Figures

Tables

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REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Original Version – preliminary	Sept 99
0.2	Block diagram and description added Document revision table added	Oct 99
0.3	Updated feature list, misc formatting	Aug 99

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1. OVERVIEW

The 7700SID and 7700SID-AM decode PESA and NBC source identification information from standard definition serial digital 525/625 line signals and display the ID by "burning in" text on the output video. These cards also de-multiplex one group of audio, measure the 4 audio levels and display the peak program levels as vertical bar graphs on the output video. There is one serial digital and one composite analog output signal with this text and bar graph information.

The 7700SID-AM also has a two channel audio D to A converter for monitoring either pair of audio channels within the selected audio group.

Features 7700SID and 7700SID-AM:

- One SDI 525 or 625, 270 Mb/s component input.
- Decodes specified PESA SID (8 characters) or NBC VITC SID (5 or 9 characters), status (4 characters) and Time code into visible display.
- One SDI output and One Analog composite (PAL/NTSC) output; separately selectable between SID/Status/TC/text and SID/Status/TC/text+Audio Level.
- 4 channel Audio level Indicator is keyed as bar graphs in visible display.
- When not detecting SID, display a text message. Text message is programmable through the RS232 port.
- A comprehensive on screen display is available to configure the various features of the cards.
- The device can also be set up from external computer source which may then be disconnected. Setup functionality will be achieved on a module by module basis via the front accessible RS-232 port.
- Two GPI inputs to modify the display characteristics and/or display a text message. Message is programmable through the RS232 port.
- GPI/Os are on a high density DB15

Features 7700SID-AM only:

- One Pair Stereo balanced Analog Outputs of Embedded digital audio channel pairs ½ or ¾.
- Audio outputs can be set so both are a mono mix of the selected channel pair.
- Audio outputs are on a high density DB15.

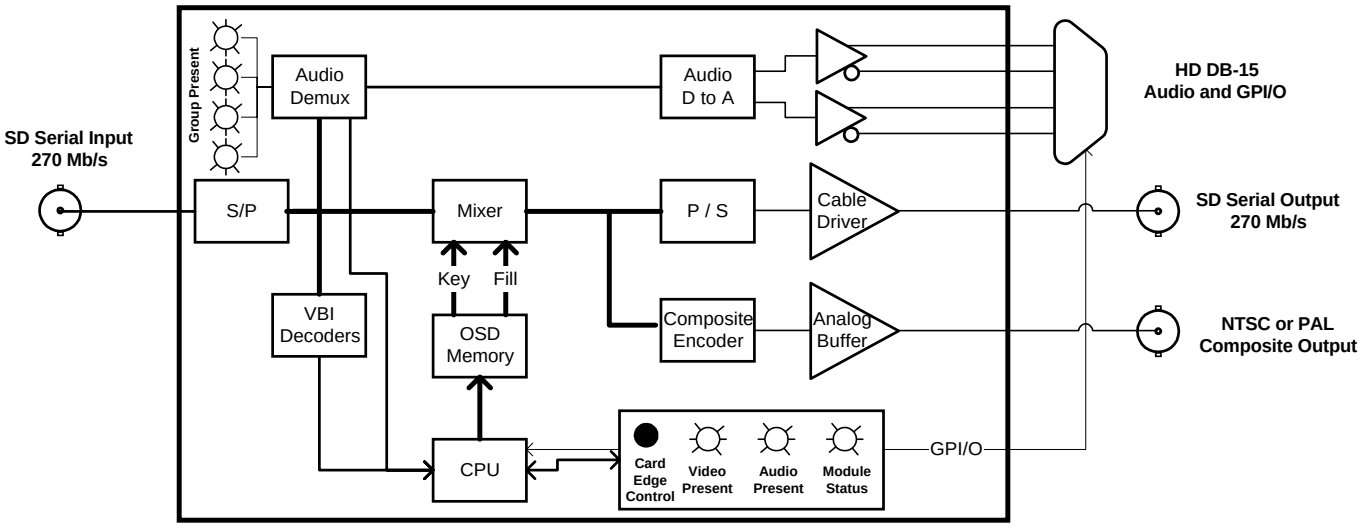

Figure 1: 7700SID and 7700SID-AM Block Diagrams

Serial digital video is converted to parallel and embedded audio, VITC and PESA Source ID are extracted from it. The audio is converted to analog (7700SID-AM only) and delivered out the high density DB-15 connector on the rear of the card. The audio is also read by the CPU and further processed to extract level information. The CPU creates the level bar graphs and writes them out to the On Screen Display (OSD) memory.

The CPU also reads raw VITC and PESA SID data and extracts time code and the source ID information. The time code and source ID message is also written to the OSD memory.

The hardware pulls out the OSD information and mixes (keys) the text and bar graphs onto the video stream. This video goes out digitally through a parallel to serial converter as well as analog through a composite encoder.

The CPU also gets push button and toggle switch commands from the card edge controls and draws extensive menus for configuring the operation of the card.

General purpose inputs are used for remote control of some features and general purpose outputs are generated under error conditions.

