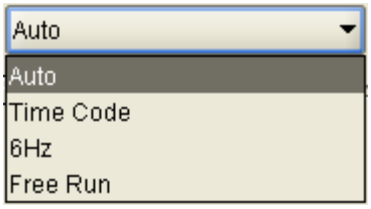
This control selects the source of Timecode. Select *Embedded* to use RP188 ancillary time code (ATC) as the source for high definition video formats or Vertical interval time code (VITC) as the source for standard definition video formats. When *Off* is selected, there will be no timecode on the output video.



If no Timecode is detected, it will not be embedded on the output video.

5.2.1.17. Pull Down Reference

On 1080p/23.98sF video inputs the *Pulldown Reference* menu is used to identify the input frame that will become an A frame at the output. This frame is called the *A frame candidate* (see Figure 5-2). The output of the *A frame candidate* frame will be delayed by 2 frames, will consist of two video fields and will normally be in time with the genlock input. (See sections 5.2.1 and 5.2.1.12 for information on phasing of the output video with respect to the genlock.) Additionally, an offset can be added to the A Frame reference using the *A Frame Offset* control to accommodate situations where the A frames are not in time with the A Frame reference. (See section 5.2.1.18)



Auto	When you select *Auto* the card will auto detect the pulldown reference according to the following priority: • 6 Hz pulse if present • RP188 ancillary timecode if present (feature not implemented yet) • Free Run pulldown if neither 6 Hz pulse or RP188 is present
Time Code	Select *Time Code* when the embedded ancillary timecode present on the input video is used to determine the pulldown. The input frames with time code frame numbers divisible evenly by 4 will normally identify the input A frame candidates.
6Hz	Select *6 Hz Input* when a 6 Hz pulse connected to pin 1 of the **AUXILIARY I/O** connector is used to determine the pulldown. The 6 Hz pulse should be a 1/30th second wide TTL level active high pulse occurring 6 times per second and must be coincident with the start of an input frame. The 6 Hz pulse will normally identify the A frame candidates.
Free Run	Select *Free Run* when you want a continuous 3:2 pulldown on the output but do not care if it matches specific frames of the input video.

5.2.1.18. A Frame Offset

This control allows the user to select other frames as the A Frame.

Figure 5-3 shows how this control defines the A frame candidate when the 6 Hz pulse is present. Figure 5-4 shows how this control defines the A frame when RP188 Ancillary data is used to control the 3:2 pulldown.

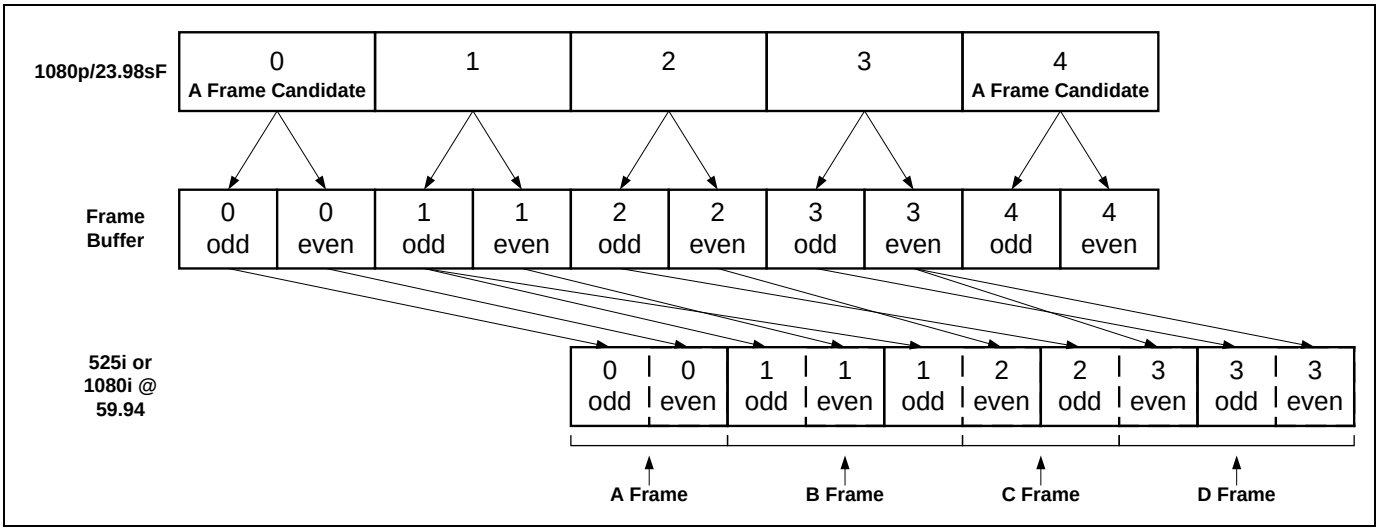


Figure 5-2: 3:2 Pulldown Sequence Insertion – 1080p/23.98sF Input Video

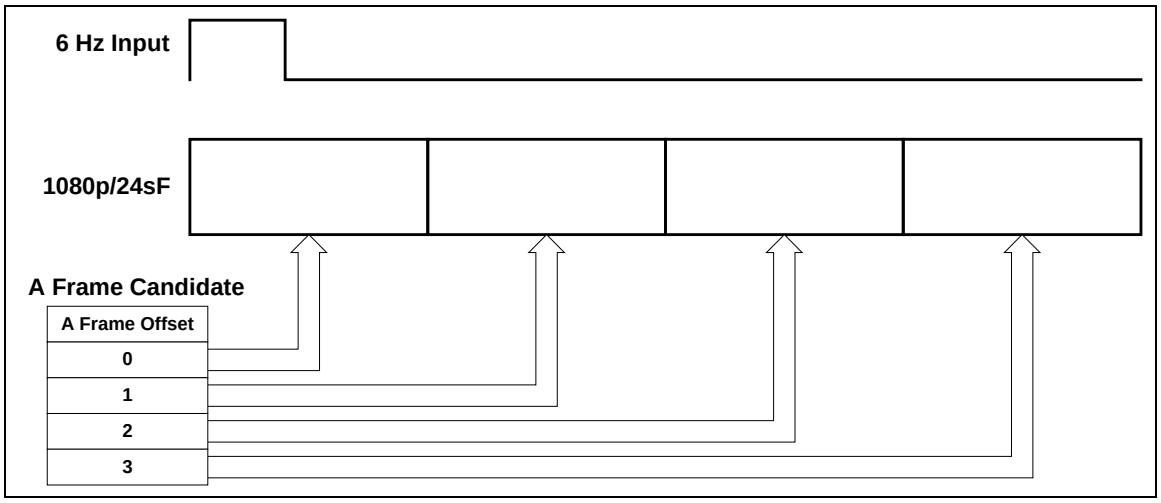


Figure 5-3: 6 Hz Pulldown Sequence A Frame Alignment – 1080p/23.98sF Input Video

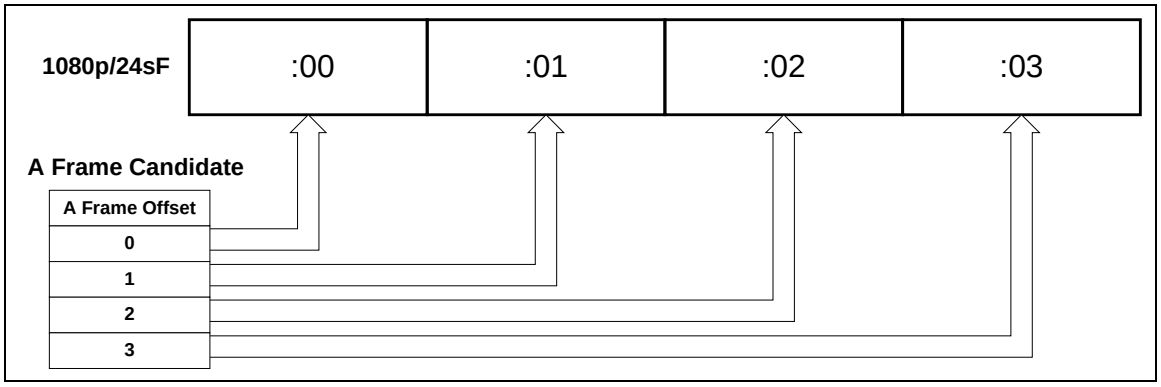


Figure 5-4: RP188 Pulldown Sequence A Frame Alignment – 1080p/23.98sF Input Video

5.2.1.19. Auto Recall Presets for Specific Video Input/Output Standard Combination

The *Auto Recall Presets* functionality is used to automatically recall card configurations for specific combinations of video input and output combinations. The user must define these format dependant card configurations using VistaLINK® PRO. Once this is complete, they will automatically be recalled once that particular combination is detected on the module itself. To utilize this functionality, see Section 5.10.1.3

5.2.2. Video Monitor

The *Video Monitor* section enables the user to view the status of video related parameters. The following sections describe the monitoring in greater detail.

5.2.2.1. Main PGM IN BNC Video Standard

The *Main PGM IN BNC Video Std* reports if a valid video signal is presented to PGM IN A and what standard has been detected when it is present.

5.2.2.2. Backup PGM IN BNC Video Standard

Backup PGM IN BNC Video Std reports if a valid video signal is presented to PGM IN B and what standard has been detected when it is present.

5.2.2.3. Input Video BNC

Input Video BNC reports what input BNC has been selected to pass through the main up/down/cross conversion path.

5.2.2.4. Video Delay

Video Delay reports video delay through the card in ms.

5.2.2.5. Video Payload ID

Video Payload ID reports if a valid Video Payload ID ANC packet has been detected and will display the decoded video format information.

5.2.3. CDP Monitor

The CDP Monitor section enables the user to view CDP parameters that are monitored. This section is for read-only purposes and the parameters herein cannot be modified.

5.2.3.1. CDP Parser

This parameter displays the status of Closed Caption reading.

5.2.3.2. CDP 708 Demux

This parameter displays the status of 708 Closed Caption reading.

5.2.4. 3:2 Pulldown Monitor

The *3:2 Pulldown Monitor* section enables the user to view 3:2 Pulldown parameters that are monitored. This section is for read-only purposes and the parameters herein cannot be modified.

5.2.4.1. Pulldown Reference

This parameter returns the state of the pulldown reference

5.2.4.2. 6 Hz Pulldown

This parameter returns the state of the 6Hz pulldown

5.2.4.3. TimeCode Pulldown

This parameter returns the state of the time code pulldown

5.2.5. Fiber Monitor

The Fiber monitoring section allow for visual acknowledgement of detected SFP inserted into the –F version rear-plate.

5.2.5.1. Fiber TX Module Status

Fiber TX module Status reports if the module has detected the presents of a TX SFP module in the rear plate on boot up.

5.2.5.2. Fiber RX Module Status

Fiber RX module Status reports if the module has detected the presents of a RX SFP module in the rear plate on boot up.

5.3. CARD REFERENCE TAB

The card can be set up in two different scenarios. The user can select a genlock input or the card can be setup to select a set of prioritized genlock sources. When *Prioritized Reference Failover Enable* is set to Disable, the reference will be selected by the Reference select option. If a valid reference is not present on the selected reference input, the card will lock to the incoming video. When *Prioritized Reference Fail Over Enable* is set to enable, the card goes through a selected priority sequence before locking to incoming video.

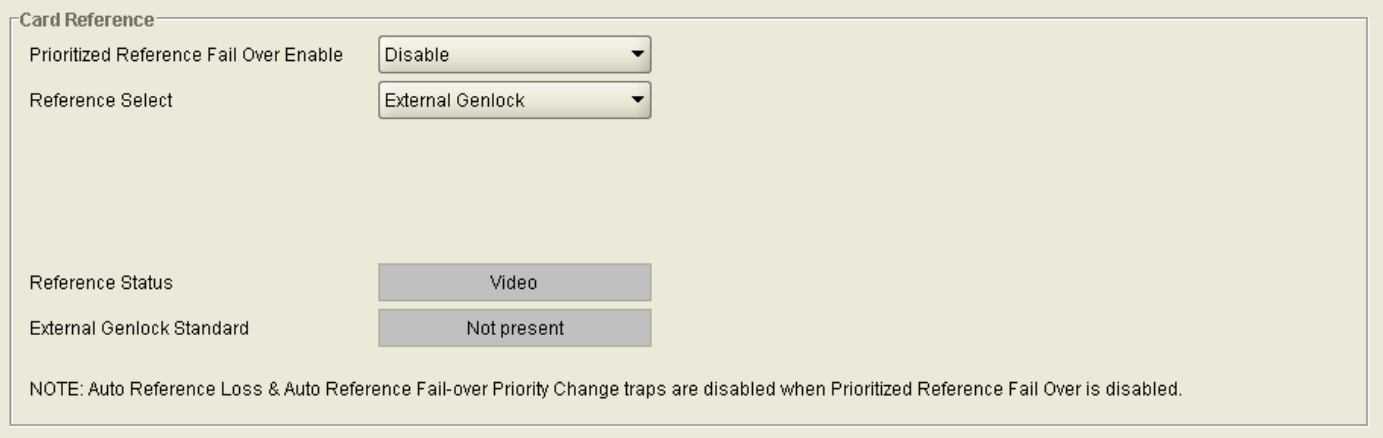
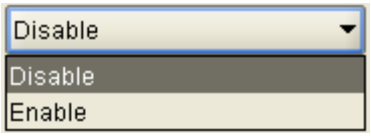


Figure 5-5: Card Reference Tab

5.3.1.1. Prioritized Reference Fail Over Enable Parameter

The *Prioritized Reference Fail Over Enable* is used to set a Priority Genlock sequence



When *Prioritized Reference Fail Over* is Enabled, the following controls appear

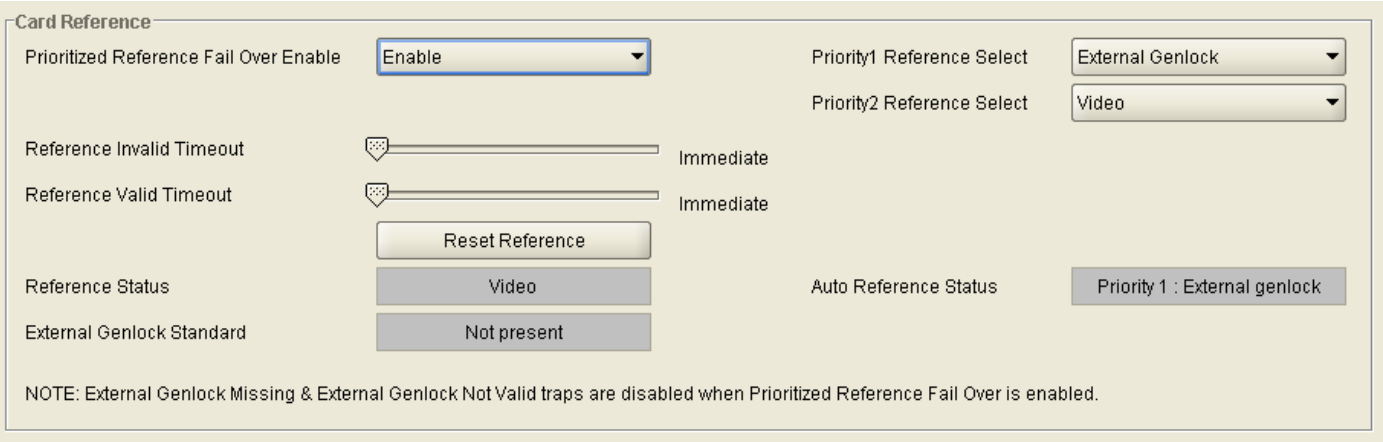


Figure 5-6: Prioritized Reference Fail Over Options

External Genlock Missing and External Genlock Not Valid traps are disabled when Prioritized Reference Fail Over is Enabled

5.3.1.2. Reference Invalid Timeout

This control allows the user to set a timeout length when a reference signal is lost on the Priority 1 Reference input. Once the module confirms that, the genlock input is no longer valid

5.3.1.3. Reference Valid Timeout

The *Reference Valid Timeout* sets a user specified time that the reference input will return to the Priority 1 Reference when a valid genlock signal is re-asserted.

5.3.1.4. Reset Reference Button

The Reference Reset Button allows the user to reset the *Prioritized Reference Fail Over* back to original settings

5.3.1.5. Reference Status Monitor

The *Reference Status* Monitor is used to see what the current valid reference standard is being applied to the module. When no reference if detected the Reference Status window will state None.

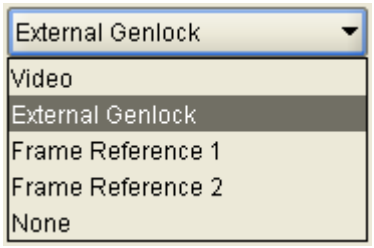
5.3.1.6. External Genlock Standard

External Genlock Standard reports if a valid video reference has been supplied to the REF IN BNC and indicates the standard that is detected when a valid reference is applied.

5.3.1.7. Priority1 Reference Select

This control is used to set the desired first priority reference point

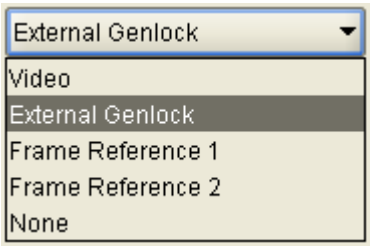
- To select locking to the incoming video, select Video (none).
- To select the REF IN BNC, choose External genlock.
- To select Frame Ref 1 on the 7700FR-G or the 7800FR, choose Frame reference 1
- To select Frame Ref 2 on the 7700FR-G or the 7800FR, choose Frame reference 2
- To select No reference input select None



5.3.1.8. Priority2 Reference Select

This control is used to set the desired second priority reference point

- To select locking to the incoming video, select Video (none).
- To select the REF IN BNC, choose External genlock.
- To select Frame Ref 1 on the 7700FR-G or the 7800FR, choose Frame reference 1
- To select Frame Ref 2 on the 7700FR-G or the 7800FR, choose Frame reference 2
- To select No reference input select None



5.3.1.9. Auto Reference Status Monitor

The Auto reference Status Monitor is used to see what the current Priority the module is under. It will report either Priority 1 or Priority 2 and the source of the current genlock input.

5.3.1.10. Reference Select

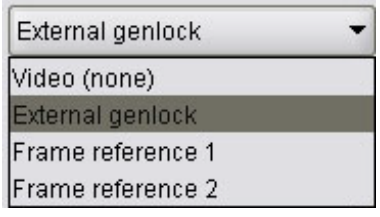
With this control, the source of video reference for the card is selected.
When the card is used in the 7700FR-G or the 7800FR Frame Reference inputs may be used.

- To select the REF IN BNC, choose External genlock.
- To select Frame Ref 1 on the 7700FR-G or the 7800FR, choose Frame reference 1
- To select Frame Ref 2 on the 7700FR-G or the 7800FR, choose Frame reference 2
- To select locking to the incoming video, select Video (none).

Note that if the selected genlock reference disappears or is not valid, the card will lock to incoming video.

This option is only available when *Prioritized Reference Fail Over* is Disabled

The drop down menu for the ***Reference Select*** appears as follows:



5.4. 7812 AUDIO ARCHITECTURE

All 7812 series modules incorporate a similar audio architecture. Figure 5-7 depicts this architecture. Internally, 16 channels of audio are processed within the module. These 16 channels of audio are selected (on a pair-by-pair basis) to come from embedded audio inputs or discrete AES inputs. As well, the 7812 series module has optional Dolby decoders capable of decoding Dolby AC3 or E on any of the embedded audio channels or incoming AES. Once input audio channels are selected, auto-sensing audio sample rate conversion and adjustable audio delay is applied. All advanced audio processing steps, such as audio up-mixing, down-mixing and adjacent channel mono-mixing, have simultaneous access to all 16 channels of input audio.

Finally, sixteen independent Output Channel Mixers or 8 independent Output Channel Mixers for both Dolby AC3 and Dolby E generate sixteen channels of output audio. These Output Channel Mixers perform any required audio inversions, audio gain adjustments and audio channel swapping. 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. Once the desired adjustments have been made to the Audio Mixers, these audio sources can be selected on a channel pair basis with the Audio output mux allowing a selection of AES out or encoded from either Dolby source. AES audio outputs and embedded audio outputs carry the same audio.

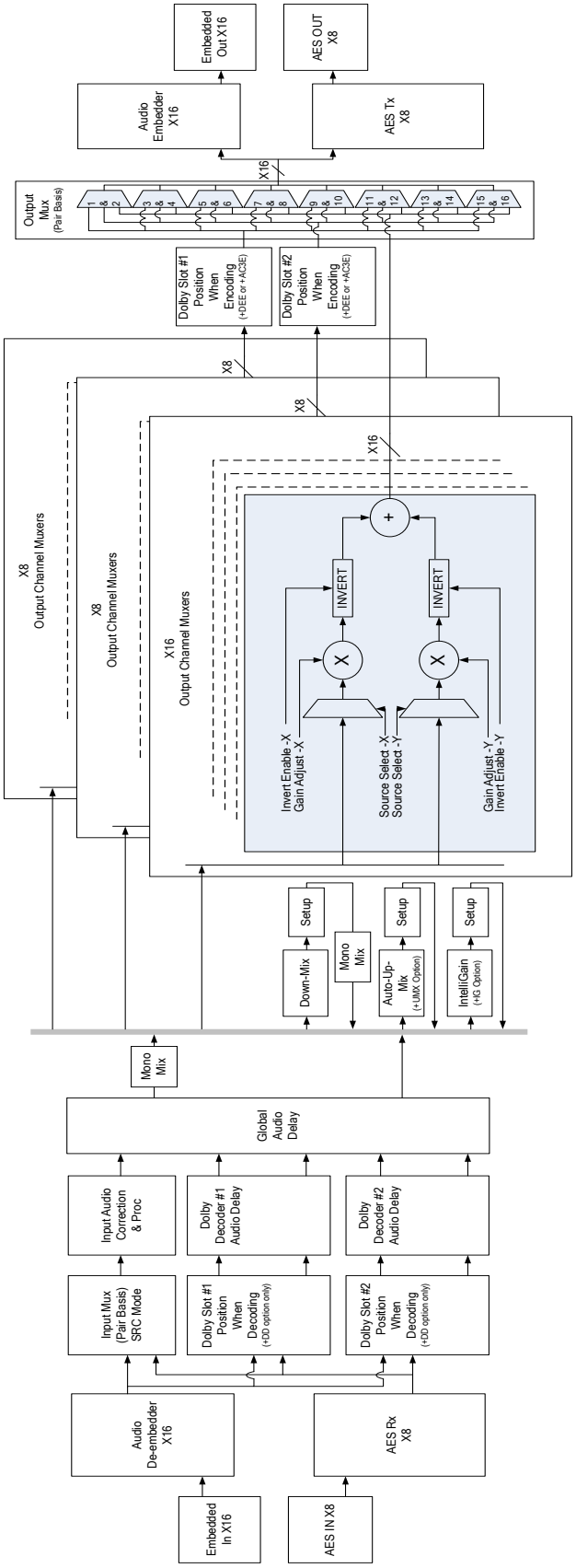


Figure 5-7: Internal 7812 Series Audio Architecture

5.5. AUDIO TAB

The *Audio* control menu is used to configure the on-board audio sample rate converters and the internal audio delay block. The *Audio* menu is also used to enable and disable the four internal audio embedders and to specify C bit processing modes. SRC status, Audio Delay, Video Delay, and Detected Dolby modules are also monitored and reported in the *Audio* menu. Sections 5.5.1 to 5.5.2 give detailed information about each of the menu items.

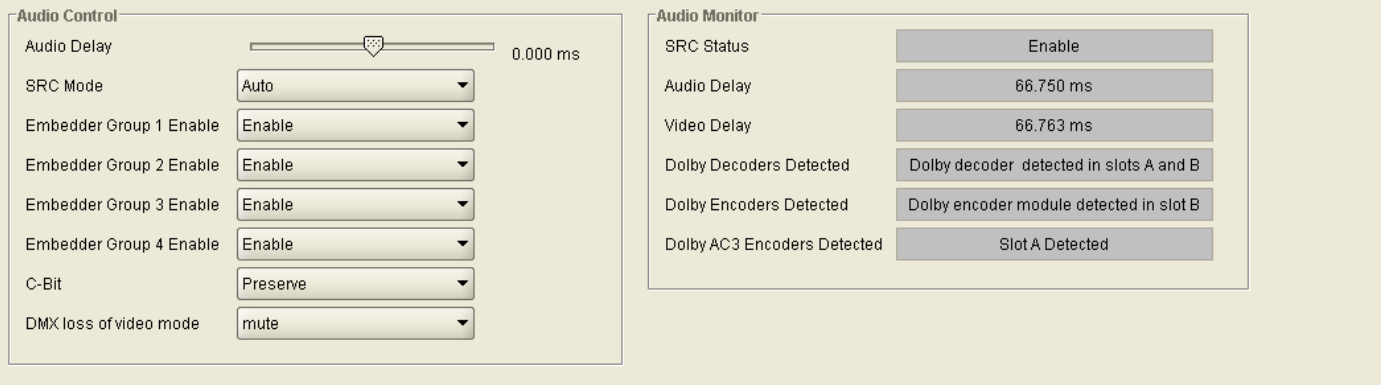


Figure 5-8: Audio Tab

Any changes to the audio settings will cause a momentary interruption on the output audio.

5.5.1. Audio Control

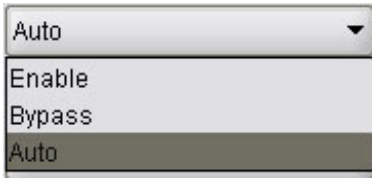
5.5.1.1. Audio Delay

This control adjusts the audio delay +/- 350.00 ms. This delay is relative to the delay that the module automatically inserts to match audio path and video path delays.

Note: Negative values are limited to the amount of video delay; the card does not have negative delay ability. Added Video delay can be added in the Video Tab in order to achieve a greater negative audio delay. See Section 5.2.1.8 for details on how to add additional Video delay

5.5.1.2. SRC Mode Configuration

This control allows the user to adjust the mode for the sample rate converters.



Enable	Enables the sample rate converters for PCM audio.
Bypass	Bypasses the sample rate converters. This setting should be used for non-PCM audio.
Auto	The module will automatically detect PCM and non-PCM audio and automatically turn on/off the SRCs as required. Note that all SRCs are set to bypass as soon as a source of non-PCM audio is detected within any of the 16 internally processed audio channels

5.5.1.3. Embedded Audio Groups

The module has four audio embedders that each inserts one group of audio into the outgoing serial digital video. For the sake of brevity, only the control for Audio Embedder 1 is discussed in further detail. Each embedder has an enable and disable function as shown below.

Disable	Audio embedding for group 1 will be disabled.
Enable	Audio embedding for group 1 will be enabled.

5.5.1.4. C-Bit Control

This control enables the user to set the C-Bit Control.

Using the *C-Bit Control* drop down menu, the user can select from the following options:

Preserve	This option preserves/passes the C-Bit settings from audio inputs to audio outputs.
Replace:	This option replaces the C-Bit settings

5.5.1.5. DMX Loss of Video Mode

This control enables the user to set the action that the 7812 series module will take when there is a loss of input video. If the video is lost, you may choose to mute the output audio or choose to pass AES input audio.

Mute	Setting this control to *mute* will mute the audio if there is a loss of video.
Pass AES	Setting this control to *pass AES* will enable the user to pass the AES audio when the input video is lost.

5.5.2. Audio Monitor Settings

The *Audio Monitor* section enables the user to view video and audio parameters that are monitored. This section is for read-only purposes and the parameters herein cannot be modified.

5.5.2.1. SRC Status

The ***SRC Status*** parameter displays the status of the Sample Rate Converters. The SRC status will display either *enable* or *bypass*.

5.5.2.2. Audio Delay

The ***Audio Delay*** parameter displays the delay of the audio in *ms*.

5.5.2.3. Video Delay

The ***Video Delay*** parameter displays the delay of the associated video in ms.

5.5.2.4. Dolby Decoders Detected

This parameter will indicate the Dolby decoder modules detected on boot up

5.5.2.5. Dolby Encoders Detected

This parameter will indicate the Dolby E encoder modules detected on boot up

5.5.2.6. Dolby AC3 Encoders Detected

The parameter will indicate the Dolby AC3 encoder modules detected on boot up

5.6. AUDIO INPUT TAB

All 7812 series modules incorporate a similar audio architecture as shown in Figure 5-7. Internally, 16 channels of audio are processed within the module. These 16 channels of audio are selected (on a pair-by-pair basis) to come from embedded audio inputs or discrete AES inputs. This is done within the Audio Input control tab. For the sake of brevity, only the settings for channels 1-8 are shown. Controls for CH 9-16 are exactly the same.

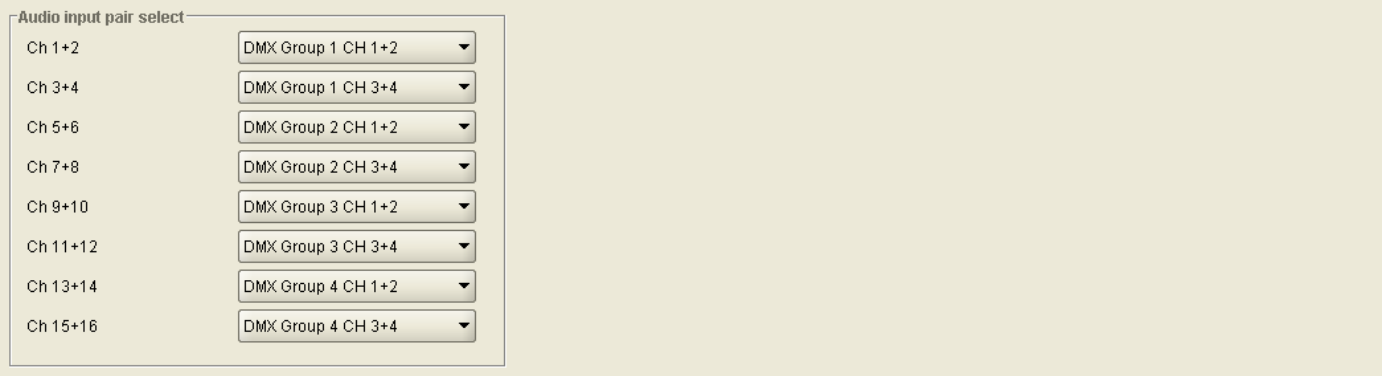
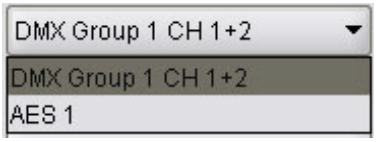


Figure 5-9: Audio Input Tab

5.6.1. Audio Input Pair Select Options

5.6.1.1. Audio Source for Input Channel 1 and 2

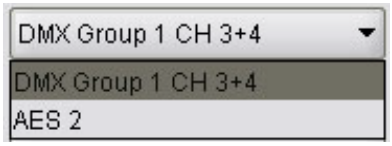
This control allows the user to configure the source for internally processed channels 1 and 2. Your options include processing embedded audio channels with Group 1 CH1+2 or AES1 input.



DMX Group 1 CH1+2	Select this option to choose embedded audio Group 1, CH1+2 for subsequent processing in the card.
AES1	Select this option to choose AES1 input for subsequent processing in the card.

5.6.1.2. Audio Source for Input Channel 3 and 4

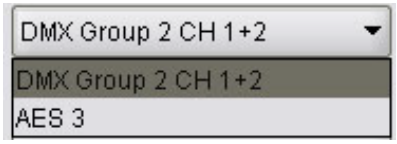
This control allows the user to configure the source for internally processed channels 3 and 4. Your options include processing embedded audio channels with Group 1 CH3+4 or AES2 input.



DMX Group 1 CH3+4	Select this option to choose embedded audio Group 1, CH3+4 for subsequent processing in the card.
AES2	Select this option to choose AES2 input for subsequent processing in the card.

5.6.1.3. Audio Source for Input Channel 5 and 6

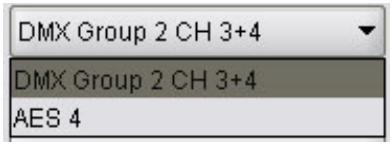
This control allows the user to configure the source for internally processed channels 5 and 6. Your options include processing embedded audio channels Group 2 CH1+2 or AES3 input.



DMX Group 2 CH1+2	Select this option to choose embedded audio Group 2, CH1+2 for subsequent processing in the card.
AES3	Select this option to choose AES3 input for subsequent processing in the card.

5.6.1.4. Audio Source for Input Channel 7 and 8

This control allows the user to configure the source for internally processed channels 7 and 8. Your options include processing embedded audio channels with Group 2 CH3+4 or AES4 input.



DMX Group 2 CH3+4	Select this option to choose embedded audio Group 2, CH3+4 for subsequent processing in the card
AES4	Select this option to choose AES4 input for subsequent processing in the card

5.7. AUDIO OUTPUT TAB

As shown in Figure 5-10, there are eight individual Output Channel Muxes in 7812 series modules. These Output Channel muxes allow the user to select from either the Audio mixers, Dolby encoder A or Dolby Encoder B.

For the sake of brevity, only the *Audio Output Pair 1 + 2* control tab will be discussed in this manual. Controls for *Ch 3 + 4*, *Ch 5 + 6*, *and Ch 7 + 8* etc. are identical in their operation.

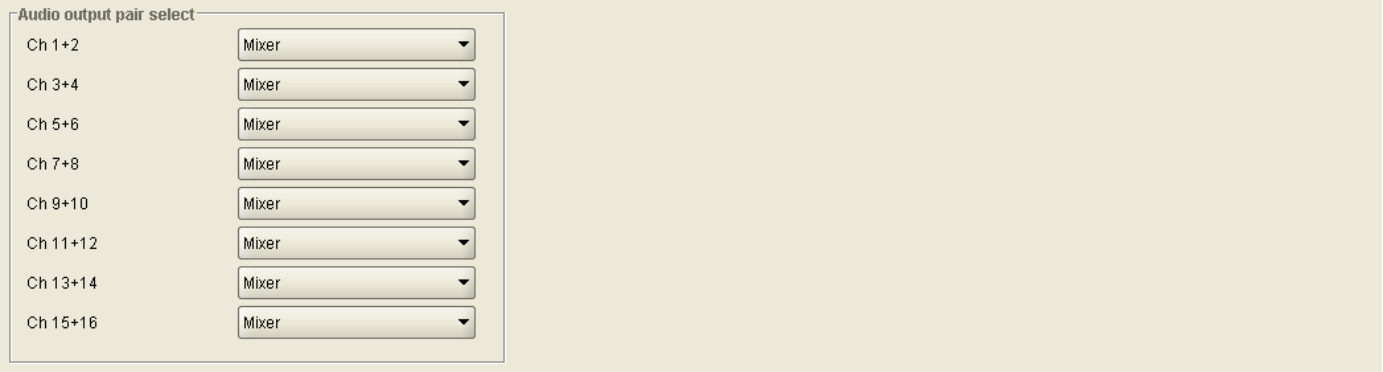
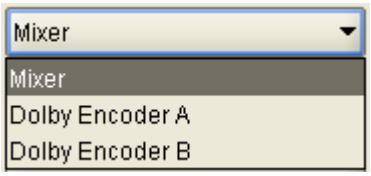


Figure 5-10: Audio Output Tab

5.7.1. Audio Output Pair Select

The Audio Output Pair Select enables the user to select if the output audio source will be from the mixer controls or from any of the available Dolby encoders. The *Audio Output Pair Select* drop down menu appears as follows:



Mixer	Select this option to output audio from the Audio mixers on the Audio Proc Tab
Dolby Encoder A	Select this option to output Encoded audio from the Dolby Encoder in slot A
Dolby Encoder B	Select this option to output Encoded audio from the Dolby Encoder in slot B

5.8. AUDIO PROC TAB

As shown in Figure 5-11, there are sixteen individual Output Channel Mixers in 7812 series modules. 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. Embedded audio and discrete AES audio outputs are driven with the same audio generated using these Output Channel Mixers.

For the sake of brevity, only the *Audio Proc Ch1-Ch4* control tab will be discussed in this manual. Control radial buttons for Channel 5-8, Channel 9-12, and Channel 13-16 are identical in their operation. 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.

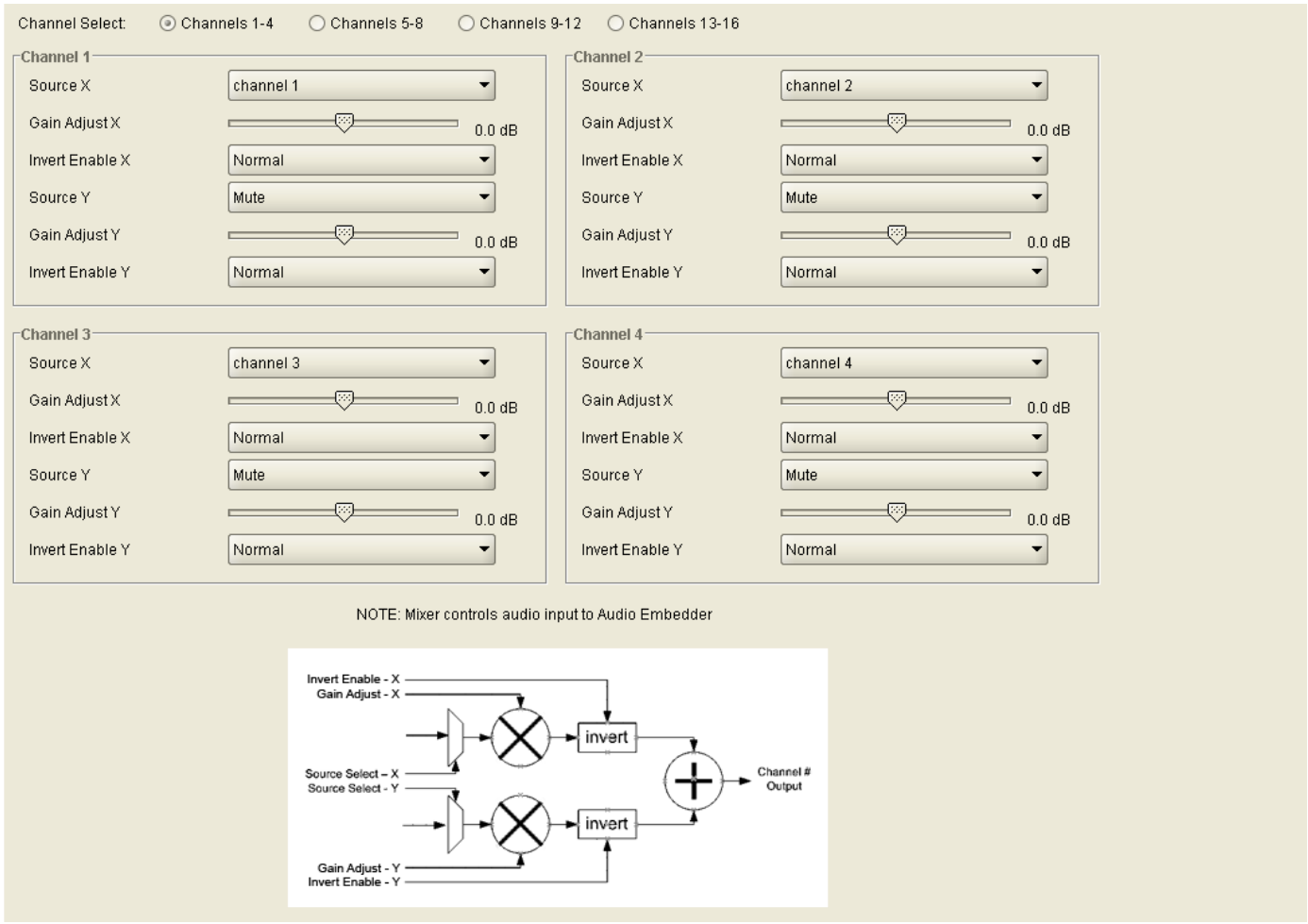
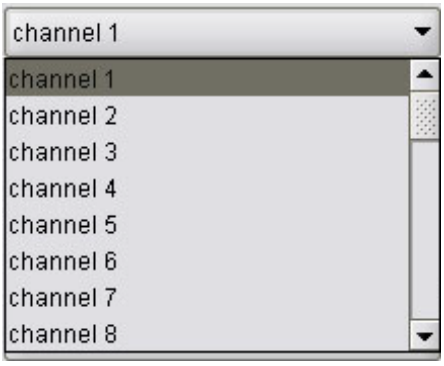


Figure 5-11: Audio Proc Ch1-Ch4 Tab

5.8.1. Source X

The *Source X* control enables the user to route one of the 16 internally processed input audio channels to the X input of the Channel mixer. The user can select the channel source by selecting the desired channel from the *Source X* drop down menu as shown below.



The full set of available channel options is listed below.

Source X Input	Channel 1	IntelliGain Channel 1
	Channel 2	IntelliGain Channel 2
	Channel 3	IntelliGain Channel 3
	Channel 4	IntelliGain Channel 4
	Channel 5	IntelliGain Channel 5
	Channel 6	IntelliGain Channel 6
	Channel 7	IntelliGain Channel 7
	Channel 8	IntelliGain Channel 8
	Channel 9	Dolby Decoder A Channel 1
	Channel 10	Dolby Decoder A Channel 2
	Channel 11	Dolby Decoder A Channel 3
	Channel 12	Dolby Decoder A Channel 4
	Channel 13	Dolby Decoder A Channel 5
	Channel 14	Dolby Decoder A Channel 6
	Channel 15	Dolby Decoder A Channel 7
	Channel 16	Dolby Decoder A Channel 8
	Mono mix channels 1 and 2	Dolby Decoder A Monitor Channel 1
	Mono mix channels 3 and 4	Dolby Decoder A Monitor Channel 2
	Mono mix channels 5 and 6	Dolby Decoder B Channel 1
	Mono mix channels 7 and 8	Dolby Decoder B Channel 2
	Mono mix channels 9 and 10	Dolby Decoder B Channel 3
	Mono mix channels 11 and 12	Dolby Decoder B Channel 4
	Mono mix channels 13 and 14	Dolby Decoder B Channel 5
	Mono mix channels 15 and 16	Dolby Decoder B Channel 6
	Mute	Dolby Decoder B Channel 7
	Down Mix L	Dolby Decoder B Channel 8
	Down Mix R	Dolby Decoder B Monitor Channel 1
	Down Mix Mono	Dolby Decoder B Monitor Channel 2
	Up Mix L Front	
	Up Mix R Front	
	Up Mix Center	
	Up Mix LFE	
	Up Mix L Surround	
	Up Mix R Surround	
	Up Mix Stereo Pass L	
	Up Mix Stereo Pass R	

5.8.2. Gain Adjust X

The *Gain Adjust X* 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.

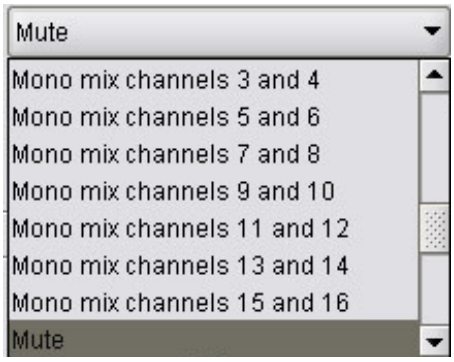
5.8.3. Invert Enable X

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

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

5.8.4. Source Y

The Source Y control enables the user to route one of the 16 internally processed input audio channels to the Y input of the channel mixer. The user can select the channel source by selecting the desired channel from the Source Y drop down menu as shown below.



The full set of available channels is listed below.

Source Y Input	Channel 1	IntelliGain Channel 1
	Channel 2	IntelliGain Channel 2
	Channel 3	IntelliGain Channel 3
	Channel 4	IntelliGain Channel 4
	Channel 5	IntelliGain Channel 5
	Channel 6	IntelliGain Channel 6
	Channel 7	IntelliGain Channel 7
	Channel 8	IntelliGain Channel 8
	Channel 9	Dolby Decoder A Channel 1
	Channel 10	Dolby Decoder A Channel 2
	Channel 11	Dolby Decoder A Channel 3
	Channel 12	Dolby Decoder A Channel 4
	Channel 13	Dolby Decoder A Channel 5
	Channel 14	Dolby Decoder A Channel 6
	Channel 15	Dolby Decoder A Channel 7
	Channel 16	Dolby Decoder A Channel 8
	Mono mix channels 1 and 2	Dolby Decoder A Monitor Channel 1
	Mono mix channels 3 and 4	Dolby Decoder A Monitor Channel 2
	Mono mix channels 5 and 6	Dolby Decoder B Channel 1
	Mono mix channels 7 and 8	Dolby Decoder B Channel 2
	Mono mix channels 9 and 10	Dolby Decoder B Channel 3
	Mono mix channels 11 and 12	Dolby Decoder B Channel 4
	Mono mix channels 13 and 14	Dolby Decoder B Channel 5
	Mono mix channels 15 and 16	Dolby Decoder B Channel 6
	Mute	Dolby Decoder B Channel 7
	Down Mix L	Dolby Decoder B Channel 8
	Down Mix R	Dolby Decoder B Monitor Channel 1
	Down Mix Mono	Dolby Decoder B Monitor Channel 2
	Up Mix L Front	
	Up Mix R Front	
	Up Mix Center	
	Up Mix LFE	
	Up Mix L Surround	
	Up Mix R Surround	
	Up Mix Stereo Pass L	
	Up Mix Stereo Pass R	

5.8.5. Gain Adjust Y

The *Gain Adjust 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 associated slider control left to decrease the value or right increase the value. The value range for the gain adjustments is -24 dB to +24 dB. Gain is adjusted in 0.1 dB increments.

