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REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary Version	Sep 03
1.0	First release with *Vista*LINK® support, add video standard DIP switches	Oct 03
1.1	Add Genlock specifications, updated jitter specs	Oct 03
1.2	Updated delay and jitter specs	Feb 04
1.3	Added 7743DLY-HD module	Mar 04
1.3.1	Fixed Incorrect DIP switch documentation for 7743DLY-HD (Table 6-2) Fixed MODULE OK LED description	Jul 04
1.4	Updated Video Genlock Standard switch settings and Monitored Parameters	May 08
1.5	Updated delay adjustment descriptions	Aug 08

1. OVERVIEW

The 7740DLY-HD series modules are full function HD Video Delay modules designed for applications such as: satellite uplink, signal re-entry on master control inputs, at cable headends, mobile vehicle outputs, broadcast transmitter inputs, virtual sets and matching delays caused by multi-channel audio compression.

There are two models available with different amounts of delay possible. The 7743DLY-HD also can act as a delay for standard definition SMPTE 259M video. Both versions will be referred to as the 7740DLY-HD throughout this manual except where there are specific differences in the products.

Model	Video Standard	Delay Range
7742DLY-HD (Discontinued)	HD SDI (SMPTE 292M)	37 μs up to 1.6 seconds
7743DLY-HD	SDI (SMPTE 259M)	65 μs up to 16.5 seconds
	HD SDI (SMPTE 292M)	37 μs up to 3.3 seconds

> **As of July 2004 the 7742DLY-HD has been discontinued, but the documentation is included here for customers with existing units.**

The 7740DLY-HD modules will delay all VBI and Ancillary data including embedded audio along with the video. The delay can be set in frames, lines and samples or in seconds.

With the broadcast environment in mind, the modules feature bypass relay protection to one output.
The 7740DLY-HD modules are housed in a 3RU frame that will hold up to seven 7740DLY-HD series modules or a 1RU frame that will hold up to 3 modules.

Features:
- Full signal delay capability including VBI and ANC DATA for SMPTE 292M (1.5Gb/s) signals
- 7743DLY-HD also supports full signal delay capability including VBI for SMPTE 259M (270Mb/s) signals
- Delay programmable in video units (frames, lines, and samples) or as time units (seconds)
- Auto senses video standard
- Bypass relay for program path protection on power loss
- Card edge controls operate on screen menu system to program delay settings
- *Vista*LINK®-enabled offering remote control and configuration capabilities via SNMP using *Vista*LINK® Pro or 9000NCP Network Control Panel. *Vista*LINK® is available when modules are used with the 3RU 7700FR-C frame and a 7700FC *Vista*LINK® Frame Controller module in slot 1 of the frame
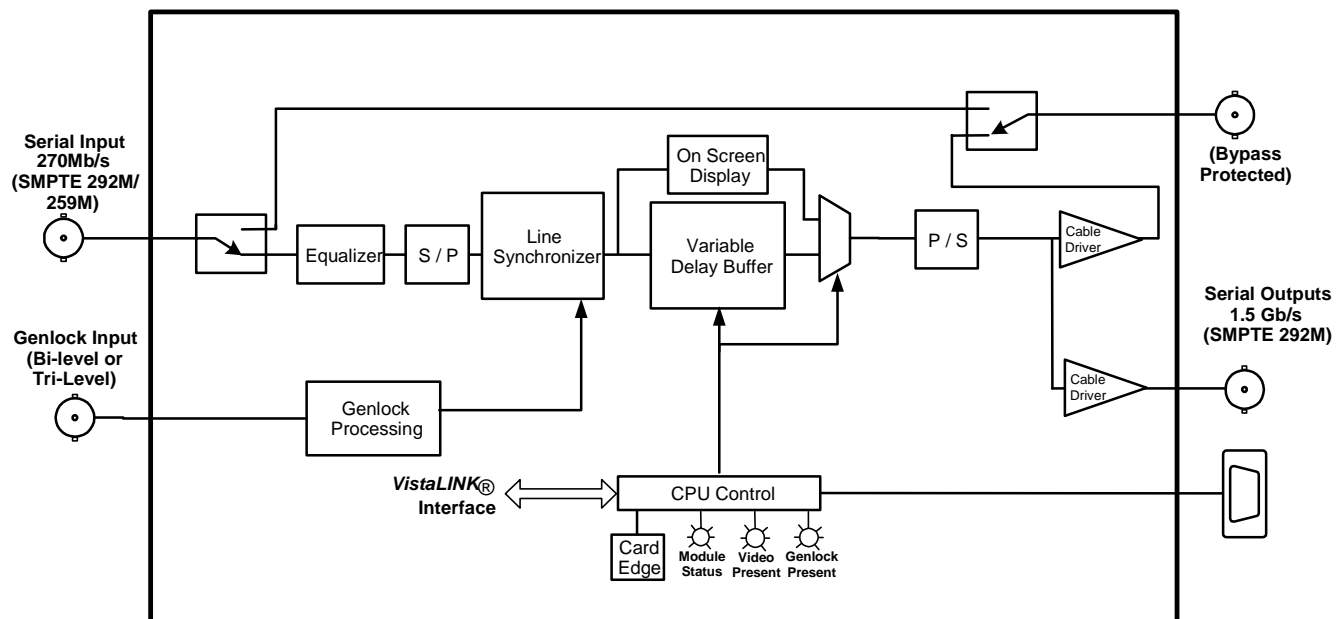
Figure 1-1: 7740DLY-HD Series Block Diagram