2. INSTALLATION

The 7700SID(-AM) modules comes with a companion rear plate that has 3 BNC connectors and one high density female DB-15. For information on mounting the rear plate and inserting the module into the frame see the 7700FR chapter section 3.

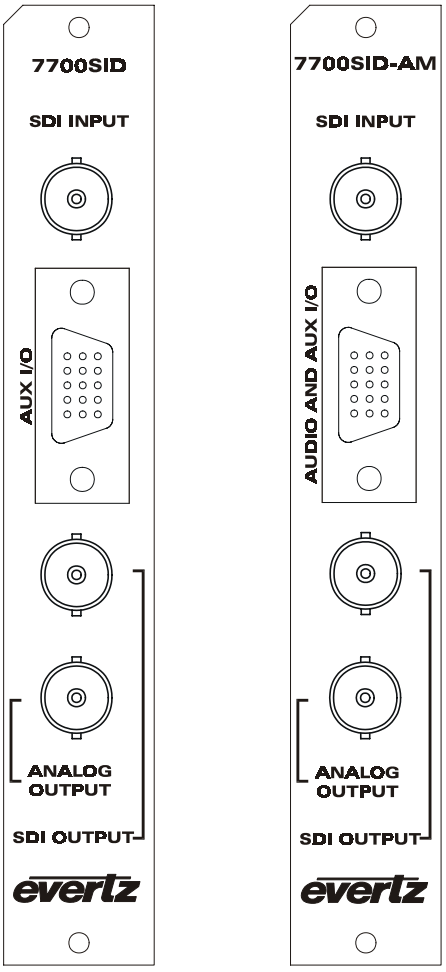

Figure 2: 7700SID and 7700SID-AM Rear Panels

7700SID and 7700SID-AM cards can be interchanged in the 7700 frame but there will not be any audio output from 7700SID cards.

2.1. VIDEO IN AND OUT

Connect a source of component 525 or 625 270 Mb/s video to the top BNC labeled SDI INPUT. Processed digital component video with text and audio bar graphs is available on the SDI OUTPUT BNC while processed composite analog video is available on the COMPOSITE OUTPUT BNC. If the card is not present or the power is off, there will be nothing on the outputs.

2.2. AUDIO AND AUX I/O

The following is the pinout of the female HD DB-15 connector. It is labeled "Aux I/O" on the 7700SID and "Audio and Aux I/O" on the 7700SID-AM:

DB-15	Name	Description
9	NC	
4	A1-	Audio channel 1 – (7700SID-AM only)
5	A1+	Audio channel 1 + (7700SID-AM only)
10	NC	
14	A2-	Audio channel 2 - (7700SID-AM only)
15	A2+	Audio channel 2 + (7700SID-AM only)
8	GPI1	General Purpose Input 1
12	GPI2	General Purpose Input 2
3	GPO1	General Purpose Output 1
13	GPO2	General Purpose Output 2
7	CTS	RS-232 (output)
2	Tx	RS-232 (output)
6	Rx	RS-232 (input)
11	RTS	RS-232 (input)
1	COMGND	Communications ground

Table 1: Audio and Aux I/O Pinout

Two channels of balanced analog audio are available through this connector. The balanced audio can be connected to male XLR connectors as follows (standard pin 2 +ve connection):

HD DB-15	XLR
Audio +	2
Audio -	3
Shell	1

Table 2: Audio to XLR Connection

The GPI's are active low with internal pull up resistors (4.7k Ohms) to +5V. To make an input active, lower the signal to near ground potential (i.e. connect to shell or signal COMGND ground). This can be done with a switch, relay, TTL drive, GPO output or other similar method.

The GPO's are active low with internal pull up (10k Ohm) resistors. When active, the output will go low and is able to sink up to 10mA. When in-active, the signal will go high (+5V). Do not draw more than 100μA from the output.

The COM port signals are standard RS-232 with hardware flow control. The directions of the signals are indicated in the above table.

3. SPECIFICATIONS

3.1. SERIAL DIGITAL INPUT

Standard: SMPTE 259M-C – 525 or 625 line component.
Connector: 1 BNC per IEC 169-8
Termination: 75 ohm
Equalization: Automatic 300m @ 270 Mb/s with Belden 8281 or equivalent cable
Return Loss: >15dB up to 270MHz
Embedded Audio: SMPTE 272M-A

3.2. SERIAL VIDEO OUTPUT

Number of Outputs: 1
Type: 525/625 line 270 Mbit/s SMPTE 259M–C
Connector: BNC per IEC 169-8
Signal Level: 800mV nominal
DC Offset: 0V ±0.5V
Rise and Fall Time: 470ps nominal
Overshoot: <10% of amplitude
Embedded Audio: Same signal as input: SMPTE272M-A

3.3. ANALOG VIDEO OUTPUT

Type: NTSC, SMPTE 170M or PAL, ITU624-4
Number of Outputs: 1
Connector: BNC per IEC 169-8
Signal Level: 1V nominal
DC Offset: 0V ±0.1V
Return Loss: >35dB up to 5MHz
Frequency Response: 0.8dB to 4 MHz
DC Offset: 0V +/- 100mV
Differential Phase: <0.9°(<0.6° typical)
Differential Gain: <0.9% (<0.5 % typical)
SNR: >56dB to 5 MHz (shallow ramp)