5.8.6. Invert Enable Y

This control enables the user to invert the phase or pass the selected audio channels. The Invert Enable Y drop down menu appears as follows:

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

5.9. AUDIO INPUT CORRECTION TAB

The *Audio Input Correction* controls as shown in Figure 5-12 are used to configure parameters associated with the audio inputs. Audio input Correction is used to adjust the Gain, Inversion and delay of the individual audio input channels. Cannels 1 to 8 can be configured by selecting the *Channels 1-8* radial button and channels 9 to 16 can be configured by selecting the *Channels 9-16* radial button. The controls for Channel 1 will be described in detail, as the controls for Channels 1 - 16 operate in an identical fashion. Sections 5.9.1 to 5.9.3 provide detailed information about each of the menu items.

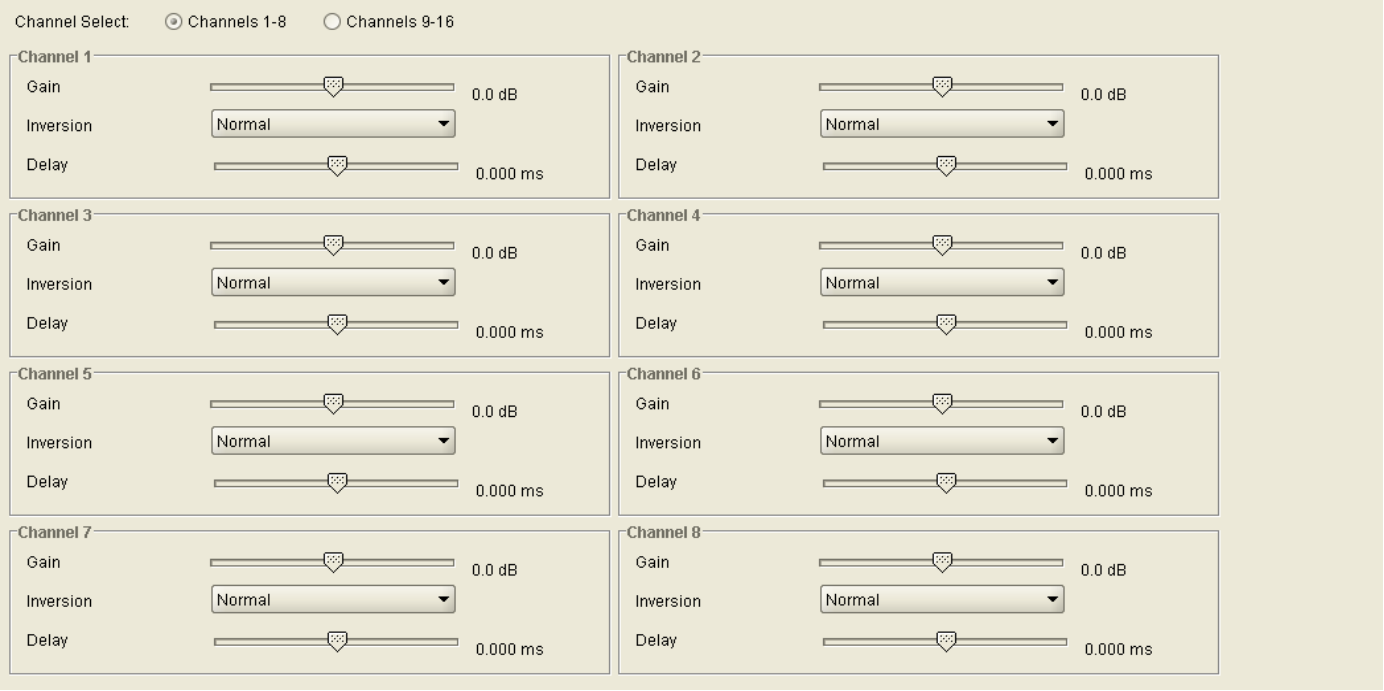


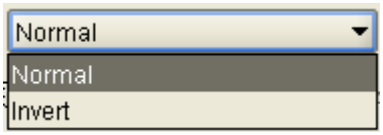
Figure 5-12: Audio Input Correction Tab

5.9.1. Input Gain Controls

The *Gain* 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 associated slider control left to decrease the value or right increase the value. The value range for the gain adjustments is -24 dB to +24 dB. Gain is adjusted in 0.1 dB increments.

5.9.2. Conversion Control

The *Inversion* control is used to invert the incoming audio channel.



5.9.3. Input Channel Audio Delay

This control adjusts the audio delay +/- 350.00 ms. This delay is relative to the delay that the module automatically inserts to match audio path and video path delays.

Note: Negative values are limited to the amount of video delay; the card does not have negative delay ability. Added Video delay can be applied in the Video Tab in order to achieve a greater negative audio delay. See Section 5.2.1.8 for details on how to add additional Video delay

5.10. DEINTERLACER CONTROL TAB

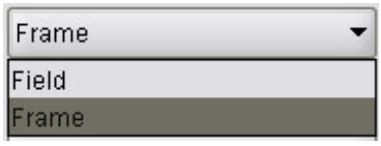
The *Deinterlacer* controls as shown in Figure 5-13, are used to configure parameters associated with the video de-interlacer. Video de-interlacing is performed so that the scaling/aspect ratio conversion can occur in the progressive video domain. Scaling/aspect ratio conversion in the progressive domain is the highest quality way to perform up/down/cross conversion. Sections 5.10.1.1 to 5.10.1.5 provide detailed information about each of the menu items.

Figure 5-13: DeInterlacer Control Tab

5.10.1. De-Interlacer Control

5.10.1.1. Setting the Deinterlacer Mode

With this control, you can set whether the module will perform field or frame based de-interlacing conversion. The user can select Field or Frame based processing using the drop down menu that appears as follows:

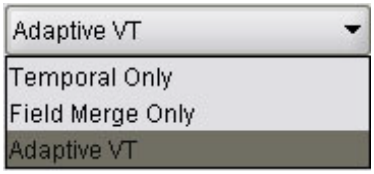


Field	In *Field* mode, the de-interlacer works on a field-by-field basis.
Frame	In *Frame* mode, the de-interlacer works on a complete frame basis.

Note: When operating in an up-conversion mode, this control is ignored and is defaulted to frame mode. The deinterlacer will automatically switch between frame and field accordingly to the image.

5.10.1.2. DeInterlacer Type

This control enables the user to set the base type of de-interlacing that the module will perform. The user may choose between *Temporal Only*, *Field Merge Only* and *Adaptive VT*. Select that de-interlacer processing mode using the drop down menu.



Temporal Only	When de-interlacing, only temporal filtering is performed to interpolate the 480i to 480p pixels or 1080i to 1080 pixels.
Field Merge Only	When de-interlacing, field 1 and field 2 are merged together with no filtering performed to interpolate 480i to 480p or 1080i to 1080p pixels.
Adaptive VT	When de-interlacing fully motion adaptive processing is applied with adaptive spatial+ temporal filtering applied when interpolating 480i to 480p or 1080i to 1080p pixels. This is the highest quality mode of operation and is the recommended setting.

5.10.1.3. IFMD Mode

This control enables the user to set the motion processing mode for the de-interlacer. The user may select from *Disable, Auto* or *Noise Adaptive* using the following drop down menu.

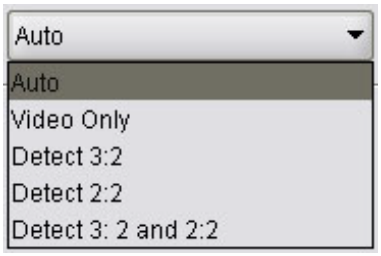
Disable	No motion adaptive processing will take place and all pixels will be treated as static.
Auto	Per pixel motion processing will take place and de-interlacing filters will automatically change based on the amount of per pixel motion detected.
Noise Adaptive	Per pixel motion processing will take place and de-interlacing filters will automatically change based on the amount of per pixel motion detected and the automatically measured amount of noise in the image. This is the recommended setting for the highest image quality.

5.10.1.4. IFMD Threshold

With this control, the user can change the threshold of what is deemed motion for the deinterlacer. The user can set the IFMD threshold by moving the threshold slider to the left or the right. The IFMD threshold value ranges from 0 to 15. The threshold can be adjusted in increments of 1. The IFMD Threshold is set to 8 by default. A value of 8 gives the best overall image quality for a wide variety of image content.

5.10.1.5. Film Detection Mode

The 7812 series modules have the ability to automatically detect embedded 3:2 and 2:2 sequences. When such sequences are present inverse 3:2 and 2:2 is performed so that mathematically lossless conversion back to progressive may be achieved. For optimal performance, the *Auto* mode of operation is highly recommended. The ***Film Detection Mode*** drop down menu enables the user to set the operating mode as shown below:



Auto	The card will automatically detect video sequences including embedded 3:2 and embedded 2:2 sequences. Processing will be automatically adapted to match the detect content. If no film mode sequence is detected, the de-interlacer will automatically revert to video mode processing. This is the recommended setting for this control.
Video Only	The video de-interlacer will operate in *video only* mode and will utilize its internal motion adaptive and edge interpolation process for de-interlacing the input signal.
Detect 3:2	The video de-interlacer will search for and lock onto embedded 3:2 sequences and perform inverse 3:2 pull-down to de-interlace the input signal.
Detect 2:2	The video de-interlacer will search for and lock onto embedded 2:2 sequences and perform inverse 2:2 pull-down to de-interlace the input signal.
Detect 3:2 and 2:2	The video de-interlacer will search for and lock onto embedded 3:2 or 2:2 sequences and perform inverse 3:2 or 2:2 pull-down to de-interlace the input signal.

5.11. VIDEO PROCESSING TAB

The *Video Proc* control menu as shown in Figure 5-14 is used to configure parameters associated with the video processing functions of the converter. Sections 5.11.1 to 5.11.1.8 provide detailed information about each of the menu items.

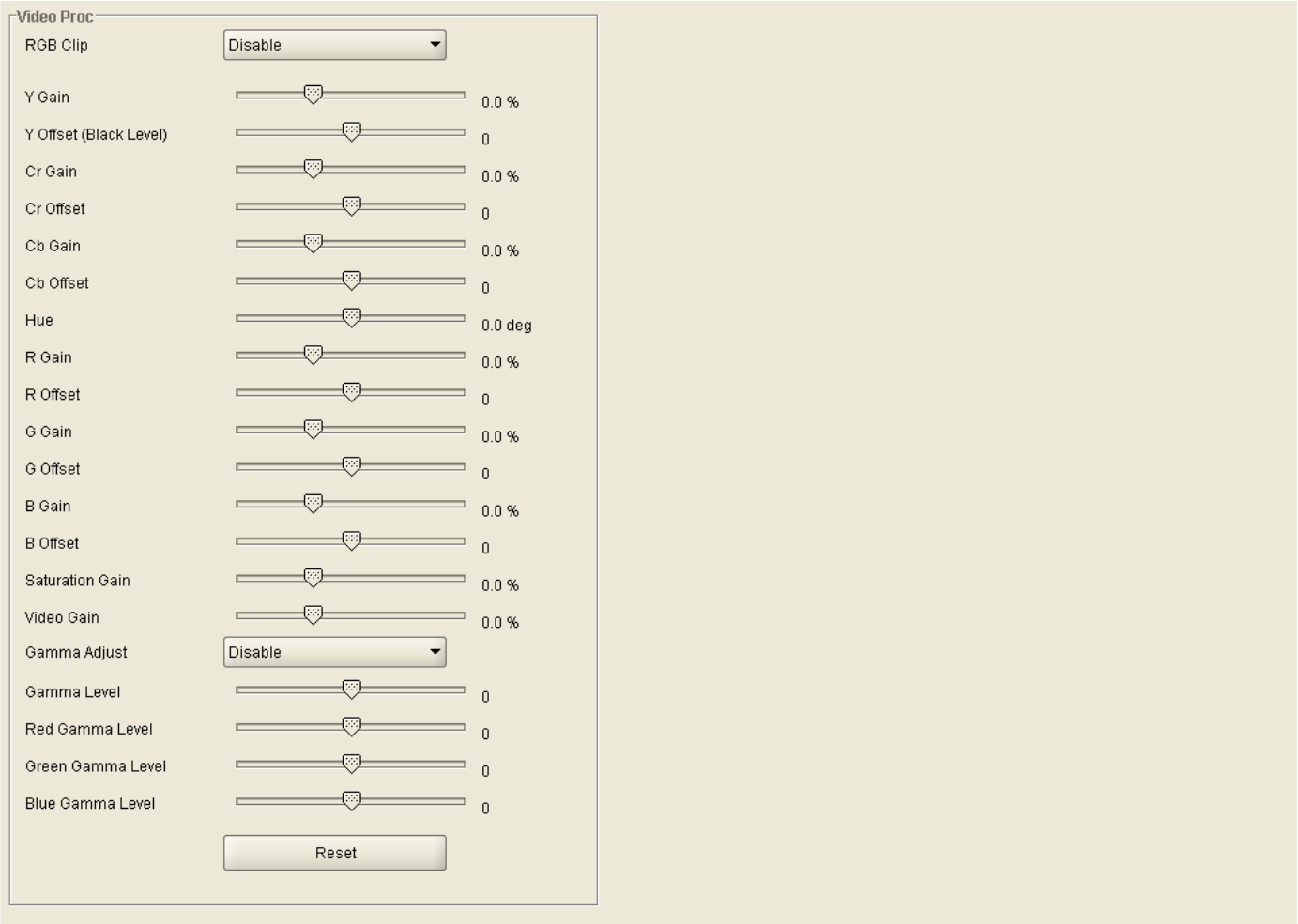


Figure 5-14: Video Proc Tab

ALL of these parameters affect the video in real time. H&V frequency bands will cause hits to the video while a new filter is loaded.

5.11.1. Video Proc

5.11.1.1. RGB Clipper

The ***RGB Clip*** parameters control RGB clipping/colour legalization process. When set to *enable*, the module will clip any illegal levels of R, G, and B (individually) to their respective Black and White Levels. If disabled, then the illegal values are passed unmodified. This control is normally set to *Disable* in order to allow for Super Black or other test patterns to pass through the module.

Enable	The module will clip any illegal levels of R, G, and B (individually) to their respective Black and White Levels.
Disable	Video will pass through this processing block un-modified and illegal RGB values will pass.

5.11.1.2. Gain Levels

There are eight controls that set the gain of the video. With these controls, the user can adjust the gain of the 3 components in either the Y Cr Cb domain or the R G B domain over a range of -50% to 100% in 0.1% steps. Gain adjustments in the Y, Cb, and Cr domain are made first, and then gain adjustments in the RGB domain. Illegal values are clipped after gain adjustments.

Y Gain: Ranges from –50% to 100% in 0.1% increments.
Cb Gain: Ranges from –50% to 100% in 0.1% increments.
Cr Gain: Ranges from –50% to 100% in 0.1% increments.
R Gain: Ranges from –50% to 100% in 0.1% increments.
G Gain: Ranges from –50% to 100% in 0.1% increments.
B Gain: Ranges from –50% to 100% in 0.1% increments.
Saturation Gain: Ranges from –50% to 100% in 0.1% increments.
Video Gain: Ranges from –50% to 100% in 0.1% increments.

5.11.1.3. DC Offsets

There are three controls that set the DC Offset of the video signal. With these controls, the user can individually adjust the DC offset of Y, Cr and Cb with a range of +/- 200 quantization levels.

Y Offset: Ranges from –200 to 200 quantization levels in 1 level increments.
Cb Offset: Ranges from –200 to 200 quantization levels in 1 level increments.
Cr Offset: Ranges from –200 to 200 quantization levels in 1 level increments.

5.11.1.4. Hue

With this control, the user can adjust the Hue of the video signal. The Hue control can be applied to the video signal regardless of the type of video signal being applied (SD, HD or 3G).

Hue: Ranges from –180 to 180 degrees in 0.1 degree increments.

5.11.1.5. Gamma Adjust

The *Gamma Adjust* control enables and disables the gamma adjustment functionality of 7812 series modules. When enabled, the module will allow the user to adjust the gamma level. If disabled, then the gamma level is set to 0.

Enable	The ability to adjust the gamma of the video signal is enabled. Gamma Level, Red Gamma Level, Green Gamma Level, Blue Gamma Levels controls are enabled.
Disable	The ability to adjust the gamma of the video signal is disabled. Gamma Level, Red Gamma Level, Green Gamma Level, Blue Gamma Levels controls are disabled.

5.11.1.6. Gamma Level

With this control, the user can adjust the overall Gamma correction factor from - 128 to + 127 in increments of 1.

Gamma Level: Ranges from –128 to 127 in 1 level increments.

5.11.1.7. Red, Green, Blue Gamma Levels

With these controls, the user can individually adjust the Red, Green, and Blue Gamma levels from – 128 to + 127 in increments of 1.

Red Gamma Level: Ranges from –128 to 127 in 1 level increments.
Green Gamma Level: Ranges from –128 to 127 in 1 level increments.
Blue Gamma Level: Ranges from –128 to 127 in 1 level increments.

5.11.1.8. Reset Button

By pressing the *Reset* button, all Video Processing parameters in this control tab will return to their default setting.

5.12. COLOUR LEGALIZE TAB

The *Colour Legalize* control menu as shown in Figure 5-15 is used to configure parameters associated with the video processing functions of the converter. Sections 5.11.1 to 5.11.1.8 provide detailed information about each of the menu items.

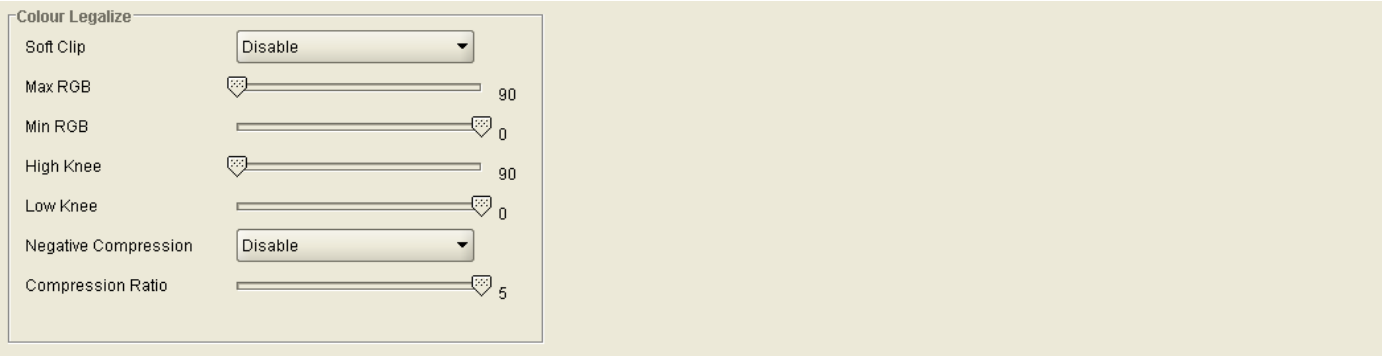


Figure 5-15: Colour Legalize Tab

5.12.1. Colour Legalize

5.12.1.1. Soft Clip

Soft Clip control will enable/disable the colour compander controls

5.12.1.2. Max RGB

This control will set the maximum value for the RGB compander. The value range for the Max RGB adjustments is 90% to 110% of the maximum legal value. Max RGB is adjusted in 1% increments. The default value is 90%.

5.12.1.3. Min RGB

This control will set the minimum value for the RGB compander. The value range for the Min RGB adjustments is from 0% to -10% of the minimum legal value. Min RGB is adjusted in 1% increments. The default value is 0%.

5.12.1.4. High Knee

This control will set the point at which companding occurs at the upper range. The value range for the high knee adjustments is 90% to 110% of the maximum legal value. high knee is adjusted in 1% increments. The default value is 90%.

5.12.1.5. Low Knee

This control will set the point at which companding occurs at the lower range. The value range for the low knee adjustments is from 0% to -10% of the minimum legal value. low knee is adjusted in 1% increments. The default value is 0%.

5.12.1.6. Negative Compression

This control will enable/disable negative colour legalizer compression to be applied. When Enabled the amount of compression can be adjusted with the compression ratio control

5.12.1.7. Compression Ratio

This control will set the gamut range compression ratio. The value range for the compression adjustments is from 5% to 1% of the minimum legal value. The compression ratio is adjusted in 1% increments. The default value is 5%.

5.13. IMAGE ENHANCEMENT TAB

The *Image Enhancement* control menu as shown in Figure 5-16, are used to configure parameters associated with the video processing functions of the converter. Sections 5.11.1 to 5.11.1.8 provide detailed information about each of the menu items.

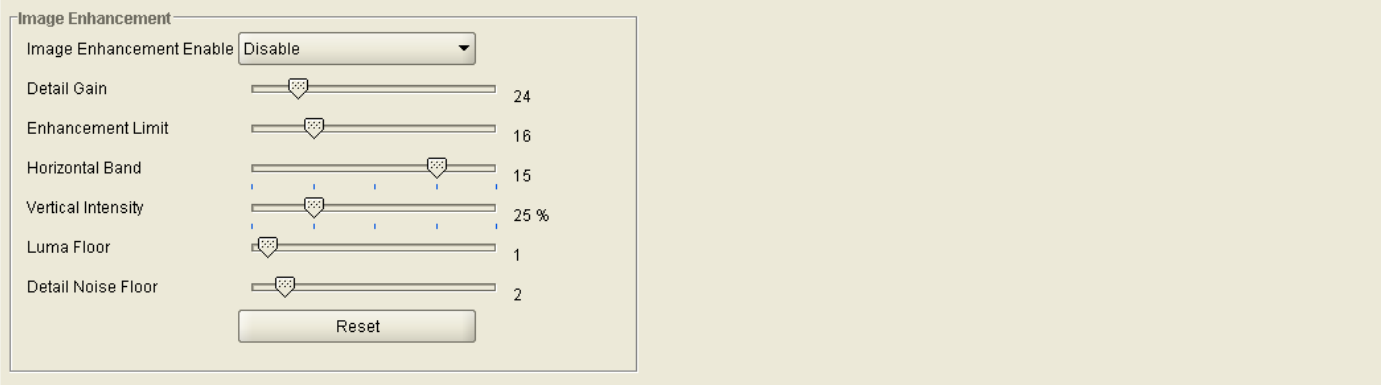


Figure 5-16: Image Enhancement Tab

5.13.1. Image Enhancement

5.13.1.1. Image Enhancement Enable

Setting this control to *Enable* will enable the *Image Enhancement Control* settings. Setting this control to *Disable* will disable the *Image Enhancement Control* functionality.

Enable	Enables the image enhancement process.
Disable	Disables the image enhancement process.

5.13.1.2. Detail Gain

This control selects the level of the detail gain with a range of 0 to 127, where 0 refers to no increase in detail gain. A typical range for this control is 0 to 50. Higher values will normally distort the image beyond the range that is normally considered acceptable.

5.13.1.3. Enhancement Limit

This control selects the largest detail value to be added back into the signal. The range is from 0 to 63. The detail that has a value larger than this value will be clipped.

5.13.1.4. Horizontal Band

This control selects the Horizontal frequency band to be enhanced. The horizontal band is adjusted in increments of 5, where 0 selects the lowest frequency band available and 20 the highest.

5.13.1.5. Vertical Intensity

This control selects the intensity of the vertical enhancement process, as a ratio of the Horizontal enhancement. The range is 0 to 100% in increments of 25% where 0% refers to no Vertical enhancement and 100% provides a Vertical intensity that is equivalent to the Horizontal.

5.13.1.6. Luma Floor

This control selects the minimum Luma value that will be enhanced with a range of 0 to 15. The default value is 1. Pixels with a value below this floor will be left untouched.

5.13.1.7. Detail Noise Floor

When the image detail has a value that is below this floor it will be deemed to consist mostly of noise. As such, the pixel associated with that detail level would be left untouched. The detail noise floor has a valid range of 0 to 15 with a default value of 2.

By pressing the *Reset* button, all Image Enhancement Controls will return to their default setting.

5.14. SCALER TAB

The 7812 series of converters utilize high performance multi-tap polyphase filters to perform scaling and aspect ratio conversion on the input signal. The *Scaler* control menus are used to configure the cut-off frequencies of the polyphase filters and to define the aspect ratio conversion. In addition, the *Scaler* tab contains specific controls for managing sharp vertical and horizontal edge transitions so that edge ringing is minimized. Static side panel colours and output AFD stamping values are also adjusted within this tab. Sections 5.14.1 to 5.14.5 provide detailed information about each menu items.

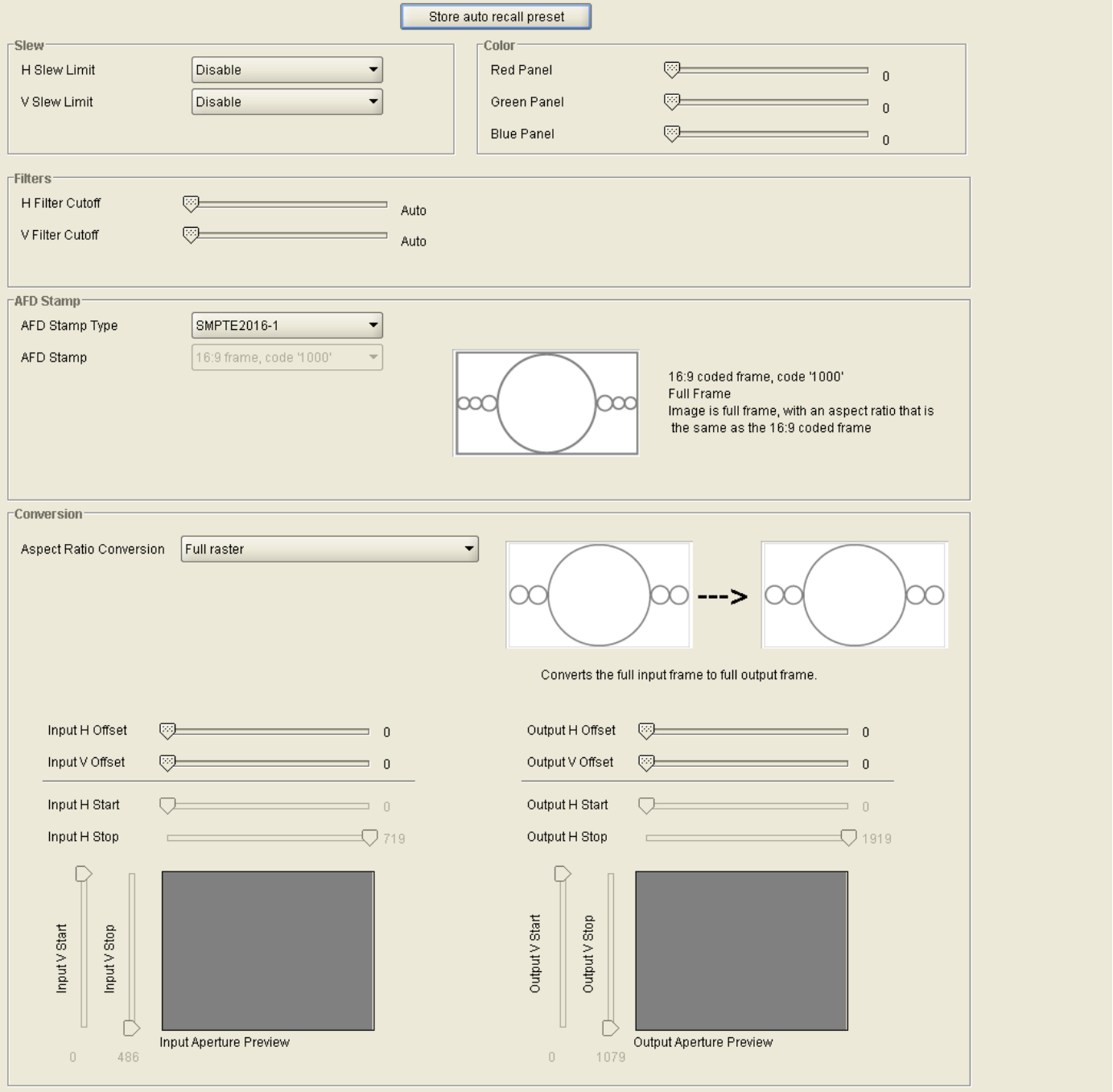


Figure 5-17: Scaler Tab

5.14.1. Slew Settings

5.14.1.1. Slew Limits

There are individual controls for *H Slew Rate Limit* and *V Slew Rate Limit*. When enabled, these controls process sharp spatial transitions so that ringing around such transitions are minimized. When *disabled*, the edge processing is disabled.

The *H Slew limit* control manages sharp horizontal edge transitions.

Enable	Enables the H Slew Rate Limiting so that ringing around sharp horizontal edge transitions are minimized.
Disable	H Slew Rate Limiting is disabled.

The *V Slew limit* control manages sharp vertical edge transitions.

Enable	Enables the V Slew Rate Limiting so that ringing around sharp vertical edge transitions are minimized.
Disable	V Slew Rate Limiting is disabled.

5.14.2. Colour Controls

5.14.2.1. Letterbox Panel Colours

There are three menu items used to set the default side panel colours. Panel colours are used to fill any "un-used space" in the output image raster when specific aspect ratio conversions are performed (i.e. side panels generated on the left hand and right hand side of an image when converting 4:3 to 16:9). There are individual controls for R, G and B components of the side panel.

R: Sets the value for the R component of the default side panel colour with a range of 0 to 255.
G: Sets the value for the G component of the default side panel colour with a range of 0 to 255.
B: Sets the value for the B component of the default side panel colour with a range of 0 to 255.

The user can use a standard colour picker such as is available in Microsoft Paint to determine the desired colour values.

5.14.3. Filter Settings

5.14.3.1. Scaler Filter Sharpness

There are two controls that adjust the horizontal and vertical filters for the scaler. Effectively, these controls manage the cut-off frequency for the Horizontal and Vertical filters.

The smaller the value, the narrower the corresponding filter bandwidth and the less aliasing passed through to the output. The larger the value, the wider the corresponding filter bandwidth.

The *H Filter Cutoff* controls the Horizontal filter bandwidth. It also has several unique filters that have specific enhancement profiles.

Levels 5….64	Selects the horizontal filter bandwidth such that each value 5 thru 64 corresponds to 1/64th the bandwidth of the input signal.
Auto	The optimal horizontal filter is automatically selected to match the scaling and aspect ratio conversion process being performed.
Enhance HF 1 db	High frequencies within the image are enhanced by 1 dB
Enhance HF 2 dB	High frequencies within the image are enhanced by 2 dB
Mid Band Boost 1 dB	Mid band frequencies within the image are enhanced by 1 dB
Mid Band Boost 2 dB	Mid band frequencies within the image are enhanced by 2 dB

The *V Filter Cutoff* controls the Vertical filter bandwidth.

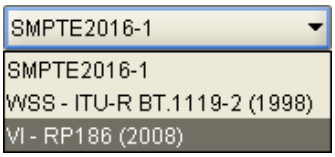
Levels 1….64	Selects the horizontal filter bandwidth such that each value 1 thru 64 corresponds to 1/64th the bandwidth of the input signal.
Auto	The optimal horizontal filter automatically selected to match the scaling and aspect ratio conversion process being performed.

5.14.4. AFD Stamp Settings

These controls enable the user to specify the type of AFD stamp and outgoing AFD code. Depending on the type of AFD being used there will be a variety of selected AFD stamp codes. The AFD Stamp control is enabled only when the *AFD Stamp Source* is set to *User AFD Stamp*. Use the *AFD Stamp* drop down menu to select the appropriate out-bound AFD code. There are 20 SMPTE2016-1 AFD codes, 7 WSS – ITU-R BT.1119.2 codes, and 20 VI – RP186 codes to choose from. As each AFD code is selected, a pictorial representation of what that AFD code means is shown in the right hand side of the screen.

5.14.4.1. AFD Stamp Type

This control will select the type of AFD to be stamped on the output video.



SMPTE2016-1	When selecting SMPTE2016-1, this will stamp AFD specified by the SMPTE2016-1 standard.
WSS – ITU-R BT.1119-2 (1998)	When selecting WSS – ITU-R BT.1119-2 (1998), this will stamp wide-screen signaling as specified by the WSS – ITU-R BT.1119-2 (1998) standard.
VI – RP186 (2008)	When selecting VI – RP186 (2008), this will stamp wide-screen signaling as specified by the VI – RP186 (2008) standard.

5.14.4.2. AFD Stamp

The ***AFD Stamp*** control allows the user to specify the AFD signal that will be stamped on the output signal when the AFD Stamp Source control (within the *AFD Control* tab) is set to User AFD Stamp. It is possible to stamp the following AFD values.

16:9 frame, code '0010'	AFD code 16:9 frame, code '0010' will be inserted into the outgoing video.
16:9 frame, code '0011'	AFD code 16:9 frame, code '0011' will be inserted into the outgoing video.
16:9 frame, code '0100'	AFD code 16:9 frame, code '0100' will be inserted into the outgoing video.
16:9 frame, code '1000'	AFD code 16:9 frame, code '1000' will be inserted into the outgoing video.
16:9 frame, code '1001'	AFD code 16:9 frame, code '1001' will be inserted into the outgoing video.
16:9 frame, code '1010'	AFD code 16:9 frame, code '1010' will be inserted into the outgoing video.
16:9 frame, code '1011'	AFD code 16:9 frame, code '1011' will be inserted into the outgoing video.
16:9 frame, code '1101'	AFD code 16:9 frame, code '1101' will be inserted into the outgoing video.
16:9 frame, code '1110'	AFD code 16:9 frame, code '1110' will be inserted into the outgoing video.
16:9 frame code '1111'	AFD code 16:9 frame code '1111' will be inserted into the outgoing video.
4:3 frame, code '0010'	AFD code 4:3 frame, code '0010' will be inserted into the outgoing video.
4:3 frame, code '0011'	AFD code 4:3 frame, code '0011' will be inserted into the outgoing video.
4:3 frame, code '0100'	AFD code 4:3 frame, code '0100' will be inserted into the outgoing video.
4:3 frame, code '1000'	AFD code 4:3 frame, code '1000' will be inserted into the outgoing video.
4:3 frame, code '1001'	AFD code 4:3 frame, code '1001' will be inserted into the outgoing video.
4:3 frame, code '1010'	AFD code 4:3 frame, code '1010' will be inserted into the outgoing video.
4:3 frame, code '1011'	AFD code 4:3 frame, code '1011' will be inserted into the outgoing video.
4:3 frame code '1101'	AFD code 4:3 frame, code '1101' will be inserted into the outgoing video.
4:3 frame code '1110'	AFD code 4:3 frame code '1110' will be inserted into the outgoing video.
4:3 frame code '1111'	AFD code 4:3 frame code '1111' will be inserted into the outgoing video.

When each AFD code is selected, a pictorial representation of what the code is intended to mean (see Figure 5-18)

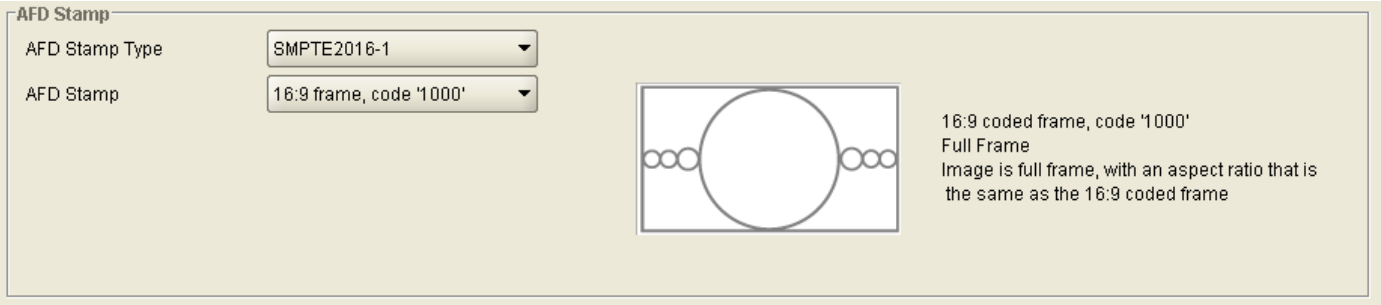


Figure 5-18: Pictorial Representation

5.14.5. Conversion Settings

5.14.5.1. Aspect Ratio Conversion

The *Aspect Ratio Conversion* menu selects the aspect ratio conversion that the module will perform. There are numerous pre-defined aspect ratio conversions as well as the ability to define custom aspect ratio conversions. When the *User Aspect* mode is selected, the user can set input image cropping and output image size on a pixel-by-pixel and line-by-line basis.

Full Raster	Converts the full input raster to full output raster. If the input and output aspect ratios are not equivalent, there will be aspect distortion.
User Aspect	Converts the region of the input raster defined by the *Input H & V Start* and *Stop* values to the region of the output raster defined by the *Output H & V Start* and *Stop* values with coloured side panels.
4:3 Side Panel to 16:9 TB Cut **13:9 Letter Box to 16:9 TB Cut** **14:9 Letter Box to 16:9 TB Cut** **13:9 Stretch to 16:9 TB Cut** **14:9 Stretch to 16:9 TB Cut** **16:9 Stretch to 16:9 TB Cut**	These settings convert the input picture to 16:9 top and bottom cuts. **Note: For 1080i/1035i inputs, these functions only work in field mode.**
13:9 Stretch to 4:3 Side Panel **14:9 Stretch to 4:3 Side Panel** **16:9 Stretch to 4:3 Side Panel**	These settings squeeze common stretched input video back to 4:3 side panel images on a 16:9 aspect raster.
4:3 to 4:3 Side Panel on 16:9 **4:3 to 13:9 Stretch on 16:9** **4:3 to 14:9 Stretch on 16:9** **4:3 to 16:9 Stretch on 16:9** **4:3 to 13:9 Crop on 16:9** **4:3 to 14:9 Crop on 16:9** **4:3 to 16:9 Crop on 16:9**	These settings are common up converter settings for converting 4:3 aspect ratio images to common 16:9 formats. These settings are not appropriate for cross or down conversion.

16:9 to 16:9 Letter Box on 4:3 **16:9 to 14:9 Letter Box on 4:3** **16:9 to 13:9 Letter Box on 4:3** **16:9 to 4:3 Side Cut on 4:3** **16:9 to 4:3 Squeeze on 4:3**	These settings are common down converter settings for converting 16:9 aspect ratio images to common 4:3 formats. These settings are not appropriate for cross or up conversion.
16:9 Top Letter Box on 4:3 to 16:9 **14:9 Top Letter Box on 4:3 to 16:9 TB Cut** **14:9 Top Letter Box on 4:3 to 14.9 Side Panel** **14:9 Top Letter Box on 4:3 to 16:9 Stretch on 16.9** **16:9 Top Letter Box on 4:3 to 16:9**	
14.9 Letter Box on 4:3 to 16:9 TB Cut **14:9 Letterbox on 4:3 to 14.9 Side Panel** **14.9 Letterbox on 4.3 to 16.9 Stretch on 16.9**	
4.3 Side Panel on 16.9 to 4:3 **14.9 Side Panel to 14.9 Letter Box on 4:3** **14.9 Side Panel to 4:3 Side Cut on 4:3** **14.9 Side Panel to 4.3 Squeeze on 4.3**	

NOTE: When the module is configured to operate with AFD, (*AFD Input Enable* is set to Enable and AFD is present on the input video signal) this control will have no effect.

As each of the above settings is selected, a pictorial representation of the selected conversion is shown to the immediate right of the drop down menu as shown in Figure 5-19.

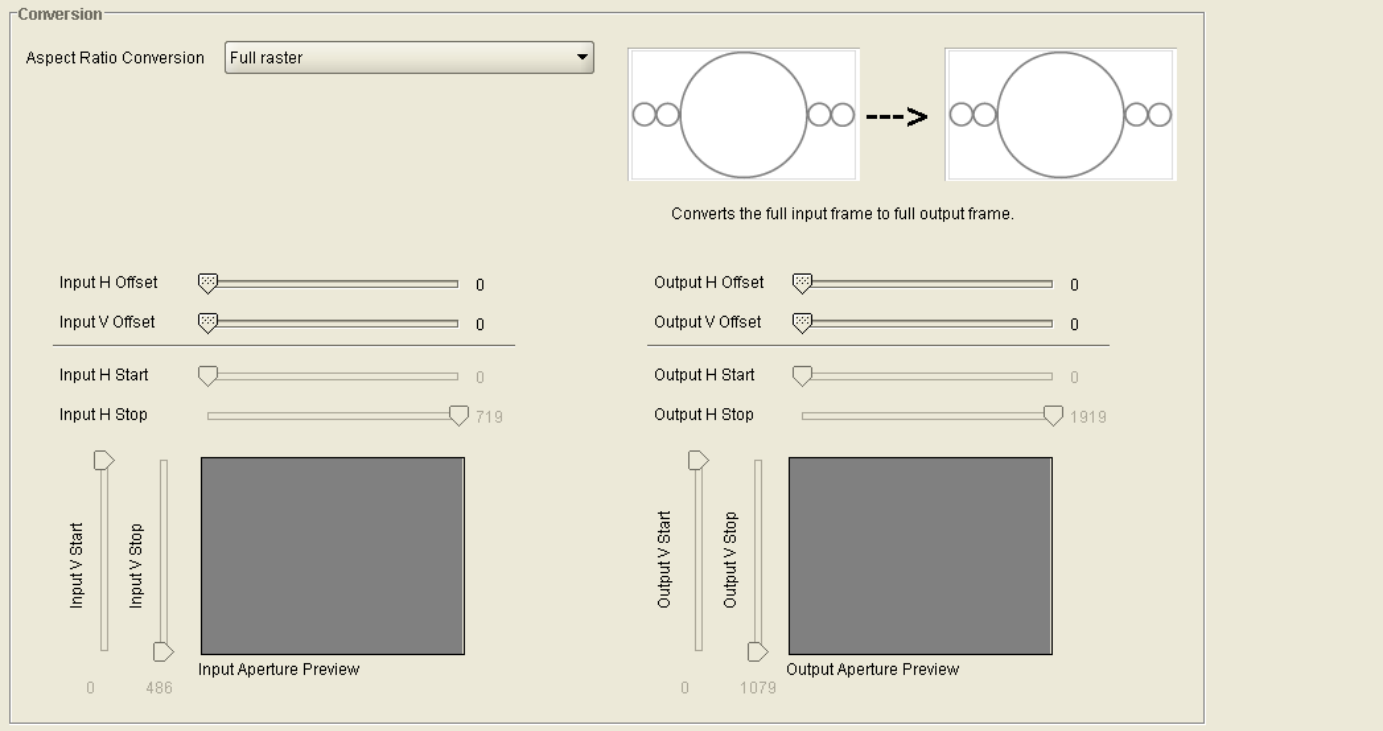


Figure 5-19: Aspect Ratio Conversion

5.14.5.2. Image Offsetting

There are two controls for each the input and output video for offsetting the image when cropped. These controls allow vertical and horizontal adjustment to be made either on the input or output image. The values for these controls directly correspond to the amount of cropping that is done with the input and output start and stop controls for the vertical and horizontal cropping controls.

5.14.5.3. User Aspect Ratio Setting

There are four registers for each input video standard that set the portion of the input picture that will be converted. These register settings do not have any effect when the pre-defined aspect ratios are used.

Input H Start/ Input H Stop:	The *Input H Start* and *Input H Stop* define the horizontal portion of the input image to process to the output raster.
Input V Start/ Input V Stop:	The *Input V Start* and *Input V Stop* define the vertical portion of the input image to process to the output raster.

There are four registers for each output video standard that define the size of the output image and how to place the resulting image on the output video raster.

Output H Start/ Output H Stop:	The *Output H Start* and *Output H Stop* define how to scale the cropped input image horizontally and where to place it horizontally on the output raster. The image will be stretched to fill the width. (I.e. For 1080i the range of values are 0 to 1919. The range of values for 720p output is 0 to 1279).
Output V Start/ Output V Stop:	The *Output V Start* and *Output V Stop* define how to scale the cropped input image vertically and where to place it vertically on the output raster. The image will be stretched to fill the height. (E.g. For 1080i, the range of values are 0 to 539. The range of values for 720p output is 0 to 719).

A pictorial representation of the input image cropping and output image size is shown to the user right below the slider bars for the custom aspect ratios as shown in Figure 5-20.

Figure 5-20: Image Cropping and Output Image Size

5.15. CLOSED CAPTIONING CONTROL TAB

The 7812 series of converters extracts closed captioning from the input signal and translates it to the output video signal. The *Closed Captioning* menus are used to configure the parameters associated with the closed caption handling. Sections 5.15.1 to 5.15.1.4 provide detailed information about each of the parameters.

Figure 5-21: CC Control Tab

Any changes to the closed captioning settings can cause a momentary interruption.

5.15.1. Closed Captioning Control

5.15.1.1. Closed Captioning Enable

This parameter will enable closed caption handling for the module.

On	When turned *On*, any closed captioning will be extracted from the input signal, and mapped to line 21 if the output video is SD, or to the designated HD write line (see section 5.15.1.2) if the output video is HD.
Off	When turned *Off*, no closed captioning is encoded in the output video signal.