2.   INSTALLATION

The 7740DLY-HD series modules come with a companion rear plate that has 4 BNC connectors and a 25 pin D connector and occupy two slots in the frame. For information on mounting the rear plate and inserting the module into the frame see the 7700FR chapter section 3.
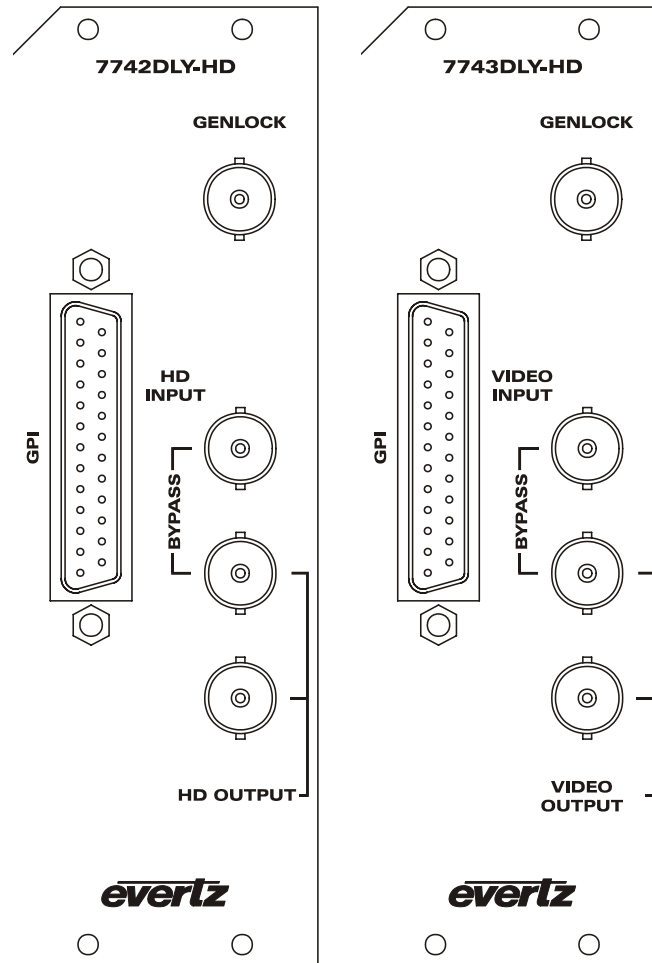
Figure 2-1: 7740DLY-HD Series Rear Panels

2.1.   VIDEO CONNECTIONS

HD INPUT (VIDEO INPUT): Input BNC connector for 10-bit serial digital video signals. The 7742DLY-HD supports signals compatible with the SMPTE 292M (1.5 Gb/s) standard. The 7743DLY-HD supports signals compatible with the SMPTE 259M (270 Mb/s) and SMPTE 292M (1.5 Gb/s) standards.