3.4. ANALOG AUDIO OUTPUT (7700SID-AM ONLY)

Number of Outputs: 2
Type: Balanced analog audio
Connector: Female High Density DB-15
Output Impedance: 33Ohm
Sampling Frequency: 48kHz
Signal Level: 0dB FS => 14dBu
NOTE: High impedance loads only (10 kOhms)
Not good for low impedance loads (i.e. 600 Ohm)
Frequency Response: 50Hz to 20kHz: +/- 0.20dB
SNR: >85dB (50Hz to 20 kHz)
THD+N: 65 dB @ 1kHz, 0 dB FS, typical

3.5. AUDIO BAR GRAPHS

Number of Graphs: 4 (1 group)
Ballistics: AES/EBU
Attack Time: 1 audio sample
Decay Time: 1.5s for 20dB
Signal Range: 60dB (0dB FS to –60dB FS)
Error Range: 0dB FS to –6dB FS
Warning Range: -6dB FS to –20dB FS

3.6. GENERAL PURPOSE IN/OUT

Number of Inputs: 2 (behavior is assigned via. OSD menu items)
Number of Outputs: 2 (GPO 1: Aux bit from VITC SID, GPO 2: Active when video or audio is absent)
Type: Opto-isolated, active low with internal pull-ups to +5V
Connector: Female High Density DB-15
Signal Level: +5V nominal

3.7. ELECTRICAL

Voltage: + 12VDC
Power: 9 Watts.
EMI/RFI: Complies with FCC Part 15, class A and EU EMC directive.

4. STATUS LED'S

4.1. MODULE 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 there is a fault in the module power supply or general error conditions exist.

SIGNAL PRESENT: This Green LED will be On when there is a valid signal present at the module SDI input.

AUDIO PRESENT: Active when selected Audio Group is detected by the De-embedder.

4.2. AUDIO STATUS LEDS

Four LEDs located on the lower end of the module (opposite the DIP switch) indicate which audio groups are present in the input video.

Audio Group LED	Colour	Audio Group Status
1	Off	No group 1 present on input video.
	Green	Group 1 present on input video.
2	Off	No group 2 present on input video.
	Green	Group 2 present on input video.
3	Off	No group 3 present on input video.
	Green	Group 3 present on input video.
4	Off	No group 4 present on input video.
	Green	Group 4 present on input video.

Table 3: Audio Group Status LEDs

5. CARD EDGE CONTROLS

The 7700SID(-AM) is equipped with an 8 position DIP switch to allow the user to control a couple key aspects of operation. The operation of the DIP switch can be enabled or disabled with an OSD control item (see Enable DIP Switches). When disabled, the state of the switches is ignored.

A toggle switch and push button allow card edge navigation of a set of on-screen-display menus used to configure the card.

5.1. DIP SWITCH CONTROLS

An eight position DIP switch is accessible from the front of the card. Switch 1 is on the left as viewed from the front of the card and the white switch finger is in the “On” position when it is down, closest to the printed circuit board.

The model 7700SID(-AM) de-embeds one group of audio (selected by switches 1 and 2) for calculating and displaying the audio level. In addition, the 7700SID-AM will output channels ½ or channels ¾ of the selected group.

DIP 1	DIP 2	Audio Group Selected
Off	Off	1
Off	On	2
On	Off	3
On	On	4

Table 4 Audio Group Select DIP Switch Settings

The 7700SID-AM uses switch 3 to select either channels 1 and 2 or 3 and 4. The 7700SID ignores this switch.

DIP 3	Audio Output Channels
Off	1 and 2
On	3 and 4

Table 5 Audio Output Select DIP Switch

The 7700SID-AM uses switch 4 to swap the two analog output channels. When active channels 1(3) and 2(4) will be swapped. This is equivalent to a left/right swap if the signals are stereo pairs. The 7700SID ignores this switch.

DIP 4	Audio Output Swap
Off	no swap
On	Swapped

Table 6 Audio Output Swap DIP Switch

The 7700SID-AM uses switch 5 to cause a mono mix of the two analog output channels. When active channels 1(3) and 2(4) will be summed and the level cut in half to preserve program levels. The 7700SID ignores this switch.

DIP 5	Audio Mono Mix
Off	no mix
On	Mixed

Table 7 Audio Output Mono Mix DIP Switch

The 7700SID and 7700SID-AM uses switch 6 to enable the audio bar graph "burn-in" on the SDI output.

DIP 6	SDI Bar Graph OSD
Off	no audio bar graphs
On	Audio bar graphs displayed

Table 8 SDI Bar Graph DIP Switch

The 7700SID and 7700SID-AM uses switch 7 to enable the audio bar graph "burn-in" on the composite output.

DIP 7	Composite Bar Graph Display
Off	no audio bar graphs
On	Audio bar graphs displayed

Table 9 Audio Level Display DIP Switch

The 7700SID and 7700SID-AM uses switch 8 to select the video input standard.