5.15.1.2. HD Write Line

The *HD Write Line* parameter will set the HD line where the HD VANC captions are inserted on the output HD video as per SMPTE 334M.

5.15.1.3. Loss of CC Timeout

This parameter enables the user to set the amount of time (in seconds) before the Closed Captioning timeouts when the video is lost. To set the *Loss of CC Timeout*, drag the slider right to decrease or left to increase the value. The value range is 1 to 600 seconds.

5.15.1.4. Caption Services in CEA708

There are eight controls that will map closed caption and text channels into CEA708 caption services. For simplicity, only the selection control for the *CC1 to CEA708 Service* control will be shown in the manual. This parameter will map CC1 into a CEA708 Caption Service. Currently, the modules only support 16 services (1 to 16). When set to off, the CC1 is not mapped to any CEA708 Caption Service.

Off	CC1 will not be mapped to a CEA708 Service
1	CC1 will be mapped CEA708 Service 1
2	CC1 will be mapped CEA708 Service 2
3	CC1 will be mapped CEA708 Service 3
4	CC1 will be mapped CEA708 Service 4
5	CC1 will be mapped CEA708 Service 5
6	CC1 will be mapped CEA708 Service 6
7	CC1 will be mapped CEA708 Service 7
8	CC1 will be mapped CEA708 Service 8
9	CC1 will be mapped CEA708 Service 9
10	CC1 will be mapped CEA708 Service 10
11	CC1 will be mapped CEA708 Service 11
12	CC1 will be mapped CEA708 Service 12
13	CC1 will be mapped CEA708 Service 13
14	CC1 will be mapped CEA708 Service 14
15	CC1 will be mapped CEA708 Service 15
16	CC1 will be mapped CEA708 Service 16

5.16. UTILITIES CONTROL TAB

The *Utilities Control* tab is used to control the presets. The user can configure the *Recall Preset*, *Store User Preset*, and enable/disable the *Auto Recall Presets* function. This Tab also allows for uploading Sub-Preset files to the module through FTP or SNMP. Sub-Preset files can be loaded one at a time or all at once using the Sub-Preset multiple load function.

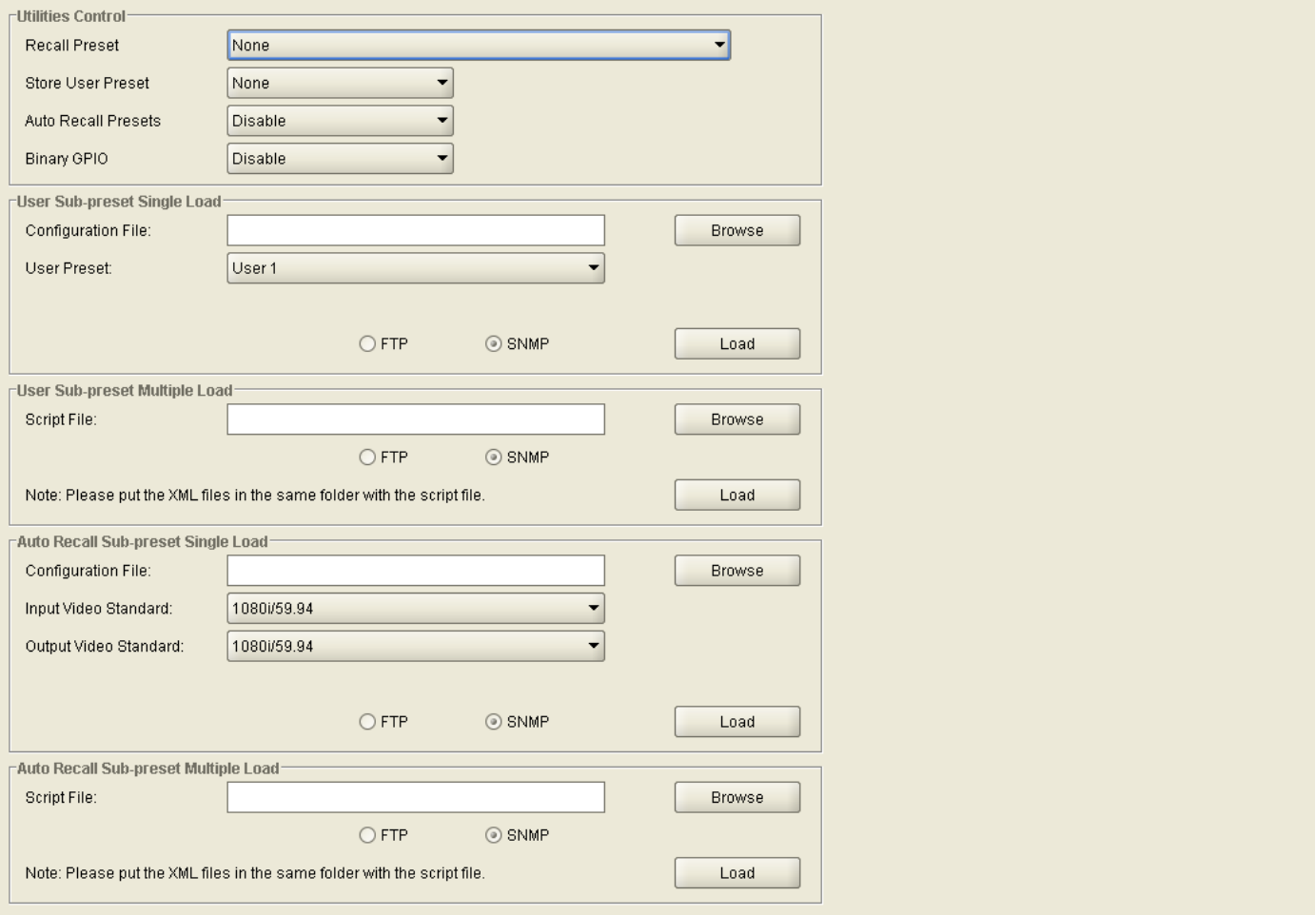


Figure 5-22: Utilities Control Tab

5.16.1. Utilities Control

The 7812 series of converters can manage 10 user presets.
These 10 presets can store the complete set of card controls.

There may be a slight disturbance in the operation of the card while the new preset is being recalled.

5.16.1.1. Recalling Configurations from the User Presets

This control is used to initiate a recall of the card configuration from one of the user presets or reset the card to factory defaults.
There are 10 user presets to recall.

None	No Presets will be recalled
Default	All controls for the card will revert to defaults
Preset 1	Recall User Preset 1
Preset 2	Recall User Preset 2
Preset 3	Recall User Preset 3
Preset 4	Recall User Preset 4
Preset 5	Recall User Preset 5
Preset 6	Recall User Preset 6
Preset 7	Recall User Preset 7
Preset 8	Recall User Preset 8
Preset 9	Recall User Preset 9
Preset 10	Recall User Preset 10

5.16.1.2. Storing Configurations from the User Presets

This control is used to initiate a store of the current card configuration into one of the user presets. To store a card configuration to a specific preset, select the preset to which you wish to store the card settings and press the APPLY button. There are 10 presets to which you can store.

None	No Presets will be stared
Auto Recall	Store Presets determined by input and output video controls.
Preset 1	Store to User Preset 1
Preset 2	Store to User Preset 2
Preset 3	Store to User Preset 3
Preset 4	Store to User Preset 4
Preset 5	Store to User Preset 5
Preset 6	Store to User Preset 6
Preset 7	Store to User Preset 7
Preset 8	Store to User Preset 8
Preset 9	Store to User Preset 9
Preset 10	Store to User Preset 10

5.16.1.3. Auto Recall Presets for Specific Video Input/Output Standard Combination

The *Auto Recall Presets* functionality is used to automatically recall card configurations for specific combinations of video input and output combinations. The user must define these format dependant card configurations using VistaLINK® PRO. Once this is complete, they will automatically be recalled once that particular combination is detected on the module itself. To utilize this functionality, the following steps must be performed:

1) Enable the *Auto Recall Presets* functionality in the *Utilities* control tab.
2) Set the combination of input and output video standards for which you wish to define the card preset. This is done in *Video* control tab.
3) Proceed to configure as desired ensuring that you press APPLY each time a parameter is changed.
4) Proceed to the *Video* control tab or the *Scaler* control tab and press the *Store Auto Recall Preset* button.
5) Repeat steps 2-4 for each combination of input/output video standards

NOTE:
The Auto Recall Presets functionality should be used with care.

All card parameters are recalled when a new combination of video input/output standards are detected. When *Auto Recall Presets* is enabled, changing any particular card parameter (Y Gain just as an example) will take effect only for that particular combination of video input/output standards. It will not be stored for all operating modes. When a new combination of video input/output standards is detected, a new value for that particular card parameter may be recalled. Parameters must be specifically set for each combination of video input/output standards if you desire the same parameter value to be recalled all the time.

Note that this also includes items like GPIO settings and which *User Presets* they recall. If the GPIO settings are not specifically set for each and every possible combination of video input/output standards, the GPIO functions could change when the new video input/output standard is detected.

Disable	*Auto Recall Presets* functionality is disabled.
Enable	Each time a particular combination of video input/output standards is selected, the module will automatically recall the defined preset for the combination of input/output video standards.

5.16.2. Binary GPIO Control

This control allows the four external GPIO's to operate in binary to allow more external GPIO control.

Disable	*Disables binary GPIO's, GPIOs operate in normal mode*
Enable	Each time a particular binary combination of GPIOs is enabled, the module will automatically recall the defined preset for the binary combination of GPIOs enabled. Below is an example of Binary GPIO coding.

GPOI 1	GPIO 2	GPIO 3	GPIO 4	Result
ground	ground	ground	ground	GPIO 1
open	ground	ground	ground	GPIO 2
ground	open	ground	ground	GPIO 3
open	open	ground	ground	GPIO 4
ground	ground	open	ground	GPIO 5
open	ground	open	ground	GPIO 6
ground	open	open	ground	GPIO 7
open	open	open	ground	GPIO 8
ground	ground	ground	open	GPIO 9
open	ground	ground	open	GPIO 10
ground	open	ground	open	GPIO 11
open	open	ground	open	GPIO 12
ground	ground	open	open	GPIO 13
open	ground	open	open	GPIO 14
ground	open	open	open	GPIO 15
open	open	open	open	GPIO 16

Table 5-1: GPIO Truth Table

5.16.3. User Sub-Preset Single Load

This control is used to initiate a store to a saved card configuration into one of the user presets. To store a card configuration to a specific preset, select the preset to which you wish to store the card settings and press upload the associated Sub-Preset XML file. There are 10 presets to which you can store a Sub-Preset.

5.16.4. User Sub-Preset Multiple Load

This control is used to initiate a store of multiple XML configuration files to the card configuration into the user presets. To store the card configurations to the presets, a script file must be created which contains the information on the XML files to be used and the User Preset location they will be stored to along with the IP address for purpose to load with FTP. There are 10 user presets to which you can store a Sub-Preset. Sub-Presets need to be saved in the same location the script file is stored.

The format for the XML file is as follows:
<name of xml file>,<user preset #>,<ip (if mini agent)>
example: In525i.xml,1,192.168.192.207

5.16.5. Auto Recall Sub-Preset Single Load

The *Auto Recall Sub-Presets Single Load* functionality is used to automatically recall card configurations for specific combinations of video input and output combinations. The user must define these format dependant card configurations using VistaLINK® PRO. Once this is complete, they will automatically be recalled once that particular combination is detected on the module itself. To utilize this functionality, the following steps must be performed:

1) Enable the *Auto Recall Presets* functionality in the *Utilities* control tab.
2) Load the desired XML Sub-Preset configuration file
3) Set the combination of input and output video standards for which you wish to define the card preset. This is done by the *Input Video Standard* and the *Output Video Standard* control located directly under the configuration file configuration.
4) Select the method to upload the Sub-Preset configuration file by selecting either the FTP or SNMP radial buttons.
5) Repeat steps 2-4 for each combination of input/output video standards

5.16.6. Auto Recall Sub-Preset Multiple Load

This configuration allows the load of multiple *Auto Recall Sub-Presets* with the use of a scrip file. The scrip file will contain the information of the Sub-Presets XML files and the Input and output video standards associated with them along with the IP address for purpose to load with FTP. The Sub-Preset XML files must be located in the same folder as the script file when configuring the card.

The format for the XML file is as follows:
<name of xml file>,<input video standard>,<output video standard>,<ip (if mini agent)>
example: In525i.xml,525i/59.94,1080i/59.94,192.168.192.207

5.17. CHANGE PRODUCT TAB

Some options can be purchased from sales and added to the 7812 without hardware upgrades. This tab allows for module upgrades that are purchased from sales.

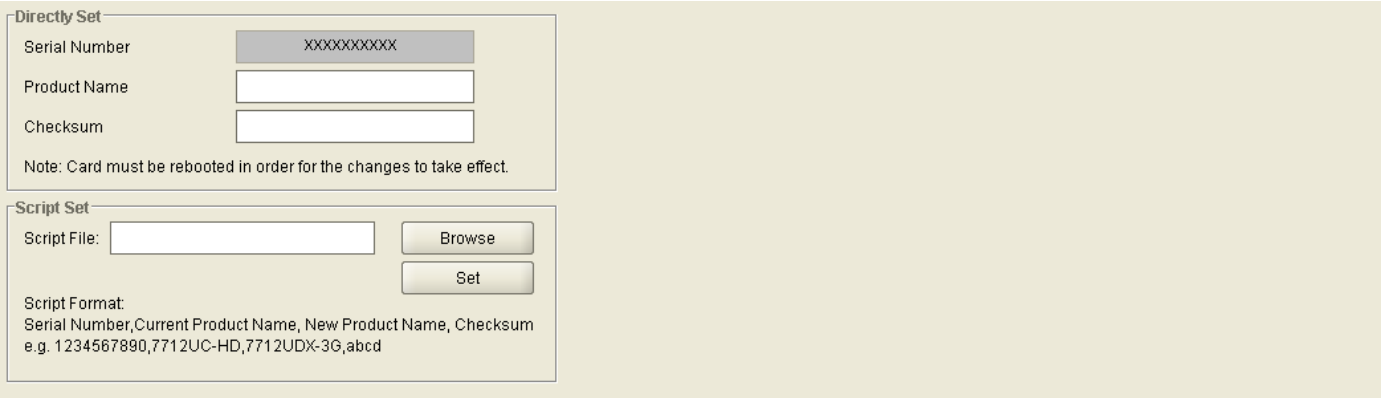


Figure 5-23: Change Product Tab

5.17.1. Directly Set

5.17.1.1. Serial Number

The serial number is loaded by the manufacturer and will be displayed in this location. When contacting sales for an option upgrade you will need to quote this number.

5.17.1.2. Product Name

The product name entry area will be used to enter in the name of the product that the module will be upgrade to. Please ask your sales rep for the proper product name when upgrading your module.

5.17.1.3. Checksum

The check sum location will contain the verification code that the Evertz sales department will provide when the options have been purchased.

NOTE: The Product name and the checksum NEED to be entered the exact same way as provided by the Sales department or the process will not work.

5.17.2. Script Set

5.17.2.1. Script File

When upgrading the 7812 cards a script file could be sent to the module to make the upgrade process easier.
If using a script file for upgrading follow these steps:

1. Browse to the location of the file on your computer.
2. Press set to send the script file to the card
3. Once done restart the card for the settings to take effect.

5.18. VANC BYPASS TAB

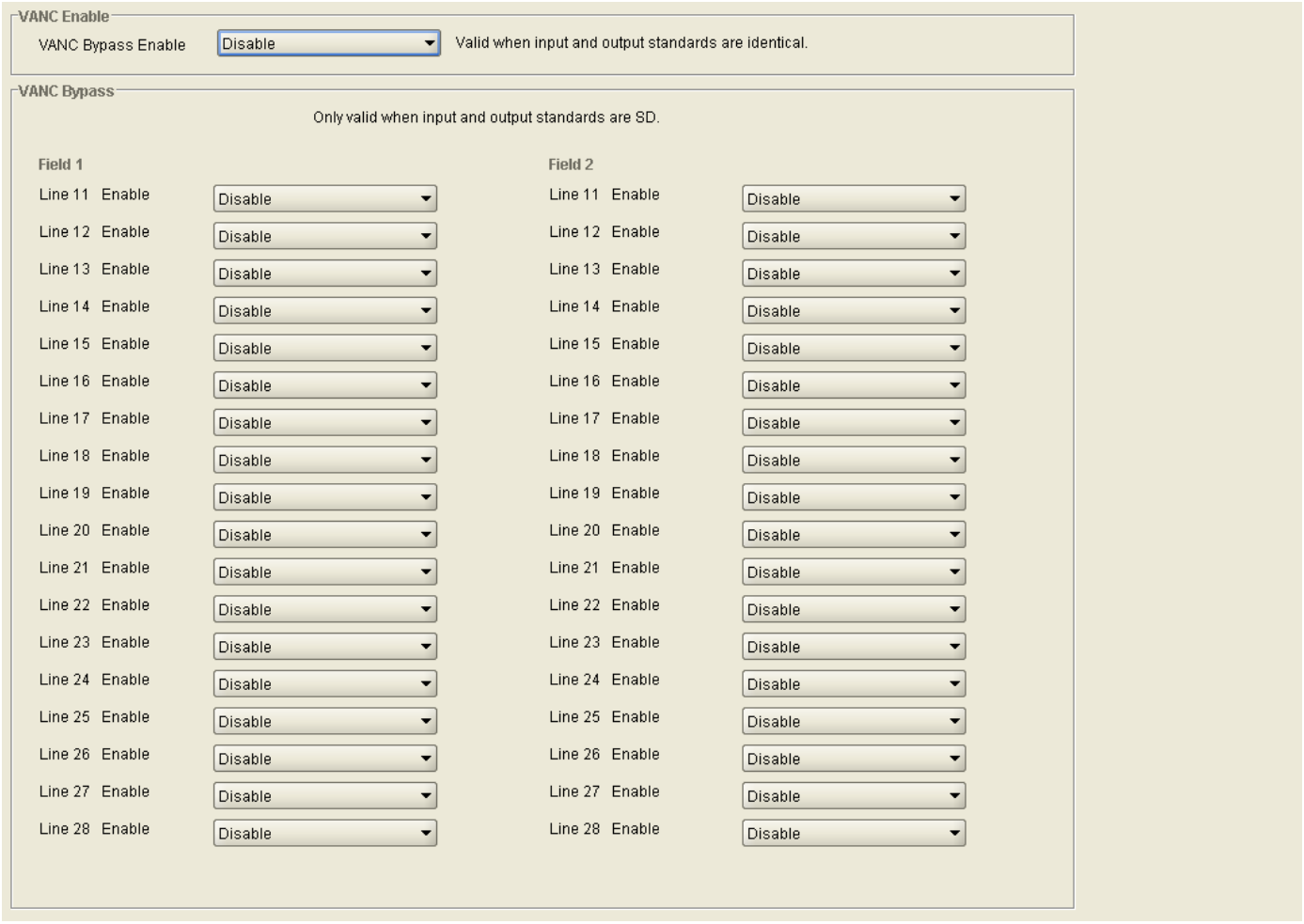


Figure 5-24: VANC BYPASS

5.18.1. VANC Enable

5.18.1.1. VANC Bypass Enable

The VANC Bypass Enable is the main control for bypassing any VANC data seen on the input of the 7812 card. VANC bypass will only work when the input and output standards are the same.

5.18.2. VANC Bypass

5.18.2.1. Line Enable for Lines 11 – 28 for Field 1 and Field 2

Each of these controls will Enable/Disable the blanking for the incoming VANC data on an SD signal on their corresponding lines and Fields. To black VANC data set to enable. To allow the VANC data to be passed on the output select Disable. These controls are only valid when both input/output are set to SD.

NOTE: Each of the individual VANC Bypass line controls will be disabled if the VANC Bypass Enable control is set to disable.

5.19. ANC PASSTHRU TAB

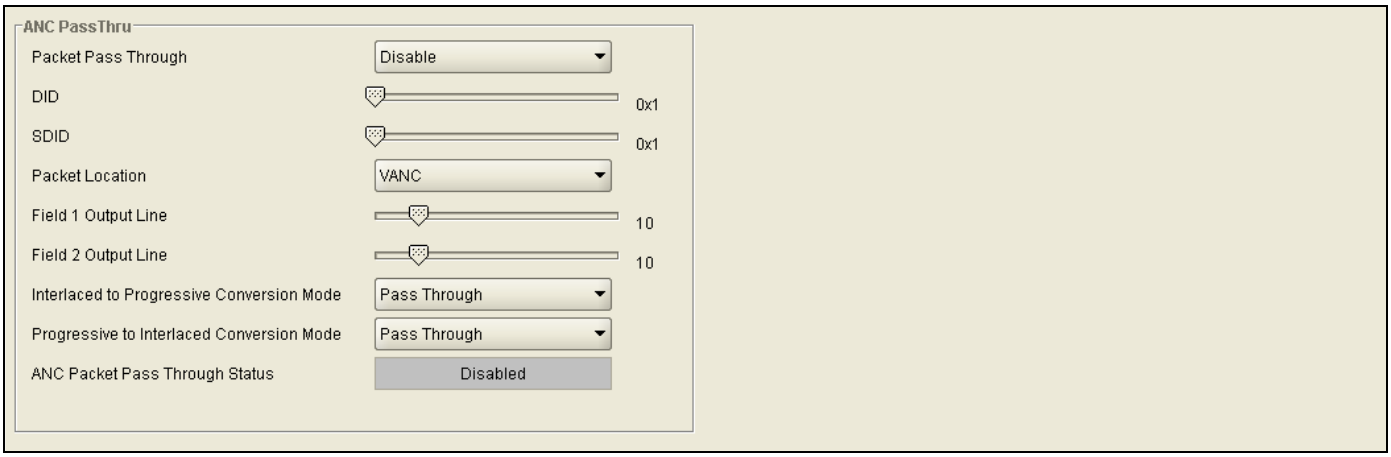


Figure 5-25: ANC PassThru Tab

5.19.1. ANC PassThru

5.19.1.1. Packet Pass Through

The *ANC Pass Through* Enable is the main control for enabling passing ANC data seen on the input of the 7812 card. When enabled the specified ANC packet is embedded on the output. When disabled no ANC packets will be passed through the 7812 card.

5.19.1.2. DID Control

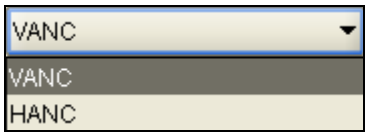
This control will set the DID of the ANC packet to be passed through. The DID has a valid range from 0x1 to 0xFF with a default value of 0x1

5.19.1.3. SDID Control

This control will set the SDID of the ANC packet to be passed through. The SDID has a valid range from 0x1 to 0xFF with a default value of 0x1

5.19.1.4. Packet Location

This control specifies whether the output ANC packet should be located in the HANC or VANC region.



VANC	When set to VANC the incoming ANC packets will be inserted on the VANC region of the output video.
HANC	When set to HANC the incoming ANC packets will be inserted on the HANC region of the output video.

5.19.1.5. Field 1 Output Line

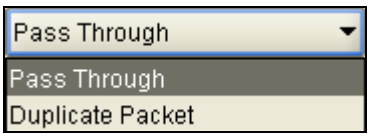
This control will set the field 1 output line of the ANC packet to be passed through. The valid range for the Field 1 Output Line is from line 7 to line 24. The default value is 10.

5.19.1.6. Field 2 Output Line

This control will set the field 1 output line of the ANC packet to be passed through. The valid range for the Field 1 Output Line is from line 7 to line 24. The default value is 10.

5.19.1.7. Interlaced to Progressive Conversion Mode

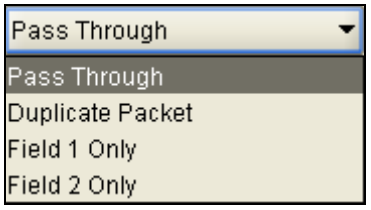
This control will determine the method of outputting the ANC packets on an interlaced to progressive conversion.



Pass Through	When set to *Pass Through* the module will take ANC packet from field 1 and insert onto frame 1 and data on field 2 will be inserted onto frame 2.
Duplicate Packet	When set to *Duplicate Packet,* the module will embed data from field 1 on to both frame one and two on the output.

5.19.1.8. Progressive to Interlaced Conversion Mode

This control will determines the method of outputting the ANC packets on a progressive to interlaced conversion



Pass Through	When set to *Pass Through* the module will take ANC packet from frame 1 and insert onto field 1 and data on frame 2 will be inserted onto field 2.
Duplicate Packet	When set to *Duplicate Packet,* the module will embed data from frame 1 on to both field one and two on the output.
Field 1 Only	When set to *Field 1 Only*, the module will only embed the incoming packets onto Field 1 on the output.
Field 2 Only	When set to *Field 2 Only*, the module will only embed the incoming packets onto Field 1 on the output.

5.19.1.9. ANC Packet Pass Through Status

This monitoring window returns the current state of the ANC Packet Pass Through module. This will display if the control is disabled or passing the incoming ANC data. If there is no ANC data present on the input this control will indicate Not Detected.

5.20. SD APERTURE CONTROL TAB

The precise definition of "active region" for an SD input is sometimes unclear. This is because SD signals have been defined differently in various standards. The SD Aperture control allows the user to set the exact pixels and exact lines that are used to define the *SD Clean Aperture* and the *SD Production Aperture*. Both the *Clean Aperture* and the *Production Aperture* are independently definable. The user may define whether to use the *Clean Aperture* or the *Production Aperture* to determine the pixel aspect ratio for conversions.

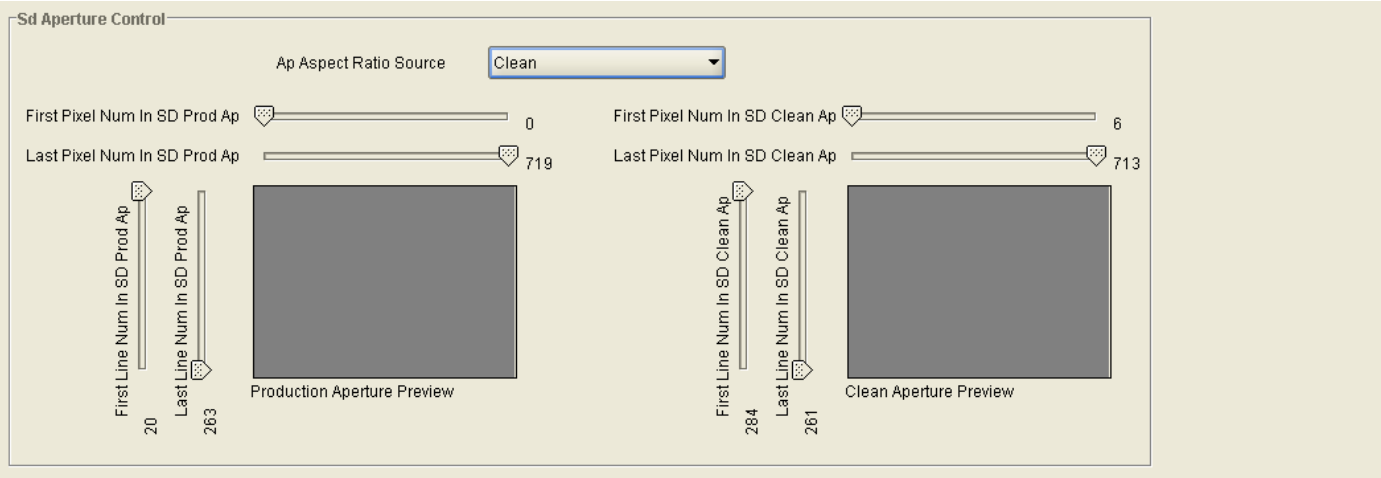
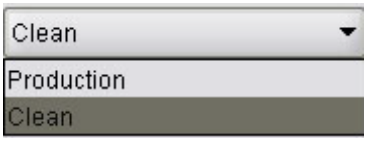


Figure 5-26: SD Aperture Control Tab

5.20.1. SD Aperture Control

5.20.1.1. Ap Aspect Ratio Source

The *AP Aspect Ratio Source* control selects whether the *Production Aperture* or the *Clean Aperture* is used when converting input signals.



Production	Selects the *Production Aperture* to be used when converting input signals.
Clean	Selects the *Clean Aperture* to be used when converting input signals.

5.20.1.2. Ap Aspect Ratio Settings

These controls allow the user to define the exact pixels and exact lines that are used to define the *SD Clean Aperture* and the *SD Production Aperture*. As this process is done, a pictorial representation of the defined region is depicted (as shown in Figure 5-27).

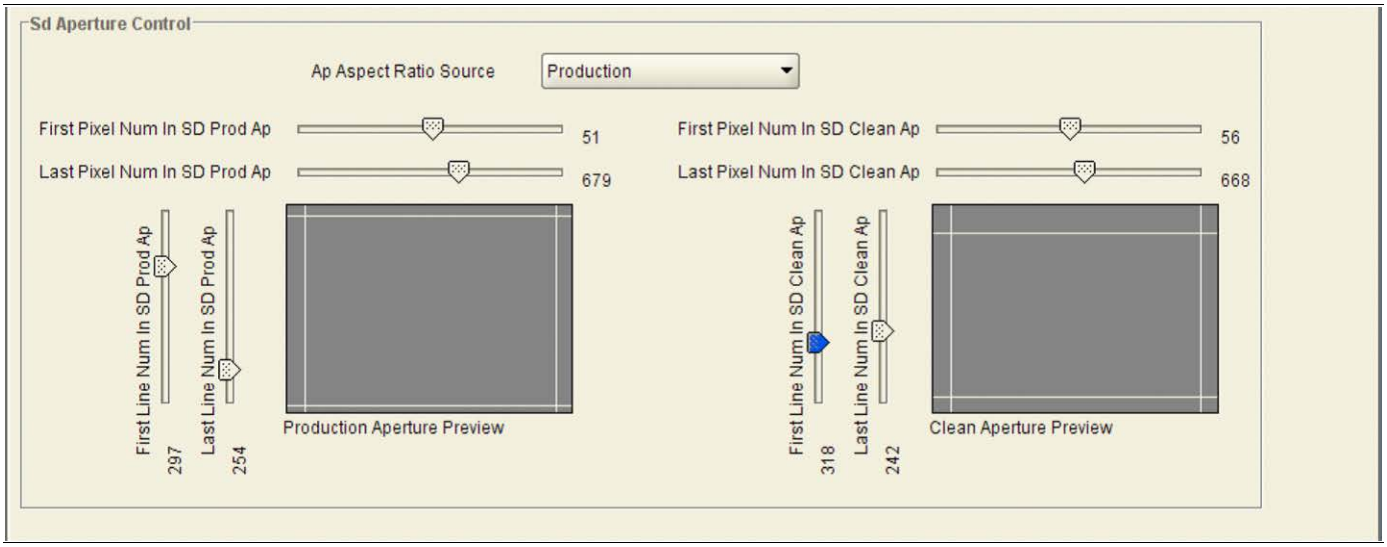


Figure 5-27: SD Aperture Control

First Pixel Num in SD Prod Aperture	By moving the slider bar up and down you can define the first active horizontal pixel for the SD Production Aperture.
Last Pixel Num in SD Prod Aperture	By moving the slider bar up and down you can define the last active horizontal pixel for the SD Production Aperture.
First Line Num in SD Prod Aperture	By moving the slider bar up and down you can define the first active line for the SD Production Aperture.
Last Line Num in SD Prod Aperture	By moving the slider bar up and down you can define the last active line for the SD Production Aperture.

First Pixel Num in SD Clean Aperture	By moving the slider bar up and down you can define the first active horizontal pixel for the SD Clean Aperture.
Last Pixel Num in SD Clean Aperture	By moving the slider bar up and down you can define the last active horizontal pixel for the SD Clean Aperture.
First Line Num in SD Clean Aperture	By moving the slider bar up and down you can define the first active line for the SD Clean Aperture.
Last Line Num in SD Clean Aperture	By moving the slider bar up and down you can define the last active line for the SD Clean Aperture.

5.21. AFD CONTROL TAB

The 7812 series of converters are fully AFD enabled and offer frame accurate and glitch steering of aspect ratio conversions based on AFD signals decoded from incoming video signals. This applies for all variations of the 7812 series product line including down-converters, up-converters as well as up/down/cross converters.

Within the 7812 series of products, AFD values are monitored and read from the incoming video signal every frame. These inbound AFD codes are then used to index a user programmable ARC/Scaler response. Each incoming AFD code can have its own unique ARC/Scaler response. AFD codes are then re-stamped on the outbound video signal so that down-stream devices may further take advantage of the embedded AFD codes.

There are two main control tabs for AFD. These are the AFD Control and the AFD ARC control tabs. The following diagram depicts the AFD Control tab.

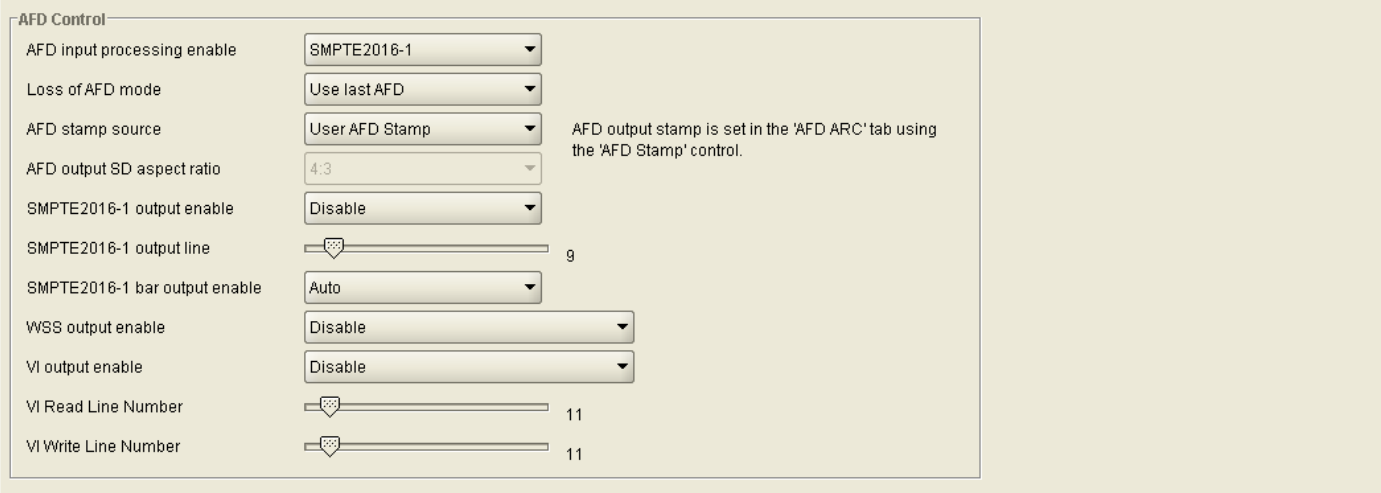


Figure 5-28: AFD Control Tab

5.21.1. AFD Control

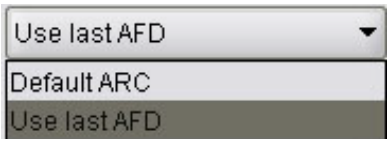
5.21.1.1. AFD Input Processing Enable Control

This control enables and disables the input side AFD processing. When *Enabled*, the module will decode incoming AFD values and adapt its processing to those AFD codes. When *Disabled*, the module will not decode incoming AFD values. When incoming AFD codes are not decoded, automatic steering of ARC processing based on AFD presets is not possible.

Enable	Incoming AFD values will be decoded and the module will adapt its processing to those AFD codes.
Disable	Incoming AFD values will not be decoder. When incoming AFD codes are not decoded, automatic steering of ARC processing based on AFD presets is not possible.

5.21.1.2. Loss of AFD Mode Control

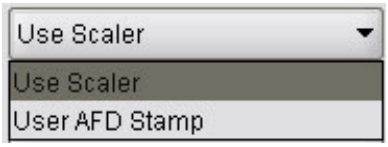
This control enables the user to configure the action that the converter will take when incoming AFD signals are lost or not present. When incoming AFD signals are lost or not present the module can revert to a default ARC/Scaler setting or continue to use the last valid AFD received to steer conversions. The user can set this action by selecting one of the options from the drop down menu.



Default ARC	When incoming AFD values are absent, ARC processing will revert to default ARC processing as defined in the *Scaler* control tab.
Use Last AFD	When incoming AFD values are absent, ARC processing will use the last valid AFD code received to automatically steer ARC processing.

5.21.1.3. AFD Stamp Source

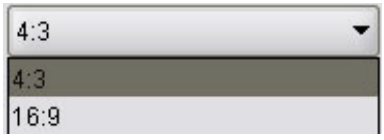
This control enables the user to set the source for output AFD stamping. The user may configure the card to use the AFD value automatically generated by the scaler and its setting or to stamp a user defined AFD value.



Use Scaler	AFD values stamped on the outbound video signal will be those AFD values automatically generated by the scaler and its settings. The *AFD Stamp* control will be disabled in the *Scaler* control tab and the AFD ARC control tab since AFD values will automatically be generated by the scaler.
User AFD Stamp	AFD values stamping on the outbound video signal will be the user specified AFD value.

5.21.1.4. AFD Output SD Aspect Ratio

This control enables the user to define whether SD outputs should be stamped with an AFD value that indicates a 16:9 or 4:3 output image raster. To set the aspect ratio, use the *Output SD Aspect Ratio* drop down menu to select the appropriate aspect ratio.



4:3	AFD codes for SD outputs will be defined with a 4:3 output image raster AFD code.
16:9	AFD codes for SD outputs will be defined with a 16:9 output image raster AFD code.

5.21.1.5. SMPTE2016-1 Output Enable Control

This control enables and disables the insertion of AFD packets in the outgoing video signal.

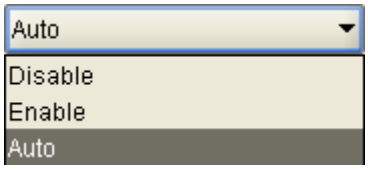
Disable	AFD codes will **NOT** be inserted into the outgoing video signal.
Enable	AFD codes will be inserted into the outgoing video signal.

5.21.1.6. SMPTE2016-1 Output Line

This control defines the line on which AFD packets will be inserted into the outgoing video signal when AFD packet insertion is enabled. The user can set the output line using the *AFD Output Line* slider. Drag the slider right to increase the value or move it left to decrease the value of the AFD Output line. The valid range is from 7 to 24 with a default of line 9.

5.21.1.7. SMPTE2016-1 Bar Output Enable

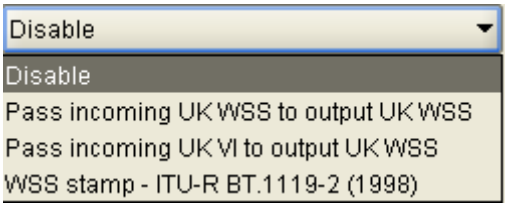
This control Enables/Disables Bar Data on the output video. Bar data is used with AFD in order to indicate the exact image size if not exactly 16:9 or 4:3. The following image depicts the drop down menu with the available controls.



Disable	When set to disable, Bar Data will not be inserted in to the output video
Enable	When set to Enable, Bar data will accompany the AFD information in the output picture.
Auto	When set to Auto, the card will automatically respond to the current card configuration and insert bar data as needed.

5.21.1.8. WSS Output Enable

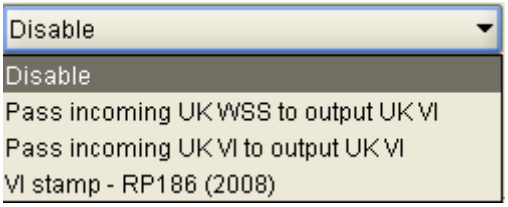
This control will Enable/Disable Wide-Screen signaling on the output video. The 7812 card can read and pass the incoming WSS or stamp a new WSS on the output.



Disable	When set to Disable, WSS will not be embedded on the output video
Pass Incoming UK WSS to output UK WSS	This will Pass the incoming UK WSS to the output Video
Pass incoming UK VI to output UK WSS	This will take the incoming UK VI and embed it as UK WSS on the output video.
WSS Stamp – ITU-R BT.1119.2 (1998)	This will stamp WSS on the output based on the current card configuration

5.21.1.9. VI Output Enable

This control will Enable/Disable VI signaling on the output video. The 7812 card can read and pass the incoming VI or stamp a new VI on the output.

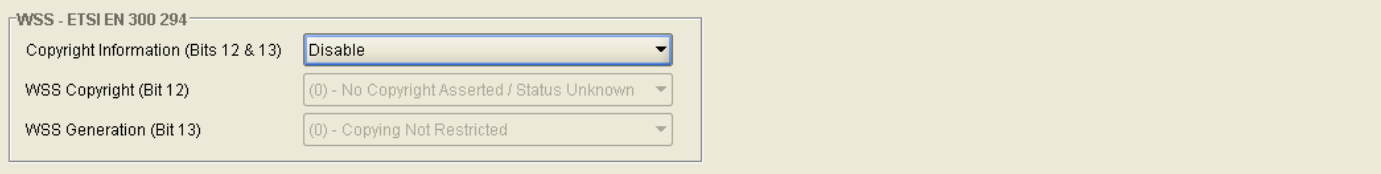


Disable	When set to Disable, VI will not be embedded on the output video
Pass Incoming UK WSS to output UK VI	This will take the incoming UK WSS and embed it as UK VI on the output video.
Pass incoming UK VI to output UK VI	This will Pass the incoming UK VI to the output Video
VI Stamp – RP186 (2008)	This will stamp VI on the output based on the current card configuration

5.21.1.10. VI Read/Write Line Number

The VI Read/Write Line Number will select the line that the 7812 card will look for and write VI data in the video. The valid range is from line 10 to line 20 with a default value of 11.

5.22. WSS – ETSI EN 300 294 TAB



5.22.1. WSS – ETSI EN 300 294

5.22.1.1. Copyright Information (Bits 12 & 13)

This parameter enables/disabled copy generation on the WSS stamp (ETSI EN 300 294)

5.22.1.2. WSS Copyright (Bit 12)

This control will enable/disable bit 12 for copyright assertion. The default value is (0) No Copyright Asserted/Status Unknown.

(0) – No Copyright Asserted/Status Unknown	This control will disable Bit 12 of the WSS Copyright Information
(1) – Copyright Asserted	This control will enable Bit 12 of the WSS Copyright Information

5.22.1.3. WSS Generation (Bit 13)

This control will enable/disable bit 13 for copyright restriction. The default value is (0) Copying Not Restricted.

(0) – Copying Not Restricted	This control will disable Bit 13 of the WSS Copyright Information
(1) – Copying Restricted	This control will enable Bit 13 of the WSS Copyright Information

5.23. AFD MONITOR TAB

The AFD monitoring tab contains radio buttons for the three different AFD codes used in the 7812 product line. They include SMPTE2016-1, WSS ITU-R BT.1119.2, and VI – RP186. The following sections contain more detailed information on each radio button.

5.23.1. SMPTE2016-1 Monitor

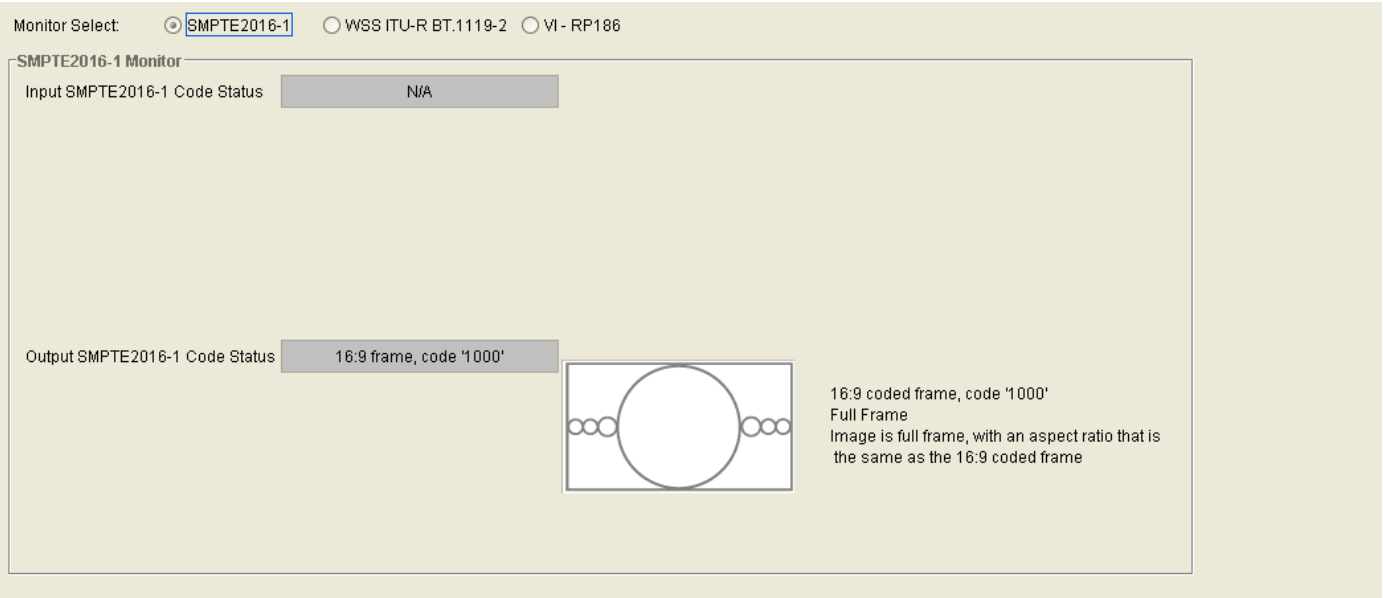


Figure 5-29: SMPTE2016-1 Monitor Tab

5.23.1.1. Input SMPTE2016-1 Code Status

Any detected SMPTE2016-1 values on the incoming video signal will be reported in this area. The detected SMPTE2016-1 code will be presented and a pictorial representation of what that code means will be presented beside the numerical SMPTE2016-1 value.