HDI OUTPUT (VIDEO OUTPUT): Two BNC serial digital video outputs are provided. Output 1 is protected by a bypass relay, which will activate in the event of power loss to the module. The remaining output is not bypass protected.

2.2. GENLOCK REFERENCE

GENLOCK: This BNC is used to connect a video or tri-level sync reference. The genlock signal may be NTSC or PAL colour black, or tri-level sync and is auto-detected by the module. The genlock standard must be set using the DIP switches 1 to 3. (See section 5.1) Jumper J9 on the 7700CC sub-module selects whether the reference input is terminated to 75 ohms or high impedance (default). (See section 8.3). The output video can be timed with respect to the genlock video using the *Reference Phase* menu items. (See section 7.2.1) When no Genlock is provided, the output video is timed with respect to the input video. In order to meet the jitter tolerance specifications outlined in section 3.2 a genlock reference must be applied.

2.3. GENERAL PURPOSE INPUTS

A 25 pin D connector labeled GPI contains 8 GPI inputs. The connector pinout is shown in Table 2-1.

Pin #	Name	Description
1	-	Not used
2	-	Not used
3	GPI 0	Bypass Relay Enable
4	GPI 1	Future use
5	-	Not used
6	-	Not used
7	-	Not used
8	-	Not used
9	-	Not used
10	-	Not used
11	GPI 2	Future use
12	GPI 3	Future use
13	GPI 4	Future use
14	GPI 6	Future use
15	GPI 7	Future use
16	-	Not used
17	-	Not used
18	-	Not used
19	-	Not used
20	-	Not used
21	GND	Ground
22	-	Not used
23	-	Not used
24	-	Not used
25	GPI 5	Future use
	Shell	Ground

Table 2-1: GPI Connector Pin Definitions

3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUT

3.1.1. High Definition Serial Digital Video

Standard: SMPTE 292M (1.5 Gb/s)
Connector: BNC per IEC 60169-8 Amendment 2
Equalization: Automatic to 75m @ 1.5 Gb/s with Belden 1694 or equivalent cable
Return Loss: > 15 dB up to 1.0 Gb/s
> 10 dB up to 1.5 Gb/s (with relay)

3.1.2. Standard Definition Serial Digital Video (model 7743DLY-HD only)

Standard: SMPTE 259M (270 Mb/s)
Connector: BNC per IEC 60169-8 Amendment 2
Equalization: Automatic
Max. Cable Length: Automatic to 300m @ 270 Mb/s with Belden 8281 or equivalent cable
Return Loss: > 15 dB up to 270 Mb/s

3.2. SERIAL VIDEO OUTPUTS

3.2.1. HD Serial Digital Video

Number of Outputs: 1 with relay bypass, 1 additional output
Connector: BNC per IEC 60169-8 Amendment 2
Signal Level: 800mV nominal
DC Offset: 0V ±0.5V
Rise and Fall Time: 200ps nominal
Overshoot: <10% of amplitude
Return Loss: > 15 dB up to 1.5 Gb/s
Wide Band Jitter: < 0.2 UI

3.2.2. Standard Definition Serial Digital Video (model 7743DLY-HD only)

Number of Outputs: 1 with relay bypass, 3 additional outputs
Connector: BNC per IEC 60169-8 Amendment 2
Signal Level: 800mV nominal
DC Offset: 0V ±0.5V
Rise and Fall Time: 740ps nominal
Overshoot: <10% of amplitude
Return Loss: > 15 dB up to 540 Mb/s
Wide Band Jitter: < 0.2 UI

3.3. GENLOCK INPUT

Type:	HD Tri-level Sync, (See Table 5-2)
	NTSC or PAL Colour Black 1 V p-p, or
	Composite bi-level sync (525i/59.94 or 625i/50) 300 mV
Connector:	BNC per IEC 60169-8 Amendment 2
Termination:	75 ohm (jumper selectable)

3.4. FUNCTIONAL

Minimum Delay:
7742DLY-HD:	37.7 μsec (2800 samples)
7743DLY-HD:	65.5 μsec (1770 samples) for standard definition,
	37.7 μsec (2800 samples) for high definition