DIP 8	Video Standard
Off	525
On	625

Table 10 Video Standard DIP Switch

5.2. NAVIGATING THE ON SCREEN DISPLAY MENUS

The three position, return to center, toggle switch and momentary push button located on the front edge of the module is used to navigate the on screen display (OSD) setup menus and configure the cards various controls.

To enter the OSD menu system, press the push button once. This will bring you to the main setup menu where you can use the toggle switch to move up and down the list of available sub menus. An arrow moves up and down the left hand side of the menu items to indicate which item you are currently choosing. Once the arrow is on the desired item, press the push button to select the next menu.

On all menus, there are two extra selectable items; BACK and EXIT. Selecting BACK will take you to the previous menu (the one that was used to get into the menu) while EXIT will return the display to its normal operating mode. On the main menu, BACK and EXIT will both take you to the normal operating mode.

Once in a sub menu, there may be another menu layer, or there may be a list of parameters to adjust. If there is another set of menu choices, use the toggle switch to select the next choice with the same procedure as in the main menu.

To adjust any parameter, use the toggle switch to move up or down to the desired parameter and press the push button. The arrow will move to the end of the line (right hand side) indicating that you can now adjust the parameter. Using the toggle switch, adjust the parameter to its desired value. If the parameter is a numerical value, the number will increase if you lift the toggle switch and decrease if you push down on the toggle switch. It the parameter contains a list of choices, you can cycle through the list by pressing the toggle switch in either direction.

When you have stopped at the desired value, depress the push button. This will update the parameter with the selected value and move the arrow back to the left side of the parameter list. Continue selecting and adjusting other parameters or use the BACK or EXIT commands.

5.3. CHANGING TEXT FIELDS

Some of the controls of the OSD menu allow you to adjust a text based field. Editing a line of text can be a little tedious with a toggle switch and a push button, but it can be done with the following procedure:

1. Select the text to edit by hitting the push button when the menu item is selected. This will take you to a screen that has the label/name of the text being edited and a white box. The white box contains the text to change and is drawn to the maximum size of the text field.

2. Use the toggle switch to select/change the first character of the text message. Note the arrow under the character. This indicates which character you are currently changing with the toggle switch.

3. Once you have selected the character, press the push button. This will advance the arrow and take you to the next character to change.

4. There are two special characters to help you enter the text; a backspace character (left pointing arrow), and an end of line character (right pointing arrow):

   - **Left arrow:** If you have accidentally advanced to the next character and want to go back, select the left arrow with the toggle switch. When you press the push button, you will go back to the previous character. This will save you from having to complete the editing and re-edit it to change the mistake.
   - **Right arrow:** If you are done changing the text, and the new text is shorter than old text, you can terminate the line with a right pointing arrow. When you use the push button after selecting the right arrow, the editing session is over and you will return to the menu structure.

5. You are done editing when you reach the end of the field (maximum length), or you select the right arrow and press the push button.

5.4. CONFIGURATION MENUS

This section describes the operation of the On Screen Display (OSD) of user controllable parameters. The following tables are arranged in a tiered structure to indicate the path taken to reach the control. An underline indicates the factory default values.

5.4.1. Menu Structure

The following is a brief description of the first set of menus that appear when you enter the OSD screens. Selecting one of these items will traverse you down into the next screen level.

AUDIO	Configure the parameters associated with audio de-multiplexing and analog audio output.
VIDEO/SID	Controls for the operation of video processing and source ID decoding.
WINDOWS	Positioning controls for the various text windows.
COLORS	Configuration of the text and graphics intensity and color.
GPI/GPO	Configuration of the GPI/O's.
DIP SWITCHES	Configuration and state of the card edge DIP switches.
UTILITIES	Various debug and maintenance features.

5.5. AUDIO CONTROLS

5.5.1. Audio Group Selection

AUDIO GROUP SELECT 1, 2, 3, 4	Select which audio group to de-multiplex from the incoming video. Up to 4 groups of audio may be embedded in the incoming SDI video. This control selects which one of the four to monitor. There are four green LED's under the DIP switches to indicate which of the four groups are currently present on the input video. This menu item is not controllable if the DIP switches have been enabled in the "DIP SWITCHES" menu. It will however, report the current state of the control set by the DIP switches.

5.5.2. Audio Channel Selection

AUDIO
CHANNELS
1 and 2, 3 and 4

Select which audio channels to monitor from the incoming video.

There are two pairs of audio in each group in the incoming SDI video. This control selects which pair to monitor. The selected pair will be sent to the D to A converter (7700SID-AM only). On a 7700SID, you can set this value, but it will not affect anything until an audio D to A converter card is installed.

This menu item is not controllable if the DIP switches have been enabled in the "DIP SWITCHES" menu. It will, however, report the current state of the control set by the DIP switches.

5.5.3. Audio Channel Swap

AUDIO
CH1/CH2 SWAP
NO, YES

Swap the two channels going to the D to A.