5.23.1.2. Output SMPTE2016-1 Code Status

The SMPTE2016-1 code being stamped on the output of the card (if applicable) will be presented and a pictorial representation of what that SMPTE2016-1 code means will be presented beside the numerical SMPTE2016-1 value.

5.23.2. WSS – ITU-R BT.1119-2 Monitor

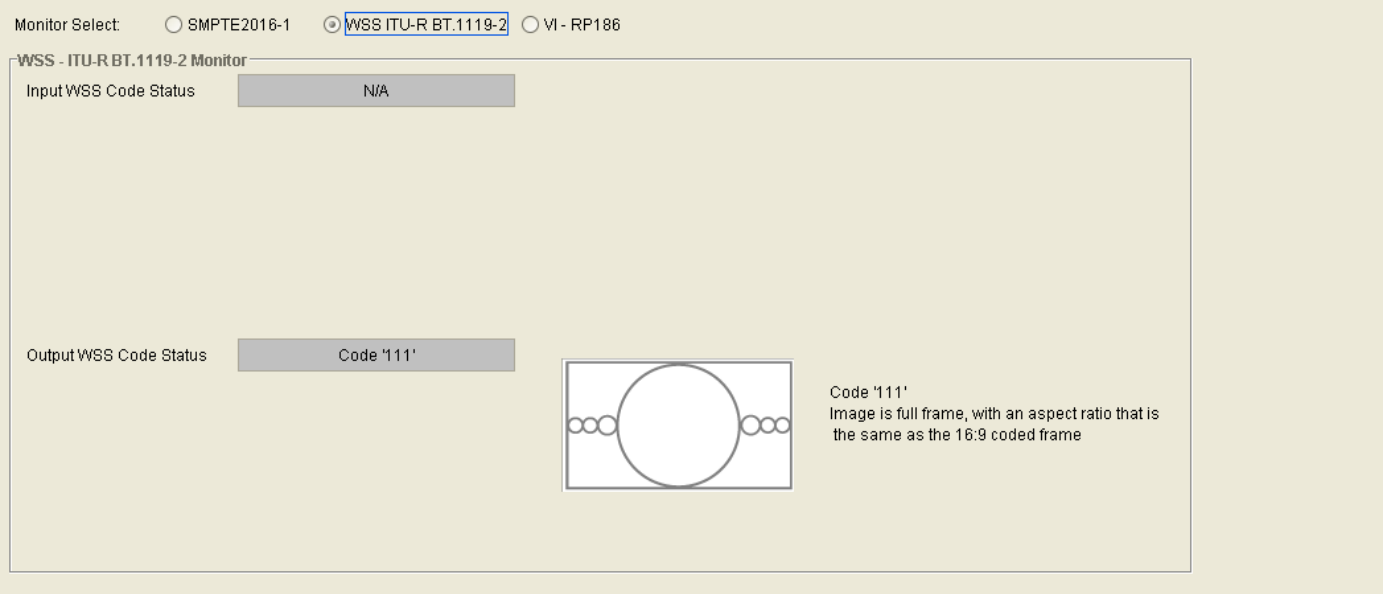


Figure 5-30: WSS – ITU-R BT.1119.2 Monitor Tab

5.23.2.1. Input WSS – ITU-R BT.1119.2 Code Status

Any detected WSS – ITU-R BT.1119.2 values on the incoming video signal will be reported in this area. The detected WSS – ITU-R BT.1119.2 code will be presented and a pictorial representation of what that code means will be presented beside the numerical WSS – ITU-R BT.1119.2 value.

5.23.2.2. Output WSS – ITU-R BT.1119.2 Code Status

The WSS – ITU-R BT.1119.2 code being stamped on the output of the card (if applicable) will be presented and a pictorial representation of what that WSS – ITU-R BT.1119.2 code means will be presented beside the numerical WSS – ITU-R BT.1119.2 value.

5.23.3. VI – RP186 Monitor

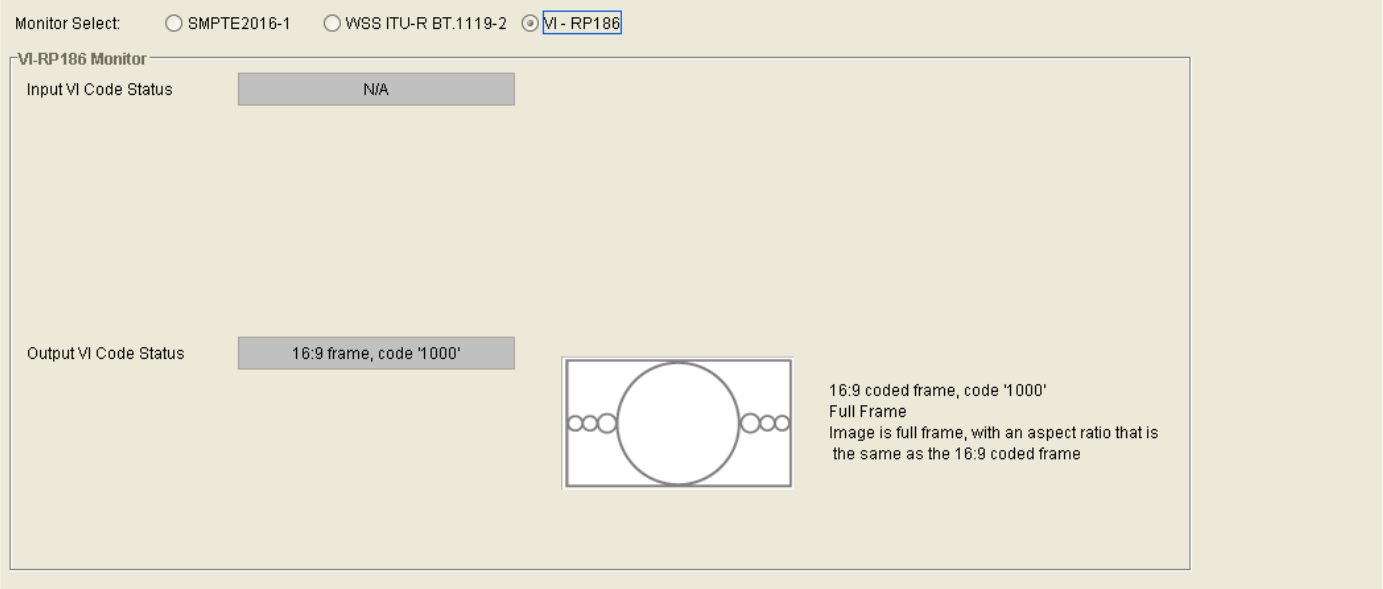


Figure 5-31: VI – RP186 Monitor Tab

5.23.3.1. Input VI – RP186 Code Status

Any detected VI – RP186 values on the incoming video signal will be reported in this area. The detected VI – RP186 code will be presented and a pictorial representation of what that code means will be presented beside the numerical VI – RP186 value.

5.23.3.2. Output VI – RP186 Code Status

The VI – RP186 code being stamped on the output of the card (if applicable) will be presented and a pictorial representation of what that VI – RP186 code means will be presented beside the numerical VI – RP186 value.

5.24. AFD ARC CONTROLS

The *AFD ARC* control tab is the key section that enables the user to define the automatic steering of *Aspect Ratio Conversions* in response to incoming AFD codes. For each incoming AFD code, the user may specify a unique ARC/Scaler operating mode and a unique output AFD code. In this way, incoming AFD codes are effectively treated as “virtual GPIs” that recall scaler specific card presets.

To properly configure the 7812 series cards for AFD, proceed to the *AFD ARC* control tab. Select an AFD code using the *AFD Select* drop down menu. This corresponds to the inbound AFD value for which you will define a specific ARC/Scaler response. In the *Conversion* section, select the specific ARC processing that you would like to occur every time that specified input side AFD code is received. Furthermore, specify the outbound AFD code in the *AFD stamp* section. Note that the AFD Stamp control is enabled only when the AFD Stamp Source is set to *User AFD Stamp*. Once all settings are selected, press the *Apply* button on the top of the control tab. If using the *Auto Recall Preset* function you should also press the ‘Store to auto recall preset’ button. Perform this process for each incoming AFD value.

Note that it is possible for each combination of input and output video standards to have their own unique set of AFD code responses. This can be done using the *Auto Recall Preset* function. When doing so, the first step in defining automatic AFD processing is to first consider your input and output video standards. Select the appropriate input, output video standards within the VIDEO control tab, and press the *Apply* button. Following this, complete the process outlined in the preceding paragraph. Be sure to complete this process for each relevant combination of input and output video standards.

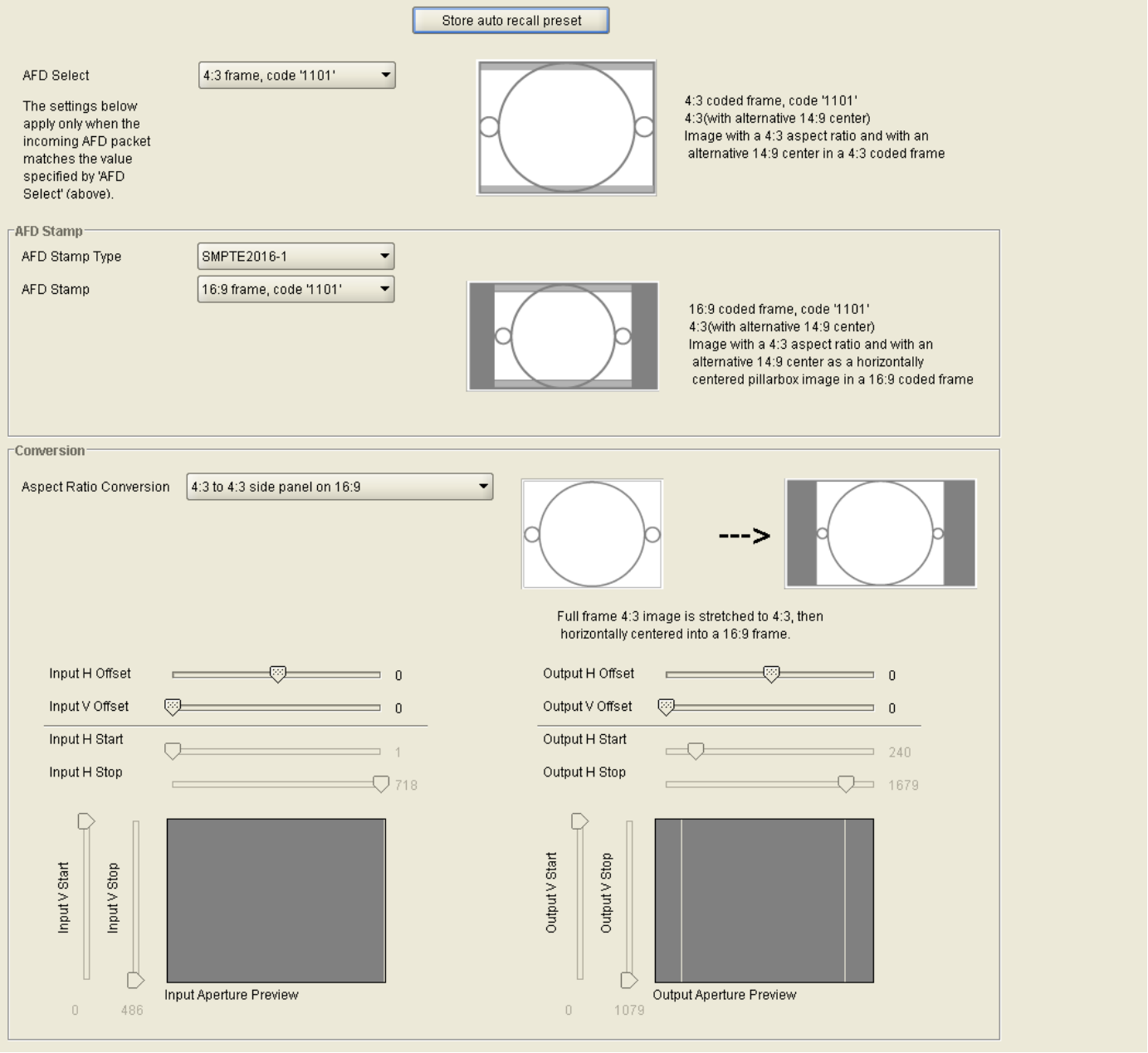


Figure 5-32: AFD ARC Tab

5.24.1. AFD Select

This control enables the user to select the incoming AFD code to which a scaler response will be defined. Use the drop down menu as shown below (in Figure 5-33) to select an AFD code. As each menu item is selected, a pictorial representation of the actual aspect ratio being selected is shown on the right hand side of the screen beside the drop down selection.

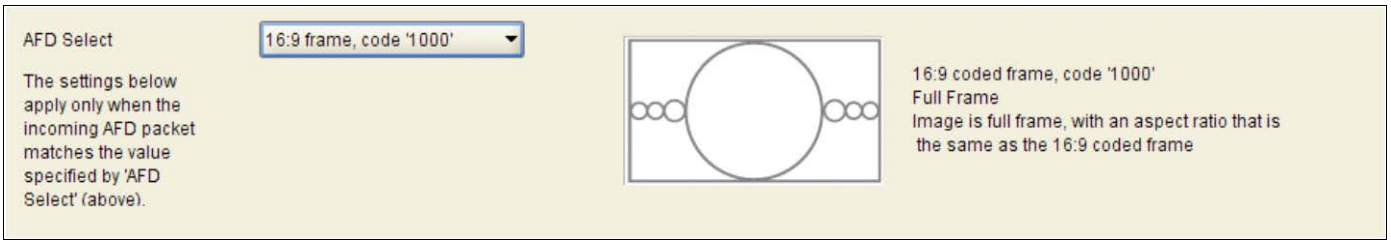


Figure 5-33: AFD Select

The following AFD codes may be selected.

16:9 frame, code '0010'	Scaler/ARC responses will be defined for AFD code 16:9 frame, code '0010'
16:9 frame, code '0011'	Scaler/ARC responses will be defined for AFD code 16:9 frame, code '0011'
16:9 frame, code '0100'	Scaler/ARC responses will be defined for AFD code 16:9 frame, code '0100'
16:9 frame, code '1000'	Scaler/ARC responses will be defined for AFD code 16:9 frame, code '1000'
16:9 frame, code '1001'	Scaler/ARC responses will be defined for AFD code 16:9 frame, code '1001'
16:9 frame, code '1010'	Scaler/ARC responses will be defined for AFD code 16:9 frame, code '1010'
16:9 frame, code '1011'	Scaler/ARC responses will be defined for AFD code 16:9 frame, code '1011'
16:9 frame, code '1101'	Scaler/ARC responses will be defined for AFD code 16:9 frame, code '1101'
16:9 frame, code '1110'	Scaler/ARC responses will be defined for AFD code 16:9 frame, code '1110'
16:9 frame code '1111'	Scaler/ARC responses will be defined for AFD code 16:9 frame code '1111'
4:3 frame, code '0010'	Scaler/ARC responses will be defined for AFD code 4::3 frame, code '0010'
4:3 frame, code '0011'	Scaler/ARC responses will be defined for AFD code 4:3 frame, code '0011'
4:3 frame, code '0100'	Scaler/ARC responses will be defined for AFD code 4:3 frame, code '0100'
4:3 frame, code '1000'	Scaler/ARC responses will be defined for AFD code 4:3 frame, code '1000'
4:3 frame, code '1001'	Scaler/ARC responses will be defined for AFD code 4:3 frame, code '1001'
4:3 frame, code '1010'	Scaler/ARC responses will be defined for AFD code 4:3 frame, code '1010'
4:3 frame, code '1011'	Scaler/ARC responses will be defined for AFD code 4:3 frame, code '1011'
4:3 frame code '1101'	Scaler/ARC responses will be defined for AFD code 4:3 frame code '1101'
4:3 frame code '1110'	Scaler/ARC responses will be defined for AFD code 4:3 frame code '1110'
4:3 frame code '1111'	Scaler/ARC responses will be defined for AFD code 4:3 frame code '1111'

5.24.2. AFD Stamp

These controls enable the user to specify the type of AFD stamp and outgoing AFD code. Depending on the type of AFD being used there will be a variety of selected AFD stamp codes. The AFD Stamp control is enabled only when the *AFD Stamp Source* is set to *User AFD Stamp*. Use the *AFD Stamp* drop down menu to select the appropriate out-bound AFD code. There are 20 SMPTE2016-1 AFD codes, 7 WSS – ITU-R BT.1119.2 codes, and 20 VI – RP186 codes to choose from. As each AFD code is selected, a pictorial representation of what that AFD code means is shown in the right hand side of the screen.

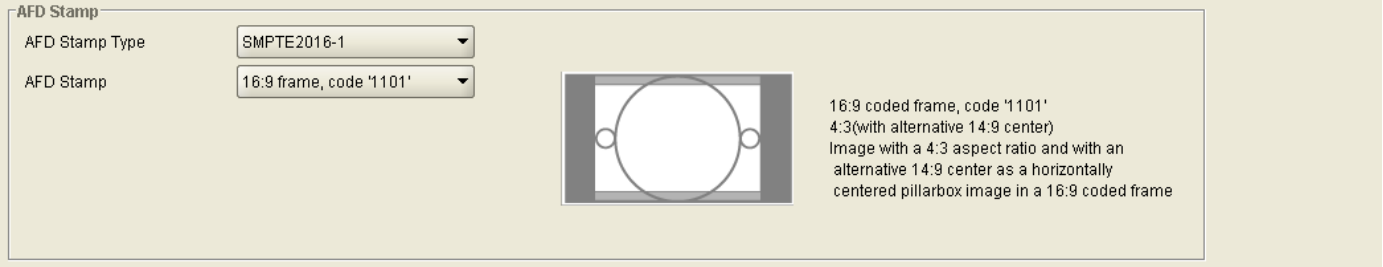
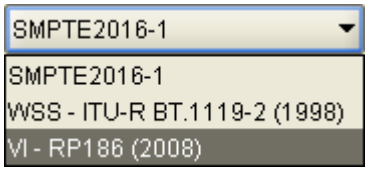


Figure 5-34: AFD Code Description

5.24.3. AFD Stamp Settings

5.24.3.1. AFD Stamp Type

This control will select the type of AFD to be stamped on the output video.



SMPTE2016-1	When selecting SMPTE2016-1, this will stamp AFD specified by the SMPTE2016-1 standard.
WSS – ITU-R BT.1119-2 (1998)	When selecting WSS – ITU-R BT.1119-2 (1998), this will stamp wide-screen signaling as specified by the WSS – ITU-R BT.1119-2 (1998) standard.
VI – RP186 (2008)	When selecting VI – RP186 (2008), this will stamp wide-screen signaling as specified by the VI – RP186 (2008) standard.

5.24.3.2. AFD Stamp

The ***AFD Stamp*** control allows the user to specify the AFD signal that will be stamped on the output signal when the AFD Stamp Source control (within the *AFD Control* tab) is set to User AFD Stamp. It is possible to stamp the following AFD values.

16:9 frame, code '0010'	AFD code 16:9 frame, code '0010' will be inserted into the outgoing video.
16:9 frame, code '0011'	AFD code 16:9 frame, code '0011' will be inserted into the outgoing video.
16:9 frame, code '0100'	AFD code 16:9 frame, code '0100' will be inserted into the outgoing video.
16:9 frame, code '1000'	AFD code 16:9 frame, code '1000' will be inserted into the outgoing video.
16:9 frame, code '1001'	AFD code 16:9 frame, code '1001' will be inserted into the outgoing video.
16:9 frame, code '1010'	AFD code 16:9 frame, code '1010' will be inserted into the outgoing video.
16:9 frame, code '1011'	AFD code 16:9 frame, code '1011' will be inserted into the outgoing video.
16:9 frame, code '1101'	AFD code 16:9 frame, code '1101' will be inserted into the outgoing video.
16:9 frame, code '1110'	AFD code 16:9 frame, code '1110' will be inserted into the outgoing video.
16:9 frame code '1111'	AFD code 16:9 frame code '1111' will be inserted into the outgoing video.
4:3 frame, code '0010'	AFD code 4:3 frame, code '0010' will be inserted into the outgoing video.
4:3 frame, code '0011'	AFD code 4:3 frame, code '0011' will be inserted into the outgoing video.
4:3 frame, code '0100'	AFD code 4:3 frame, code '0100' will be inserted into the outgoing video.
4:3 frame, code '1000'	AFD code 4:3 frame, code '1000' will be inserted into the outgoing video.
4:3 frame, code '1001'	AFD code 4:3 frame, code '1001' will be inserted into the outgoing video.
4:3 frame, code '1010'	AFD code 4:3 frame, code '1010' will be inserted into the outgoing video.
4:3 frame, code '1011'	AFD code 4:3 frame, code '1011' will be inserted into the outgoing video.
4:3 frame code '1101'	AFD code 4:3 frame, code '1101' will be inserted into the outgoing video.
4:3 frame code '1110'	AFD code 4:3 frame code '1110' will be inserted into the outgoing video.
4:3 frame code '1111'	AFD code 4:3 frame code '1111' will be inserted into the outgoing video.

When each AFD code is selected, a pictorial representation of what the code is intended to mean (see Figure 5-18)

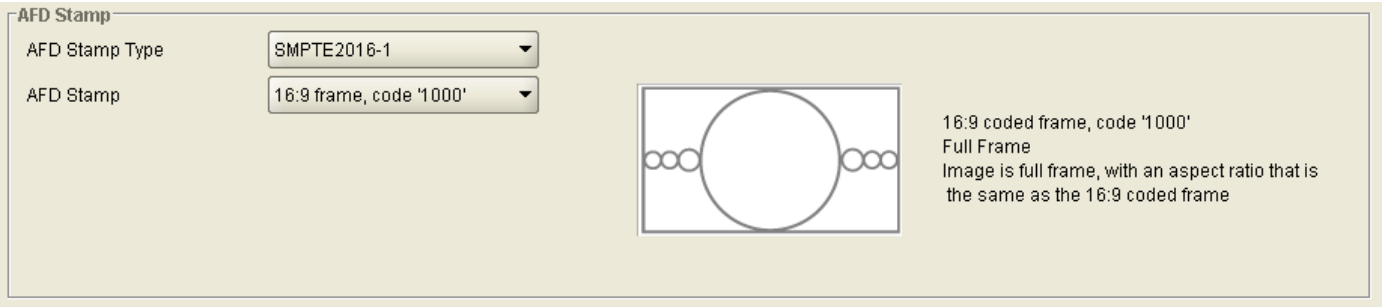


Figure 5-35: Pictorial Representation

5.24.4. Conversion Settings

5.24.4.1. Aspect Ratio Conversion

The *Aspect Ratio* Conversion menu is used to select the ARC processing that the card will perform in response to the selected incoming AFD code.

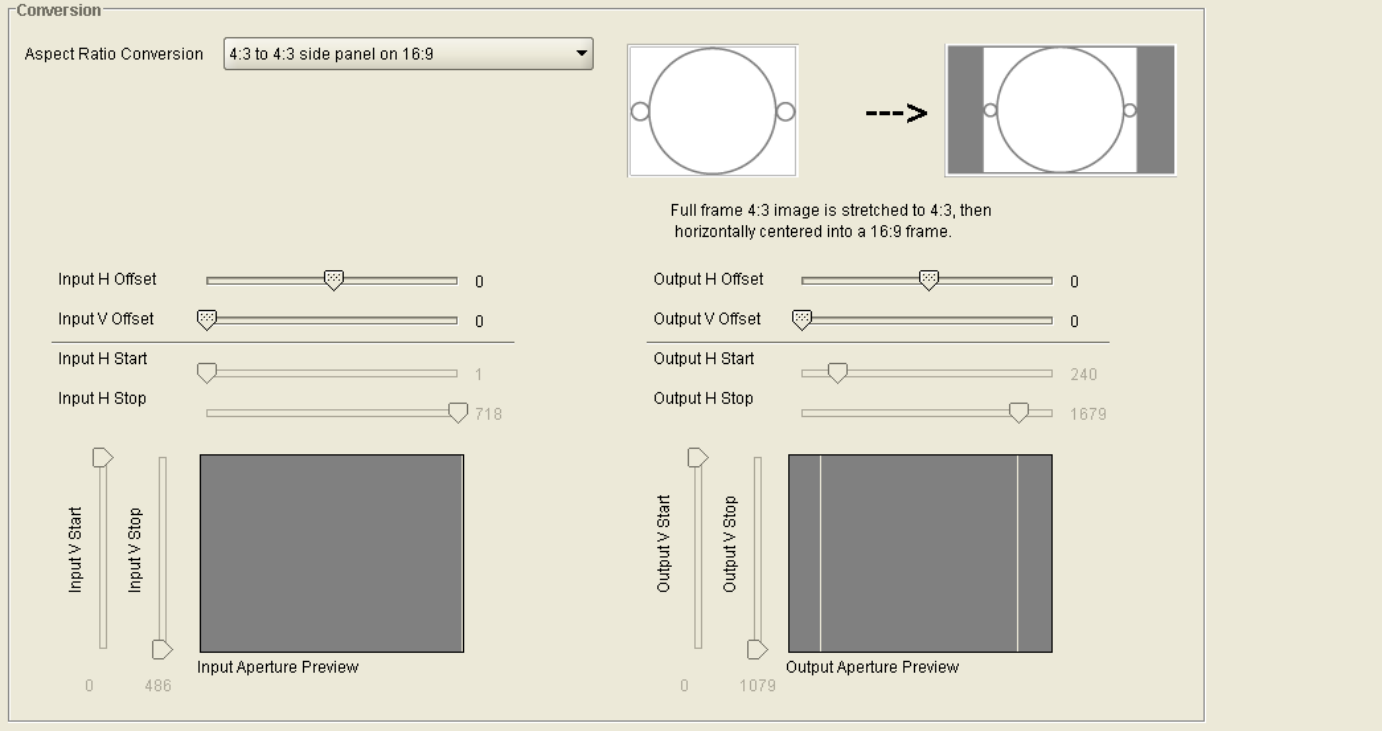


Figure 5-36: Conversion Screen

There are numerous pre-defined aspect ratio conversions available, as well as the ability to define custom aspect ratio conversions. When the *User Aspect* mode is selected, the user can set input image cropping and output image size on a pixel-by-pixel and line-by-line basis.

Full Raster	Converts the full input raster to full output raster. If the input and output aspect ratios are not equivalent, there will be aspect distortion.
User Aspect	Converts the region of the input raster defined by the *Input H & V Start* and *Stop* values to the region of the output raster defined by the *Output H & V Start* and *Stop* values with coloured side panels.
4:3 Side Panel to 16:9 TB Cut **13:9 Letter Box to 16:9 TB Cut** **14:9 Letter Box to 16:9 TB Cut** **13:9 Stretch to 16:9 TB Cut** **14:9 Stretch to 16:9 TB Cut** **16:9 Stretch to 16:9 TB Cut**	These settings convert the input picture to 16:9 top and bottom cuts. **Note: For 1080i/1035i inputs, these functions only work in field mode.**
13:9 Stretch to 4:3 Side Panel **14:9 Stretch to 4:3 Side Panel** **16:9 Stretch to 4:3 Side Panel**	These settings squeeze common stretched input video back to 4:3 side panel images on a 16:9 aspect raster.
4:3 to 4:3 Side Panel on 16:9 **4:3 to 13:9 Stretch on 16:9** **4:3 to 14:9 Stretch on 16:9** **4:3 to 16:9 Stretch on 16:9** **4:3 to 13:9 Crop on 16:9** **4:3 to 14:9 Crop on 16:9** **4:3 to 16:9 Crop on 16:9**	These settings are common up-converter settings for converting 4:3 aspect ratio images to common 16:9 formats. These settings are not appropriate for cross or down conversion.
16:9 to 16:9 Letter Box on 4:3 **16:9 to 14:9 Letter Box on 4:3** **16:9 to 13:9 Letter Box on 4:3** **16:9 to 4:3 Side Cut on 4:3** **16:9 to 4:3 Squeeze on 4:3**	These settings are common down converter settings for converting 16:9 aspect ratio images to common 4:3 formats. These settings are not appropriate for cross or up conversion.
16:9 Top Letter Box on 4:3 to 16:9 **14:9 Top Letter Box on 4:3 to 16:9 TB Cut** **14:9 Top Letter Box on 4:3 to 14.9 Side Panel** **14:9 Top Letter Box on 4:3 to 16:9 Stretch on 16.9** **16:9 Top Letter Box on 4:3 to 16:9**	
14.9 Letter Box on 4:3 to 16:9 TB Cut **14:9 Letterbox on 4:3 to 14.9 Side Panel** **14.9 Letterbox on 4.3 to 16.9 Stretch on 16.9**	
4.3 Side Panel on 16.9 to 4:3 **14.9 Side Panel to 14.9 Letter Box on 4:3** **14.9 Side Panel to 4:3 Side Cut on 4:3** **14.9 Side Panel to 4.3 Squeeze on 4.3**	

5.24.4.2. Image Offsetting

There are two controls for each the input and output video for offsetting the image when cropped. This allows vertical and horizontal adjustment to either be made on the input or output image. The values for these controls directly correspond to the amount of cropping that is done with the input and output start and stop controls for the vertical and horizontal cropping controls.

5.24.4.3. User Aspect Ratio Setting

There are four registers for each input video standard. These will set the portion of the input picture that will be converted. These register settings do not have any effect when the pre-defined aspect ratios are used.

Input H Start/ Input H Stop:	The *Input H Start* and *Input H Stop* define the horizontal portion of the input image to process to the output raster.
Input V Start/ Input V Stop:	The *Input V Start* and *Input V Stop* define the vertical portion of the input image to process to the output raster.

When operating with *User Defined* aspect ratio conversions, there are four registers for each output video standard. These define the size of the output image, and how to place the resulting image on the output video raster.

Output H Start/ Output H Stop:	The *Output H Start* and *Output H Stop* define how to scale the cropped input image horizontally and where to position it horizontally on the output raster. The image will be stretched to fill the width. (i.e. For 1080i the range of values are 0 to 1919. The range of values for 720p output is 0 to 1279).
Output V Start/ Output V Stop:	The *Output V Start* and *Output V Stop* define how to scale the cropped input image vertically and where to position it vertically on the output raster. The image will be stretched to fill the height. (E.g. For 1080i, the range of values are 0 to 539. The range of values for 720p output is 0 to 719).

5.25. NOISE CONTROL TAB

The *Noise Control* tab is used to configure parameters associated with the video noise reduction processing. There are three different types of noise reduction supported in the 7812 series products including *Mosquito Noise Reduction* (MNR), *Block Artifact Reduction* (BAR) and *General Noise Reduction*. The *General Noise Reduction* section is a motion adaptive spatial-temporal and recursive noise filter.

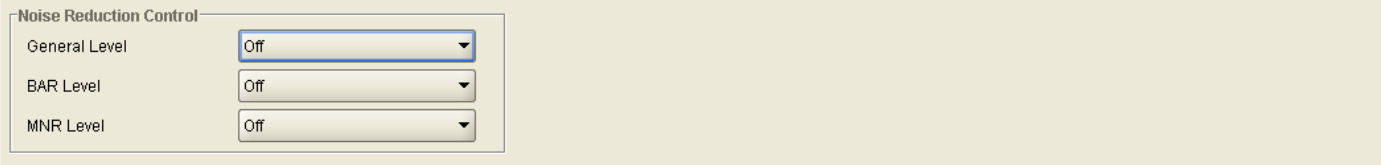
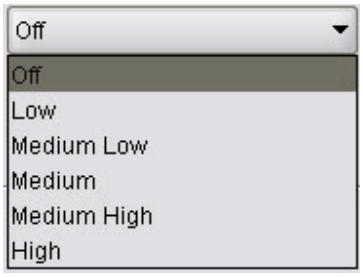


Figure 5-37: Noise Control Tab

5.25.1. Noise Reduction Levels

The *General Noise Reduction*, the *BAR noise reducer* and the *MNR noise reducer* all have the same controls; *Bar Level*, and the *MNR Level*. For the sake of brevity, only the *General Noise Reducer* will be discussed in this manual.

The *General Level* controls the strength of the applied *General Noise Reduction* filter. Select the level of noise reduction to be applied by selecting the appropriate value from the drop down menu as shown below.



Off	General noise reduction will not be enabled.
Low	A Low level of general noise reduction will be applied.
Medium Low	A Medium Low level of general noise reduction will be applied.
Medium	A Medium level of general noise reduction will be applied.
Medium High	A Medium High level of general noise reduction will be applied.
High	A High level of general noise reduction will be applied.

Note: Setting the value higher than needed to remove the noise present, will over soften areas of low amplitude, fine details.

Note: Setting the value too low may cause the circuitry to leave random noise that it could remove. However, removal of low-level details will be minimized

5.26. SCTE104 TAB

The *SCTE104* Control Tab manages the process of passing SCTE104 packets from the card's input to the card's output.

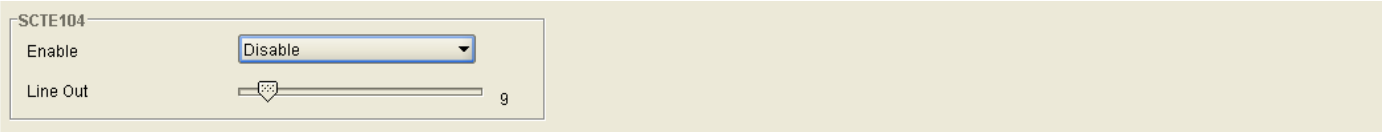


Figure 5-38: SCTE104 Tab

5.26.1. SCTE104 Enable Control

The ***Enable*** control simply enables and disables the re-insertion of SCTE104 packets in the outgoing video signal. When set to *Enable*, the SCTE104 packets will be re-inserted into the outgoing video signal. When set to *Disable*, SCTE104 packets will not be re-inserted into the outgoing video signal.

Enable	SCTE104 packets will be re-inserted into the outgoing video signal.
Disable	SCTE104 packets will not be re-inserted into the outgoing video signal.

5.26.2. Line Out Control

This control enables the user to set the specific line onto which SCTE104 packets will be inserted on the outgoing video signal. Drag the slider right to increase the value number and drag it left to decrease the value number. The value range is from 7 to 24 with a default value of 9. The *Line Out* control can be modified in increments of 1.

5.27. CC FAULT TRAP CONTROLS

The *CC Fault Traps* control enables the user to enable or disable Closed Caption traps and view trap status. 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.

If a parameter under the *Trap Status* is green, then the trap is present. If the parameter is red, then the trap is missing.

Figure 5-39: CC Fault Traps Tab

5.28. AUDIO/VIDEO TRAPS TAB

This control allows the user to enable Audio and Video traps and monitor the trap status. 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.

If a parameter under the *Trap Status* is green, then the trap is present. If the parameter is red, then the trap is missing.

Figure 5-40: Audio/Video Traps Tab

5.29. GPIO CONTROLS TAB

This GPIO Control tab allows the user to define the direction and function of each of the module's GPIOs. There are 4 GPIO's that can work each as separate GPIO's or work together as binary GPIO's. For more information on using binary GPIO's please refer to the Binary GPIO Control section in Untilities Control Tab. For the sake of brevity, only the controls for GPIO1 will be discussed. GPIO1 to 4 operates in the same fashion.

GPIO1 may be configured to be a GPI or a GPO. When set to operate as a GPI, the user may use the GPI to recall a card preset or trigger the playing/looping of a particular set of side panel logos. When set to be a GPO, the user may use the GPO to "tally" a particular logo that is being played/looped or a particular card preset that has been selected.

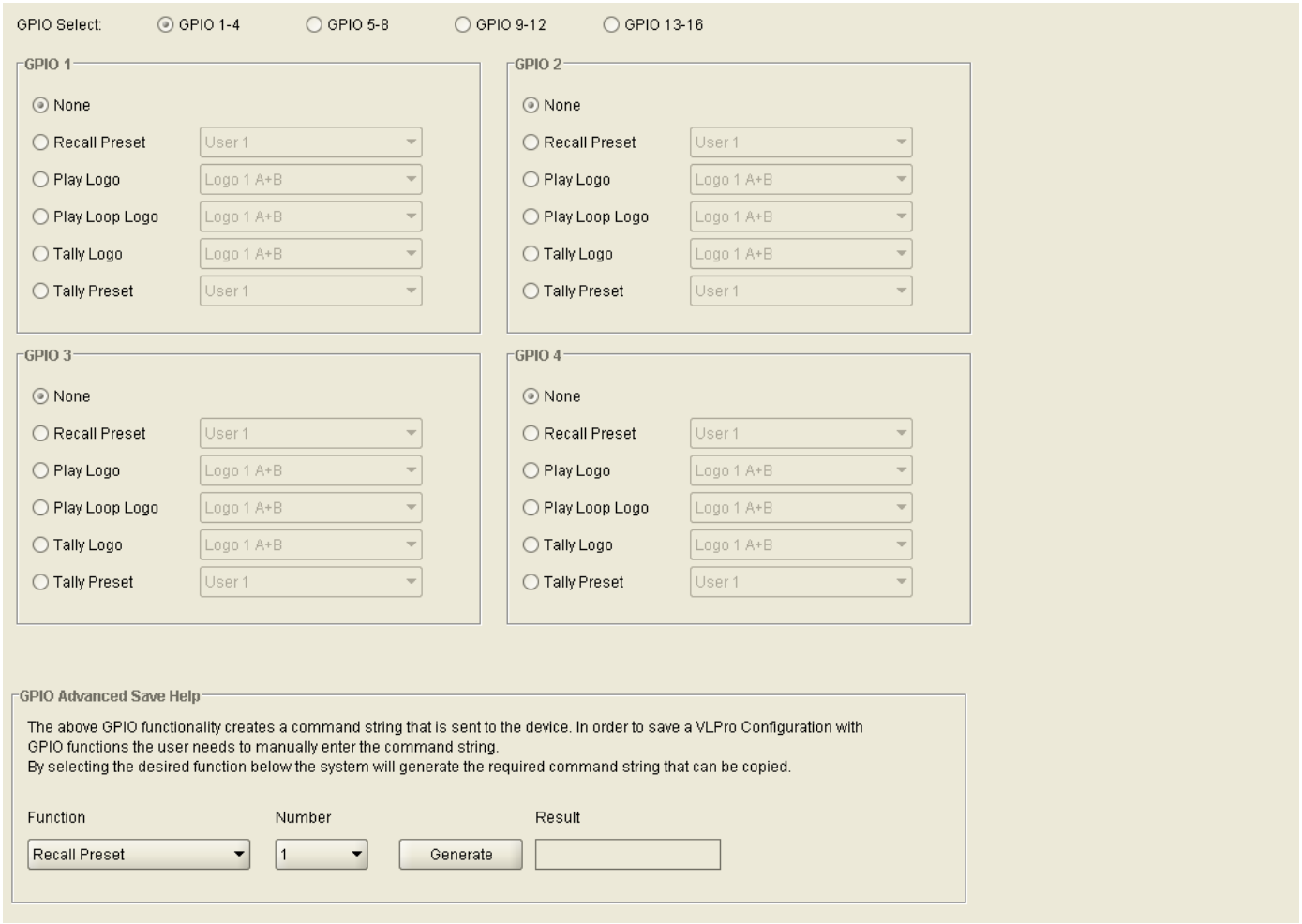
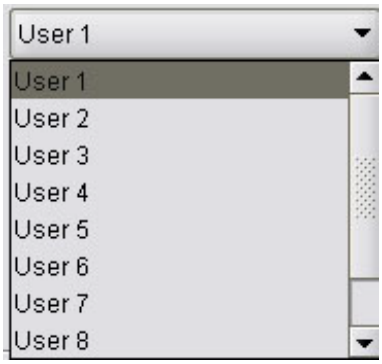


Figure 5-41: GPIO Control Tab

5.29.1. Recall Presets via GPIs

To use GPIO1 as a GPI and to further configure it for recalling a card preset, click on the “Recall Preset” radio button. Ensure that a black dot is present inside this circle. The 7812 series converter modules provide ten user presets, which can be recalled when GPIO1 is activated. Using the drop down menu, select which user preset should be recalled when GPIO1 is activated.



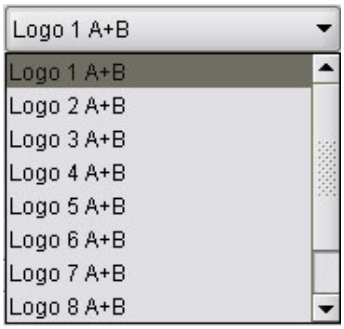
User1	Recall User Preset 1
User2	Recall User Preset 2
User3	Recall User Preset 3
User4	Recall User Preset 4
User5	Recall User Preset 5
User6	Recall User Preset 6
User7	Recall User Preset 7
User8	Recall User Preset 8
User9	Recall User Preset 9
User10	Recall User Preset 10

The *Recall Preset* control is used to set which preset will be recalled by the respective GPI input if it is closed to ground.

GPI settings are also stored in the User Presets in addition to the other settings. If the GPI settings are not the same for each video input and output combination, unexpected results may occur. In other words, make sure your GPI settings are the same for each User Preset.

5.29.2. Play Logo Settings

To use GPIO1 as a GPI and to further configure it for playing a particular logo, click on the “Play Logo” radio button. Ensure that a black dot is present inside this circle. The 7812 series converter modules can support up to ten logo sets, which can be, recalled when GPIO1 is activated. Using the drop down menu, select which logo should be recalled when GPIO1 is activated.



Logo 1 A+B	Play Logo 1 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 2 A+B	Play Logo 2 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 3 A+B	Play Logo 3 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 4 A+B	Play Logo 4 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 5 A+B	Play Logo 5 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 6 A+B	Play Logo 6 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 7 A+B	Play Logo 7 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 8 A+B	Play Logo 8 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 9 A+B	Play Logo 9 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 10 A+B	Play Logo 10 A+B (A is the left hand side logo and B is the right hand side logo)

5.29.3. Play Logo Loop Settings

To use GPIO1 as a GPI and to further configure it for playing and looping a particular logo, click on the “Play Loop Logo” radio button. Ensure that a black dot is present inside this circle. The 7812 series converter modules can support 10 logo sets, which can be recalled, played and looped when GPIO1 is activated. Using the drop down menu, select which logo should be recalled when GPIO1 is activated.

Logo 1 A+B	Play and Loop Logo 1 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 2 A+B	Play and Loop Logo 2 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 3 A+B	Play and Loop Logo 3 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 4 A+B	Play and Loop Logo 4 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 5 A+B	Play and Loop Logo 5 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 6 A+B	Play and Loop Logo 6 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 7 A+B	Play and Loop Logo 7 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 8 A+B	Play and Loop Logo 8 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 9 A+B	Play and Loop Logo 9 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 10 A+B	Play and Loop Logo 10A+B (A is the left hand side logo and B is the right hand side logo)

5.29.4. Tally Logo Settings

To use GPIO1 as a GPO, and to further configure its tallying or indicating when a particular logo is playing, click on the "Tally Logo" radio button. Ensure that a black dot is present inside this circle. The 7812 series converter modules support ten logos whose status can be reported in this way.

Logo 1 A+B	Tally status of Logo 1 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 2 A+B	Tally status of Logo 2 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 3 A+B	Tally status of Logo 3 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 4 A+B	Tally status of Logo 4 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 5 A+B	Tally status of Logo 5 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 6 A+B	Tally status of Logo 6 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 7 A+B	Tally status of Logo 7 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 8 A+B	Tally status of Logo 8 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 9 A+B	Tally status of Logo 9 A+B (A is the left hand side logo and B is the right hand side logo)
Logo 10 A+B	Tally status of Logo 10 A+B (A is the left hand side logo and B is the right hand side logo)

5.29.5. Tally Preset Settings

To use GPIO1 as a GPO and to further configure its tallying or indicating when a card preset has been selected, click on the "Tally Preset" radio button. Ensure that a black dot is present inside this circle. The 7812 series converter modules support ten card presets whose status can be reported in this way.

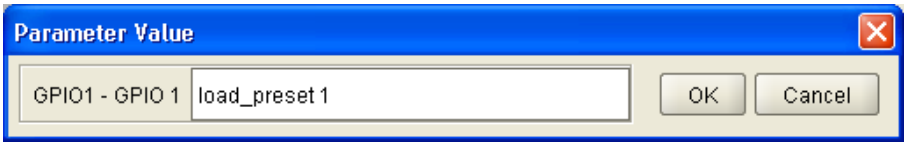
User1	Tally status of Preset 1
User2	Tally status of Preset 2
User3	Tally status of Preset 3
User4	Tally status of Preset 4
User5	Tally status of Preset 5
User6	Tally status of Preset 6
User7	Tally status of Preset 7
User8	Tally status of Preset 8
User9	Tally status of Preset 9
User10	Tally status of Preset 10

5.29.6. GPIO Advanced Save Help

GPIO advanced save is used when creating Sub-Presets using VLPro for the 7812 series converters. More information on creating sub-presets is located in section 4.2.2.3 of the VLPro manual. This will generate a string to be copied and pasted into the sub-preset text box control when setting controls for GPIO to tell the module what logo to play.