Maximum Delay:
7742DLY-HD:	approx. 1.67 sec
7743DLY-HD:	approx. 16.5 sec for standard definition
	approx. 3.2 sec for high definition

3.5. ELECTRICAL

Voltage:	+ 12VDC
Power:	20 watts
EMI/RFI:	Complies with FCC regulations for class A devices
	Complies with EU EMC directive

3.6. PHYSICAL

7700 frame mounting:
  Number of slots: 2

7701 frame mounting:
  Number of slots: 1

Stand Alone Enclosure:
Dimensions:	14 " L x 4.5 " W x 1.9 " H
	(355 mm L x 114 mm W x 48 mm H)
Weight:	approx. 1.5 lbs. (0.7 Kg)

4. STATUS LEDS

The 7740DLY-HD has 2 LED Status indicators on the main circuit board and 2 indicators on the sub-module to show operational status of the card at a glance. Figure 8-1 and Figure 8-2 show the location of the LEDs and card edge controls.

Two large LEDS on the front of the main board indicate the general health of the module:

LOCAL FAULT: This Red LED indicates poor module health and will be On during the absence of a valid input signal or if a local input power fault exists (i.e.: a blown fuse). The LOCAL FAULT indication can also be reported to the frame through the FRAME STATUS jumper.

MODULE OK: This Green LED indicates good module health. It will be On when the board power is good and the module is running normally.

Two LEDs on the sub-module (7700CC) indicate the presence of the video input and genlock signals.

VIDEO PRESENT: This Green LED will be ON when there is a valid video signal present at the module input.

GENLOCK: This Green LED will be ON when there is a signal present at the module genlock input. This LED does not indicate that a correct signal appropriate for the current video format is present. Refer to Table 5-2 for valid Video format and input Genlock combinations.

5.   CARD EDGE CONTROLS- 7742DLY-HD

The 7742DLY-HD module is equipped with a 4 position DIP switch on the top edge of the card to allow the user to select various functions. All positions are assigned sequentially such that the DIP switch 1 is located farthest from the front of the card. Table 5-1 gives an overview of the DIP switch functions for the 7742DLY-HD. Sections 5.1 and 5.2 describe the assigned DIP switch functions. The On (closed) position is down, or closest to the printed circuit board. The Off (open) position is up, or farthest from the printed circuit board. There is also a toggle switch and pushbutton which are used to navigate the on screen menu. (See section 7)

DIP Switch	Function
1	Video / Genlock Standard
2	
3	
4	*Vista*LINK® Control Enable

Table 5-1: Overview of DIP Switch Functions – 7742DLY-HD

5.1.   SELECTING THE VIDEO AND GENLOCK STANDARD – 7742DLY-HD

DIP switches 1, 2 and 3 are used to select the video and genlock standard when there is a genlock signal applied (as shown in Table 5-2). When there is no genlock signal connected, the 7740DLY-HD will auto-detect the video standard in use.

DIP 1	DIP 2	DIP 3	Video Format	Valid Genlock Types	
				Bi-Level	**Tri-Level**
Off	Off	Off	1080i/59.94 1080p/29.97 1080p/29.97sF 1035i/59.94	525/59.94	1080i/59.94 1080p/29.97 1080p/29.97sF 1035i/59.94
Off	Off	On	1080i/60 1080p/30 1080p/30sF 1035i/60	525/60	1080i/60 1080p/30 1080p/30sF 1035i/60
Off	On	Off	720p/59.94	525/59.94	720p/59.94
Off	On	On	720p/60	525/60	720p/60
On	Off	Off	1080i/50 1080p/25 1080p/25sF	625/50	1080i/50 1080p/25 1080p/25sF
On	Off	On	1080p/23.98 1080p/23.98sF		1080p/23.98 1080p/23.98sF
On	On	Off	1080p/24 1080p/24sF		1080p/24 1080p/24sF
On	On	On	Future use		

Table 5-2: Video and Genlock Standard Switch Settings – 7742DLY-HD

5.2. SELECTING WHETHER MODULE WILL BE CONTROLLED FROM THE LOCAL CONTROLS OR THROUGH THE *VISTA*LINK® INTERFACE – 7742DLY-HD

DIP switch 4 selects whether the module will be controlled from the local user controls or through the *Vista*LINK® interface.