This control, if set to YES, routes channel 1 (3 if monitoring ¾) to the right output and channel 2 (4 if monitoring ¾) to the left output. This feature is available on the 7700SID-AM only. On a 7700SID, you can set this value, but it will not affect anything until an audio D to A converter card is installed.

This menu item is not controllable if the DIP switches have been enabled in the "DIP SWITCHES" menu. It will, however, report the current state of the control set by the DIP switches.

5.5.4. Stereo/Mono Mode Channels ½

AUDIO
OUTPUT MODE
STEREO MONO

Add the left and right channels going to the D to A for mono operation.

This control, if set to MONO, adds channel 1 (3 if monitoring ¾) to channel 2 (4 if monitoring ¾), reduces the summed amplitude by 2 (to keep consistent operating levels), and routes this mono signal to both left and right outputs. This feature is available on the 7700SID-AM only. On a 7700SID, you can set this value, but it will not affect anything until an audio D to A converter card is installed.

This menu item is not controllable if the DIP switches have been enabled in the "DIP SWITCHES" menu. It will, however, report the current state of the control set by the DIP switches.

5.5.5. Peak Analog Audio Level

AUDIO	
PEAK ANALOG LEVEL	
0 to 24dBu 14dBu	

1 dB increment controls of audio levels when 0dB FS is input.

This control sets BOTH of the audio outputs to the desired operating level. The value corresponds to the output level when a 0dB FS signal is applied. To adjust the levels independently, or to fine tune the levels, use the FINE controls.

This feature is available on the 7700SID-AM only. On a 7700SID, you can set this value, but it will not affect anything until an audio D to A converter card is installed.

5.5.6. Fine Level Channel Adjust: CH1

AUDIO	
FINE CH1 ADJUST	
-128 to 127 0	

Left channel level control

The left channel output level is adjusted with this control. It has a range of approximately +/- 0.5 dB.

On a 7700SID, you can set this value, but it will not affect anything until an audio D to A converter card is installed.

5.5.7. Fine Level Channel Adjust: CH2

AUDIO	
FINE CH1 ADJUST	
-128 to 127 0	

Right channel level control

The right channel output level is adjusted with this control. It has a range of approximately +/- 0.5 dB.

On a 7700SID, you can set this value, but it will not affect anything until an audio D to A converter card is installed.

5.6. VIDEO AND SID CONTROLS

5.6.1. Video Standard/Mode

VIDEO/SID	
VIDEO STANDARD	
	525 625 AUTO

Select the video standard or auto mode.

The video line standards is selected with this control. If set to AUTO mode, the card will adjust operation as needed for the incoming standard.

This menu item is not controllable if the DIP switches have been enabled in the "DIP SWITCHES" menu. It will however, report the current state of the control set by the DIP switches. Auto mode is not available if the DIP switches are enabled.

5.6.2. SDI Output Keyer

WINDOWS	
SDI OUTPUT KEYER	
	TEXT, TEXT + AUDIO

On/off control of text and audio bar graph information on the SDI output.

The information on the SDI output can be configured with this control. Either text or text and audio bar graphs may displayed on the SDI output.

5.6.3. The 7760AVM Does not have both of these on/off controls! Only one output. Composite Output Keyer

WINDOWS	
COMPOSITE OUTPUT KEYER	
	TEXT, TEXT + AUDIO

On/off control of text and audio bar graph information on the composite output.

The information on the composite output can be configured with this control. Either text or text and audio bar graphs may displayed on the SDI output.

5.6.4. NTSC Setup Pedestal

VIDEO/SID	
NTSC SETUP PEDESTAL	
	ON, OFF

Turn the 7.5 IRE pedestal on or off when operating in 525.

The setup pedestal should not be present when operating in Japan. This control allows it to be removed.

5.6.5. Composite Monochrome Control

- VIDEO/SID
  - COMPOSITE DISPLAY MODE
    - COLOR
    - B/W

The color encoding may be turned off on the composite analog output.

If monochrome operation is desired on the composite output, color may be turned off with this control.

5.6.6. 525 VITC SID Line Number

- VIDEO/SID
  - 525 VITC LINE
    - 10 to 32
    - TBD

Select the line number to decode the VITC SID.

With this control, set the VBI line number that contains the VITC SID information when operating in 525 video mode. If the wrong line number is set, no time code or SID will be decoded.

5.6.7. 625 VITC SID Line Number

- VIDEO/SID
  - 625 VITC LINE
    - 6 to 32
    - TBD

Select the line number to decode the VITC SID.

With this control, set the VBI line number that contains the VITC SID information when operating in 625 video mode. If the wrong line number is set, no time code or SID will be decoded.

5.6.8. 525 PESA SID Line Number

- VIDEO/SID
  - 525 PESA LINE
    - 10 to 21
    - TBD

Select the line number to decode the PESA SID.

With this control, set the VBI line number that contains the PESA SID information when operating in 525 video mode. If the wrong line number is set, no SID will be decoded.

5.6.9. 625 PESA SID Line Number

- VIDEO/SID
  - 625 PESA LINE
    - 7 to 22
    - TBD

Select the line number to decode the PESA SID.

With this control, set the VBI line number that contains the PESA SID information when operating in 625 video mode. If the wrong line number is set, no SID will be decoded.