Figure 5-42: GPIO Advanced Save Help Control

To generate a string, start by selecting what you would like the GPIO to do. For example to recall Preset 1 when a GPIO is selected. Select "Recall Preset" from the *Function* control select "1" from the *number* control and click generate As show above this will generate the string, "load_preset 1". Paste this string into the GPIO text box in the advanced save control for sub-presets.



5.30. PANEL LOGO TAB

With +CF2G enabled 7812 series modules, static or animated logos may be stored in the on-board compact flash. The *Panel Logo* control tab is used to manage the when and how this side panel is inserted into the out-going video stream.

Up to 10 sets of side panels can be managed within the *Panel Logo* control tab. For each set of side panels, the left hand side panel is referenced as $Logo_n$ A and the right hand side panel is referenced as $Logo_n$ B. Before a set of side panels can be keyed into the outgoing video, the side panel content must first be moved from compact flash storage to play-out cache storage. This process is initiated by pressing the CUE button for the related side panel. Depending on the size of the side panel content animations, this process can take several minutes. Once the side panel content has been fully moved into play-out cache the STATUS A and STATUS B boxes beside the relevant logo will become RED and text indicating "QUED" will appear. $Logo_n$ A is cued first and $Logo_n$ B is cued second.

Once the cueing process is complete, you can choose to play the side panel animation once by pressing the PLAY button. By pressing the PLAY LOOP button, the animation sequence will continually play and re-play until the STOP A, STOP B or STOP ALL buttons are pressed.

Note that the cueing, playing and stop functions can also be managed using GPI inputs on 7812 series modules

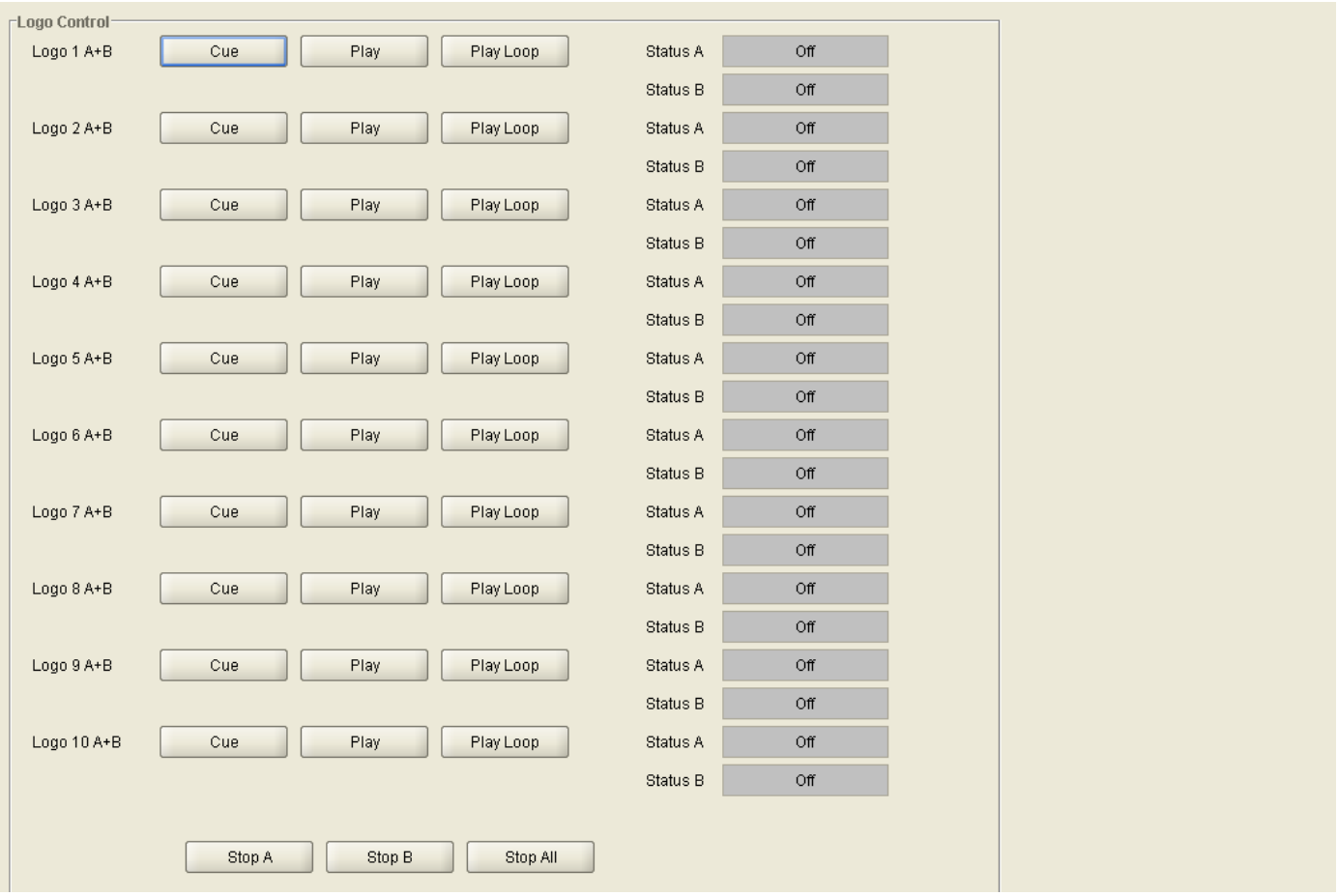


Figure 5-43: Logo Controls

5.31. CONFIGURING THE IP CONTROL TAB

All 7812 series modules have a dedicated Ethernet port for controlling module functions as a 7812 mini-agent and up-loading data to the on-board compact flash (CF2G option).

Setting the IP address of the 7812 series dedicated Ethernet port is done through VLPRO using the IP control tab. To set the IP address, type the desired network settings into the IP ADDRESS, SUBNET MASK and DEFAULT GATEWAY fields and then press APPLY.

Note: The card MUST be re-booted for the IP address change to take effect.

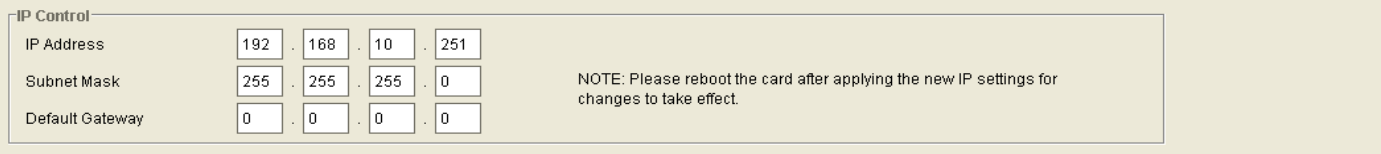


Figure 5-44: IP Control

5.32. AUDIO 5.1 DOWN MIX CONTROL TAB

The 7812 series of modules can perform 5.1 PCM to stereo (LtRt or LoRo) down mixing. This is a standard feature in all variations of the module.

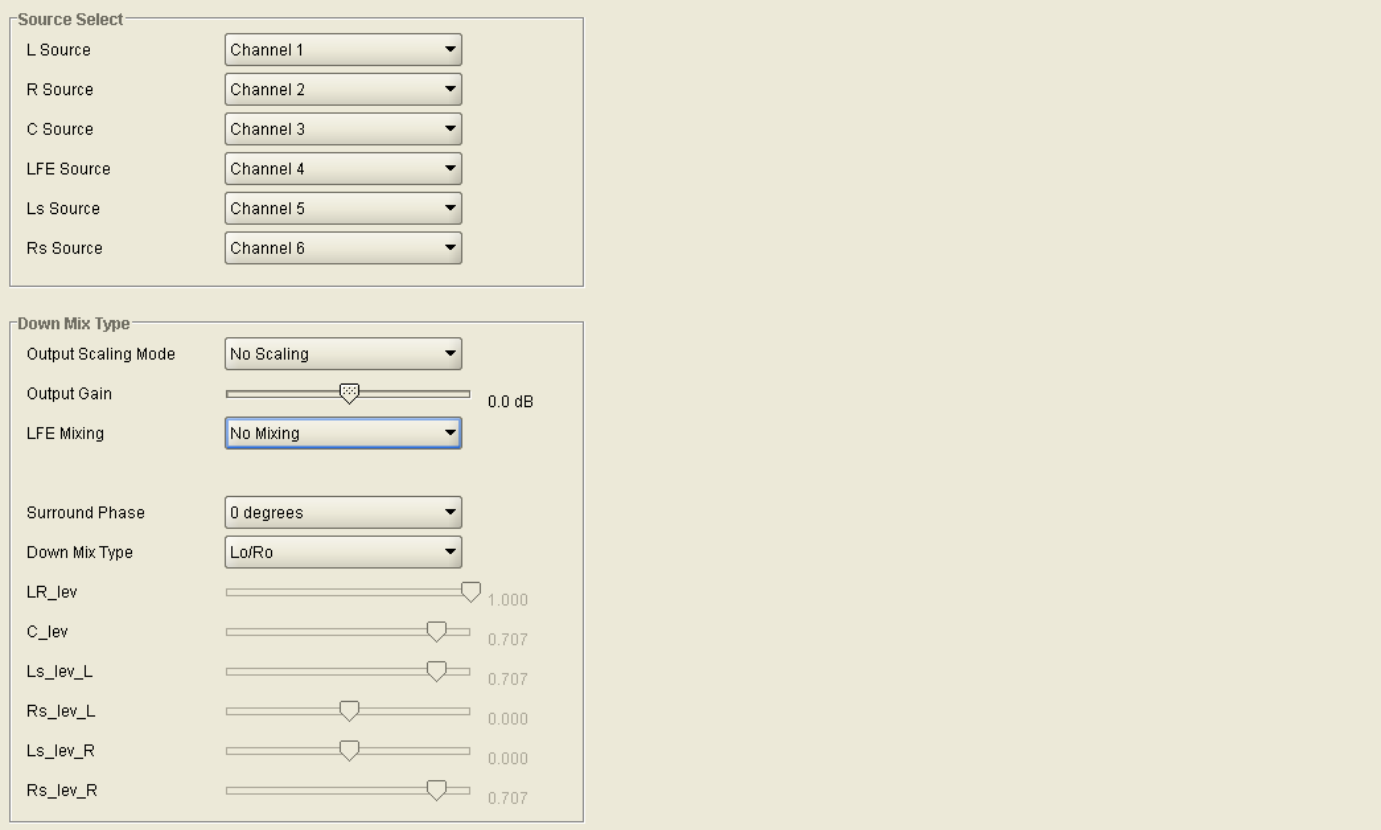
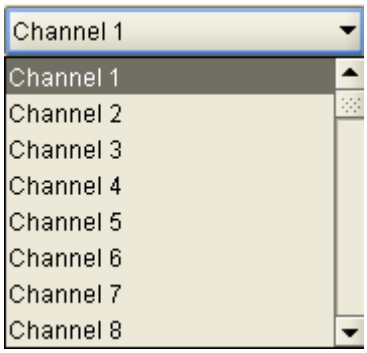


Figure 5-45: Audio 5.1 Down Mix Tab

5.32.1. 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 six 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:



L Source	Channel 1	IntelliGain Channel 1
	Channel 2	IntelliGain Channel 2
	Channel 3	IntelliGain Channel 3
	Channel 4	IntelliGain Channel 4
	Channel 5	IntelliGain Channel 5
	Channel 6	IntelliGain Channel 6
	Channel 7	IntelliGain Channel 7
	Channel 8	IntelliGain Channel 8
	Channel 9	Dolby Decoder A Channel 1
	Channel 10	Dolby Decoder A Channel 2
	Channel 11	Dolby Decoder A Channel 3
	Channel 12	Dolby Decoder A Channel 4
	Channel 13	Dolby Decoder A Channel 5
	Channel 14	Dolby Decoder A Channel 6
	Channel 15	Dolby Decoder A Channel 7
	Channel 16	Dolby Decoder A Channel 8
	Mono mix channels 1 and 2	Dolby Decoder A Monitor Channel 1
	Mono mix channels 3 and 4	Dolby Decoder A Monitor Channel 2
	Mono mix channels 5 and 6	Dolby Decoder B Channel 1
	Mono mix channels 7 and 8	Dolby Decoder B Channel 2
	Mono mix channels 9 and 10	Dolby Decoder B Channel 3
	Mono mix channels 11 and 12	Dolby Decoder B Channel 4
	Mono mix channels 13 and 14	Dolby Decoder B Channel 5
	Mono mix channels 15 and 16	Dolby Decoder B Channel 6
	Mute	Dolby Decoder B Channel 7
	Up Mix L Front	Dolby Decoder B Channel 8
	Up Mix R Front	Dolby Decoder B Monitor Channel 1
	Up Mix Center	Dolby Decoder B Monitor Channel 2
	Up Mix LFE	
	Up Mix L Surround	
	Up Mix R Surround	
	Up Mix Stereo Pass L	
	Up Mix Stereo Pass R	

5.32.2. Down Mix Type Controls

5.32.2.1. Output Scaling Mode

This 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 inputs, 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	If no normalization is applied, the stereo down-mix usually sounds at the similar levels as the 5.1 audio inputs, 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.

5.32.2.2. Output Gain

This 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.

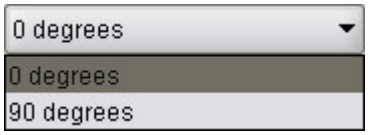
5.32.2.3. LFE Mixing Control

This 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	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.

5.32.2.4. Surround Phase Control

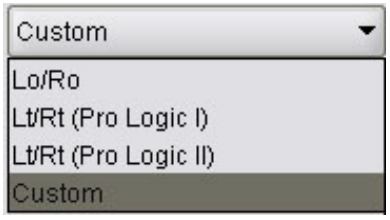
This control manages whether or not a 90-degree phase shift is applied to the surround channels before being passed to down-mix matrix. Select 0 degree if no 90-degree phase shift is needed. It is required that surround channels are 90-degree phase shifted for Dolby Prologic I decoding, but if surround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



0 degrees	No phase shift is applied to the surround channels before being passed to down.
90 degrees	A 90-degree phase shift is applied to the surround channels before being passed to down.

5.32.2.5. Down Mix Type Control

This 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.



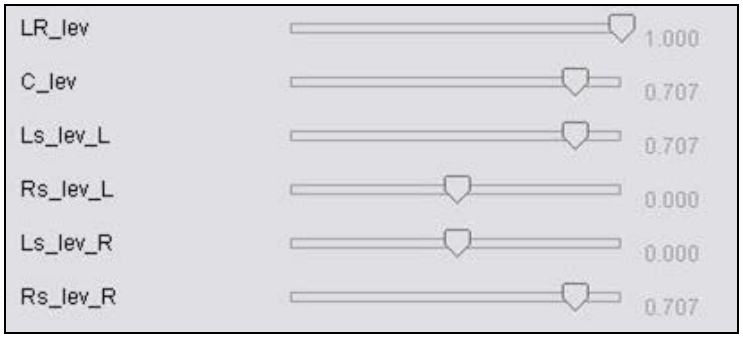
LoRo	When set to *LoRo*, the down-mixer will generate Left Only and Right Only (LoRo) stereo audio.
LtRt (Prologic I)	When set to *LtRt (Prologic I)*, the down-mixer will generate Left Total and Right Total (LtRt) Prologic I compatible stereo audio.
LtRt (Prologic II)	When set to *LtRt (Prologic II),*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

5.32.2.5.1. Custom Down Mix Type Control Settings

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

L = (LR_lev * L + C_lev * C + Ls_lev_L * Ls{0°/90°} + Rs_lev_L * Rs{0°/90°} + lfe_gain * LFE) * gain / norm
R = (LR_lev * R + C_lev * C + Ls_lev_R * Ls{0°/90°} + Rs_lev_R * Rs{0°/90°} + lfe_gain * LFE) * gain / norm

Where **lfe_gain** is controlled by LFE Mixing and LFE Gain, **gain** is controlled by Output Gain and **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.

5.33. DOLBY METADATA TAB

The 7812 series of modules have the ability to author Dolby Metadata and insert that information into the VANC of the outgoing video signal. The Dolby Metadata Encoder control tab sets some high level parameters for the Dolby metadata insertion process.

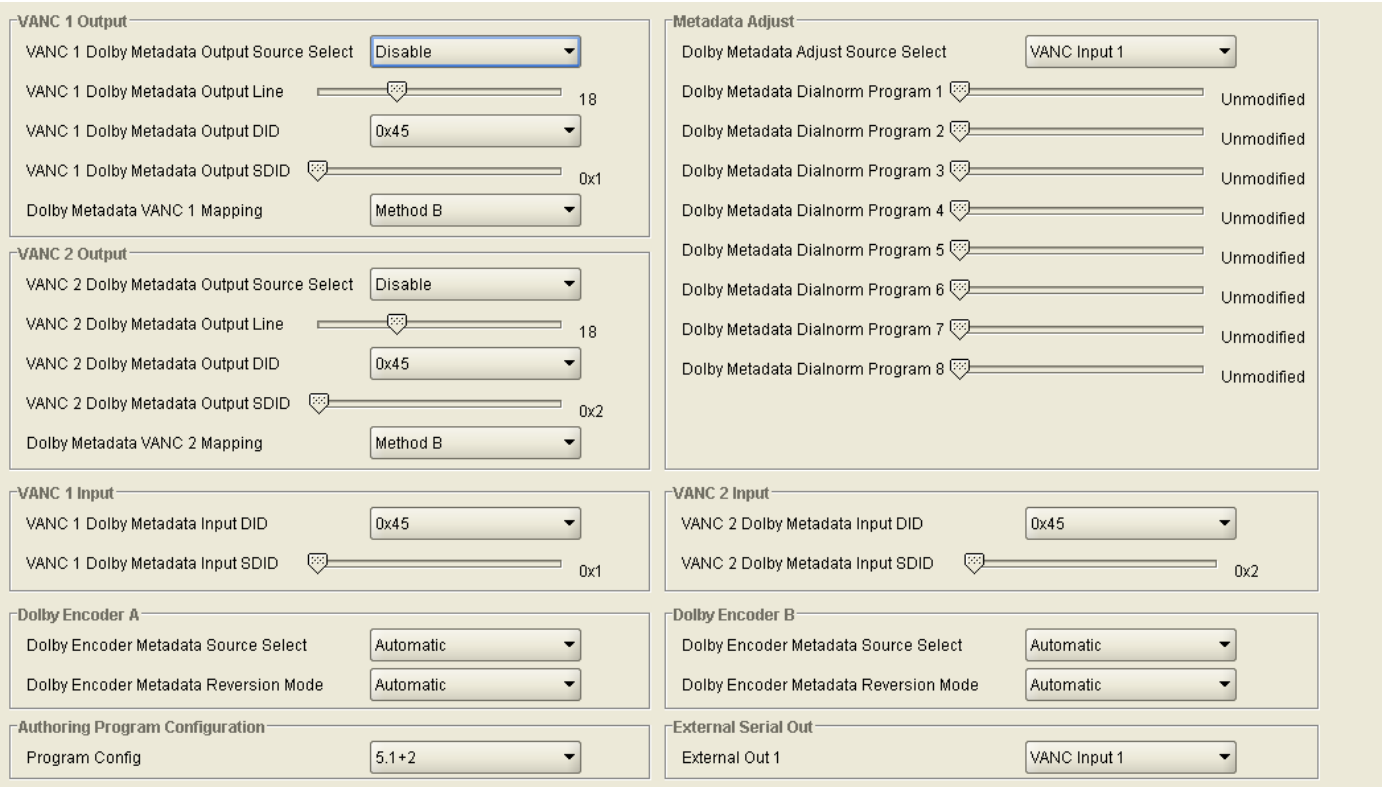


Figure 5-46: Dolby Metadata Encoder Tab

5.33.1. Out Enable Control

This control allows the user to enable or disable the Dolby Metadata Encoder. When set to *Disable*, Dolby Metadata authoring and insertion will not be enabled. When set to *Enable*, Dolby Metadata authoring and insertion will be enabled.

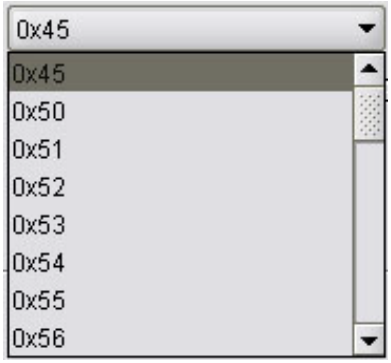
Enable	Dolby Metadata authoring and insertion will be enabled.
Disable	Dolby Metadata authoring and insertion will not be enabled.

5.33.1.1. Output Line Control

This control enables the user to adjust the line on which Dolby metadata is encoded. To adjust the control, drag the slider right to increase the value and left to decrease the value. The *Output Line* value ranges from 7 to 41 in increments of 1 line. The default setting is 18.

5.33.1.2. Output DID Control

This control sets the DID for the Dolby Metadata ancillary data packets. Use the drop down menu as shown below to pick the desired DID.



0x45	0x45 is selected for the DID for the Dolby Metadata ANC data packet.
0x50	0x50 is selected for the DID for the Dolby Metadata ANC data packet.
0x51	0x51 is selected for the DID for the Dolby Metadata ANC data packet.
0x52	0x52 is selected for the DID for the Dolby Metadata ANC data packet.
0x53	0x53 is selected for the DID for the Dolby Metadata ANC data packet.
0x54	0x54 is selected for the DID for the Dolby Metadata ANC data packet.
0x55	0x55 is selected for the DID for the Dolby Metadata ANC data packet.
0x56	0x56 is selected for the DID for the Dolby Metadata ANC data packet.
0x57	0x57 is selected for the DID for the Dolby Metadata ANC data packet.
0x58	0x58 is selected for the DID for the Dolby Metadata ANC data packet.
0x59	0x59 is selected for the DID for the Dolby Metadata ANC data packet.
0x5A	0x5A is selected for the DID for the Dolby Metadata ANC data packet.
0x5B	0x5B is selected for the DID for the Dolby Metadata ANC data packet.
0x5C	0x5C is selected for the DID for the Dolby Metadata ANC data packet.
0x5D	0x5D is selected for the DID for the Dolby Metadata ANC data packet.
0x5E	0x5E is selected for the DID for the Dolby Metadata ANC data packet.
0x5F	0x5F is selected for the DID for the Dolby Metadata ANC data packet.
0xC0	0xC0 is selected for the DID for the Dolby Metadata ANC data packet.
0xC1	0xC1 is selected for the DID for the Dolby Metadata ANC data packet.
0xC2	0xC2 is selected for the DID for the Dolby Metadata ANC data packet.
0xC3	0xC3 is selected for the DID for the Dolby Metadata ANC data packet.
0xC4	0xC4 is selected for the DID for the Dolby Metadata ANC data packet.
0xC5	0xC5 is selected for the DID for the Dolby Metadata ANC data packet.
0xC6	0xC6 is selected for the DID for the Dolby Metadata ANC data packet.
0xC7	0xC7 is selected for the DID for the Dolby Metadata ANC data packet.
0xC8	0xC8 is selected for the DID for the Dolby Metadata ANC data packet.
0xC9	0xC9 is selected for the DID for the Dolby Metadata ANC data packet.
0xCA	0xCA is selected for the DID for the Dolby Metadata ANC data packet.
0xCB	0xCB is selected for the DID for the Dolby Metadata ANC data packet.
0XCC	0XCC is selected for the DID for the Dolby Metadata ANC data packet.

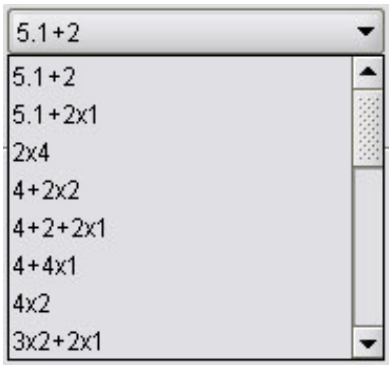
0xCD	0xCD is selected for the DID for the Dolby Metadata ANC data packet.
0xCE	0xCE is selected for the DID for the Dolby Metadata ANC data packet.
0xCF	0xCF is selected for the DID for the Dolby Metadata ANC data packet.

5.33.1.3. SDID Control

This control sets the output SDID for the Dolby Metadata ancillary data packets. To adjust the control, drag the slider right to increase the value and left to decrease the value. The *SDID Control* value ranges from 0x1 to0xFF. The default value is 0x1.

5.33.1.4. Program Config Control

This control enables the user to set the control for the program configuration of the Dolby Metadata encoder. This parameter defines how the audio channels are grouped within a Dolby bitstream. Up to eight channels can be grouped together in individual programs, where each program contains its own metadata. The default setting is *5.1 + 2*. Using the drop down menu, select the appropriate audio program configuration.



5.1+2 (2 programs)	5.1+2 is selected for the program Dolby Metadata program configuration.
5.1+2x1 (3 programs)	5.1+2x1 is selected for the program Dolby Metadata program configuration.
2x4 (2 programs)	2x4 is selected for the program Dolby Metadata program configuration.
4+2x2 (3 programs)	4+2x2 is selected for the program Dolby Metadata program configuration.
4+2+2x1 (4 programs)	4+2+2x1 is selected for the program Dolby Metadata program configuration.
4+4x1 (5 programs)	4+4x1 is selected for the program Dolby Metadata program configuration.
4x2 (4 programs)	4x2 is selected for the program Dolby Metadata program configuration.
3x2+2x1 (5 programs)	3x2+2x1 is selected for the program Dolby Metadata program configuration.
2x2+4x1 (6 programs)	2x2+4x1 is selected for the program Dolby Metadata program configuration.
2+6x1 (7 programs)	2+6x1 is selected for the program Dolby Metadata program configuration.
8x1 (8 programs)	8x1 is selected for the program Dolby Metadata program configuration.
5.1 (1 program)	5.1 is selected for the program Dolby Metadata program configuration.
4+2 (2 programs)	4+2 is selected for the program Dolby Metadata program configuration.
4+2x1 (3 programs)	4+2x1 is selected for the program Dolby Metadata program configuration.
3x2 (3 programs)	3x2 is selected for the program Dolby Metadata program configuration.
2x2+2x1 (4 programs)	2x2+2x1 is selected for the program Dolby Metadata program configuration.
2+4x1 (5 programs)	2+4x1 is selected for the program Dolby Metadata program configuration.
6x1 (6 programs)	6x1 is selected for the program Dolby Metadata program configuration.
4 (1 program)	4 is selected for the program Dolby Metadata program configuration.
2x2 (2 programs)	2x2 is selected for the program Dolby Metadata program configuration.
2+2x1 (3 programs)	2+2x1 is selected for the program Dolby Metadata program configuration.
4x1 (4 programs)	4x1 is selected for the program Dolby Metadata program configuration.
7.1 (1 program)	7.1 is selected for the program Dolby Metadata program configuration.
7.1 screen (1 program)	7.1 screen is selected for the program Dolby Metadata program configuration.

5.33.1.5. Method Control

This control enables the user to set the method that is used for Dolby Metadata formatting. There are two methods for Dolby Metadata insertion as outlined in SMPTE standard SMPTE 2020. These two methods are called Method A and Method B. Using the drop down menu, the user can set the Method to A or B for Dolby Metadata insertion.

Method A	Use SMPTE 2020 Method A process for Dolby Metadata insertion.
Method B	Use SMPTE 2020 Method B process for Dolby Metadata insertion.

5.34. DOLBY METADATA PRESETS TAB

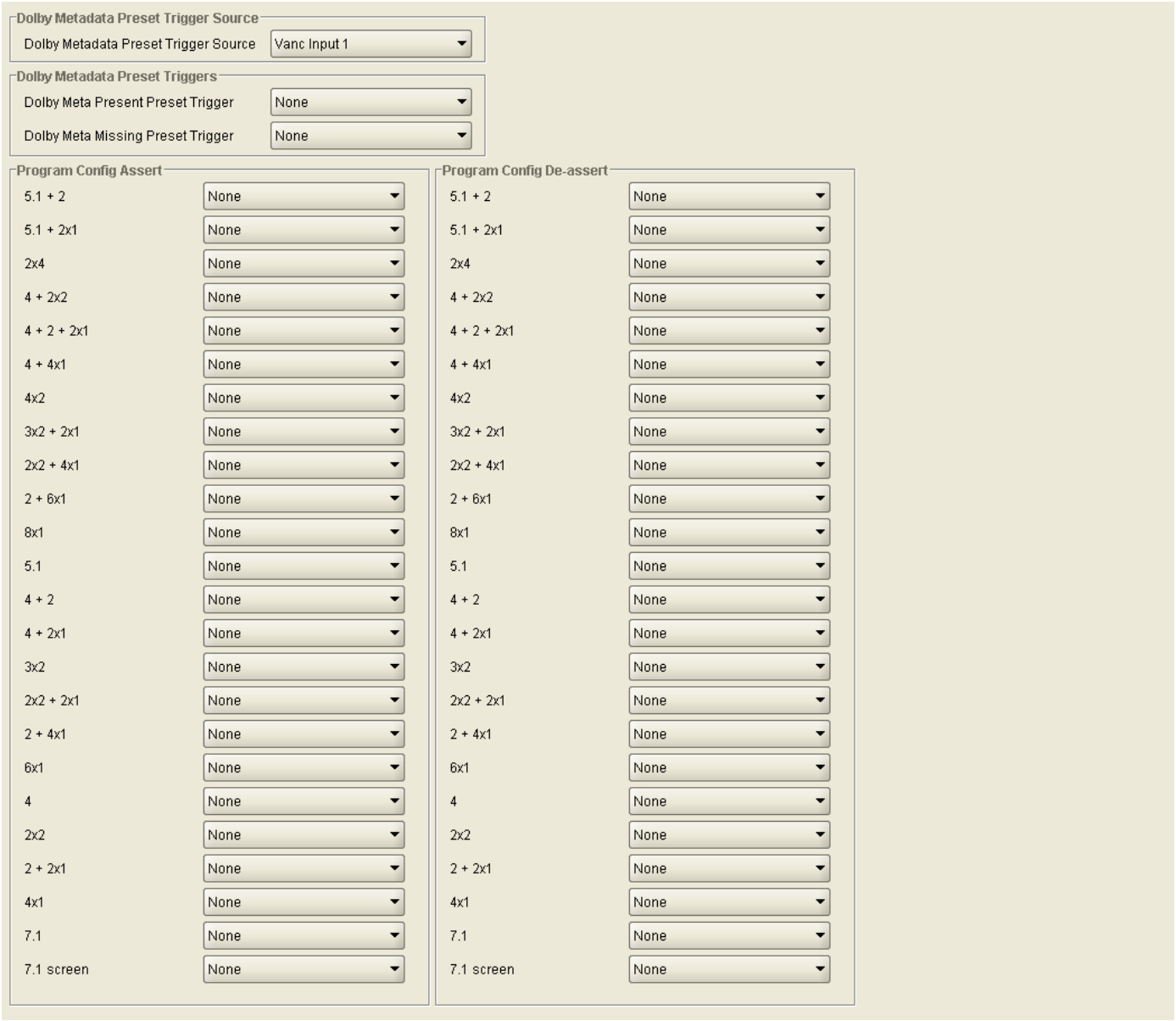
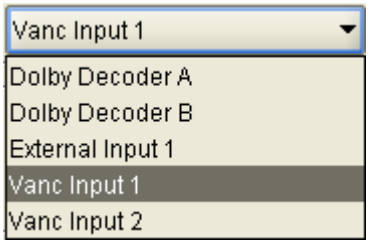


Figure 5-47: Dolby Metadata Presets Tab

5.34.1. Dolby Metadata Preset Trigger Source

The *Dolby Preset Trigger Source* control allows the user to select where the Dolby Metadata source is coming from. Below is a description of the available options:

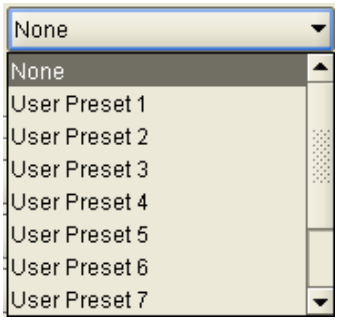


Dolby Decoder A	When Dolby Decoder A is selected, the metadata from decoder A will be used to trigger the metadata presets
Dolby Decoder B	When Dolby Decoder B is selected, the metadata from decoder B will be used to trigger the metadata presets
External Input 1	When External Input 1 is selected, the metadata from External Input 1 will be used to trigger the metadata presets.
Vanc Input 1	When Vanc Input 1 is selected, the metadata from Vanc Input 1 will be used to trigger the metadata presets.
Vanc Input 2	When Vanc Input 2 is selected, the metadata from Vanc Input 2 will be used to trigger the metadata presets.

5.34.2. Dolby Metadata Preset Triggers

5.34.2.1. Dolby Metadata Present Preset Trigger

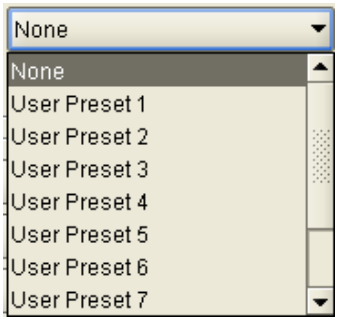
The *Dolby Metadata Present Trigger* is used to trigger presets saved to the module when a presence of Dolby Metadata is detected. The following selections are available:



None	When set to None, the module will not trigger a preset on Dolby presence.
User Preset 1- 10	When set to User Preset 1 through 10 when the presents of Dolby is detected the corresponding preset will be applied to the module.

5.34.2.2. Dolby Metadata Missing Preset Trigger

The *Dolby Metadata Missing Trigger* is used to trigger presets saved to the module when the absence of Metadata is detected. The following selections are available:



None	When set to None, the module will not trigger a preset on Dolby absence.
User Preset 1- 10	When set to User Preset 1 through 10 when the absence of Dolby signal is detected the corresponding preset will be applied to the module.

5.34.3. Program Config Assert

The Program Config Assert is used to allow the user to select a specific user defined preset with a presence of a specific Program Mode. Each of the different program modes can select any of the 10 user defined presets

5.34.4. Program Config De-assert

The Program Config De-assert is used to allow the user to select a specific user defined preset with the absence of a specific Program Mode. Each of the different program modes can select any of the 10 user defined presets

5.35. DOLBY METADATA AUTHOR TAB

There are eight unique programs for which Dolby Metadata may be specified. For simplicity, only *Dolby Metadata Programs 1* will be shown in this manual. Dolby Program 1 settings will be discussed below in sections 5.35.1 to 5.35.25. Many definitions are based on Dolby Metadata Guide (Issue 3) S05/14660/16797 and all due credits are hereby given to Dolby Laboratories.

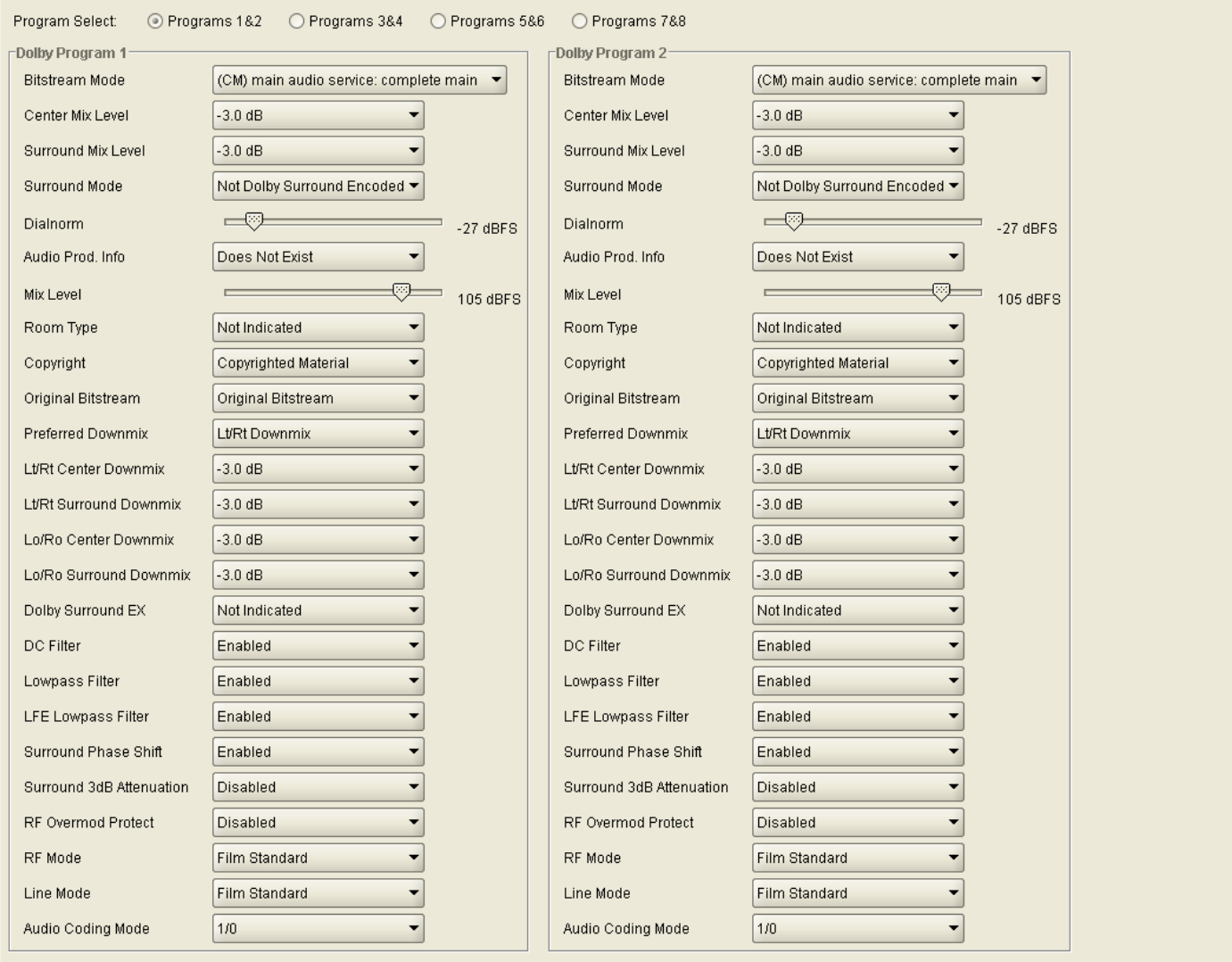
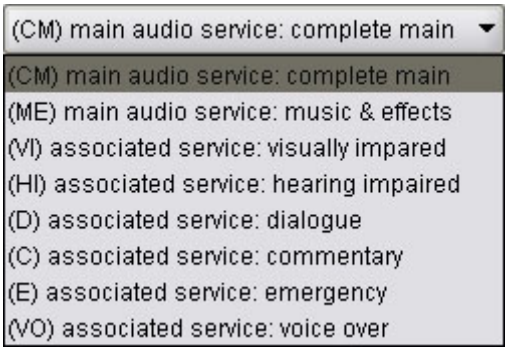


Figure 5-48: Dolby Metadata Control – Program 1 & 2 Tab

5.35.1. Bitstream Mode

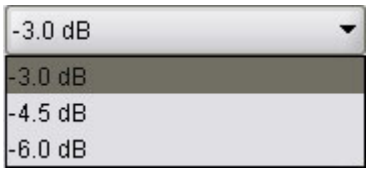
This control enables the user to set the bit-stream mode for Program 1. This parameter describes the audio service contained within the Dolby bit-stream. A complete audio program may consist of a main audio service (a complete mix of all the program audio), an associated audio service comprising a complete mix, or one main service combined with an associated service. To form a complete audio program, it may be (but rarely is) necessary to decode both a main service and an associated service. An example of an exception to this is an emergency service within a digital television program. Most programming typically uses Complete Main (CM) as its setting.



CM	*CM* flags the bit-stream as the main audio service for the program and indicates that all elements are present to form a complete audio program. This is the most common setting. The CM service may contain from one (mono) to six (5.1) channels.
ME	*ME* flags the bit-stream as the main audio service for the program, minus a dialogue channel. The dialogue channel, if any, is intended to be carried by an associated dialogue service. Different dialogue services can be associated with a single ME service to support multiple languages.
VI	*VI* flags the bit-stream as a single-channel program intended to provide a narrative description of the picture content to be decoded along with the main audio service. The VI service may also be a complete mix of all program channels, comprising up to six channels.
HI	*HI* flags the bit-stream as a single-channel program intended to convey audio that has been processed for increased intelligibility and decoded along with the main audio service. The HI service may also be a complete mix of all program channels, comprising up to six channels.
D	*D* flags the bit-stream as a single-channel program intended to provide a dialogue channel for a ME service. If the ME service contains more than two channels, the D service is limited to only one channel; if the ME service is two channels, the D service can be a stereo pair. The appropriate channels of each service are mixed together (requires special decoders).
C	*C* flags the bit-stream as a single-channel program intended to convey additional commentary that can be optionally decoded along with the main audio service. This service differs from a dialogue service because it contains an optional, rather than a required, dialogue channel. The C service may also be a complete mix of all program channels, comprising up to six channels.
E	*E* flags the bit-stream as single-channel service that is given priority in reproduction. When the E service appears in the bit-stream, it is given priority in the decoder and the main service is muted.
VO	*VO* flags the bit-stream as a single-channel service intended to be decoded and mixed to the Center channel (requires special decoders).

5.35.2. Centre Mix Level

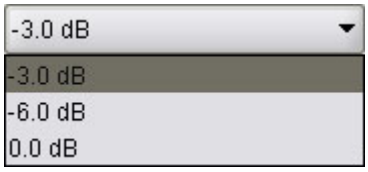
This control enables the user to author the centre mix level for program 1 of the Dolby Stream. Select the appropriate control from the drop down menu.



- 3dB	The Center channel is attenuated 3 dB and sent to the Left and Right channels.
-4.5 dB	The Center channel is attenuated 4.5 dB and sent to the Left and Right channels.
-6.0 dB	The Center channel is attenuated 6 dB and sent to the Left and Right channels.

5.35.3. Surround Mix Level

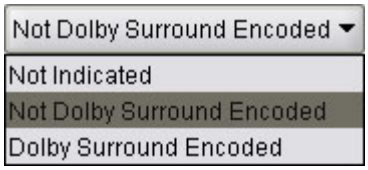
This control enables the user to author the surround mix level of the Dolby Stream. When the encoded audio has one or more Surround channels, but the consumer does not have surround speakers, this parameter indicates the nominal down-mix level for the Surround channel(s) with respect to the Left and Right front channels. Dolby Digital decoders use this parameter during down-mixing in Lo/Ro mode when Extended BSI parameters are not active. Select the appropriate control from the drop down menu.



- 3dB	The Left and Right Surround channels are each attenuated 3 dB and sent to the Left and Right front channels, respectively.
-6.0 dB	Same as above, but the signal is attenuated 6 dB.
0.0 dB	The Surround channel(s) are discarded.

5.35.4. Surround Mode

This control enables the user to author the surround mode of the Dolby stream. This parameter indicates to a Dolby Digital decoding product that also contains a Dolby Pro Logic decoder (for example a 5.1-channel amplifier), whether or not the two-channel encoded bit-stream contains a Dolby Surround (Lt/Rt) program that requires Pro Logic decoding. Decoders can use this flag to automatically switch on Pro Logic decoding as required.



Not Indicated	There is no indication either way.
Not Dolby Surround Encoded	The bitstream contains information that was not encoded in Dolby Surround. The bitstream contains information that was encoded in Dolby Surround. After Dolby Digital decoding, the bitstream is decoded using Pro Logic.
Dolby Surround Encoded	The bitstream contains information that was encoded in Dolby Surround. After Dolby Digital decoding, the bitstream is decoded using Pro Logic.

5.35.5. Dialnorm Control

This control enables the user to author the ***Dialnorm level*** of the Dolby bitstream. When received at the consumer's Dolby Digital decoder, this parameter setting determines a level shift in the decoder that sets, or normalizes, the average audio output of the decoder to a preset level. This aids in matching audio volume between program sources. To adjust the Dialnorm control, drag the slide right to increase the value and left to decrease the value. The Dialnorm Control has a value range of –1 dBFS to –31 dBFS in increments of 1 dBFS. The default value is -27 dBFs.

5.35.6. Audio Prod Info

This control enables the user to author the ***Audio Prod. Information*** for the Dolby bitstream. This parameter indicates whether the mixing level and room type values are valid. If *Yes*, then a receiver or amplifier could use these values as described below. If *No*, then the values in these fields are invalid. In practice, only high-end consumer equipment implements these features. Use the drop down to set this control.

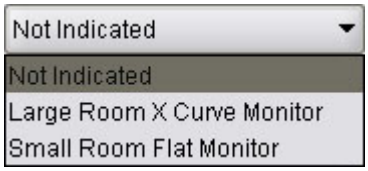
Does Not Exist	Mixing Level and Room Type parameters are invalid and should be ignored.
Exists	Mixing Level and Room Type parameters are valid.