DIP 4	*VISTA*LINK CONTROL
Off	The card functions are controlled through the local menus
On	The card functions are controlled through the *Vista*LINK® interface. (See section 9)

Table 5-3: *Vista*LINK® Control Switch Settings – 7742DLY-HD

6.   CARD EDGE CONTROLS – 7743DLY-HD

The 7743DLY-HD module is equipped with a 4 position DIP switch on the top edge of the card to allow the user to select various functions. Table 6-1 gives an overview of the DIP switch functions for the 7742DLY-HD. All positions are assigned sequentially such that the DIP switch 1 is located farthest from the front of the card. Sections 6.1 and 6.2 describe the assigned DIP switch functions. The On (closed) position is down, or closest to the printed circuit board. The Off (open) position is up, or farthest from the printed circuit board. There is also a toggle switch and pushbutton which are used to navigate the on screen menu. (See section 7)

DIP Switch	Function
1	
2	Video / Genlock Standard &
3	VistaLINK$_®$ Control Enable
4	

Table 6-1: Overview of DIP Switch Functions – 7743DLY-HD

6.1.   SELECTING THE VIDEO AND GENLOCK STANDARD – 7743DLY-HD

DIP switches 1, 2, 3 and 4 are used to select the video and genlock standard when there is a genlock signal applied (as shown in Table 5-2). When there is no genlock signal connected, the 7743DLY-HD will auto-detect the video standard in use.

DIP 1	DIP 2	DIP 3	DIP 4	Video Format	Valid Genlock Types	
					Bi-Level	Tri-Level
Off	Off	Off	Off	1080i/59.94 1080p/29.97 1080p/29.97sF 1035i/59.94	525i/59.94	1080i/59.94 1080p/29.97 1080p/29.97sF 1035i/59.94
Off	Off	Off	On	1080i/60 1080p/30 1080p/30sF 1035i/60	525i/60	1080i/60 1080p/30 1080p/30sF 1035i/60
Off	Off	On	Off	720p/59.94	525i/59.94	720p/59.94
Off	Off	On	On	720p/60	525i/60	720p/60
Off	On	Off	Off	1080i/50 1080p/25 1080p/25sF	625i/50	1080i/50 1080p/25 1080p/25sF
Off	On	Off	On	1080p/23.98 1080p/23.98sF		1080p/23.98 1080p/23.98sF
Off	On	On	Off	1080p/24 1080p/24sF		1080p/24 1080p/24sF
Off	On	On	On	525/59.94	525i/59.94	
On	Off	Off	Off	625i/50	625i/50	
On	Off	Off	On	720p/50	625i/50	720p/50
On	On	On	Off	Auto-detect		
On	On	On	On	Future use		

Table 6-2: Video and Genlock Standard Switch Settings – 7743DLY-HD

6.2.   SELECTING WHETHER THE MODULE WILL BE CONTROLLED FROM THE LOCAL CONTROLS OR THROUGH THE *VISTA*LINK® INTERFACE – 7743DLY-HD

When all four DIP switches are On the module will be controlled through the *Vista*LINK® interface. Otherwise it will be controlled through the local interface.

DIP 1	DIP 2	DIP 3	DIP 4	VISTALINK® CONTROL
On	On	On	On	The card functions are controlled through the *Vista*LINK® interface. (See section 9)

Table 6-3: *Vista*LINK® Control Switch Settings – 7743DLY-HD

7. USING THE ON SCREEN MENU

An On screen menu (OSD) is used to configure many of the module's parameters. The three position, return to center, toggle switch and momentary pushbutton located on the front edge of the module are used to navigate the OSD setup menus and configure the card's various controls.

To enter the OSD menu system, press and hold the pushbutton and then press the toggle switch up for 3 seconds. 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 pushbutton to select the next menu.

On all menus, there is a selectable item *Done*. Selecting *Done* will take you to the previous menu (the one that was used to get into the menu). If you are at the top level of the menu tree then selecting *Done* will exit the OSD menu and return the module to the normal operating mode.

Once you are in a sub-menu, there may be another menu level, 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 option with the same procedure as in the main menu.