5.7. OSD WINDOW CONTROLS

5.7.1. Missing/Simulated SID Message

CONTROLS
MISSING SID MSG.
NO SID

Message to display when there is no SID present.

If enabled (with the following control), this message can be displayed if there is neither VITC SID nor PESA SID present on the 7700SID's input video on the lines set by the "PESA SID Line Number" and the "VITC SID Line Number" controls. The text of the message can be changed. See the section on “Changing text fields”.

5.7.2. Missing/Simulated SID Mode

CONTROLS
MISSING SID MODE
ENABLE, DISABLE

On/off control of missing SID mode

If enabled, the above message can be displayed if there is neither VITC SID nor PESA SID present on the 7700SID's input video on the lines set by the "PESA SID Line Number" and the "VITC SID Line Number" controls. If disabled, the SID window will disappear when there is neither SID is present.

5.7.3. SID Window H Position

WINDOWS
SID WINDOW H
0 to 39 22

Starting column for the SID window.

This is the character position of the first character in the SID display window counted from the left side of the screen.

When you select this parameter, the screen text will disappear and a box of the correct size will appear. Move it around to the desired position with the toggle switch. Press the push button when done.

Warning, if you position the window near the audio bar graphs, you will loose some text if you are in “TEXT” only mode (see “SDI Output” and “Composite Output” above).

5.7.4. SID Window V Position

WINDOWS
SID WINDOW V
0 to 19
4

Starting row for the SID window.

This is the row of the SID display window counted from the top of the screen.

When you select this parameter, the screen text will disappear and a box of the correct size will appear. Move it around to the desired position with the toggle switch. Press the push button when done.

5.7.5. Time Code Window Enable

WINDOWS
TIME CODE WINDOW
ENABLE, DISABLE

On/ off control of the time code window.

The time code window can be turned off/on using this control.

5.7.6. Time Code Window H Position

WINDOWS
TC WINDOW H
0 to 39
10

Starting column for the time code window.

This is the character position of the first character in the time code display window counted from the left side of the screen.

When you select this parameter, the screen text will disappear and a box of the correct size will appear. Move it around to the desired position with the toggle switch. Press the push button when done.

Warning, if you position the window near the audio bar graphs, you will loose some text if you are in “TEXT” only mode (see “SDI Output” and “Composite Output” above).

5.7.7. Time Code Window V Position

WINDOWS	
TC WIDNOW V	
0 to 19 11	

Starting row for the time code window.

This is the row of the time code display window counted from the top of the screen.

When you select this parameter, the screen text will disappear and a box of the correct size will appear. Move it around to the desired position with the toggle switch. Press the push button when done.

5.7.8. Status Window Enable

WINDOWS	
STATUS WINDOW	
ENABLE, DISABLE	

On/ off control of the status window.

The status window can be turned on/off using this control.

5.7.9. Status Window H Position

WINDOWS	
STATUS WINDOW H	
0 to 39 22	

Starting column for the status window.

This is the character position of the first character in the status display window counted from the left side of the screen.

When you select this parameter, the screen text will disappear and a box of the correct size will appear. Move it around to the desired position with the toggle switch. Press the push button when done.

Warning, if you position the window near the audio bar graphs, you will loose some text if you are in “TEXT” only mode (see “SDI Output” and “Composite Output” above).

5.7.10. Status Window V Position

WINDOWS
STATUS WINDOW V
0 to 19
11

Starting row for the status window.

This is the row of the status display window counted from the top of the screen.

When you select this parameter, the screen text will disappear and a box of the correct size will appear. Move it around to the desired position with the toggle switch. Press the push button when done.

5.7.11. GPI #1 Message Window H Position

WINDOWS
GPI#1 WINDOW H
0 to 39
10

Starting column for the GPI #1 message window.

This is the character position of the first character in the message associated with GPI #1 counted from the left side of the screen.

When you select this parameter, the screen text will disappear and a box of the correct size will appear. Move it around to the desired position with the toggle switch. Press the push button when done.

Warning, if you position the window near the audio bar graphs, you will loose some text if you are in “TEXT” only mode (see “SDI Output” and “Composite Output” above).

5.7.12. GPI #1 Message Window V Position

WINDOWS
GPI#1 WINDOW V
0 to 19
0

Starting row for the GPI#1 message window.

This is the row of the message associated with GPI #1 counted from the top of the screen.

When you select this parameter, the screen text will disappear and a box of the correct size will appear. Move it around to the desired position with the toggle switch. Press the push button when done.

5.7.13. GPI #2 Message Window H Position

WINDOWS	
GPI#2 WINDOW H	
	0 to 39 20

Starting column for the GPI #2 message window.

This is the character position of the first character in the message associated with GPI #2 counted from the left side of the screen.

When you select this parameter, the screen text will disappear and a box of the correct size will appear. Move it around to the desired position with the toggle switch. Press the push button when done.

Warning, if you position the window near the audio bar graphs, you will loose some text if you are in "TEXT" only mode (see "SDI Output" and "Composite Output" above).