5.35.7. Mix Level

This control allows the user to author the ***Mix Level*** for the Dolby bit-stream. The Mixing Level parameter describes the peak sound pressure level (SPL) used during the final mixing session at the studio or on the dubbing stage. The parameter allows an amplifier to set its volume control such that the SPL in the replay environment matches that of the mixing room. This control operates in addition to the dialogue level control, and is best thought of as the final volume setting on the consumer's equipment. This value can be determined by measuring the SPL of pink noise at studio reference level and then adding the amount of digital headroom above that level. For example, if 85 dB equates to a reference level of –20 dBFS, the mixing level is 85 + 20, or 105 dB. Use the slide bar to change the authored Mix Level in the Dolby Metadata packet. The Mix Level ranges from 80 dBFS to 110 dBFS. The default value is 105 dBFs.

5.35.8. Room Type

This control enables the user to author the *Room Type* information. The *Room Type* parameter describes the equalization used during the final mixing session at the studio or on the dubbing stage. A *Large* room is a dubbing stage with the industry standard X-curve equalization; a *Small* room has flat equalization. This parameter allows an amplifier to be set to the same equalization as that heard in the final mixing environment.



Not Indicated	Not Indicated.
Large Room X Curve Monitor	Large Room X Curve Monitor used during final mixing.
Small Room Flat Monitor	Small Room used during final mixing with flat equalization.

5.35.9. Copyright

This control allows the user to author the Copyright information for the Dolby bit-stream. This parameter indicates whether the encoded Dolby Digital bitstream is copyright protected. It has no effect on Dolby Digital decoders and its purpose is purely to provide information.

Not Copyrighted	Indicates the material is not copyrighted material.
Copyrighted Material	Indicates the material is copyrighted.

5.35.10. Original Bitstream

This control allows the user to author the Original Bitstream metadata for the Dolby bit-stream. This parameter indicates whether the encoded Dolby Digital bitstream is the master version or a copy. It has no effect on Dolby Digital decoders and its purpose is purely to provide information. The *Original Bitstream* drop down menu has the following options:

Not Copyrighted	Indicate the material is not copyrighted material.
Copyrighted Material	Indicate the material is copyrighted.

5.35.11. Preferred Down Mix

This control allows the user to author the Preferred Down-Mix metadata for the Dolby bit-stream. This parameter allows the producer to select either the Lt/Rt or the Lo/Ro downmix in a consumer decoder that has stereo outputs. Consumer receivers are able to override this selection, but this parameter provides the opportunity for a 5.1-channel soundtrack to play in Lo/Ro mode without user intervention. This is especially useful on music material. The *Preferred Down Mix* drop down menu has the following options:

Not Indicated	Not Indicated
LtRt Downmix	Lt/Rt Preferred
LoRo Downmix	Lo/Ro Preferred

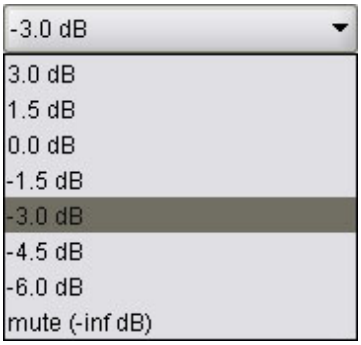
5.35.12. Lt/Rt Centre Down Mix

This control allows the user to author the LtRt Center Down-Mix metadata for the Dolby bit-stream. This parameter indicates the level shift applied to the Center channel when adding to the left and right outputs as a result of down-mixing to a Lt/Rt output. The *Lt/Rt Centre Down Mix* menu provides the following options:

3.0 dB	3.0 dB level shift applied to the Center channel
1.5 dB	1.5 dB level shift applied to the Center channel
0.0 dB	0.0 dB level shift applied to the Center channel
-1.5 dB	-1.5 dB level shift applied to the Center channel
-3.0 dB	-3.0 dB level shift applied to the Center channel
-4.5 dB	-4.5 dB level shift applied to the Center channel
-6.0 dB	-6.0 dB level shift applied to the Center channel
Mute	-999 dB level shift applied to the Center channel

5.35.13. Lt/Rt Surround Control

This control allows the user to author the **LtRt Surround Control** metadata for the Dolby bit-stream. This parameter indicates the level shift applied to the Surround channels when down-mixing to a Lt/Rt output. The ***Lt/Rt Surround Control*** drop down menu provides the following options:



3.0 dB	3.0 dB level shift applied to the Surround channels
1.5 dB	1.5 dB level shift applied to the Surround channels
0.0 dB	0.0 dB level shift applied to the Surround channels
-1.5 dB	-1.5 dB level shift applied to the Surround channels
-3.0 dB	-3.0 dB level shift applied to the Surround channels
-4.5 dB	-4.5 dB level shift applied to the Surround channels
-6.0 dB	-6.0 dB level shift applied to the Surround channels
Mute	-999 dB level shift applied to the Surround channels

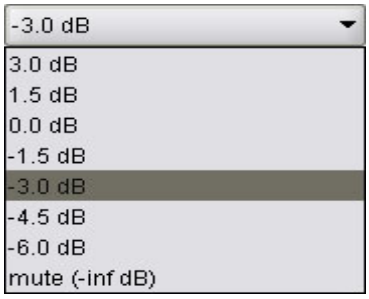
5.35.14. Lo/Ro Centre Control

This control allows the user to author the ***LoRo Center Control*** metadata for the Dolby bit-stream. This parameter indicates the level shift applied to the Center channel when adding to the left and right outputs as a result of down-mixing to a Lo/Ro output. When Extended BSI parameters are active, this parameter replaces the Center Down-mix Level parameter in the universal parameters.

3.0 dB	3.0 dB level shift applied to the Center channel
1.5 dB	1.5 dB level shift applied to the Center channel
0.0 dB	0.0 dB level shift applied to the Center channel
-1.5 dB	-1.5 dB level shift applied to the Center channel
-3.0 dB	-3.0 dB level shift applied to the Center channel
-4.5 dB	-4.5 dB level shift applied to the Center channel
-6.0 dB	-6.0 dB level shift applied to the Center channel
Mute	-999 dB level shift applied to the Center channel

5.35.15. Lo/Ro Surround Control

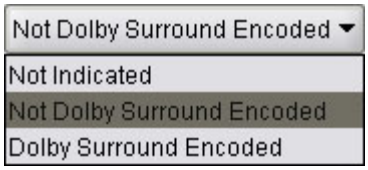
This control allows the user to author the *LoRo Surround Control* metadata for the Dolby bit-stream. This parameter indicates the level shift applied to the Surround channels when down-mixing to a Lo/Ro output. When Extended BSI parameters are active, this parameter replaces the Surround Down-mix Level parameter in the universal parameters. The *Lo/Ro Surround Control* drop down menu provides the following options.



3.0 dB	3.0 dB level shift applied to the Surround channels
1.5 dB	1.5 dB level shift applied to the Surround channels
0.0 dB	0.0 dB level shift applied to the Surround channels
-1.5 dB	-1.5 dB level shift applied to the Surround channels
-3.0 dB	-3.0 dB level shift applied to the Surround channels
-4.5 dB	-4.5 dB level shift applied to the Surround channels
-6.0 dB	-6.0 dB level shift applied to the Surround channels
Mute	-999 dB level shift applied to the Surround channels

5.35.16. Dolby Surround EX Control

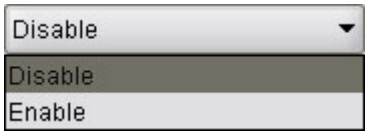
This control allows the user to author the Surround EX Control metadata for the Dolby bit-stream. This parameter is used to identify the encoded audio as material encoded in Surround EXTM. This parameter is only used if the encoded audio has two Surround channels. An amplifier or receiver with Dolby Digital Surround EX decoding can use this parameter as a flag to switch the decoding on or off automatically. The behavior is similar to that of the Dolby Surround Mode parameter. The *Dolby Surround EX Control* drop down menu provides the following options:



Not Indicated	Not Indicated
Not Dolby Surround Encoded	Not Surround EX
Dolby Surround Encoded	Dolby Surround EX

5.35.17. DC Filter Control

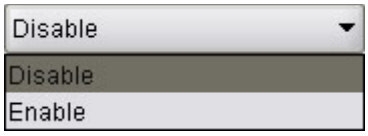
This control allows the user to author the DC Filter Control metadata for the Dolby bit-stream. This parameter determines whether a DC-blocking 3 Hz high-pass filter is applied to the main input channels of a Dolby Digital encoder prior to encoding. This parameter is not carried to the consumer decoder. It is used to remove DC offsets in the program audio and would only be switched off in exceptional circumstances. The *DC Filter Control* drop down menu provides the following options:



Disable	Filter was disabled.
Enable	Filter was enabled.

5.35.18. Lowpass Filter Control

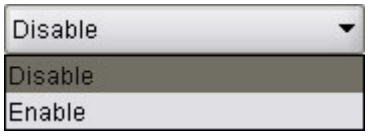
This control allows the user to author the *Lowpass Filter Control* metadata for the Dolby bit-stream. This parameter determines whether a lowpass filter is applied to the main input channels of a Dolby Digital encoder prior to encoding. This filter removes high frequency signals that are not encoded. At the suitable data rates, this filter operates above 20 kHz. In all cases, it prevents aliasing on decoding and is normally switched on. This parameter is not passed to the consumer decoder. The *Lowpass Filter Control* drop down menu provides the following options:



Disable	Filter was disabled.
Enable	Filter was enabled.

5.35.19. LFE Lowpass Filter Control

This control allows the user to author the LFE Lowpass Filter metadata for the Dolby bit-stream. This parameter determines whether a 120 Hz eighth-order low-pass filter is applied to the LFE channel input of a Dolby Digital encoder prior to encoding. It is ignored if the LFE channel is disabled. This parameter is not sent to the consumer decoder. The filter removes frequencies above 120 Hz that would cause aliasing when decoded. This filter should only be switched off if the audio to be encoded is known to have no signal above 120 Hz. The *LFE Lowpass Filter Control* drop down menu provides the following options:



Disable	Filter was disabled.
Enable	Filter was enabled.

5.35.20. Surround Phase Shift Control

This control allows the user to author the ***Surround Phase Shift Control*** metadata for the Dolby bit-stream. This parameter causes the Dolby Digital encoder to apply a 90-degree phase shift to the Surround channels. This allows a Dolby Digital decoder to create a Lt/Rt downmix simply. For most material, the phase shift has a minimal impact when the Dolby Digital program is decoded to 5.1 channels, but it provides a Lt/Rt output that can be decoded with Pro Logic to L, C, R, S, if desired. However, for some phase critical material (such as music) this phase shift is audible when listening in a 5.1- channel format. Likewise, some material downmixes to a satisfactory Lt/Rt signal without needing this phase shift. It is therefore important to balance the needs of the 5.1 mix and the Lt/Rt downmix for each program. The default setting is *Enable*. The *Surround Phase Shift Control* drop down menu provides the following options:

Disable	Filter was disabled.
Enable	Filter was enabled.

5.35.21. Surround 3dB Attenuation Control

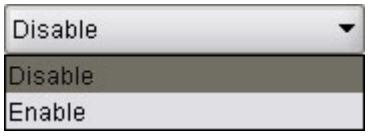
This control allows the user to author the ***3 dB Attenuation Control*** metadata for the Dolby bit-stream. The Surround 3 dB Attenuation parameter determines whether the Surround channel(s) are attenuated 3 dB before encoding. The attenuation actually takes place inside the Dolby Digital encoder. It balances the signal levels between theatrical mixing rooms (dubbing stages) and consumer mixing rooms (DVD or TV studios). Consumer mixing rooms are calibrated so that all five main channels are at the same sound pressure level (SPL). To maintain compatibility with older film formats, theatrical mixing rooms calibrate the SPL of the Surround channels 3 dB lower than the front channels. The consequence is that signal levels on tape are 3 dB louder. Therefore, to convert from a theatrical calibration to a consumer mix, it is necessary to reduce the Surround levels by 3 dB by enabling this parameter. The *Surround 3dB Attenuation* drop down menu provides the following options:

Disable	Filter was disabled.
Enable	Filter was enabled.

5.35.22. RF Overmod Protect Control

This control allows the user to author the ***RF Overmod Protect Control*** metadata for the Dolby bit-stream. This parameter is designed to protect against over modulation when a decoded Dolby Digital bitstream is RF modulated. When enabled, the Dolby Digital encoder includes pre-emphasis in its calculations for RF Mode compression. The parameter has no effect when decoding using Line mode compression. *Except in rare cases, this parameter should be disabled.*

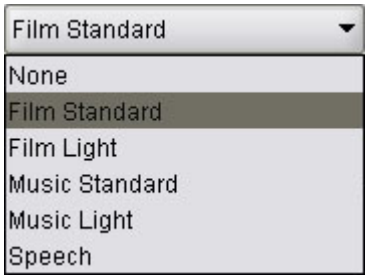
The *RF Overmod Protect* drop down menu provides the following options:



Disable	Filter was disabled.
Enable	Filter was enabled.

5.35.23. RF Mode

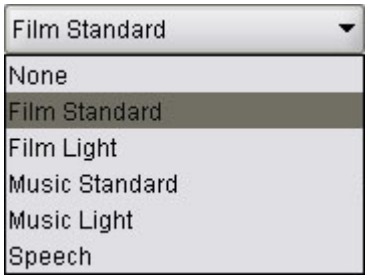
This control allows the user to author the ***RF Mode*** metadata for the Dolby bit-stream. Six preset DRC profiles are available for content producers: Film Light, Film Standard, Music Light, Music Standard, Speech, and None. The *RF Mode* drop down menu provides the following options:



Film Light	Max Boost: 6 dB (below –53 dB) Boost Range: –53 to –41 dB (2:1 ratio) Null Band Width: 20 dB (–41 to –21 dB) Early Cut Range: –26 to –11 dB (2:1 ratio) Cut Range: –11 to +4 dB (20:1 ratio)
Film Standard	Max Boost: 6 dB (below –43 dB) Boost Range: –43 to –31 dB (2:1 ratio) Null Band Width: 5 dB (–31 to –26 dB) Early Cut Range: –26 to –16 dB (2:1 ratio) Cut Range: –16 to +4 dB (20:1 ratio)
Music Light (No early cut range)	Music Light (No early cut range) Max Boost: 12 dB (below –65 dB) Boost Range: –65 to –41 dB (2:1 ratio) Null Band Width: 20 dB (–41 to –21 dB) Cut Range: –21 to +9 dB (2:1 ratio)
Music Standard	Max Boost: 12 dB (below –55 dB) Boost Range: –55 to –31 dB (2:1 ratio) Null Band Width: 5 dB (–31 to –26 dB) Early Cut Range: –26 to –16 dB (2:1 ratio) Cut Range: –16 to +4 dB (20:1 ratio)
Speech	Max Boost: 15 dB (below –50 dB) Boost Range: –50 to –31 dB (5:1 ratio) Null Band Width: 5 dB (–31 to –26 dB) Early Cut Range: –26 to –16 dB (2:1 ratio) Cut Range: –16 to +4 dB (20:1 ratio)
None	No DRC profile selected. The dialogue level parameter *(dialnorm)* is still applied

5.35.24. Line Mode

This control allows the user to author the ***Line Mode*** metadata for the Dolby bit-stream. Six preset DRC profiles are available to content producers: Film Light, Film Standard, Music Light, Music Standard, Speech, and None. The *Line Mode* drop down menu provides the following options:



Film Light	Max Boost: 6 dB (below –53 dB) Boost Range: –53 to –41 dB (2:1 ratio) Null Band Width: 20 dB (–41 to –21 dB) Early Cut Range: –26 to –11 dB (2:1 ratio) Cut Range: –11 to +4 dB (20:1 ratio)
Film Standard	Max Boost: 6 dB (below –43 dB) Boost Range: –43 to –31 dB (2:1 ratio) Null Band Width: 5 dB (–31 to –26 dB) Early Cut Range: –26 to –16 dB (2:1 ratio) Cut Range: –16 to +4 dB (20:1 ratio)
Music Light (No early cut range)	Music Light (No early cut range) Max Boost: 12 dB (below –65 dB) Boost Range: –65 to –41 dB (2:1 ratio) Null Band Width: 20 dB (–41 to –21 dB) Cut Range: –21 to +9 dB (2:1 ratio)
Music Standard	Max Boost: 12 dB (below –55 dB) Boost Range: –55 to –31 dB (2:1 ratio) Null Band Width: 5 dB (–31 to –26 dB) Early Cut Range: –26 to –16 dB (2:1 ratio) Cut Range: –16 to +4 dB (20:1 ratio)
Speech	Max Boost: 15 dB (below –50 dB) Boost Range: –50 to –31 dB (5:1 ratio) Null Band Width: 5 dB (–31 to –26 dB) Early Cut Range: –26 to –16 dB (2:1 ratio) Cut Range: –16 to +4 dB (20:1 ratio)
None	No DRC profile selected. The dialogue level parameter *(dialnorm)* is still applied.

5.35.25. Audio Coding Mode

This control allows the user to author the ***Audio Coding*** metadata for the Dolby bit-stream.

5.36. AUTO UP MIX CONTROL TAB

With the +UMX option (available on –AES versions only) the 7812 series of converters can up mix stereo audio to 5.1 surround sound audio. The Up-mixing block also has the capability to auto detect the incoming source to see if it is a stereo pair or 5.1 signal being supplied and automatically upmix the incoming stereo pair or pass the incoming 5.1.

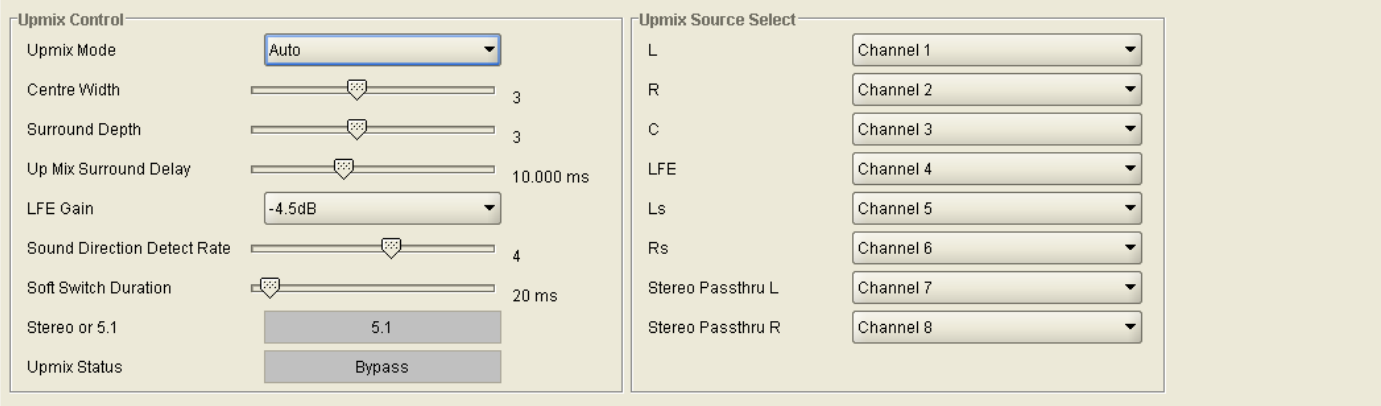
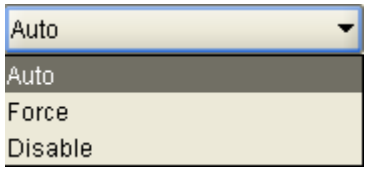


Figure 5-49: Up Mix Control Tab

5.36.1. Upmix Control

5.36.1.1. Upmix Mode

The Upmixer can automatically determine if the audio needs to be upmixed. It will detect whether 5.1 or a stereo pair is seen on its inputs.



Auto	When set to Auto the upmixer will determine if 5.1 or stereo is present. If stereo is present it will up-mix the audio to 5.1, and pass if 5.1 is seen.
Force	When set to force the up-mixer will always up-mix the incoming audio.
Disable	When set to disable the up-mixer will not up-mix the audio and just pass it through.

5.36.1.2. 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 dialogue. Narrower centre width will cause the front centre sound primarily coming from the centre speaker. Wider centre width causes the front centre sound comes 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.

5.36.1.3. 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.

5.36.1.4. 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.

5.36.1.5. LFE Gain

This 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.

5.36.1.6. 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 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.

5.36.1.7. Soft Switch Duration

The Soft Switch Duration controls the transition time when the upmix module switches modes from 5.1 bypass to upmix and vice versa. The duration can range from xx ms to xx ms.

5.36.1.8. Stereo or 5.1 Monitor

This monitors the incoming audio to determine if it is 2.0 or 5.1 and will provide this information.

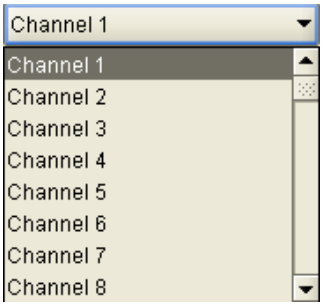
5.36.1.9. Upmix Status Monitor

The upmix status monitor gives a visual representation of what mode the UMX block is currently running in.

5.36.2. Upmix Source Select Control

The *Source Select* control enables the user to select the source of audio from which the 5.1 surround sound audio will be generated. Use the drop down menu to select the appropriate source. The following are the available sources of audio. There are six sources of audio that feeds the up-mixing process: L Source, R Source, C Source, LFE Source, Ls Source, and Rs Source and two passthru Channels left and right. Any audio sent to the stereo passthru will be delayed the same and the other channels but will remain unchanged. 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:



L Source	Channel 1	IntelliGain Channel 1
	Channel 2	IntelliGain Channel 2
	Channel 3	IntelliGain Channel 3
	Channel 4	IntelliGain Channel 4
	Channel 5	IntelliGain Channel 5
	Channel 6	IntelliGain Channel 6
	Channel 7	IntelliGain Channel 7
	Channel 8	IntelliGain Channel 8
	Channel 9	Dolby Decoder A Channel 1
	Channel 10	Dolby Decoder A Channel 2
	Channel 11	Dolby Decoder A Channel 3
	Channel 12	Dolby Decoder A Channel 4
	Channel 13	Dolby Decoder A Channel 5
	Channel 14	Dolby Decoder A Channel 6
	Channel 15	Dolby Decoder A Channel 7
	Channel 16	Dolby Decoder A Channel 8
	Mono mix channels 1 and 2	Dolby Decoder A Monitor Channel 1
	Mono mix channels 3 and 4	Dolby Decoder A Monitor Channel 2
	Mono mix channels 5 and 6	Dolby Decoder B Channel 1
	Mono mix channels 7 and 8	Dolby Decoder B Channel 2
	Mono mix channels 9 and 10	Dolby Decoder B Channel 3
	Mono mix channels 11 and 12	Dolby Decoder B Channel 4
	Mono mix channels 13 and 14	Dolby Decoder B Channel 5
	Mono mix channels 15 and 16	Dolby Decoder B Channel 6
	Mute	Dolby Decoder B Channel 7
	Down Mix L	Dolby Decoder B Channel 8
	Down Mix R	Dolby Decoder B Monitor Channel 1
	Down Mix Mono	Dolby Decoder B Monitor Channel 2

5.37. INTELLIGAIN OVERVIEW

IntelliGain™ is a technology developed by Evertz to control the loudness of audio programs on the fly. More specifically, it calculates the perceived loudness of the input audio and modifies the audio to ensure that the long-term average loudness level is at the target level. IntelliGain™ works with mono, stereo and multi-channel audio per program and can handle up to 8 programs simultaneously. The objective loudness calculation is based on ITU Recommendation (ITU-R BS.1770), "Algorithms to measure audio program loudness and true-peak audio level". This recommendation provides equations for calculating loudness over mono, stereo and multi-channel audio programs. IntelliGain™ constantly calculates audio program loudness. When the loudness is over the target level, it reduces the gain; and when the loudness is below the target level, it increases the gain. The gain adjustment smoothness is user-controllable by setting attack and release times.

An important feature that IntelliGain™ possesses is its ability to automatically detect commercials/promos and normal programs. During commercial/promo periods, it uses one set of attack and release times, and during normal program periods, it uses another set of attack and release times. Both sets of attack and release times are definable by the user. In general, it is desirable to have faster attack/release times for commercial/promo periods and slower attack/release times for normal program periods. The level adjustment at the transition from one program/commercial to the next is almost instant, but it is not audible. While within a program or commercial, the adjustment is slow to maintain the dynamic range of the material.

Features:

- Normalize loudness of audio programs to a target level
- Peak limiting
- Automatic detection of loud commercials or programs
- Relatively constant gain within a program interval to preserve audio dynamic range
- Artifact-free transition between programs and commercials
- Automatic configuration of audio programs according to input Dolby E™ or AC-3™ stream
- Simultaneously process multiple multi-channel programs
- User adjustable attack and release times

5.38. INTELLIGAIN™ CONFIGURATION TAB

The IntelliGain™ Configuration tab displays the top-level IntelliGain™ control interface. There are a number of parameters that control both the intelligent leveler and the on-board dynamic processor (compressor, expander, and limiter). Figure 5-50 shows the IntelliGain™ Configuration view from the VistaLINK® NMS.

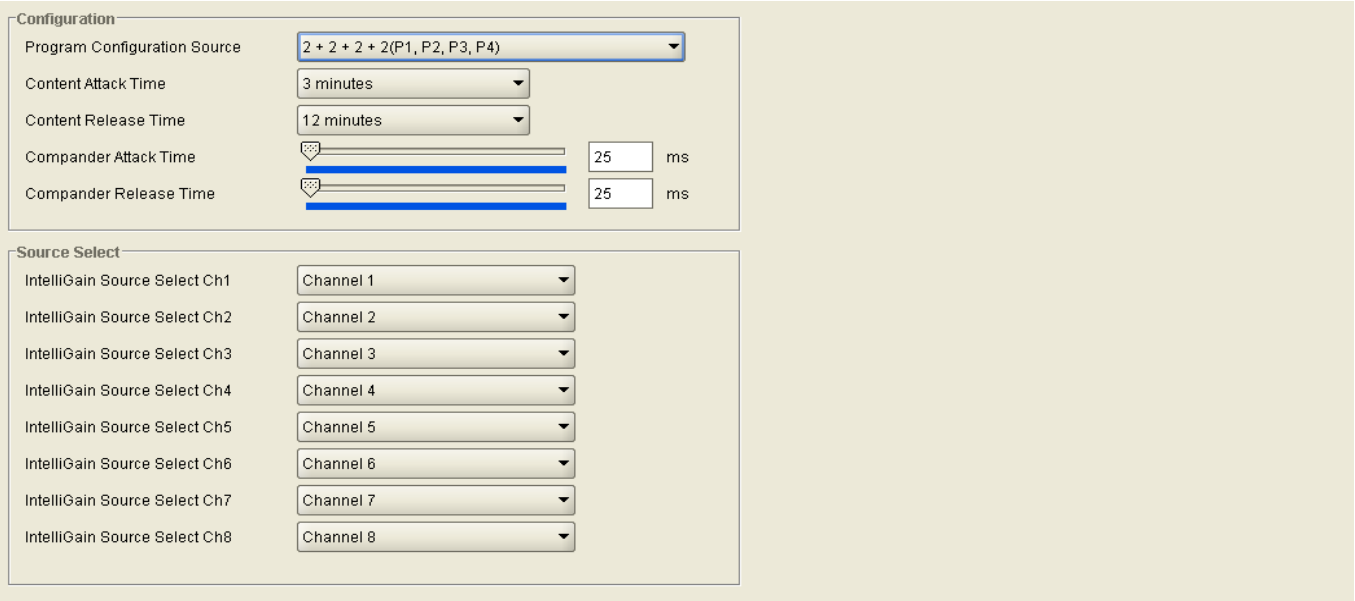


Figure 5-50: IntelliGain™ Configuration Tab

Table 5-2 provides a brief overview of the top level of the IntelliGain™ Configuration menu tree. The details of each of the menu items are described in sections 5.38.1 to 5.38.2.

Program Configuration Source	Defines how the audio channels are grouped together.
Program Attack Time	Defines the maximum integration time that is applied when loudness increases during a program period.
Program Release Time	Defines the maximum integration time that is applied when loudness decreases during a program period.
Compander Attack Time	Defines how quickly the compander reacts to an increase in the input loudness.
Compander Release Time	Defines how quickly the compander reacts to a decrease in the input loudness.
Detected Program Configuration Source	Indicates the detected program configuration by the internal IntelliGain™ program configuration parser.
Audio Source Select	Defines the audio channels that will be fed into the program audio channels.

Table 5-2: IntelliGain™ Configuration Options

Sections 5.38.1 to 5.38.2 provide detailed explanations for each control available in the IntelliGain™ Configuration Source tab.

5.38.1. Configuration

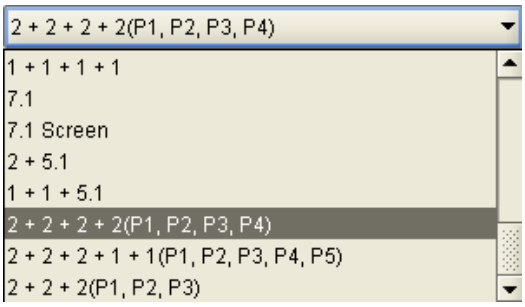
5.38.1.1. Program Configuration Source

This parameter defines how the audio channels are grouped together. Up to eight channels can be grouped together in individual programs, where each program contains its own metadata. IntelliGain™ uses this parameter to configure multiple internal settings.

This control must be set to define the audio program provided as the input to IntelliGain™.

Note: It is important to follow the program to channel mapping guidelines, which are provided in Table 5-4. For example, Program Configuration Source 2 + 2 + 2 + 2 defines audio program 1 mapped to AES 1, audio program 2 mapped to AES 4, audio program 3 mapped to AES 2 and audio program 4 mapped to AES 3. Program Configuration Source 2 + 2 + 2 + 2 (p1, p2, p3, p4) has the audio program mapped sequentially.

If the audio program configuration is defined to be of this type, it is recommended to use this Program Configuration Source.



The following table (Table 2-2)Table 5-4 provides a list of programs to channel mapping guidelines. For example, configuration 5.1+2, program 1 (P1) is mapped to channel CH1 to CH6 and program 2 (P2) is mapped to channel CH7 to CH8. Table 5-3 provides a list of abbreviations used:

Abbreviations	Description
P	Program
CH	Channel
L	Left or left front
R	Right or right front
C	Center or mono
LFE	Low frequency effect
Ls	Left surround
Rs	Right surround
Bsl	Back surround left
Bsr	Back surround right

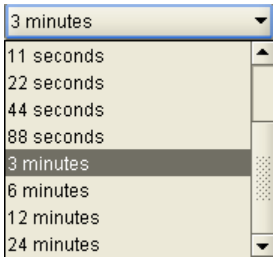
Table 5-3: Abbreviations

Program Configuration	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8
5.1+2	P1-L	P1-R	P1-C	P1-LFE	P1-Ls	P1-Rs	P2-L	P2-R
5.1 + 1 + 1	P1-L	P1-R	P1-C	P1-LFE	P1-Ls	P1-Rs	P2-C	P3-C
4 + 4	P1-L	P1-R	P1-C	P1-S	P2-C	P2-S	P2-L	P2-R
4 + 2 + 2	P1-L	P1-R	P1-C	P1-S	P3-L	P3-R	P2-L	P2-R
4 + 2 + 1 + 1	P1-L	P1-R	P1-C	P1-S	P3-C	P4-C	P2-L	P2-R
4 + 1 + 1 + 1 + 1	P1-L	P1-R	P1-C	P1-S	P4-C	P5-C	P2-C	P3-C
2 + 2 + 2 + 2	P1-L	P1-R	P3-L	P3-R	P4-L	P4-R	P2-L	P2-R
2 + 2 + 2 + 1 + 1	P1-L	P1-R	P3-L	P3-R	P4-C	P5-C	P2-L	P2-R
2 + 2 + 1 + 1 + 1 + 1	P1-L	P1-R	P3-C	P4-C	P5-C	P6-C	P2-L	P2-R
2 + 1 + 1 + 1 + 1 + 1	P1-L	P1-R	P4-C	P5-C	P6-C	P7-C	P2-C	P3-C
1 + 1 + 1 + 1 + 1 + 1 + 1 + 1	P1-C	P2-C	P3-C	P4-C	P5-C	P6-C	P7-C	P8-C
5.1	P1-L	P1-R	P1-C	P1-LFE	P1-Ls	P1-Rs	None	None
4 + 2	P1-L	P1-R	P1-C	P1-S	None	None	P2-L	P2-R
4 + 1 + 1	P1-L	P1-R	P1-C	P1-S	None	None	P2-C	P3-C
2 + 2 + 2	P1-L	P1-R	P3-L	P3-R	None	None	P2-L	P2-R
2 + 2 + 1 + 1	P1-L	P1-R	P3-C	P4-C	None	None	P2-L	P2-R
2 + 1 + 1 + 1 + 1	P1-L	P1-R	P4-C	P5-C	None	None	P2-C	P3-C
1 + 1 + 1 + 1 + 1 + 1	P1-C	P2-C	P3-C	P4-C	P5-C	P6-C	None	None
4	P1-L	P1-R	P1-C	P1-S	None	None	None	None
2 + 2	P1-L	P1-R	None	None	None	None	P2-L	P2-R
2 + 1 + 1	P1-L	P1-R	None	None	None	None	P2-C	P3-C
1 + 1 + 1 + 1	P1-C	P2-C	P3-C	P4-C	None	None	None	None
7.1	P1-L	P1-R	P1-C	P1-LFE	P1-Ls	P1-Rs	P1-Bsl	P1-Bsr
7.1 Screen	P1-L	P1-R	P1-C	P1-LFE	P1-Ls	P1-Rs	P1-Le	P1-Re
2 + 5.1	P1-L	P1-R	P2-L	P2-R	P2-C	P2-LFE	P2-Ls	P2-Rs
1 + 1 + 5.1	P1-C	P2-C	P2-L	P2-R	P2-C	P2-LFE	P2-Ls	P2-Rs
2 + 2 + 2 + 2 (p1, p2, p3, p4)	P1-L	P1-R	P2-L	P2-R	P3-L	P3-R	P4-L	P4-R
2 + 2 + 2 + 1 + 1 (p1, p2, p3, p4, p5)	P1-L	P1-R	P2-L	P2-R	P3-L	P3-R	P4-C	P5-C
2 + 2 + 2 (p1, p2, p3)	P1-L	P1-R	P2-L	P2-R	P3-L	P3-R	None	None

Table 5-4: Relationship between Audio Programs and Audio Channels

5.38.1.2. Commercial Attack Time

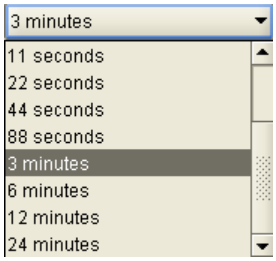
The *Commercial Attack Time* defines the maximum integration time that is applied when loudness increases during a commercial period. The actual integration time is content dependent. For more responsive results set the attack time to a smaller value.



Less than 1 second	< 1 sec. maximum integration time will be applied when loudness increases
Less than 2 seconds	< 2 sec. maximum integration time will be applied when loudness increases
Less than 3 seconds	< 3 sec. maximum integration time will be applied when loudness increases
Less than 6 seconds	< 6 sec. maximum integration time will be applied when loudness increases
11 seconds	11 sec. maximum integration time will be applied when loudness increases
22 seconds	22 sec. maximum integration time will be applied when loudness increases
44 seconds	44 sec. maximum integration time will be applied when loudness increases
88 seconds	88 sec. maximum integration time will be applied when loudness increases
3 minutes	3 min. maximum integration time will be applied when loudness increases
6 minutes	6 min. maximum integration time will be applied when loudness increases
12 minutes	12 min. maximum integration time will be applied when loudness increases
24 minutes	24 min. maximum integration time will be applied when loudness increases

5.38.1.3. Commercial Release Time

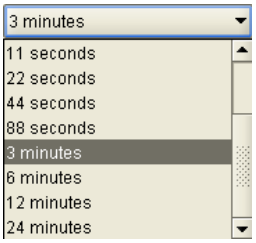
The *Commercial Release Time* defines the maximum integration time that is applied when loudness decreases during a commercial period. The actual integration time is content dependent. For more responsive results set the release time to a smaller value.



Less than 1 second	< 1 sec. maximum integration time will be applied when loudness decreases
Less than 2 seconds	< 2 sec. maximum integration time will be applied when loudness decreases
Less than 3 seconds	< 3 sec. maximum integration time will be applied when loudness decreases
Less than 6 seconds	< 6 sec. maximum integration time will be applied when loudness decreases
11 seconds	11 sec. maximum integration time will be applied when loudness decreases
22 seconds	22 sec. maximum integration time will be applied when loudness decreases
44 seconds	44 sec. maximum integration time will be applied when loudness decreases
88 seconds	88 sec. maximum integration time will be applied when loudness decreases
3 minutes	3 min. maximum integration time will be applied when loudness decreases
6 minutes	6 min. maximum integration time will be applied when loudness decreases
12 minutes	12 min. maximum integration time will be applied when loudness decreases
24 minutes	24 min. maximum integration time will be applied when loudness decreases

5.38.1.4. Program Attack Time

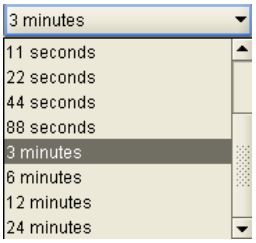
The *Program Attack Time* defines the maximum integration time that is applied when loudness increases during a program period. The actual integration time is content dependent. For more responsive results set the attack time to a smaller value.



Less than 1 second	< 1 sec. maximum integration time will be applied when loudness increases
Less than 2 seconds	< 2 sec. maximum integration time will be applied when loudness increases
Less than 3 seconds	< 3 sec. maximum integration time will be applied when loudness increases
Less than 6 seconds	< 6 sec. maximum integration time will be applied when loudness increases
11 seconds	11 sec. maximum integration time will be applied when loudness increases
22 seconds	22 sec. maximum integration time will be applied when loudness increases
44 seconds	44 sec. maximum integration time will be applied when loudness increases
88 seconds	88 sec. maximum integration time will be applied when loudness increases
3 minutes	3 min. maximum integration time will be applied when loudness increases
6 minutes	6 min. maximum integration time will be applied when loudness increases
12 minutes	12 min. maximum integration time will be applied when loudness increases
24 minutes	24 min. maximum integration time will be applied when loudness increases

5.38.1.5. Program Release Time

The *Program Release Time* defines the maximum integration time that is applied when loudness decreases during program period. The actual integration time is content dependent. For more responsive results set the release time to a smaller value.



Less than 1 second	< 1 sec. maximum integration time will be applied when loudness decreases
Less than 2 seconds	< 2 sec. maximum integration time will be applied when loudness decreases
Less than 3 seconds	< 3 sec. maximum integration time will be applied when loudness decreases
Less than 6 seconds	< 6 sec. maximum integration time will be applied when loudness decreases
11 seconds	11 sec. maximum integration time will be applied when loudness decreases
22 seconds	22 sec. maximum integration time will be applied when loudness decreases
44 seconds	44 sec. maximum integration time will be applied when loudness decreases
88 seconds	88 sec. maximum integration time will be applied when loudness decreases
3 minutes	3 min. maximum integration time will be applied when loudness decreases
6 minutes	6 min. maximum integration time will be applied when loudness decreases
12 minutes	12 min. maximum integration time will be applied when loudness decreases
24 minutes	24 min. maximum integration time will be applied when loudness decreases

5.38.1.6. Compander Attack Time

The *Compander Attack Time* control defines how quickly the compander reacts to an increase in the input loudness. The compander Attack time can be set to a value from 10 ms to 2000ms (2 sec.).

5.38.1.7. Compander Release Time

The *Compander Release Time* control defines how quickly the compander reacts to a decrease in the input loudness. The compander release time should be larger than or equal to the *Compander Attack Time*. The compander Release time can be set to any value from 10 ms to 2000ms (2 sec.).

5.38.2. Audio Source Channels

This control sets the channel mappings for the audio program configuration. This audio configuration then feeds the program configuration sources. For simplicity, only Channel 1 is shown.

L Source	Channel 1	Upmix Delayed Right
	Channel 2	IntelliGain Channel 1
	Channel 3	IntelliGain Channel 2
	Channel 4	IntelliGain Channel 3
	Channel 5	IntelliGain Channel 4
	Channel 6	IntelliGain Channel 5
	Channel 7	IntelliGain Channel 6
	Channel 8	IntelliGain Channel 7
	Channel 9	IntelliGain Channel 8
	Channel 10	Dolby Decoder A Channel 1
	Channel 11	Dolby Decoder A Channel 2
	Channel 12	Dolby Decoder A Channel 3
	Channel 13	Dolby Decoder A Channel 4
	Channel 14	Dolby Decoder A Channel 5
	Channel 15	Dolby Decoder A Channel 6
	Channel 16	Dolby Decoder A Channel 7
	Mono mix channels 1 and 2	Dolby Decoder A Channel 8
	Mono mix channels 3 and 4	Dolby Decoder A Monitor Channel 1
	Mono mix channels 5 and 6	Dolby Decoder A Monitor Channel 2
	Mono mix channels 7 and 8	Dolby Decoder B Channel 1
	Mono mix channels 9 and 10	Dolby Decoder B Channel 2
	Mono mix channels 11 and 12	Dolby Decoder B Channel 3
	Mono mix channels 13 and 14	Dolby Decoder B Channel 4
	Mono mix channels 15 and 16	Dolby Decoder B Channel 5
	Mute	Dolby Decoder B Channel 6
	Upmix Left Front	Dolby Decoder B Channel 7
	Upmix Right Front	Dolby Decoder B Channel 8
	Upmix Center	Dolby Decoder B Monitor Channel 1
	Upmix LFE	Dolby Decoder B Monitor Channel 2
	Upmix Left Surround	Down Mix L
	Upmix Right Surround	Down Mix R
	Upmix Delayed Left	Down Mix Mono

5.39. INTELLIGAIN™ PROGRAM CONTROL TAB

IntelliGain™ can individually process up to eight audio programs independently. An audio program defines how the audio is grouped together.

For example, a 5.1+2 program configuration mode is defined to have 2 audio programs. The first audio program is 5.1 and the second is 2.

Table 5-5 outlines the relationship between the program configuration mode and the number of audio programs.

Program Configuration	Number of Programs
5.1 + 2	2
5.1 + 1 + 1	3
4 + 4	2
4 + 2 + 2	3
4 + 2 + 1 + 1	4
4 + 1 + 1 + 1 + 1	5
2 + 2 + 2 + 2	4
2 + 2 + 2 + 1 + 1	5
2 + 2 + 1 + 1 + 1 + 1	6
2 + 1 + 1 + 1 + 1 + 1	6
1 + 1 + 1 + 1 + 1 + 1 + 1 + 1	8
4	1
2 + 2	2
2 + 1 + 1	3
1 + 1 + 1 + 1	4
7.1	1
7.1 Screen	1
2 + 5.1	2
1 + 1 + 5.1	3
2 + 2 + 2 + 2 (p1, p2, p3, p4)	4
2 + 2 + 2 + 1 + 1 (p1, p2, p3, p4, p5)	5
2 + 2 + 2 (p1, p2, p3)	3

Table 5-5: Relationship between Program Configuration Mode and Audio Programs

The internal IntelliGain™ engine will analyze the value of the *Detected Program Config Source.* This value will determine how many Program VistaLINK® tabs are to be accessible.

For example, if IntelliGain™ detects a program configuration source of 5.1 + 2, then 2 program configuration tabs will be user accessible. However, if IntelliGain™ detects a program configuration source of 1 + 1 + 1 + 1 then 4 program configuration tabs will be accessible.

Figure 5-51 identifies up to eight program configuration tabs that are accessible via the VistaLINK® NMS.

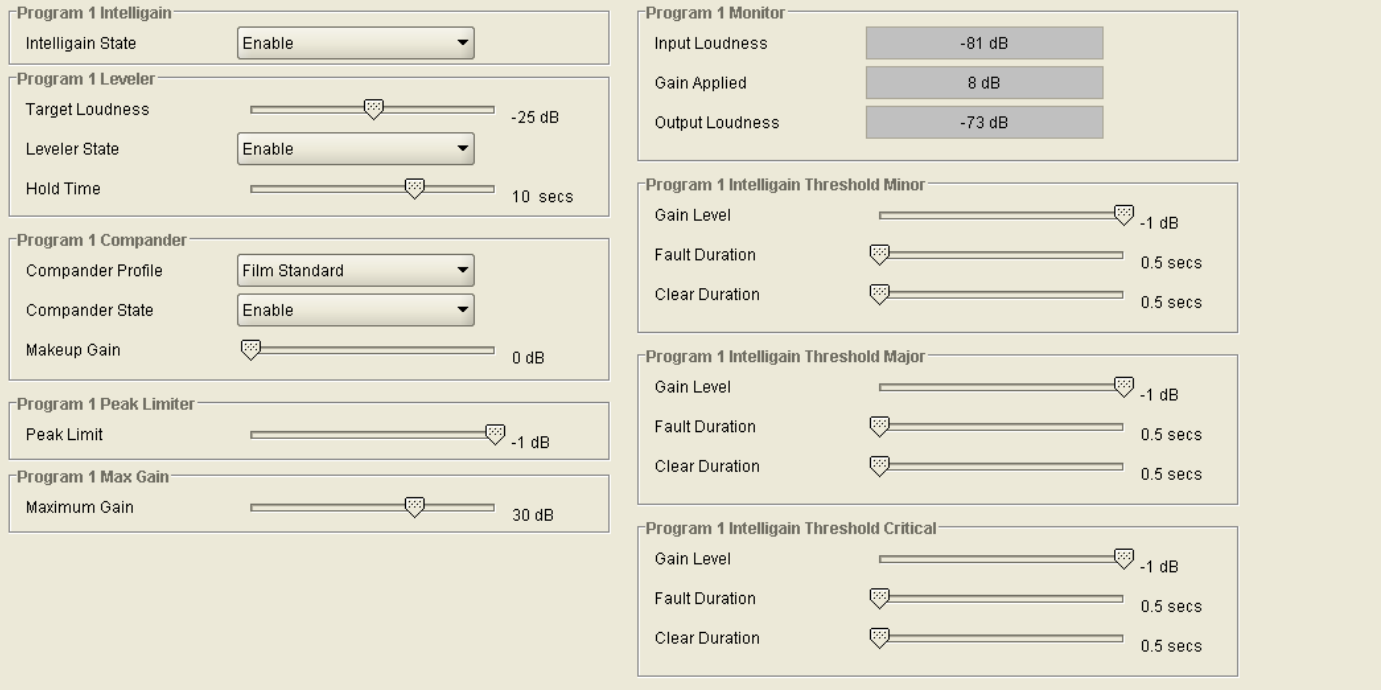


Figure 5-51: Program 1 Configuration View

5.39.1. Program Configuration Control

As IntelliGain™ detects valid audio programs, the VistaLINK® program configuration tabs will become activated. The user interface and program configuration tabs are identical.