If there is a list of parameters to adjust, use the toggle switch to move up or down to the desired parameter and press the pushbutton. The arrow will move to the 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. If 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 pushbutton. 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 *Done* commands to return to the next higher menu level.

7.1. TOP LEVEL MENU STRUCTURE

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

VIDEO DELAY	Sets the amount of delay.
REFERENCE PHASE	Sets the timing phase of output video to the Genlock reference input.
DONE	Exit On Screen Menu System.

7.1.1. Setting the Video Delay

> **Note that all data in the video path is delayed (active picture, VANC and HANC), not just the active picture area.**

The *VIDEO DELAY* menu item allows the user to set the video delay. The maximum delay is approximately 1.6 seconds even though it is set using video units (frames, lines and samples). The video delay is set using frame, line or sample increments. Each time the pushbutton is pressed to accept a portion of the total delay, the new video delay will be implemented.

Frame = xxx	Sets the amount of delay in whole numbers of frames.
Line = yyy	Sets the amount of delay in whole numbers of lines.
Sample = zzz	Sets the amount of delay in samples.
Done	Return to main menu.
Delay = ttt.ddd sec	Displays the amount of delay in seconds.

Step 1: Coarse Adjustment (Frame)

Press the toggle switch up or down until the right arrow (>) is beside the Frames menu item. Press the pushbutton to set the whole frame delay. The display will show `frames = xxx` where xxx is the frames part of the delay value. Press the toggle switch up or down to adjust the value. Holding the toggle switch will change the value at a faster rate. Press the pushbutton to accept the video frames part of the delay. The arrow (>) will appear back at the left side of the display.

Step 2: Medium Adjustment (Line)

The line delay adjustment delays the entire line of the video bit stream, including the blanking portion/HANC. Press the toggle switch down until the right arrow (>) is beside the Lines menu item. Press the pushbutton to set the whole line delay. The display will show `line = yyy` where yyy is the lines part of the delay value. Press the toggle switch up or down to adjust the value. Holding the toggle switch will change the value at a faster rate. Press the pushbutton to accept the video lines part of the delay. The arrow (>) will appear back at the left side of the display.

Step 3: Fine Adjustment (Sample)

The sample delay adjustment delays the whole sample video bit stream, including the blanking portion/HANC. Press the toggle switch down until the right arrow (>) is beside the Samples menu item. Press the pushbutton to set the sample delay. The display will show `sample = zzz` where zzz is the samples part of the delay value. Press the toggle switch up or down to adjust the value. Holding the toggle switch will change the value at a faster rate. Press the pushbutton to accept the video sample part of the delay. The arrow (>) will appear back at the left side of the display.

Table 7-1 shows the maximum number of video units of delay available for different HD video standards with the 7742DLY-HD. Table 7-2 shows the maximum number of video units of delay available for different HD video standards with the 7743DLY-HD. The calculations are based on the total samples per line shown in Table 7-1 and Table 7-2, and the time per sample which is $1 / (74.25 \times 10^6)$ seconds. Table 7-5 shows typical conversions between video units and time units for 525 and 625 line video.

Table 7-3 shows the maximum number of video units of delay available for different SD video standards with the 7743DLY-HD. The calculations are based on the total samples per line shown in Table 7-3, and the time per sample which is $1 / (13.5 \times 10^6)$ seconds. Table 7-4 shows typical conversions between video units and time units for 525 and 625 line video.

Video Type	Lines per frame	Samples per line	Maximum delay			
			Video Units			Time Units
			Frames	Lines	Samples	Seconds
1080i/60	1125	2200	49	1124	2199	1.667
1080i/50	1125	2640	40	1124	2639	1.640
1080p/24	1125	2750	39	1124	2749	1.667
720p/60	750	1650	97	749	1649	1.633

Table 7-1: Maximum HD Video Delay – 7742DLY-HD

Video Type	Lines per frame	Samples per line	Maximum delay			
			Video Units			Time Units
			Frames	Lines	Samples	Seconds
1080i/60	1125	2200	101	1124	2199	3.378
1080i/50	1125	2640	83	1124	2639	3.399
1080p/24	1125	2750	80	1124	2749	3.359
720p/60	750	1650	197	749	1649	3.3033