5.7.14. GPI #2 Message Window V Position

WINDOWS	
GPI#2 WINDOW V	
	0 to 19 0

Starting row for the GPI #2 message window.

This is the row of the message associated with GPI #2 counted from the top of the screen.

When you select this parameter, the screen text will disappear and a box of the correct size will appear. Move it around to the desired position with the toggle switch. Press the push button when done.

5.8. COLOR SET-UP CONTROLS

The colors of the font and audio bar graphs are controlled by this set of controls. The luminance values adjust, not only, their associated grey levels but also the luminance levels of a color. The following table shows the relationship between the control and what it affects:

Luminance control	**Controlled text feature**	**Controlled bar graph feature**
White	Text font	Yellow pedestal
Bar Graph Border	Bar graph text and border	Green pedestal

The numbers used here represent decimal 8 bit values of the 4:2:2 video standard. For instance peak white is represented by 235 (EB hex) which is ¼ of the 10 bit number of 940 (3AC hex).

When the luminance or color level control is selected, you are taken to a screen that allows you to observe the changes that you are making.

5.8.1. Text Brightness

COLORS	
TEXT BRIGHTNESS	Adjust white level of the text
120 to 235 160	This control adjusts the luminance level of the white areas in the font. This value applies to all white in the whole font. It also adjusts the luminance pedestal of the warning (yellow) color.

5.8.2. Bar Graph Border Brightness

COLORS	
BAR GRAPH BORDER	Adjust grey level around bar graphs
80 to 235 111	This control adjusts the luminance level of the grey areas in the bar graphs. It also adjusts the luminance pedestal of the OK (green) color. The default is the luminance pedestal needed for the green of 75% color bars.

5.8.3. OK Color Saturation

COLORS	
OK	Adjust the saturation level of the "OK" (green) color
-128 to 127 -82	This control adjusts the saturation of the “OK” areas in the bar graphs. This is the region below the program reference level. The value represents the Cb component of the green color. The default is the green color of 75% color bars. Note that this control only adjusts the saturation (richness) and not the luminance (brightness) of the color. The brightness is controlled by the “Grey 1 Level” control. Also, a grey is achieved by adjusting the value to zero and a magenta color by adjusting the value to a positive number.

5.8.4. Warning Color Saturation

COLORS
WARNING
-128 to 127 <u>-82</u>

Adjust the saturation level of the "warning" (yellow) color

This control adjusts the saturation of the “warning” areas of the bar graphs. This yellow is used to color the audio bar graphs region above the program reference level and below the "error" region. The value represents the Cb component of the yellow color. The default is the value of the yellow bar of 75% color bars.

Note that this control only adjusts the saturation and not the luminance (brightness) of the color. The brightness is controlled by the “White Level” control.

Also, a grey is achieved by adjusting the value to zero and a blue color by adjusting the value to a positive number.

5.8.5. Error Color Saturation

COLORS
ERROR
-128 to 127 <u>84</u>

Adjust the saturation level of the "error" (red) color

This control adjusts the saturation of the “error” areas of the bar graphs. The red color is used to color the audio bar graphs region where levels are approaching numerical saturation (0dB FS). The value represents the Cr component of the red color. The default is the value of the red bar of 75% color bars.

Note that this only adjusts the saturation and not the luminance (brightness) of the color. The brightness is controlled by the “Grey 2 level” control.

Also, a grey is achieved by adjusting the value to zero and a cyan color by adjusting the value to a negative number.

5.9. GPI PROGRAMMING

Selecting either “Program GPI” menu items, takes you to a screen dedicated to configuring the actions associated with that GPI.

Any or all of the following features may be enabled. Note, however, that you can not blink the SID display if it enabled to go off when the GPI goes active.

5.9.1. Message Associated with GPI

PROGRAM GPI MESSAGE GPI#1: RECORD GPI#2: REPLAY	Message to display when GPI goes active
	This is the message associated with the associated GPI. The text of the message can be changed. See the section on “Changing text fields”.

5.9.2. Enable Message Window Associated with GPI

PROGRAM GPI MESSAGE WINDOW ENABLE, DISABLE	Enable message window when GPI goes active
	If enabled, the above message will be displayed when the associated GPI goes active.

5.9.3. Blink SID or Message Window with Active GPI

PROGRAM GPI BLINK MSG/SID DISABLE, ENABLE	Enable message or SID blinking when GPI goes active
	If the above GPI message is enabled to go on, it can also be blinked when the GPI goes active. If the above message is NOT enabled to go on, the SID window will be blinked (if there is a SID message to display). Also, the “Missing or simulated SID” message will blink if that mode is enabled.

5.9.4. Turn Off Text with Active GPI

PROGRAM GPI TEXT OFF DISABLE, ENABLE	Turn off text when GPI goes active
	If this "all text off" feature is enabled, all OSD text, EXCEPT the GPI message windows, will be turned off when the GPI goes active. If any of the GPI messages are enabled to come on, the message will come on as the other text goes off. This control will act on both the SDI output and the composite output.