Sections 5.39.2 to 5.39.17 provide detailed explanations for each control available in the Program Configuration tab. Since each program configuration interface is identical, only Program 1 will be described.

5.39.2. IntelliGain™ State

This control is the master switch for the IntelliGain™ processor, which is used for the given audio program.

Enable	Set this control to *Enable* to initiate IntelliGain™ processing.
Disable	Set this control to Dis*able* to deactivate IntelliGain™ processing.

5.39.3. Target Loudness

This control is used to set the target loudness level for the given audio program. The IntelliGain™ processor will level the audio to this value. Note that if the compander is enabled, it is desirable to set the target loudness parameter to the range (–31 dB to –26 dB) and use *Makeup Gain* control to reach the final desired target loudness level. The *Target Loudness* control has a full range from -35 dBFs to -15dBFs.

5.39.4. Leveler State

This control is used to activate the IntelliGain™ audio leveler. The leveler is used to level each individual audio channel to the target loudness level. Set this control to *Enable* to activate the IntelliGain™ audio leveler.

Enable	Set this control to *Enable* to activate the IntelliGain™ audio leveler.
Disable	Set this control to Dis*able* to de-activate the IntelliGain™ audio leveler.

5.39.5. Target Loudness Control

This control is used to set the target loudness level for the given audio program. The IntelliGain™ processor will level the audio to this value. Note that if the compander is enabled, it is desirable to set the target loudness parameter to the range (–31 LKFS to –26 LKFS) and use *Makeup Gain* control to reach the final desired target loudness level.

5.39.6. Maximum Gain Control

The *Maximum Gain* control is the total amount of gain that the IntelliGain™ engine will apply. For example, setting this control to 10 LKFS indicates that IntelliGain™ is not to add anymore than 10 LKFS of gain to the audio program, even if the audio program requires more gain to reach the target loudness level.

5.39.7. Hold Time Control

This control is used to set the hold time for the given audio program. The IntelliGain™ processor will wait this period of time to add gain once the level goes below the target loudness.

Immediate	Immediately processes the incoming audio.
1 – 14 seconds	Allows the user to select a defined amount of time before applying processing.
Adaptive	The adaptive setting will vary the hold time depending on the content for optimal sound quality.

5.39.8. Compander Profile

The compander profiles are used to define the dynamic range control of the compander. There are 5 default profiles.

Film Standard	The *Film Standard* profile is used to compress/expand sporting events, and movies with a large dynamic range. Max Boost: 6 dB (below –43 dB) Boost Range: –43 to –31 dB (2:1 ratio) Null Band Width: 5 dB (–31 to –26 dB) Early Cut Range: –26 to –16 dB (2:1 ratio) Cut Range: –16 to +4 dB (20:1 ratio)
Film Light	The *File Light* profile is used to compress/expand light movies or program content such as dramas or content with less dynamic range. Max Boost: 6 dB (below –53 dB) Boost Range: –53 to –41 dB (2:1 ratio) Null Band Width: 20 dB (–41 to –21 dB) Early Cut Range: –26 to –11 dB (2:1 ratio) Cut Range: –11 to +4 dB (20:1 ratio)
Speech	The *Speech* profile is used to compress/expand content such as news, documentaries or “talking head” type content. Max Boost: 15 dB (below –50 dB) Boost Range: –50 to –31 dB (5:1 ratio) Null Band Width: 5 dB (–31 to –26 dB) Early Cut Range: –26 to –16 dB (2:1 ratio) Cut Range: –16 to +4 dB (20:1 ratio)
Music Standard	The *Music Standard* profile is used in most typical music environments such as concerts, music videos and music content with a wide dynamic range. Max Boost: 12 dB (below –55 dB) Boost Range: –55 to –31 dB (2:1 ratio) Null Band Width: 5 dB (–31 to –26 dB) Early Cut Range: –26 to –16 dB (2:1 ratio) Cut Range: –16 to +4 dB (20:1 ratio)
Music Light	The *Music Light* profile is used to compress/expand music content with a narrow dynamic range. Max Boost: 12 dB (below –65 dB) Boost Range: –65 to –41 dB (2:1 ratio) Null Band Width: 20 dB (–41 to –21 dB) Cut Range: –21 to +9 dB (2:1 ratio).

5.39.9. Compander State

This control is used to activate the on-board compressor/expander, otherwise known as the compander. The use of the compander allows audio signals with a large dynamic range to be transmitted over facilities that have a smaller dynamic range capability. The compander works by compressing or expanding the dynamic range of the audio signal.

5.39.10. Makeup Gain

The *Makeup Gain* is used to add additional gain to the audio program. This control would be used if the final desired target loudness has not been reached. The makeup gain control has a range of 0 dBFs to 20 dBFs.

5.39.11. Peak Limit

The *Peak Limit* is used within the audio program chain to provide an upper limit to peak program levels. Sometimes referred to as a "brick-wall" limiter. This control is used to maintain the upper limit of the peak levels. The peak limit control has a range from -15 dBFs to 1 dBFs.

5.39.12. Input Loudness Monitor

The *Input Loudness* control will provide a real time value of the calculated input loudness value. This control is used for monitoring purposes only.

5.39.13. Gain Applied Monitor

The *Gain Applied* control will provide a real time value indicating the amount of gain being applied by the IntelliGain™ system. Values can be either negative, indicating a gain reduction, or positive, indicating gain is being applied.

5.39.14. Output Loudness Monitor

The *Output Loudness* control will provide a real time value of the calculated output loudness value. This control is used for monitoring purposes only. It is used to provide confidence monitoring.

5.39.15. Output Level Threshold (1, 2, 3)

The Gain Level Threshold control is used for real time monitoring and SNMP trap alarming. By defining the output level, the IntelliGain™ system will send an SNMP alarm to VistaLINK® if the output loudness level exceeds the defined output level. For example, by setting this control to –18 dBFs, if the calculated output loudness level exceeds –18 dBFS (for the specified fault duration) then an alarm will be sent to VistaLINK® for immediate operator notification. There are 3 levels of alarm thresholds. These can be setup as minor, major and critical alarming thresholds. The Gain Level Threshold has a range of -65 dBFs to -1 dBFs.

5.39.16. Fault Duration

The *Fault Duration* control defines the amount of time that the IntelliGain™ system detects the output level has been exceeded. For example, if this control is set to 25 seconds; this means that the output level has to be exceeded for a minimum of 25 seconds before an SNMP trap alarm is sent to VistaLINK®. The *Fault Duration* has a range of 0.5 sec to 240 seconds.

5.39.17. Clear Duration Control

The *Clear Duration* defines the amount of time that the IntelliGain™ system must be corrected to before a correction SNMP trap is sent to VistaLINK®. For example, if this control is set to 10 seconds; this means that the IntelliGain™ output level fault must be corrected for a minimum of 10 seconds before a correction alarm is sent to VistaLINK®. This control is primarily used to smooth out alarming for audio with a very wide dynamic range. The *Clear Duration* has a range of 0.5 sec to 240 seconds.

5.40. INTELLIGAIN™ TRAPS TAB

The IntelliGain™ system can provide real time analysis and confidence monitoring with SNMP trap alarm notification. These alarms can be enabled and disabled on an individual audio program basis using the IntelliGain™ Fault Traps configuration tab.

To enable or disable an SNMP alarm notification, either check or un-check the defined control.

The system also provides real time trap status information. If a trap is sent by the IntelliGain™ system, the trap status box will change state indicating the real time value for that trap. For example, if the trap status box is the colour green, then the trap has not been sent. However, if the status box is the colour red, then the fault is in a current state of alarm. Once corrected, the status box will turn back to the colour green.

IntelliGain™ Traps Tab identifies the VistaLINK® configuration view for the IntelliGain™ Fault Traps.

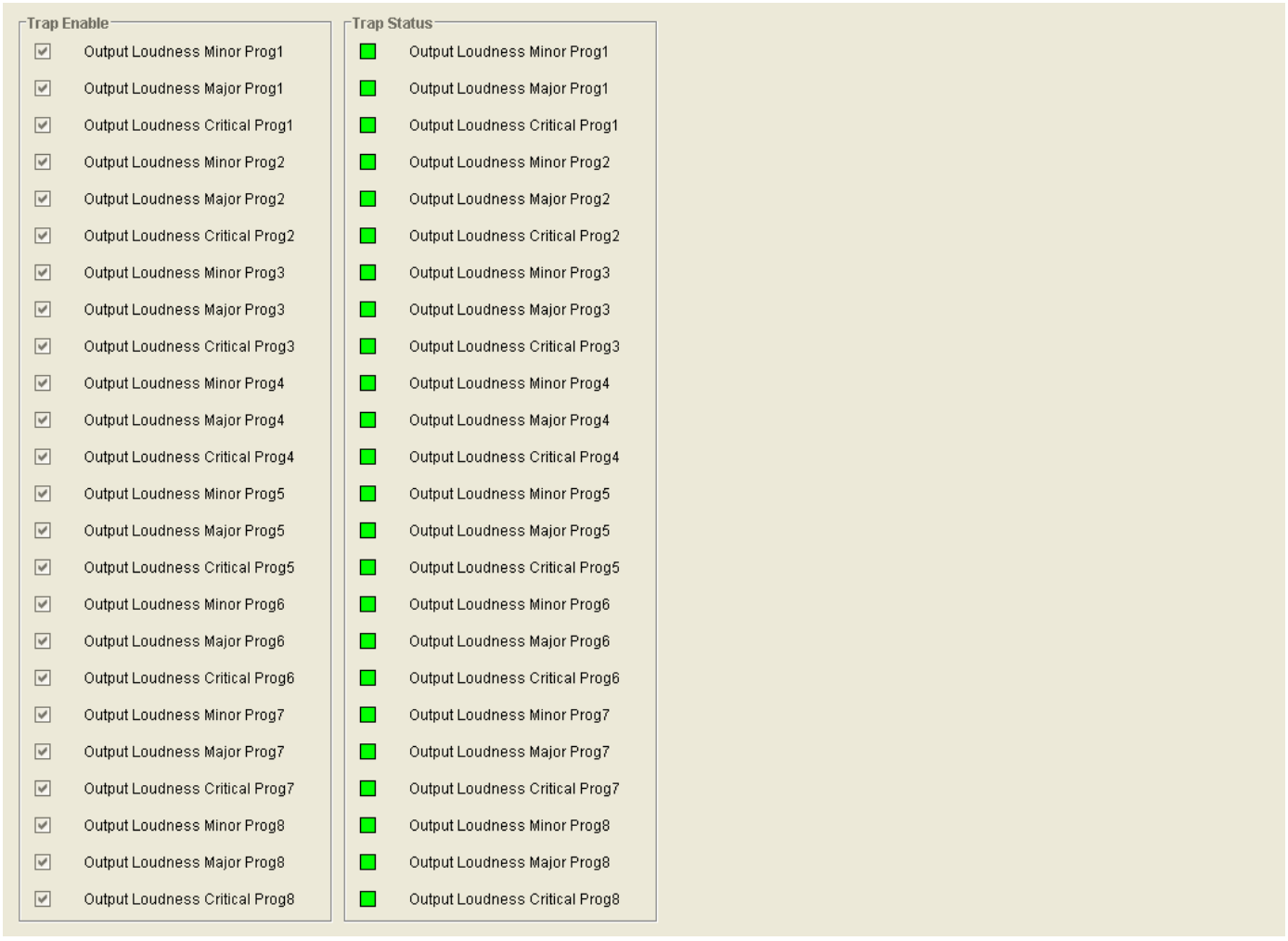


Figure 5-52: IntelliGain™ Traps Tab

5.41. DOLBY DECODER CONTROL TAB

The 7812 series module can decode Dolby AC3 and Dolby E with the Dolby Decode options. There can be up to two Dolby decode modules. The controls for each Dolby Decoder are identical. Since each Dolby Decoder Control Tabs are identical, only Dolby Decoder A will be described.

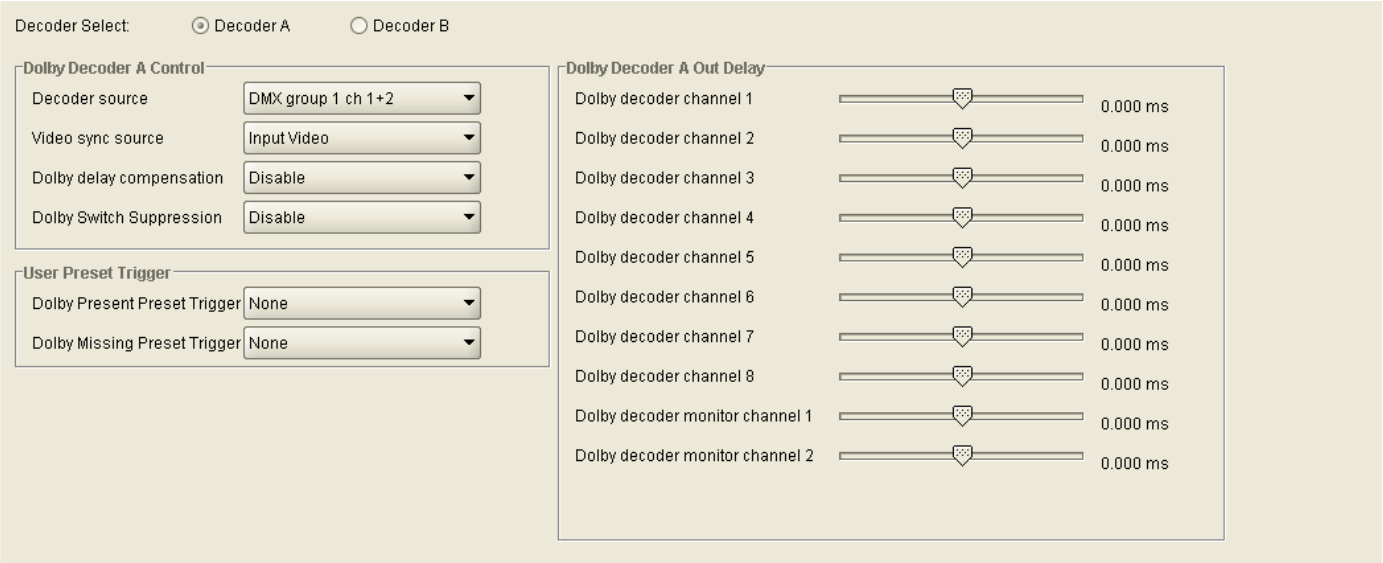
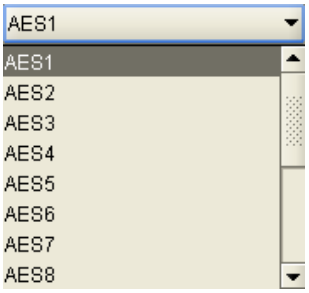


Figure 5-53: Dolby Decoder Control Tab

5.41.1. Decoder Source

The Dolby Decoder source control allows the selection of the input source provided to the Dolby Decoder. The following selections are available:

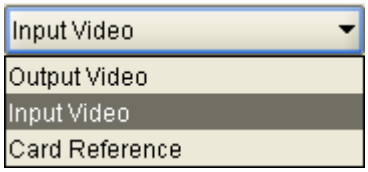


AES1	Selects AES1 as the source to decode Dolby
AES2	Selects AES2 as the source to decode Dolby
AES3	Selects AES3 as the source to decode Dolby
AES4	Selects AES4 as the source to decode Dolby
AES5	Selects AES5 as the source to decode Dolby
AES6	Selects AES6 as the source to decode Dolby
AES7	Selects AES7 as the source to decode Dolby
AES8	Selects AES8 as the source to decode Dolby

DMX Group 1 Ch 1 + 2	Selects DMX Group 1 Ch 1 + 2 as the source to decode Dolby
DMX Group 1 Ch 3 + 4	Selects DMX Group 1 Ch 3 + 4 as the source to decode Dolby
DMX Group 2 Ch 1 + 2	Selects DMX Group 2 Ch 1 + 2 as the source to decode Dolby
DMX Group 2 Ch 3 + 4	Selects DMX Group 2 Ch 3 + 4 as the source to decode Dolby
DMX Group 3 Ch 1 + 2	Selects DMX Group 3 Ch 1 + 2 as the source to decode Dolby
DMX Group 3 Ch 3 + 4	Selects DMX Group 3 Ch 3 + 4 as the source to decode Dolby
DMX Group 4 Ch 1 + 2	Selects DMX Group 4 Ch 1 + 2 as the source to decode Dolby
DMX Group 4 Ch 3 + 4	Selects DMX Group 4 Ch 3 + 4 as the source to decode Dolby

5.41.2. Video Sync Source

The Video Sync Source allows the user to reference the Dolby decoder output with the output video, Input video or with the modules reference source.



Output Video	The Decode will be timed with the video output
Input Video	The decode will be timed with the input video
Card Reference	The decode will be timed with the card reference

5.41.3. Dolby Delay Compensation

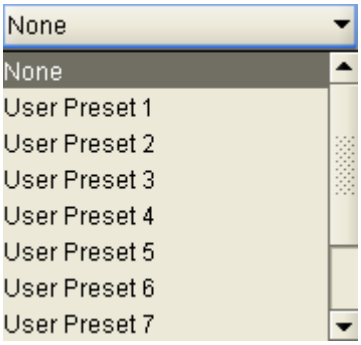
The Dolby Delay compensation allows the user to ensure that the audio processing matches the video processing.

5.41.4. Dolby Switch Suppression

The Dolby Switch Suppression control will mute the output of the decoder to avoid any audible tone that might occur when switching between a PCM source to a Dolby source.

5.41.5. Dolby Present Preset Trigger

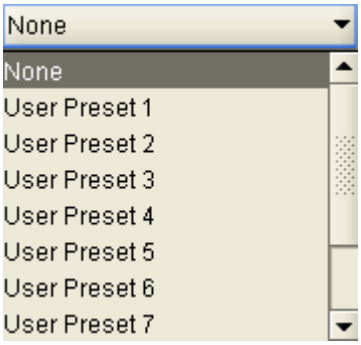
The *Dolby Present Trigger* is used to trigger presets saved to the module when a presence of Dolby is detected. The following selections are available:



None	When set to none, If trigger conditions are met the module will take no action.
User Preset 1	When set to user preset 1, If trigger conditions are met the module will recall User Preset 1
User Preset 2	When set to user preset 2, If trigger conditions are met the module will recall User Preset 2
User Preset 3	When set to user preset 3, If trigger conditions are met the module will recall User Preset 3
User Preset 4	When set to user preset 4, If trigger conditions are met the module will recall User Preset 4
User Preset 5	When set to user preset 5, If trigger conditions are met the module will recall User Preset 5
User Preset 6	When set to user preset 6, If trigger conditions are met the module will recall User Preset 6
User Preset 7	When set to user preset 7, If trigger conditions are met the module will recall User Preset 7
User Preset 8	When set to user preset 8, If trigger conditions are met the module will recall User Preset 8
User Preset 9	When set to user preset 9, If trigger conditions are met the module will recall User Preset 9
User Preset 10	When set to user preset 10, If trigger conditions are met the module will recall User Preset 10

5.41.6. Dolby Missing Preset Trigger

The *Dolby Present Trigger* is used to trigger presets saved to the module when absence of Dolby is detected. The following selections are available:



None	When set to none, If trigger conditions are met the module will take no action.
User Preset 1	When set to user preset 1, If trigger conditions are not met the module will recall User Preset 1
User Preset 2	When set to user preset 2, If trigger conditions are not met the module will recall User Preset 2
User Preset 3	When set to user preset 3, If trigger conditions are not met the module will recall User Preset 3
User Preset 4	When set to user preset 4, If trigger conditions are not met the module will recall User Preset 4
User Preset 5	When set to user preset 5, If trigger conditions are not met the module will recall User Preset 5
User Preset 6	When set to user preset 6, If trigger conditions are not met the module will recall User Preset 6
User Preset 7	When set to user preset 7, If trigger conditions are not met the module will recall User Preset 7
User Preset 8	When set to user preset 8, If trigger conditions are not met the module will recall User Preset 8
User Preset 9	When set to user preset 9, If trigger conditions are not met the module will recall User Preset 9
User Preset 10	When set to user preset 10, If trigger conditions are not met the module will recall User Preset 10

5.41.7. Dolby Decoder Out Delay

The Dolby Decoder Out Delay can be used to add additional gains per decoded channel.

5.42. DOLBY E ENCODER CONTROL TAB

The 7812 series module can encode Dolby E with the Dolby E options installed. There can be more than one Dolby E module installed. The controls for each Dolby E encoder are identical. Since each Dolby E Encoder Control Tabs are identical, only Dolby Encoder A will be described.

Figure 5-54: Dolby Encoder Control Tab

5.42.1. Dolby Encoder Line Phase Adjust

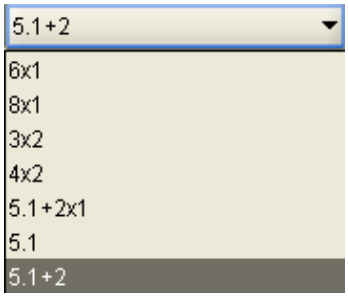
This control adjusts the output line phase of the Dolby-E encoder with respect to the input video sync source.

Adjustments are in increments of 1 line of the sync source.

5.42.2. Dolby Encoder Auto Program Configuration

This control selects the program configuration for the automatic operating mode of the Dolby-E encoder.

The control allows the selection of the most commonly used program configurations and enables the module to generate a default metadata BSI in the Dolby-E stream.



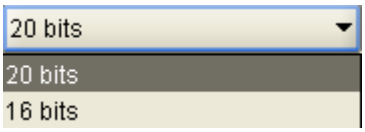
Program Config	# Programs	Ch 1	Ch 2	Ch 3	Ch 4	Ch 5	Ch 6	Ch 7	Ch 8
6x1	6	0.L	1.C	2.C	3.C	4.C	5.C		
8x1	8	0.C	1.C	2.C	3.C	4.C	5.C	6.C	7.C
3x2	3	0.L	0.R	2.L	2.R			1.L	1.R
4x2	4	0.L	0.R	2.L	2.R	3.L	3.R	1.L	1.R
5.1+2x1	3	0.L	0.R	0.C	0.LFE	0.Ls	0.Rs	1.C	2.C
5.1	1	0.L	0.R	0.C	0.LFE	0.Ls	0.Rs		
5.1+2	2	0.L	0.R	0.C	0.LFE	0.Ls	0.Rs	1.L	1.R

Table 5-6: Channel Mappings and Program Configurations

5.42.3. Dolby Encoder Delay Compensation

The Dolby Delay compensation allows the user to ensure that the audio processing matches the video processing.

5.42.4. Dolby Encoder Data Width



20 bits	When 20 bits is selected, the data count will be 20 bits wide
16 bits	When 16 bits is selected, the data count will be 16 bits wide

5.43. DOLBY E ENCODER MIXER TAB

The 7812 series module can encode Dolby E with the Dolby E options installed. There can be more than one Dolby E module installed. The controls for each Dolby E encoder are identical. Since each Dolby E Encoder Control Tabs are identical, only Dolby Encoder A will be described.

As shown in Figure 5-53, there are eight individual Dolby Encoder Channel Mixers in 7812 series modules. These Channel mixers perform audio inversion, audio gain adjustment and audio channel swapping for each of the 8 Dolby 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 audio.

For the sake of brevity, only the *Dolby E Encoder A Channels 1-4* control tab will be discussed in this manual. Control radial buttons for *Dolby E Encoder A Channels 5-8* are identical in their operation. 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.

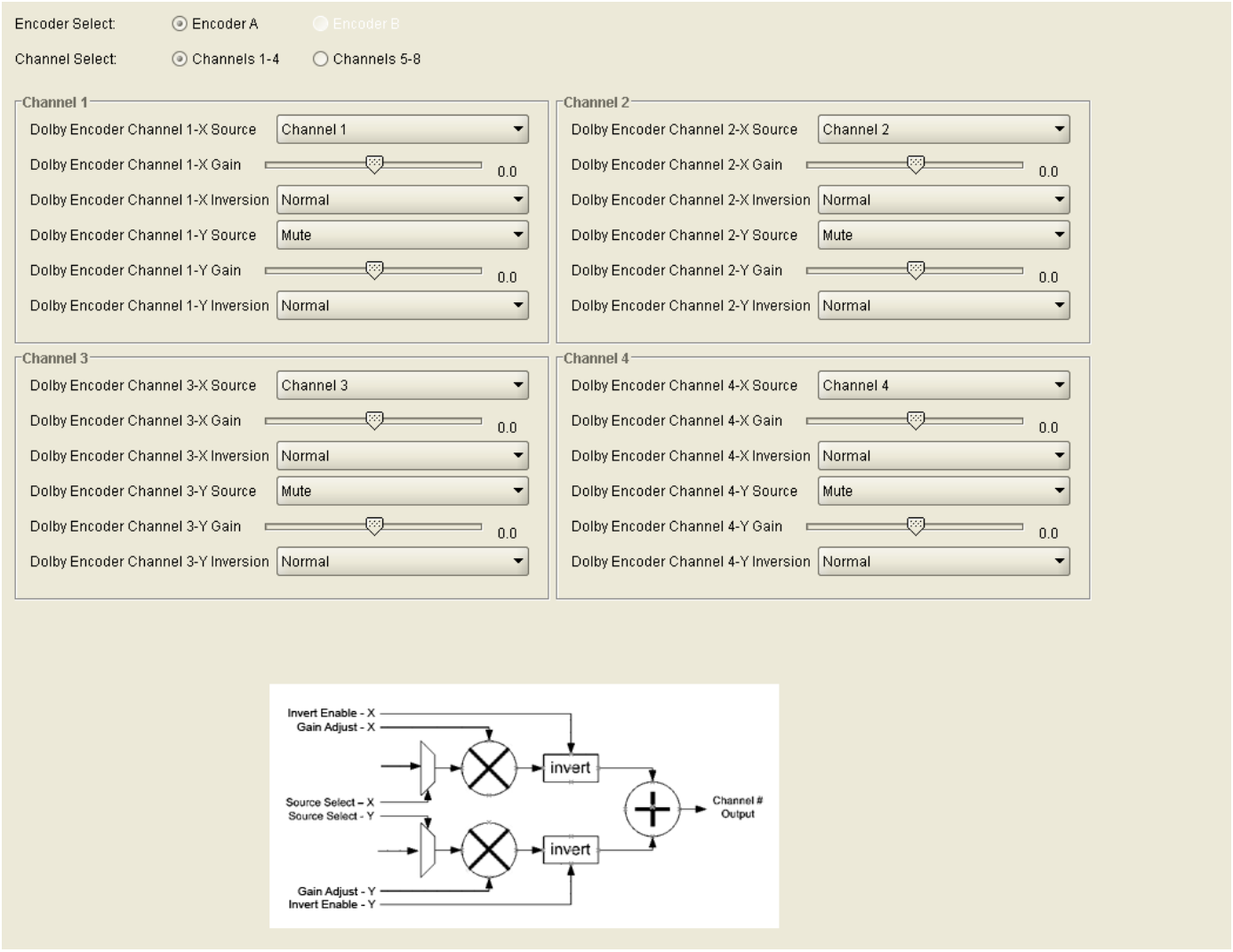
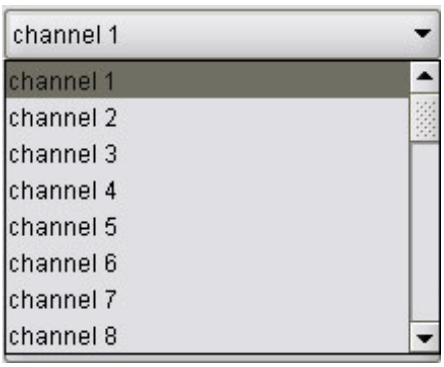


Figure 5-55: Dolby Encoder Channel Tab

5.43.1. Source X

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



The full set of available channels is listed below.

Source X Input	Channel 1	IntelliGain Channel 1
	Channel 2	IntelliGain Channel 2
	Channel 3	IntelliGain Channel 3
	Channel 4	IntelliGain Channel 4
	Channel 5	IntelliGain Channel 5
	Channel 6	IntelliGain Channel 6
	Channel 7	IntelliGain Channel 7
	Channel 8	IntelliGain Channel 8
	Channel 9	Dolby Decoder A Channel 1
	Channel 10	Dolby Decoder A Channel 2
	Channel 11	Dolby Decoder A Channel 3
	Channel 12	Dolby Decoder A Channel 4
	Channel 13	Dolby Decoder A Channel 5
	Channel 14	Dolby Decoder A Channel 6
	Channel 15	Dolby Decoder A Channel 7
	Channel 16	Dolby Decoder A Channel 8
	Mono mix channels 1 and 2	Dolby Decoder A Monitor Channel 1
	Mono mix channels 3 and 4	Dolby Decoder A Monitor Channel 2
	Mono mix channels 5 and 6	Dolby Decoder B Channel 1
	Mono mix channels 7 and 8	Dolby Decoder B Channel 2
	Mono mix channels 9 and 10	Dolby Decoder B Channel 3
	Mono mix channels 11 and 12	Dolby Decoder B Channel 4
	Mono mix channels 13 and 14	Dolby Decoder B Channel 5
	Mono mix channels 15 and 16	Dolby Decoder B Channel 6
	Mute	Dolby Decoder B Channel 7
	Down Mix L	Dolby Decoder B Channel 8
	Down Mix R	Dolby Decoder B Monitor Channel 1
	Down Mix Mono	Dolby Decoder B Monitor Channel 2
	Up Mix L Front	
	Up Mix R Front	
	Up Mix Center	
	Up Mix LFE	
	Up Mix L Surround	
	Up Mix R Surround	
	Up Mix Stereo Pass L	
	Up Mix Stereo Pass R	

5.43.2. Gain Adjust X

The *Gain Adjust X* 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.

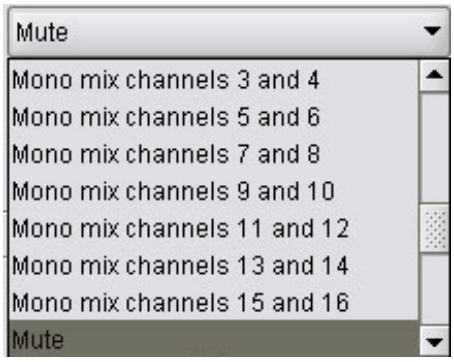
5.43.3. Invert Enable X

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

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

5.43.4. Source Y

The Source Y control enables the user to route one of the 16 internally processed input audio channels to the Y input of the Channel 1 mixer. The user can select the channel source by selecting the desired channel from the Source Y drop down menu as shown below.



The full set of available channels is listed below.

Source Y Input	Channel 1	IntelliGain Channel 1
	Channel 2	IntelliGain Channel 2
	Channel 3	IntelliGain Channel 3
	Channel 4	IntelliGain Channel 4
	Channel 5	IntelliGain Channel 5
	Channel 6	IntelliGain Channel 6
	Channel 7	IntelliGain Channel 7
	Channel 8	IntelliGain Channel 8
	Channel 9	Dolby Decoder A Channel 1
	Channel 10	Dolby Decoder A Channel 2
	Channel 11	Dolby Decoder A Channel 3
	Channel 12	Dolby Decoder A Channel 4
	Channel 13	Dolby Decoder A Channel 5
	Channel 14	Dolby Decoder A Channel 6
	Channel 15	Dolby Decoder A Channel 7
	Channel 16	Dolby Decoder A Channel 8
	Mono mix channels 1 and 2	Dolby Decoder A Monitor Channel 1
	Mono mix channels 3 and 4	Dolby Decoder A Monitor Channel 2
	Mono mix channels 5 and 6	Dolby Decoder B Channel 1
	Mono mix channels 7 and 8	Dolby Decoder B Channel 2
	Mono mix channels 9 and 10	Dolby Decoder B Channel 3
	Mono mix channels 11 and 12	Dolby Decoder B Channel 4
	Mono mix channels 13 and 14	Dolby Decoder B Channel 5
	Mono mix channels 15 and 16	Dolby Decoder B Channel 6
	Mute	Dolby Decoder B Channel 7
	Down Mix L	Dolby Decoder B Channel 8
	Down Mix R	Dolby Decoder B Monitor Channel 1
	Down Mix Mono	Dolby Decoder B Monitor Channel 2
	Up Mix L Front	
	Up Mix R Front	
	Up Mix Center	
	Up Mix LFE	
	Up Mix L Surround	

	Up Mix R Surround	
	Up Mix Stereo Pass L	
	Up Mix Stereo Pass R	

5.43.5. Gain Adjust Y

The *Gain Adjust 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 associated slider control left to decrease the value or right increase the value. The value range for the gain adjustments is -24 dB to +24 dB. Gain is adjusted in 0.1 dB increments.

5.43.6. Invert Enable Y

This control enables the user to invert the phase or pass the selected audio channels. The Invert Enable Y drop down menu appears as follows:

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

5.44. DOLBY AC3 ENCODER CONTROL TAB

The 7812 series module can encode Dolby AC3E with the Dolby AC3E options installed. There can be more than one Dolby AC3E modules installed. The controls for each Dolby AC3E encoder are identical. Since each Dolby AC3E Encoder Control Tabs are identical, only Dolby Decoder B will be described.

Figure 5-56: Dolby AC3 Encoder Control Tab

UNDERSTANDING THE DOLBY AC-3 ENCODER

The on-card Dolby AC-3 encoder takes the output of Mixer-B and a selected source of metadata to encode a single AC-3 encoded output. This output can be substituted to any output pair (including duplicating to any number of outputs) and routed to the AES and embedded outputs.

There is neither a frame-rate relationship nor a frame phase relationship between the AC-3 packet and the video frame. Switches of encoded AC-3 outputs, either discrete AES or embedded, into the video signal will result in packet corruption issues.

There are certain restrictions to what can be encoded to AC-3 relating to the LFE (low frequency effects) channel, bit-rate and audio configuration. LFE (low frequency effects channel), can only be included on audio configurations of 3/2, 2/2, 3/1, 2/1 and 3/0.

There is also a restriction on the minimum bit-rate allowed for specific audio configurations. The following table indicates what bit-rates are allowed (shaded boxes indicate the bit-rate is not allowed):

kbps	3/2	3/1	2/1	2/0	1/0
224	Y	Y	Y	Y	Y
256	Y	Y	Y	Y	Y
320	Y	Y	Y	Y	Y
384	Y	Y	Y	Y	Y
448	Y	Y	Y	Y	Y
512	Y	Y	Y	Y	Y
576	Y	Y	Y	Y	Y
640	Y	Y	Y	Y	Y

Table 5-7: Encoder Bit-rate Restrictions

There are also two automatic bit-rate configurations. These will automatically adjust the bit-rate accordingly with the audio configuration of the encoder. The following table shows the bit-rates used for a specific audio configuration:

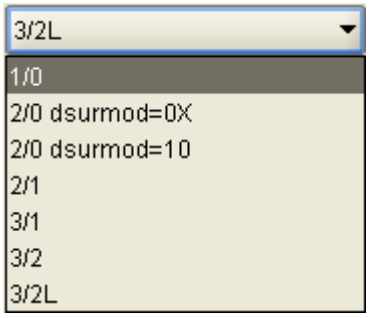
	3/2	2/2	3/1	2/1	3/0	2/0	1/0
Auto-384	384	320	320	256	256	224	96
Auto-448	448	320	320	256	256	256	96

Table 5-8: Automatic Encoder Bit-rate Selection

5.44.1. Auto Mode Program Configuration

This selects the automatic program configuration and audio configuration default. This is only used if "auto" mode is selected for the metadata source.

A standard default metadata message will be used to encode the selected audio configuration mode.



Program Config	Channels	ch 1	ch 2	ch 3	ch 4	ch 5	ch 6
3/2L	5.1	L	R	C	LFE	Ls	Rs
3/2	5.0	L	R	C		Ls	Rs
3/1	4.0	L	R	C		S	
2/1	3.0	L	R			S	
3/0	3.0	L	R	C			
2/0	2.0	L	R				
1/0	1.0			C			

Table 5-9: Channel Mappings and Program Configurations

(Channel naming convention L=left R=right C=center S=surround, LFE=low frequency effects (subwoofer) Ls=left surround, Rs=right surround). Shaded box indicated channel is not used.

5.44.2. Metadata Program Select

With this control, you can select which metadata program the Dolby Encoder should use.
AC-3 can only encode one program, but Dolby-E metadata can contain information for up to 8 programs.

Program 1	Selects program 1 for the source of Dolby Metadata.
Program 2	Selects program 2 for the source of Dolby Metadata.
Program 3	Selects program 3 for the source of Dolby Metadata.
Program 4	Selects program 4 for the source of Dolby Metadata.
Program 5	Selects program 5 for the source of Dolby Metadata.
Program 6	Selects program 6 for the source of Dolby Metadata.
Program 7	Selects program 7 for the source of Dolby Metadata.
Program 8	Selects program 8 for the source of Dolby Metadata.

5.44.3. AC-3 Bitrate Control

With this control, you can select the output bit-rate for the encoded AC-3 output. Please note, not all bit-rates are applicable for all AC-3 audio coding modes. Auto-384 will automatically select a bit-rate appropriate for the audio coding mode of the AC-3 encoder. For more information regarding available bitrates, refer to the AC3 description above.

5.44.4. Final ACMOD Monitor

This monitoring window shows the current output-encoding mode the Dolby Encoder is set to.

5.44.5. Delay Compensation

The Dolby Delay compensation allows the user to ensure that the audio processing matches the video processing.

5.45. DOLBY AC3 ENCODER MIXER TAB

The 7812 series module can encode Dolby E with the Dolby E options installed. There can be more than one Dolby E modules installed. The controls for each Dolby E encoder are identical. Since each Dolby E Encoder Control Tabs are identical, only Dolby Decoder B will be described.

As shown in Figure 5-6, there are sixteen individual Output Channel Mixers in 7812 series modules. 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. Embedded audio and discrete AES audio outputs are driven with the same audio generated using these Output Channel Mixers.

For the sake of brevity, only the *Audio Proc Ch1-Ch4* control tab will be discussed in this manual. Control radial buttons for *Audio Proc Ch5-Ch8*, *Audio Proc Ch9-Ch12* and *Audio Proc Ch13-16* are identical in their operation. 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.

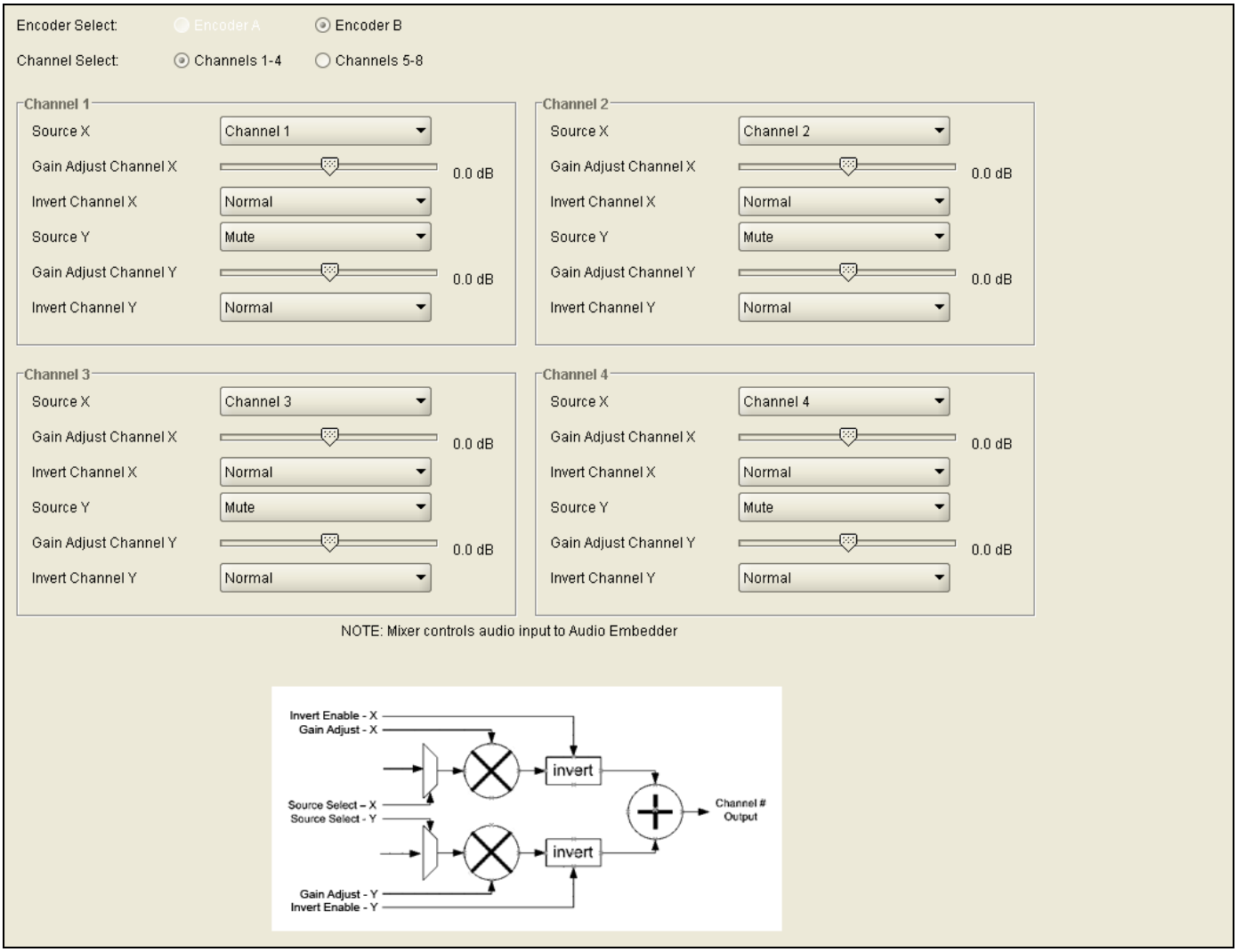
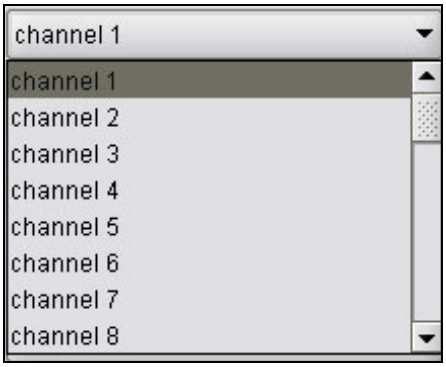


Figure 5-57: Dolby AC3 Encoder Mixer Tab

5.45.1. Source X

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



The full set of available channels is listed below.

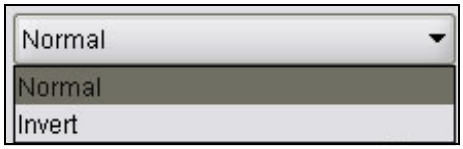
Source X Input	Channel 1	IntelliGain Channel 1
	Channel 2	IntelliGain Channel 2
	Channel 3	IntelliGain Channel 3
	Channel 4	IntelliGain Channel 4
	Channel 5	IntelliGain Channel 5
	Channel 6	IntelliGain Channel 6
	Channel 7	IntelliGain Channel 7
	Channel 8	IntelliGain Channel 8
	Channel 9	Dolby Decoder A Channel 1
	Channel 10	Dolby Decoder A Channel 2
	Channel 11	Dolby Decoder A Channel 3
	Channel 12	Dolby Decoder A Channel 4
	Channel 13	Dolby Decoder A Channel 5
	Channel 14	Dolby Decoder A Channel 6
	Channel 15	Dolby Decoder A Channel 7
	Channel 16	Dolby Decoder A Channel 8
	Mono mix channels 1 and 2	Dolby Decoder A Monitor Channel 1
	Mono mix channels 3 and 4	Dolby Decoder A Monitor Channel 2
	Mono mix channels 5 and 6	Dolby Decoder B Channel 1
	Mono mix channels 7 and 8	Dolby Decoder B Channel 2
	Mono mix channels 9 and 10	Dolby Decoder B Channel 3
	Mono mix channels 11 and 12	Dolby Decoder B Channel 4
	Mono mix channels 13 and 14	Dolby Decoder B Channel 5
	Mono mix channels 15 and 16	Dolby Decoder B Channel 6
	Mute	Dolby Decoder B Channel 7
	Down Mix L	Dolby Decoder B Channel 8
	Down Mix R	Dolby Decoder B Monitor Channel 1
	Down Mix Mono	Dolby Decoder B Monitor Channel 2
	Up Mix L Front	
	Up Mix R Front	
	Up Mix Center	
	Up Mix LFE	
	Up Mix L Surround	
	Up Mix R Surround	
	Up Mix Stereo Pass L	
	Up Mix Stereo Pass R	

5.45.2. Gain Adjust X

The *Gain Adjust X* 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.