Table 7-2: Maximum HD Video Delay – 7743DLY-HD

Video Type	Lines per frame	Samples per line	Maximum delay			
			Video Units			Time Units
			Frames	Lines	Samples	Seconds
525	525	1716	494	524	1716	16.5165
625	625	1728	414	625	1728	16.600

Table 7-3: Maximum SD Video Delay – 7743DLY-HD

Video Type	Desired Delay		Video Units		
	Milliseconds	Total Samples	Frames	Lines	Samples
525	50	1,350,000	1	261	1224
	100	2,700,000	2	523	732
	200	5,400,000	5	521	1464
625	50	1,350,000	1	156	432
	100	2,700,000	2	313	239
	200	5,400,000	5	1	478

Table 7-4: Typical SD Video Delay Settings

Video Type	Desired Delay		Video Units		
	Milliseconds	Total Samples	Frames	Lines	Samples
1080i/60	50	3,712,500	1	562	1100
	100	7,425,000	3	0	0
	200	14,850,000	6	0	0
1080i/50	50	3,712,500	1	281	660
	100	7,425,000	2	562	1320
	200	14,850,000	5	5	0
1080p/24	50	3,712,500	1	225	0
	100	7,425,000	2	450	0
	200	14,850,000	4	900	0
720p/60	50	3,712,500	3	0	0
	100	7,425,000	6	0	0
	200	14,850,000	12	0	0

Table 7-5: Typical HD Video Delay Settings

7.2.   CONFIGURING THE VIDEO OUTPUT PHASE

The *Reference Phase* menus are used to the output video timing. The chart below shows the items available in the *Reference Phase* menu. Sections 7.2.1.1 to 7.2.1.2 give detailed information about each of the menu items.

V	Sets the vertical phase of the output signal to the genlock reference input.
H	Sets the horizontal phase of the output signal to the genlock reference input.

7.2.1. Setting up the Video Output Timing

The output stage of the 7740DLY-HD contains a frame buffer and a line buffer so that the output video can be timed with respect to the reference applied to the **GENLOCK** input BNC. In the absence of a genlock signal the output video will be timed with respect to the incoming Video.

> ⚠ **The *V* and *H* phase adjustments are REAL TIME ADJUSTMENTS and will affect the output video timing immediately. These settings should not be adjusted when the output video is in the broadcast chain.**

7.2.1.1. Setting the Vertical Phase of the Output Video

Reference Phase
V
1 to Max Lines
1

With this control, you can set the vertical timing of the output video with respect to the genlock reference input. There are separate settings of V phase offset for each output video type. Setting this control to 1 keeps the output video in time with the Genlock reference or incoming video if genlock is missing.

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 genlock video, 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. (E.g. 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.) If 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 video input and the video output.

7.2.1.2. Setting the Horizontal Phase of the Output Video

Reference Phase
H
0 to Max samples
0

With this control, you can set the horizontal timing of the output video with respect to the genlock reference input. There are separate settings of V phase offset for each output video type. Setting this control to 0 keeps the output video in time with the Genlock 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. (E.g. for 1080i/59.94 output video the total number of samples per line is 2200, so to advance the output video 5 samples set the value to 2195.)