5.10. DIP SWITCH CONFIGUATION

5.10.1. Enable DIP Switches

DIP SWITCHES	
DIP SWITCH	Enable or disable DIP switch operation
ENABLE, <u>DISABLE</u>	This control allows the engineer to disable the DIP switch operation in situations where it is not desirable to have accidental changes of the controls. When the DIP switches are enabled, the corresponding menu items will not have control over the item but will reflect the state of the control set by the switch.

5.10.2. DIP Switches Legend

DIP SWITCHES	
DIP SWITCH LEGEND	Go to DIP switch legend screen
	This screen allows the user to see what the function of the different DIP switches are and their current state. If the DIP switches have been disabled, a message will be present to indicate such. Once in this screen, pressing the push button will take you back to the DIP Switch menu.

5.11. UTILITIES

5.11.1. Debug

UTILITIES	
DEBUG	A page of debug messages and status indicators
STANDARD DETECTED 525, 625	The line standard detected by the hardware. This is useful if the user has selected one standard and wants to know if a different one is present on the input.
AUDIO GROUPS 1, 2, 3, 4	The hardware can detect which groups of audio are present on the incoming video.
AUDIO CHANNELS 1, 2, 3, 4	The hardware can detect which audio channels are present in the selected group (see: AUDIO GROUP SELECTION) of the incoming video. This list will grow as more useful status and debug information is available.

5.11.2. Upgrade

UTILITIES	
UPGRADE	
YES, <u>CANCEL</u>	

Command to initiate an upgrade of the application software

In addition to the software upgrade support detailed in this manual (See the *Upgrading Firmware* section of this manual for more information), you can initiate an upgrade with this command. This will allow you upgrade the software without unplugging the card and changing the upgrade jumper.

After selecting the upgrade operation, you must change the command to “yes” and press the push button before the upgrade can take place.

After the upgrade has finished, the unit will automatically start and run in normal operating mode.

5.11.3. Factory Reset

UTILITIES	
FACTORY RESET	
YES, <u>CANCEL</u>	

Command to restore all controls back to their factory defaults

After selecting the reset operation, you must change the command to “yes” and press the push button before the command takes place. After the command, all parameters will be set to their factory default.

5.11.4. Show Font (Debug mode only)

6. JUMPERS

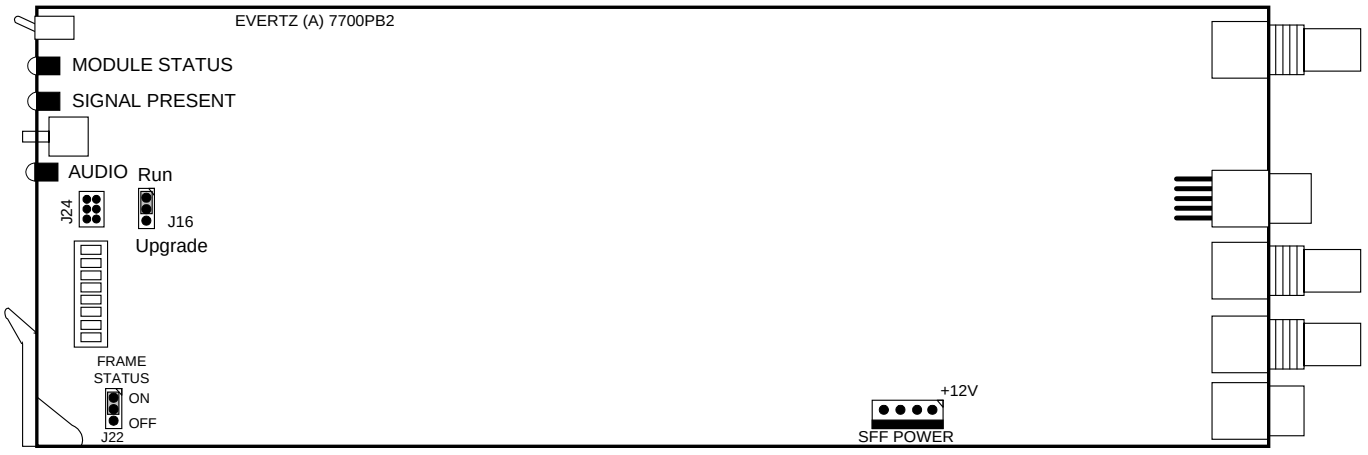

Figure 3 : Location of Jumpers on Rev A 7700PB2 Boards

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

FRAME STATUS

The FRAME STATUS jumper J22 located at the front of the module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR frame's global status bus. (This feature is not available on Rev 1 versions of the board)

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. (Default) When this jumper is removed, local faults on this module will not be monitored. For convenience you may re-install the jumper so that only one side is connected.

6.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE

The UPGRADE jumper J16 located at the front of the module is used when firmware upgrades are being done to the module. For normal operation it should be installed in the *RUN* position. On Rev 1 versions of this board the upgrade jumper is located in another location. See the *Upgrading Firmware* section of this manual for more information.

To upgrade the firmware in the module unit pull it out of the frame. Move Jumper J16 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto header J24 at the card edge. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* section of this manual. Once the upgrade is completed, remove the module from the frame, move J16 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.