5.45.3. Invert Enable X

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



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

5.45.4. Source Y

The Source Y control enables the user to route one of the 16 internally processed input audio channels to the Y input of the Channel 1 mixer. The user can select the channel source by selecting the desired channel from the Source Y drop down menu as shown below.

The full set of available channels is listed below.

Source Y Input	Channel 1	IntelliGain Channel 1
	Channel 2	IntelliGain Channel 2
	Channel 3	IntelliGain Channel 3
	Channel 4	IntelliGain Channel 4
	Channel 5	IntelliGain Channel 5
	Channel 6	IntelliGain Channel 6
	Channel 7	IntelliGain Channel 7
	Channel 8	IntelliGain Channel 8
	Channel 9	Dolby Decoder A Channel 1
	Channel 10	Dolby Decoder A Channel 2
	Channel 11	Dolby Decoder A Channel 3
	Channel 12	Dolby Decoder A Channel 4
	Channel 13	Dolby Decoder A Channel 5
	Channel 14	Dolby Decoder A Channel 6
	Channel 15	Dolby Decoder A Channel 7
	Channel 16	Dolby Decoder A Channel 8
	Mono mix channels 1 and 2	Dolby Decoder A Monitor Channel 1
	Mono mix channels 3 and 4	Dolby Decoder A Monitor Channel 2
	Mono mix channels 5 and 6	Dolby Decoder B Channel 1
	Mono mix channels 7 and 8	Dolby Decoder B Channel 2
	Mono mix channels 9 and 10	Dolby Decoder B Channel 3
	Mono mix channels 11 and 12	Dolby Decoder B Channel 4
	Mono mix channels 13 and 14	Dolby Decoder B Channel 5
	Mono mix channels 15 and 16	Dolby Decoder B Channel 6
	Mute	Dolby Decoder B Channel 7
	Down Mix L	Dolby Decoder B Channel 8
	Down Mix R	Dolby Decoder B Monitor Channel 1
	Down Mix Mono	Dolby Decoder B Monitor Channel 2
	Up Mix L Front	
	Up Mix R Front	
	Up Mix Center	
	Up Mix LFE	
	Up Mix L Surround	
	Up Mix R Surround	
	Up Mix Stereo Pass L	
	Up Mix Stereo Pass R	

5.45.5. Gain Adjust Y

The *Gain Adjust 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 associated slider control left to decrease the value or right increase the value. The value range for the gain adjustments is -24 dB to +24 dB. Gain is adjusted in 0.1 dB increments.

5.45.6. Invert Enable Y

This control enables the user to invert the phase or pass the selected audio channels. The Invert Enable Y drop down menu appears as follows:

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

5.46. BLUR CONTROL TAB

Figure 5-58: Blur Control Tab

5.46.1. Blur Enable

When enabled, the blur feature will take a portion of the left side of the image, put it in the left side panel, and blur it. It will take a portion of the right side of the image, put it in the right side panel, and blur it.

5.46.2. Blur Level

The blur level is the amount of blur that is applied. The higher the value, the more the image in the side panel will be obscured.

5.47. WST OP42/47 CONTROL TAB

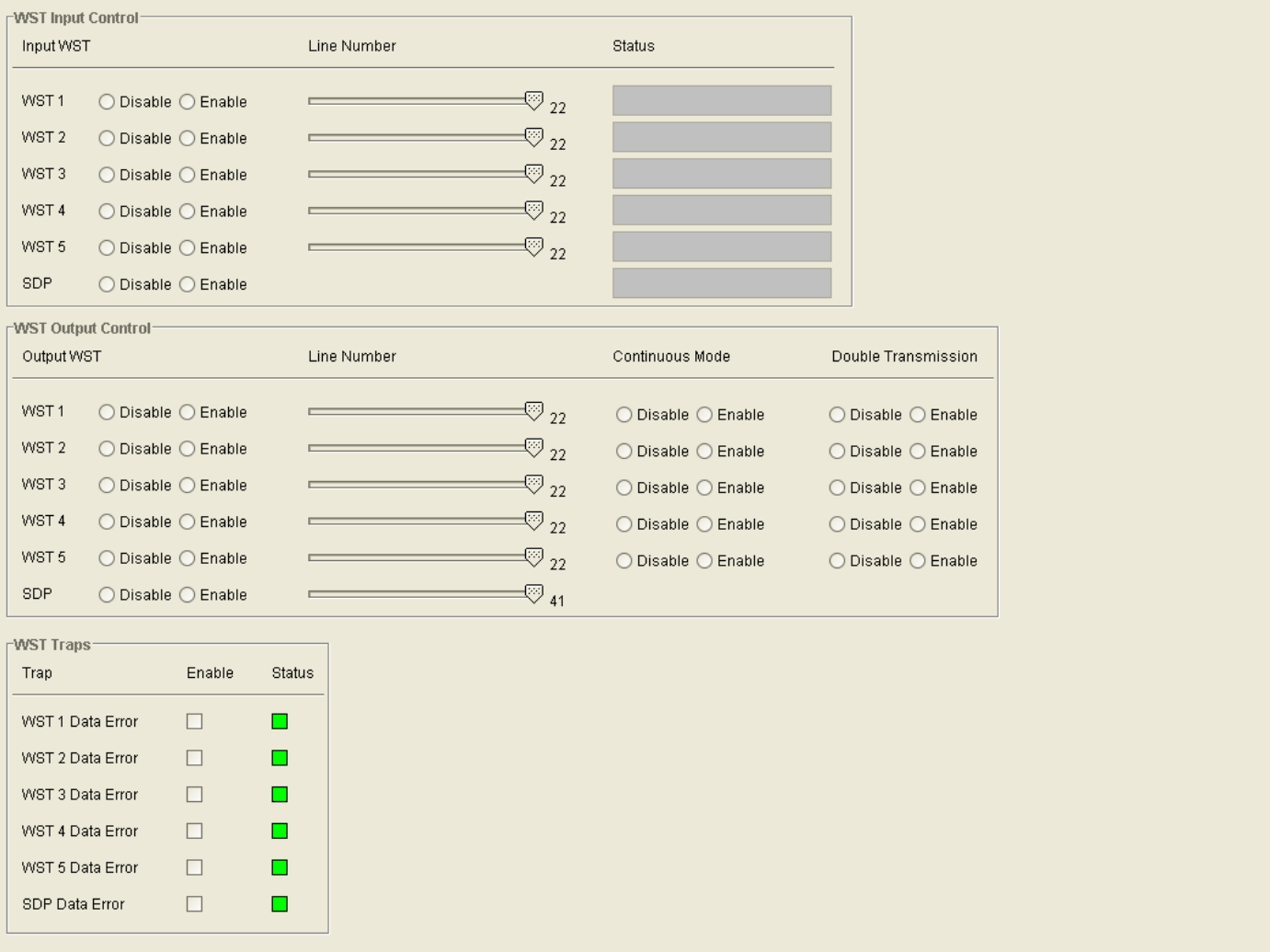


Figure 5-59: WST OP42/47 Control Tab

5.47.1. WST Input Control

The WST Input Control section is used to enable reading of WST or SDP information being supplied to the input. In order to operate this control you will need to enable one of the WST (for SD input) and select the line number to read or SDP if the teletext is coming in on an HD signal.

5.47.2. WST Output Control

The WST output Control section is used to enable writing of WST or SDP information being embedded on the output. In order to operate this control you will need to enable one of the WST (for SD output) and select the line number to embed on or SDP if the teletext is embedding on an HD signal.

5.47.3. WST Traps

WST Traps allows the user to monitor if the incoming teletext information. The trap will fire whenever a bit error is detected. If bit errors are detected the teletext information will still be present on the output.

5.48. AVM CONTROL TAB

5.48.1. Trigger Settings

5.48.1.1. Audio Silence Level

The audio level threshold below which audio is considered to be silent. The default value is -70.00 dBFS with a valid range from -96 to – 20.

5.48.1.2. Audio Silence Duration

The amount of time (in seconds) that the audio must remain silent before the audio silence trigger condition is flagged to be true. The default value is 5.0 seconds with a valid range from 0.5 s to 127.0 s.

5.49. AVM PRESETS

Figure 5-60: AVM Presets Control Tab

5.49.1. Preset Trigger Conditions

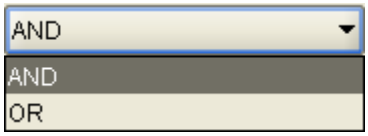
5.49.1.1. Channel X Silence

Enables/disables the avm preset trigger conditions. To select a preset trigger condition, select the check box beside the desired condition.

5.49.2. Preset Control

5.49.2.1. AVM Trigger Logic

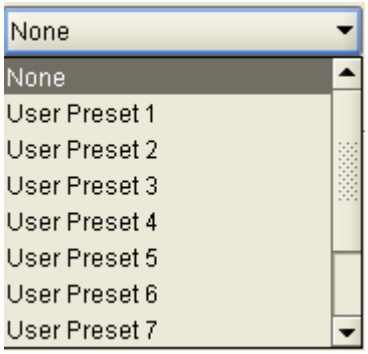
Sets the logic to be used when combining the AVM preset trigger conditions to determine if the overall AVM preset trigger either condition if True or False.



AND	A value of TRUE will only happen when all trigger conditions have been met.
OR	A value of TRUE will happen when any of the trigger conditions have been met.

5.49.2.2. Trigger Assert Preset

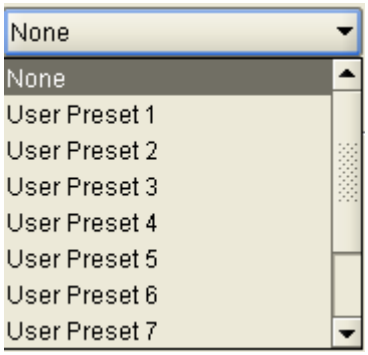
Sets the preset to be recalled when the overall AVM preset trigger condition is asserted (transitions from FALSE -> TRUE).



None	When set to none, If trigger conditions are met the module will take no action.
User Preset 1	When set to user preset 1, If trigger conditions are met the module will recall User Preset 1
User Preset 2	When set to user preset 2, If trigger conditions are met the module will recall User Preset 2
User Preset 3	When set to user preset 3, If trigger conditions are met the module will recall User Preset 3
User Preset 4	When set to user preset 4, If trigger conditions are met the module will recall User Preset 4
User Preset 5	When set to user preset 5, If trigger conditions are met the module will recall User Preset 5
User Preset 6	When set to user preset 6, If trigger conditions are met the module will recall User Preset 6
User Preset 7	When set to user preset 7, If trigger conditions are met the module will recall User Preset 7
User Preset 8	When set to user preset 8, If trigger conditions are met the module will recall User Preset 8
User Preset 9	When set to user preset 9, If trigger conditions are met the module will recall User Preset 9
User Preset 10	When set to user preset 10, If trigger conditions are met the module will recall User Preset 10

5.49.2.3. Trigger De-Assert Preset

Sets the preset to be recalled when the overall AVM preset trigger condition is asserted (transitions from TRUE -> FALSE).



None	When set to none, If trigger conditions are met the module will take no action.
User Preset 1	When set to user preset 1, If trigger conditions are not met the module will recall User Preset 1
User Preset 2	When set to user preset 2, If trigger conditions are not met the module will recall User Preset 2
User Preset 3	When set to user preset 3, If trigger conditions are not met the module will recall User Preset 3
User Preset 4	When set to user preset 4, If trigger conditions are not met the module will recall User Preset 4
User Preset 5	When set to user preset 5, If trigger conditions are not met the module will recall User Preset 5
User Preset 6	When set to user preset 6, If trigger conditions are not met the module will recall User Preset 6
User Preset 7	When set to user preset 7, If trigger conditions are not met the module will recall User Preset 7
User Preset 8	When set to user preset 8, If trigger conditions are not met the module will recall User Preset 8
User Preset 9	When set to user preset 9, If trigger conditions are not met the module will recall User Preset 9
User Preset 10	When set to user preset 10, If trigger conditions are not met the module will recall User Preset 10

5.50. AVM TRAPS

AVM Traps allows the user to trigger alarms in VLPro to help monitor audio silence on each of the audio channels. If a trap is sent by the AVM system, the trap status box will change state indicating the real time value for that trap. For example, if the trap status box is the colour green, then the trap has not been sent. However, if the status box is the colour red, then the fault is in a current state of alarm. Once corrected, the status box will turn back to the colour green. Below is a depiction of the AVM Traps Tab.

Figure 5-61: AVM Traps Control Tab

5.51. THUMBNAILS TAB

The 7812 module can be setup to work with the VistaLINK® thumbnail server in order to send video images of the output picture using the Simple Network Management Protocol (SNMP).

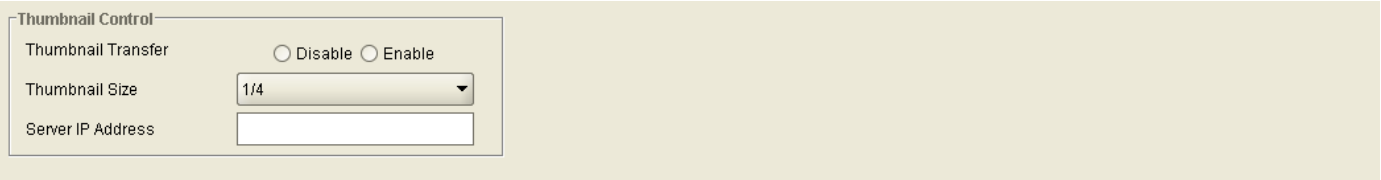


Figure 5-62: Thumbnails Tab

5.51.1. Thumbnail Transfer

This option allows the user to Enable/Disable the transfer of thumbnails.

5.51.2. Thumbnail Size

The size of the image sent to the VistaLINK® Thumbnail sever can be selected with this option. This will enable the user to send either 1/32, 1/16, 1/8, or 1/4 of the original video size to the thumbnail server.

NOTE: The size of the thumbnail image directly influences the refresh rate to the thumbnail. As the thumbnail size increases, the refresh rate decreases.

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6. JUMPERS

Figure 6-1 and Figure 6-2 provide the locations of the jumpers and LEDs on the 7812 series boards.

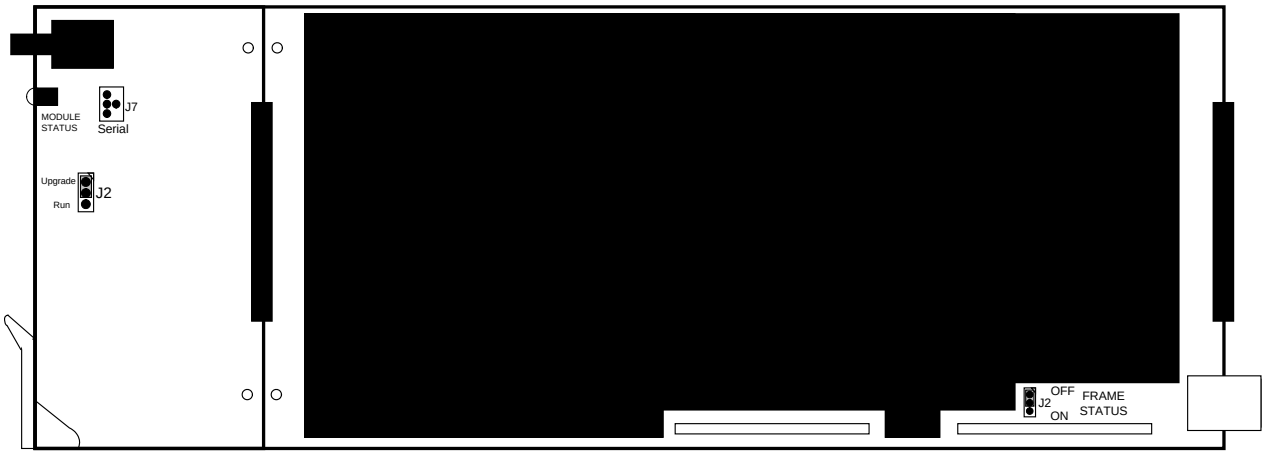

Figure 6-1: Location of Jumpers – Top View Main Module

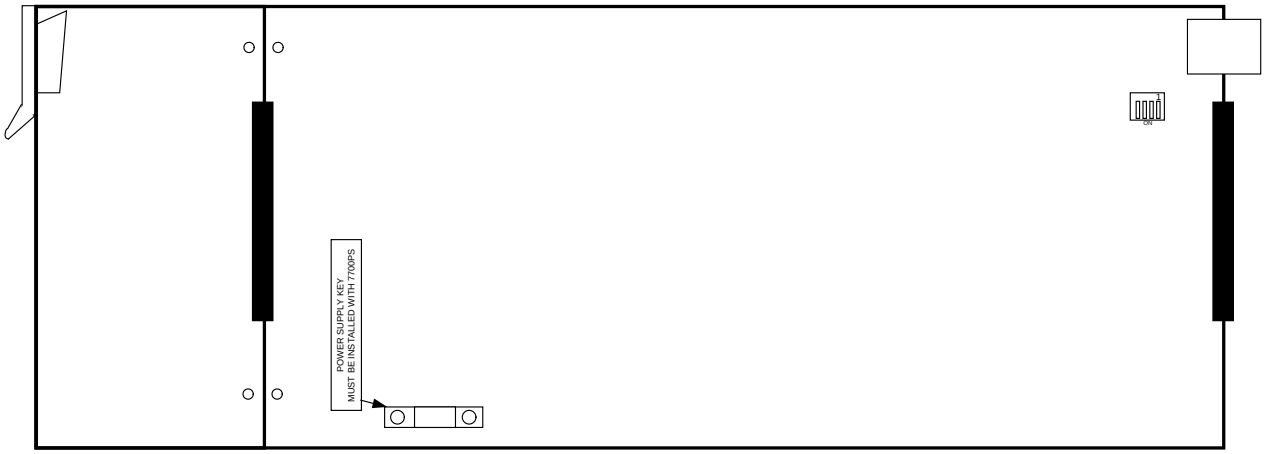

Figure 6-2: Location of Jumpers – Bottom View Main Module

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

FRAME STATUS: The FRAME STATUS jumper J2 is located near the rear of the board and close to the white metal connector. The FRAME STATUS jumper determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR-C or 7800FR frame's global status bus.

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

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

6.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

Firmware updates can be performed using two methods. The first method is Ethernet based up-load of firmware using VistaLink PRO. The second method is using serial interface based up-load of firmware using the on-card upgrade serial port.

NOTE:

When upgrading from a firmware revision 4.00 or earlier, a two-stage firmware upgrade process must be performed. Ethernet or serial based upgrades may be used to perform this two stage upgrade process.

The first step in this process involves up-loading a special intermediate 7711xucupgrade.bin file.
Please contact the Evertz service department to acquire this upgrade file.
After this special intermediate upgrade file is up-loaded, the card should be re-booted.
The second step in the process entails uploading the final card firmware using the same process.

The following outlines the details of how to perform a serial interface based upgrade.

UPGRADE: The UPGRADE jumper (J2) is located on the top side of the main near the front of the card and is used when firmware upgrades are being done to the module. For normal operation, it should be switched to the *RUN* position as shown in the diagrams above. See the *Upgrading Firmware* chapter 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 J2 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto header J7 at the card edge. Re-install the module into the frame. Run the upgrade as described in *Upgrading Firmware* chapter. Once the upgrade is completed, remove the module from the frame, move J2 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

The Upgrade baud rate for the 7812 series modules is 115,200 baud. Additional serial connection settings are as follows:

Data Bits = 8
Parity = None
Stop Bits=1
Flow Control = None

6.3. SELECTING WHETHER THE GENLOCK REFERENCE INPUT IS TERMINATED

TERM: The micro Dipswitch on the bottom of the board (near the connector) is used to terminate the genlock loop input. When DIP Switch 1 is set to "ON" there is in the 75-ohm terminating resistor placed between the genlock input and ground. When DIP Switch 1 is set in the "OFF" position, the genlock input will be high impedance. Leave DIP SWITCH 2, 3 and 4 in the OFF position.

6.4. 7812 Series "Slot Blocker"

The 7812 series of modules can be installed in either the 7700FR-C or the 7800FR frames. These modules are designed to take two slots in the Evertz 7800FR frame and three slots in the 7700FR-C.

Modules can fit into two slots in a 7800FR frame because the 7800FR allows modules to consume more power on a per slot basis than the Evertz 7700FR-C. When a 7812 series module is installed in the 7700FR-C, the module must occupy 3 slots to ensure that the frame power is managed properly. This is accomplished by installing a "Slot Blocker" on the bottom side of the board. If the "Slot Blocker" is not installed on the card and the card is inserted into the 7700FR, the card will not power-up. When installing the card in a 7800FR, the "Slot Blocker" may be removed and it will power-up and operate normally. If the "Slot Blocker" remains installed and the card is inserted into the 7800FR, the card will also power-up and operate normally.

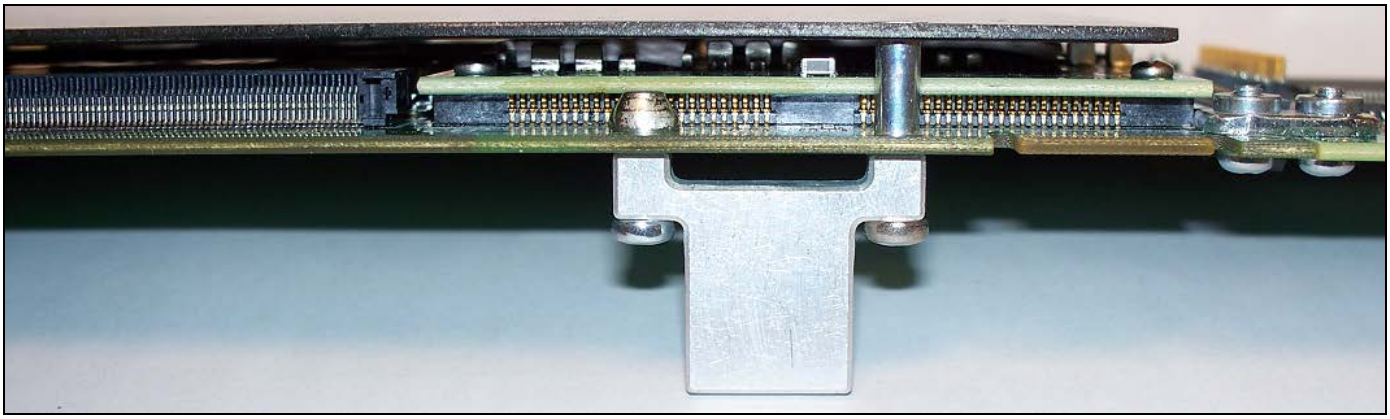

Figure 6-3: Slot Blocker

7. *VISTA*LINK® REMOTE MONITORING/CONTROL

7.1. WHAT IS *VISTA*LINK®?

*Vista*LINK® is Evertz' 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. *Vista*LINK® 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 *Vista*LINK® 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, *Vista*LINK® 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 VL-Fiber demo Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *Vista*LINK® enabled fiber optic products.

2. Managed devices, (such as 7707EO and 7707OE cards), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz *Vista*LINK® enabled 7700 series modules reside in the 3RU 7700FR-C MultiFrame and communicate with the manager via the 7700FC *Vista*LINK® 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.

7.2. *VISTA*LINK® MONITORED PARAMETERS

The following parameters can be remotely monitored through the *Vista*LINK® interface.

Parameter	Description
Main PGM IN BNC Video Std	Reports if a valid video signal is presented to PGM IN A and what standard has been detected when it is present.
Backup PGM IN BNC Video Std	Reports if a valid video signal is presented to PGM IN B and what standard has been detected when it is present.
Input Video BNC	Reports what input BNC has been selected to pass through the main up/down/cross conversion path.
Video Payload ID	Reports if a valid Video Payload ID ANC packet has been detected and indicates the format that the video is being sent to the card.
External Genlock Standard	Reports if a valid video reference has been supplied to the REF IN BNC and indicates the standard that is detected when a valid reference is applied.
Video Delay	Reports video delay through the card in ms.
CDP Parser	Displays the status of Closed Caption reading.
Input AFD Code Status	Reports any detected AFD values on the incoming video signal.
Output AFD Code Status	Presents the AFD code being stamped on the output of the card (if applicable).
SRC Status	Displays the status of the Sample Rate Converters.
Audio Delay	Displays the delay of the audio in *ms*.
Video Delay	Displays the delay of the associated video in ms.
Status A	Displays whether Status A is on or off.
Status B	Displays whether Status B is on or off.

Table 7-1: *Vista*LINK® Monitored Parameters

7.3. *VISTA*LINK® CONTROLLED PARAMETERS

Parameter	Description
Video Standard Input	Selects the video input standard.
Video Standard Output	Selects the video output standard.
Video Input Source	Selects source of video input.
SD Blanking	Last line of blanking in SD. SD input only.
Reference Select	Set video or external genlock for card locking.
V Phase Offset	Sets the vertical phase.
H Phase Offset	Sets the horizontal phase.

3G Dual Link Channel Swap	Used when operating with dual link 1080p input signals per SMPTE 372M.
Loss of Video Mode	Selects the action to take when the input video is missing.
FS Only Mode	Controls the response of the converter when the input and output formats are the same.
VITC Read	Select decode line for VITC. SD input only.
VITC Write	Select line for VITC insert. SD output only.
Time Code Source	Selects the source of Timecode.
Audio Delay	Adjusts the audio delay from the card nominal.
SRC Mode	Sets mode of sample rate converter.
Embedder Group 1 Enable	Enables or disables the Embedder Group.
Embedder Group 2 Enable	Enables or disables the Embedder Group.
Embedder Group 3 Enable	Enables or disables the Embedder Group.
Embedder Group 4 Enable	Enables or disables the Embedder Group.
C-Bit	Enables the user to set the C-Bit Control.
DMX loss of video mode	Selects the action that the 7812 series product will take when there is a loss of video on the input.
Ch 1+2	Selects the source for internally processed channels 1 and 2.
Ch 3+4	Selects the source for internally processed channels 3 and 4.
Ch 5+6	Selects the source for internally processed channels 5 and 6.
Ch 7+8	Selects the source for internally processed channels 7 and 8.
Ch 9+10	Selects the source for internally processed channels 9 and 10.
Ch 11+12	Selects the source for internally processed channels 11 and 12.
Ch 13+14	Selects the source for internally processed channels 13 and 14.
Ch 15+16	Selects the source for internally processed channels 15 and 16.
Source X	Routes one of the 16 input audio channels to the X input of the Channel 1 mixer.
Gain Adjust X	Sets the value of the gain from the selected source.
Invert Enable X	Inverts the phase or passes the selected audio channels.
Source Y	Routes one of the 16 input audio channels to the Y input of the Channel 1 mixer.
Gain Adjust Y	Sets the value of the gain from the selected source.
Invert Enable Y	Inverts the phase or passes the selected audio channels.
Deinterlacer Mode	Sets whether the module will perform field or frame based de-interlacing conversion.

Deinterlacer Type	Sets the base type of de-interlacing that the module will perform.
IFMD Mode	Sets the motion-processing mode for the de-interlacer.
IFMD Threshold	Changes the threshold of what is deemed motion for the deinterlacer.
IFMD Detection Mode	Sets the film operating mode.
RGB Clip	Enables RGB clipper.
Y Gain	Varies the Source Y.
Y Offset (Black Level)	Varies the Source Y.
Cr Gain	Varies the Source Cr.
Cr Offset	Varies the Source Cr.
Cb Gain	Varies the Source Cb.
Cb Offset	Varies the Source Cb.
Hue	Adjusts the hue of the video signal. +/- 10 degrees in 0.1 degree increments.
R Gain	Varies the Gain in RGB Domain.
G Gain	Varies the Gain in RGB Domain.
B Gain	Varies the Gain in RGB Domain.
Saturation Gain	Sets the saturation gain level.
Video Gain	Sets the video gain level.
Gamma Adjust	Enables gamma adjust.
Gamma Level	Sets the gamma correction level.
Red Gamma Level	Adjusts the Red Gamma levels.
Green Gamma Level	Adjusts the Green Gamma levels.
Blue Gamma Level	Adjusts the Blue Gamma levels.
H Slew Limit	Controls sharp horizontal edge transitions.
V Slew Limit	Controls sharp vertical edge transitions.
Red Panel	Sets the value for the R component of the background side panels.
Green Panel	Sets the value for the G component of the background side panels.
Blue Panel	Sets the value for the B component of the background side panels.
H Filter Cutoff	Sets the type of the horizontal filter in the scaler.
V Filter Cutoff	Sets the type of the vertical filter in the scaler.
AFD Stamp	Selects the AFD signal that will be stamped on the output signal.

Aspect Ratio Conversion	Selects the aspect ratio conversion that the module will perform.
Input H Start	Sets the left side crop position.
Input H Stop	Sets the right side crop position.
Input V Start	Sets the top crop position.
Input V Stop	Sets the bottom crop position.
Output H Start	Sets the left side of the output.
Output H Stop	Sets the right side of the output.
Output V Start	Sets the top of the output image.
Output V Stop	Sets the bottom of the output image.
CC Enable	Enables closed caption handling.
HD Write Line	Sets the HD line where the HD VANC captions are inserted on the output HD video as per SMPTE 334M.
Loss of CC Timeout	When video is lost, this control sets the amount of time (in seconds) before the Closed Captioning timeouts.
CC1 To CEA708 Service	Maps closed caption and text channels into CEA708 caption services.
CC2 To CEA708 Service	Maps closed caption and text channels into CEA708 caption services.
CC3 To CEA708 Service	Maps closed caption and text channels into CEA708 caption services.
CC4 To CEA708 Service	Maps closed caption and text channels into CEA708 caption services.
T1 To CEA708 Service	Maps closed caption and text channels into CEA708 caption services.
T2 To CEA708 Service	Maps closed caption and text channels into CEA708 caption services.
T3 To CEA708 Service	Maps closed caption and text channels into CEA708 caption services.
T4 To CEA708 Service	Maps closed caption and text channels into CEA708 caption services.
Recall Preset	Used to recall a current card configuration from one of the user presets.
Store User Preset	Used to store the current card configuration.
Auto Recall Presets	Enables automatic preset recall when input or output changes.
Ap Aspect Ratio Source	Selects whether the Production Aperture or the Clean Aperture is used when converting input signals.
First Pixel Num in SD Prod Ap	Defines the first active horizontal pixel for the SD Production Aperture.

Last Pixel Num in SD Prod Ap	Defines the last active horizontal pixel for the SD Production Aperture.
First Line Num in SD Prod Ap	Defines the first active line for the SD Production Aperture.
Last Line Num in SD Prod Ap	Defines the last active line for the SD Production Aperture.
First Pixel Num in SD Clean Ap	Defines the first active horizontal pixel for the SD Clean Aperture.
Last Pixel Num in SD Clean AP	Defines the last active horizontal pixel for the SD Clean Aperture.
First Line Num in SD Clean Ap	Defines the first active line for the SD Clean Aperture.
Last Line Num in SD Clean Ap	Defines the last active line for the SD Clean Aperture.
Image Enhancement Enable	Enables the Image Enhancement control settings.
Detail Gain	Selects the level of the detail gain.
Enhancement Limit	Sets the maximum enhancement allowed.
Horizontal Band	Sets the horizontal frequency band.
Vertical Intensity	Sets the intensity of vertical enhancement.
Luma Floor	Sets the gamma correction factor.
Detail Noise Floor	Sets the minimum level of detail required before the enhancer is enabled.
AFD Input Enable	Enables the input side AFD processing.
Loss of AFD Mode	Configures the action that the converter will take when incoming AFD signals are lost.
AFD Stamp Source	Sets the source for output AFD stamping.
Output SD Aspect Ratio	Defines whether SD outputs should be stamped with an AFD value that indicates a 16:9 or 4:3 output image raster.
AFD Output Enable	Enables the insertion of AFD packets in the outgoing video signal.
AFD Output Line	Sets the AFD Output Line level.
AFD Select	Selects the incoming AFD code.
AFD Stamp	Specifies the outgoing AFD code.
Aspect Ratio Conversion	Selects the ARC processing that the card will perform.
Input H Start	Sets the left side crop positions.
Input H Stop	Sets the right side crop position.
Input V Start	Sets the top crop position.
Input V Stop	Sets the bottom crop position.
Output H Start	Sets the left side of the output.
Output H Stop	Sets the right side of the output.
Output V Start	Sets the top of the output image.
Output V Stop	Sets the bottom of the output image.

General Level	Controls the strength of the applied General Noise Reduction filter.
BAR Level	Controls the strength of the BAR noise reducer.
MNR Level	Controls the strength of the MNR noise reducer.
SCTE104 Enable	Enables SCTE104 packets.
Line Out	Sets the specific line onto which SCTE104 packets will be inserted on the outgoing video signal.
GPIO None	Disables the GPIO control.
Recall Preset	Sets which preset will be recalled by the respective GPI input.
Play Logo	Configures a preset to play a particular logo.
Play Loop Logo	Configures a preset to play and loop a particular logo.
Tally Logo	Configures a preset to tally or indicate when a certain logo is playing.
Tally Preset	Indicates status of a selected user preset.
Cue	Cues selected logo.
Play	Plays selected media file.
Play Loop	Plays and loops selected media file.
Stop A	Stops playing the left hand side logo.
Stop B	Stops playing the right hand side logo.
Stop All	Stops playing the left and right hand side logo.
IP Address	Sets the IP address.
Subnet Mask	Sets the subnet mask.
Default Gateway	Sets the default gateway.
L Source	Assign a channel to L Source.
R Source	Assign a channel to R Source.
C Source	Assign a channel to C Source.
LFE Source	Assign a channel to LFE Source.
Ls Source	Assign a channel to Ls Source.
Rs Source	Assign a channel to Rs Source.
Output Scaling Mode	Controls whether the down mix matrixing is normalized or not.
Output Gain	Configures the output gain.
LFE Mixing	Controls whether the LFE channel is included or not in the audio down-mixing.
Surround Phase	Controls whether a 90-degree phase shift is applied to the surround channels before being passed to the down-mix matrix.

Down Mix Type	Sets the type of audio down-mixing that will be performed.
LR_lev	Sets the LR_lev level.
C_lev	Sets the C_lev level.
Ls_lev_L	Sets the Ls_lev_L level.
Rs_lev_L	Sets the Rs_lev_L level.
Ls_lev_R	Sets the Ls_lev_R level.
Rs_lev_R	Sets the Rs_lev_R level.
Out Enable	Enables the Dolby Metadata Encoder.
Output Line	Adjusts the Output Line value of the Dolby Metadata Encoder.
Output DID	Sets the Output DID for the Dolby Metadata ancillary data packets.
Output SDID	Sets the Output SDID for the Dolby Metadata ancillary data packets.
Program Config	Sets the control for the program configuration of the Dolby Metadata encoder.
Method	Sets the method that is used for Dolby Metadata formatting.
Bitstream Mode	Sets the bit-stream mode for Program 1.
Center Mix Level	Sets the centre mix level for program 1 of the Dolby Stream.
Surround Mix Level	Sets the surround mix level of the Dolby Stream.
Surround Mode	Sets the surround mode of the Dolby stream.
Dialnorm	Sets the Dialnorm level of the Dolby bitstream.
Audio Prod. Info	Sets the Audio Prod. Information for the Dolby bitstream.
Mix Level	Sets the Mix Level for the Dolby bit-stream.
Room Type	Sets the Room Type information.
Copyright	Sets the Copyright information for the Dolby bit-stream.
Original Bitstream	Sets the Original Bitstream metadata for the Dolby bit-stream.
Preferred Downmix	Sets the Preferred Down-Mix metadata for the Dolby bit-stream.
Lt/Rt Center Downmix	Sets the LtRt Center Down-Mix metadata for the Dolby bit-stream.
Lt/Rt Surround Downmix	Sets the LtRt Surround Control metadata for the Dolby bit-stream.
Lo/Ro Center Downmix	Sets the LoRo Center Control metadata for the Dolby bit-stream.
Lo/Ro Surround Downmix	Sets the LoRo Surround Control metadata for the Dolby bit-stream.
Dolby Surround EX	Sets the Surround EX Control metadata for the Dolby bit-stream.
DC Filter	Sets the DC Filter Control metadata for the Dolby bit-stream.
Lowpass Filter	Sets the Lowpass Filter Control metadata for the Dolby bit-stream.

LFE Lowpass Filter	Sets the LFE Lowpass Filter metadata for the Dolby bit-stream.
Surround Phase Shift	Sets the Surround Phase Shift Control metadata for the Dolby bit-stream.
Surround 3dB Attenuation	Sets the 3 dB Attenuation Control metadata for the Dolby bit-stream.
RF Overmod Protect	Sets the RF Overmod Protect Control metadata for the Dolby bit-stream.
RF Mode	Sets the RF Mode metadata for the Dolby bit-stream.
Line Mode	Sets the Line Mode metadata for the Dolby bit-stream.
Audio Coding Mode	Sets the audio coding mode.
Centre Width	Controls the width of front centre sound.
Surround Depth	Controls the depth of surround sound.
Up Mix Surround Delay	Controls the amount of time that the surround sound will be delayed against other channels.
Source Select	Selects the audio source.
LFE Gain	Controls the LFE channel gain after audio is up-mixed.
Sound Direction Detect Rate	Controls the detection rate of sound direction.

Table 7-2: *Vista*LINK® Controlled Parameters

7.4. *VISTA*LINK® TRAPS

The 7711UC-HD modules will raise a *Vista*LINK® trap if the temperature of the main or sub cards rises above 100 °F.

Parameter	Description
SD CC1 to SD CC3 Not Present	Displays the trap status of Standard Definition Closed Captioning for captions 1 to 3.
CEA708 Service 1 to CEA708 Service 16 Not Present	Displays the trap status of CEA708 Service 1 to 16.
Video Missing	Displays the status of the video missing trap.
External Genlock Missing	Displays the status of the genlock missing trap.
External Genlock Not valid	Displays the status of the genlock not valid trap.
Audio Group 1 to 4 Not Present	Displays the trap status of audio group 1 to 4.
AFD Loss	Displays the status of the AFD loss trap.
AES1 to AES8 Loss	Displays the trap status of AES1 to AES8.
Temperature	Displays the status of the temperature trap.

Table 7-3: *Vista*LINK® Controlled Parameters

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8. MENU QUICK REFERENCE

Video
- Video Standard Input
- Video Standard Output
- Video Input Source
- SD Blanking
- Reference Select
- V Phase Offset
- H Phase Offset
- 3G Dual Link Channel Swap
- Loss of Video Mode
- FS Only Mode
- VITC Read
- VITC Write
- Time Code Source
- Main PGM in BNC Video Std
- Backup PGM in BNC Video Std
- Input Video BNC
- Video Payload ID
- External Genlock Standard
- Video Delay
- CDP Parser
- Input AFD Code Status
- Output AFD Code Status

Audio
- Audio Delay
- SRC Mode
- Embedder Group 1 Enable
- Embedder Group 2 Enable
- Embedder Group 3 Enable
- Embedder Group 4 Enable
- C-Bit
- DMX loss of video
- SRC Status
- Audio Delay
- Video Delay

Audio Input
- Ch 1+2
- Ch 3+4
- Ch 5+6
- Ch 7+8
- Ch 9+10
- Ch 11+12
- Ch 13+14
- Ch 15+16

Audio Proc Ch1-Ch4
- Source X
- Gain Adjust X
- Invert Enable X
- Source Y
- Gain Adjust Y
- Invert Enable Y

Audio Proc Ch5-Ch8
- Source X
- Gain Adjust X
- Invert Enable X
- Source Y
- Gain Adjust Y
- Invert Enable Y

Audio Proc Ch9-Ch12
- Source X
- Gain Adjust X
- Invert Enable X
- Source Y
- Gain Adjust Y
- Invert Enable Y

Audio Proc Ch13-Ch16
- Source X
- Gain Adjust X
- Invert Enable X
- Source Y
- Gain Adjust Y
- Invert Enable Y

De-Interlacer Control
- Deinterlacer Mode
- Deinterlacer Type
- IFMD Mode
- IFMD Threshold
- Film Detection Mode

Video Proc
- RGB Clip
- Y Gain
- Y Offset (Black Level)
- Cr Gain
- Cr Offset
- Cb Gain
- Cb Offset
- Hue
- R Gain
- G Gain
- B Gain
- Saturation Gain
- Video Gain
- Gamma Adjust
- Gamma Level
- Red Gamma Level
- Green Gamma Level
- Blue Gamma Level

Scaler
- H Slew Limit
- V Slew Limit
- Red Panel
- Green Panel
- Blue Panel
- H Filter Cutoff
- V Filter Cutoff
- AFD Stamp
- Aspect Ratio Conversion
- Input H Start
- Input H Stop
- Input V Start
- Input V Stop
- Output H Start
- Output H Stop
- Output V Start
- Output V Stop

CC Control
- CC Enable
- HD Write Line
- Loss of CC Timeout
- CC1 To CEA708 Service
- CC2 To CEA708 Service
- CC3 To CEA708 Service
- CC4 To CEA708 Service
- T1 To CEA708 Service
- T2 To CEA708 Service
- T3 To CEA708 Service
- T4 To CEA708 Service

- **Utilities Control**
  - Recall Preset
  - Store User Preset
  - Auto Recall Presets
- **SD Aperture Control**
  - Ap Aspect Ratio Source
  - First Pixel Num in SD Prod Ap
  - Last Pixel Num in SD Prod Ap
  - First Line Num in SD Prod Ap
  - Last Line Num in SD Prod Ap
  - First Pixel Num in SD Clean Ap
  - Last Pixel Num in SD Clean Ap
  - First Line Num in SD Clean Ap
  - Last Line Num in SD Clean Ap
- **Image Enhancement**
  - Image Enhancement Enable
  - Detail Gain
  - Enhancement Limit
  - Horizontal Band
  - Vertical Intensity
  - Luma Floor
  - Detail Noise Floor
- **AFD Control**
  - AFD Input Enable
  - Loss of AFD Mode
  - AFD Stamp Source
  - Output SD Aspect Ratio
  - AFD Output Enable
  - AFD Output Line
- **AFD ARC**
  - AFD Select
  - AFD Stamp
  - Aspect Ratio Conversion
  - Input H Start
  - Input H Stop
  - Input V Start
  - Input V Stop
  - Output H Start
  - Output H Stop
  - Output V Start
  - Output V Stop
- **Noise Control**
  - General Level
  - BAR Level
  - MNR Level
- **SCTE104**
  - Enable
  - Line Out
- **CC Fault Traps**
  - SD CC1 to SD CC3 Not Present
  - CEA708 Service 1 to 16 Not Present
- **Audio/Video Traps**
  - Video Missing
  - External Genlock Missing
  - External Genlock Not Valid
  - Audio Group 1 to 4 Not Present
  - AFD Loss
  - AES1 to AES8 Loss
  - Temperature
- **GPIO (GPIO1 - GPIO4)**
  - None
  - Recall Preset
  - Play Logo
  - Play Loop Logo
  - Tally Logo
  - Tally Preset
- **Audio 5.1 Down Mix**
  - L Source
  - R Source
  - C Source
  - LFE Source
  - Ls Source
  - Rs Source
  - Output Scaling Mode
  - Output Gain
  - LFE Mixing
  - Surround Phase
  - Down Mix Type
  - LR_lev
  - C_lev
  - Ls_lev_L
  - Rs_lev_L
  - Ls_lev_R
  - Rs_lev_R
- **Dolby Metadata Encoder**
  - Out Enable
  - Output Line
  - Output DID
  - Output SDID
  - Program Config
  - Method
- **Dolby Metadata Control (Program 1 & 2 to Program 7 & 8)**
  - Bitstream Mode
  - Center Mix Level
  - Surround Mix Level
  - Surround Mode
  - Dialnorm
  - Audio Prod. Info
  - Mix Level
  - Room Type
  - Copyright
  - Original Bitstream
  - Preferred Downmix
  - Lt/Rt Center Downmix
  - Lt/Rt Surround Downmix
  - Lo/Ro Center Downmix
  - Lo/Ro Surround Downmix
  - Dolby Surround EX
  - DC Filter
  - Lowpass Filter
  - LFE Lowpass Filter
  - Surround Phase Shift
  - Surround 3dB Attenuation
  - RF Overmod Protect
  - RF Mode
  - Line Mode
  - Audio Coding Mode
- **Up Mix Control**
  - Center Width
  - Surround Depth
  - Up Mix Surround Delay
  - Source Select
  - LFE Gain
  - Sound Direction Detect Rate