8. JUMPERS AND USER CONTROLS
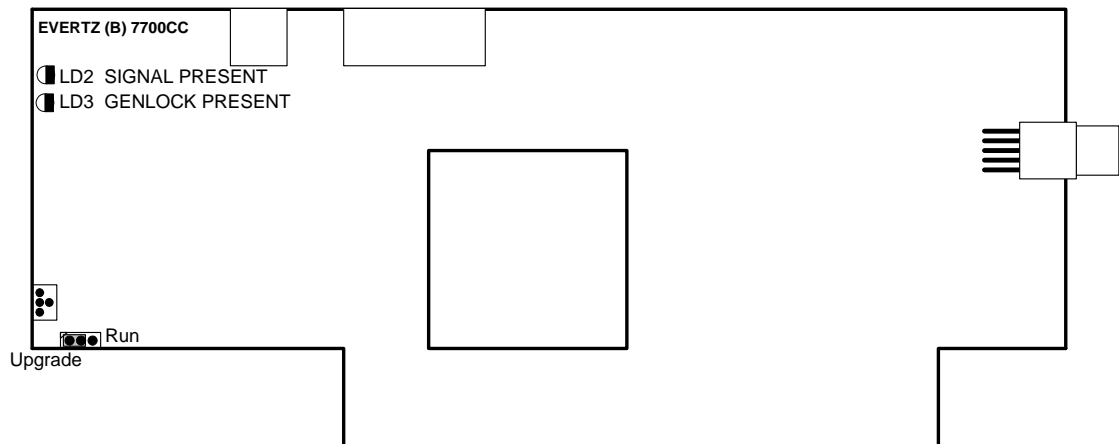

Figure 8-1: Location of Jumpers on Main Boards

Figure 8-2: Location of Jumpers on 7700CC Sub Module

8.1. 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 main module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR 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.

8.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE: The UPGRADE jumper J16 located at the front of the main module is used when firmware upgrades are being done to the module. For normal operation it should be installed in the *RUN* position. See the *Upgrading Firmware* 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 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 *Upgrading Firmware* chapter. Once the upgrade is complete, 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.

8.3. SELECTING WHETHER THE GENLOCK REFERENCE INPUT IS TERMINATED

TERM: The TERM jumper J9 located at the rear of the APB3FMTCON sub-module is used to terminate the genlock loop input. Then it is in the 75R position a 75 ohm terminating resistor will connect the input to ground. When it is in the HI-Z position the genlock loop input will be high impedance.

9. *VISTA*LINK® REMOTE MONITORING/CONTROL

9.1. WHAT IS *VISTA*LINK®?

*Vista*LINK® is Evertz's remote monitoring and configuration platform which operates over an Ethernet network using Simple Network Management Protocol (SNMP). SNMP is a standard computer network protocol that enables different devices sharing the same network to communicate with each other. *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 *Vista*LINK® Pro Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *Vista*LINK® enabled fiber optic products.

2. Managed devices (such as 7707MB), 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.

9.2. *VISTA*LINK® MONITORED PARAMETERS

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

Parameter	Description
Module Status	Indicates good module health and the presence of a valid video input signal. (The state of the MODULE OK LED)
Input Video Present	Indicates the presence of a valid video input signal. (The state of the VIDEO PRESENT LED)
Input Video Standard	Indicates video standard of input signal.
Gen Lock Present	Indicates the presence of a valid genlock reference signal. (The state of the GENLOCK LED)
Local Remote Mode	Indicates whether the 7740DLY-HD is under local control or *Vista*LINK® control. (The state of DIP switch 4)
Total Delay (frames)	Indicates the frames of the total delay being applied to the video.
Total Delay (lines)	Indicates the partial frames of total delay being applied to the video (expressed as lines).
Total Delay (samples)	Indicates the partial lines of total delay being applied to the video (expressed as samples).
Total Delay (time)	Indicates the current delay through line buffer when Genlock signal is applied (expressed as microseconds).

Table 9-1: *Vista*LINK® Monitored Parameters

9.3. *VISTA*LINK® CONTROLLED PARAMETERS

Parameter	Description
Gen Lock Standard	Sets video standard of genlock reference signal. When DIP switch 4 is Off indicates the state of DIP switches 1 to 3.
V Phase Offset	Vertical phase offset from Genlock reference.
H Phase Offset	Horizontal phase offset from Genlock reference.
Video Delay (frames)	Whole frames of delay being added to the video.
Video Delay (lines)	Whole lines of delay being added to the video.
Video Delay (samples)	Partial lines of delay (i.e. samples) being added to the video.

Table 9-2: *Vista*LINK® Controlled Parameters

9.4. *VISTA*LINK® TRAPS

The following traps can be controlled through the *Vista*LINK® interface. Each trap will indicate a fault condition when its value is True.

Trap	Description for True Condition
ModuleStatus	Local Fault LED is On.
VideoPresent	No input video present (VIDEO PRESENT LED is Off).
GenlockPresent	No genlock present (GENLOCK PRESENT LED is Off).
InvalidVideoStandard	Input signal has an unsupported Video Standard.

Table 9-3: *Vista*LINK® Traps

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