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8964ENC

4-Channel SDI to NTSC/PAL Encoder Module

Instruction Manual

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Preface

About This Manual

This manual describes the features of a specific module of the Gecko 8900 Signal Processing System. As part of this module family, it is subject to Safety and Regulatory Compliance described in the Gecko 8900 Series frame and power supply documentation (see the *8900TX/8900TF/8900TFN Frames Instruction Manual*).

8964ENC 4-Channel SDI To NTSC/PAL Encoder

Introduction

The 8964ENC module offers four independent, full-function encoders on one module. With 10-bit D-A, the 8964ENC provides high quality conversion of SDI to NTSC/PAL video. Noise reduction and picture enhancement functions are included with a frame synchronizer function also available as an option.

The 8964ENC features:

- Four 270 Mbs SDI to NTSC or PAL composite video encoders with independent controls for:
  - Horizontal timing adjustment,
  - Fine phase adjustment
  - Frame sync (option) adding vertical timing and freeze modes,
  - Proc amp controls,
  - Line-by-line VBI blanking,
  - Test signal generator (color bars output),
  - Noise reduction, and
  - Picture detail enhancement.
- An OSD (On Screen Display) can be keyed in and out of video output,
- Analog color black NTSC/PAL reference inputs,
- Up to 10 8964ENC encoders in a 2 RU Gecko™ 8900 video frame providing up to 40 encoders in one frame, and
- Remote interface with the 8900NET module (version 3.2.0 or later):
  - Web browser configuration and control,
  - SNMP traps for use with NetCentral,
  - NetConfig Networking application, and
  - Control panel connections.

Installation

Installation of the 8964ENC module is a process of:

1. Placing the module in the proper frame slot, and
2. Cabling and terminating signal ports.

The 8964ENC module can be plugged in and removed from a Gecko 8900 video frame with power on. When power is applied to the module, LED indicators reflect the initialization process (see *Power Up* on page 11).

Frame Capacity

The 8964ENC module can be installed in all Gecko 8900 video frames but with varying maximum quantities determined by frame cooling capacity. Table 1 provides the power capacity, cooling capacity, and maximum module count for each frame type.

Table 1. Video Frame Power Capacity

Capacity Calculated	8900TX Frame	8900TF Frame	8900TFN Frame
Power (W)	100	100	100
Recommended Module Cooling (W)	30	90	90
8964ENC (-FS) Modules	5	10	10

Note Module capacity figures assume no other modules are in the frame.
X = Not recommended without forced air cooling.

Module Placement in the Gecko 8900 Frame

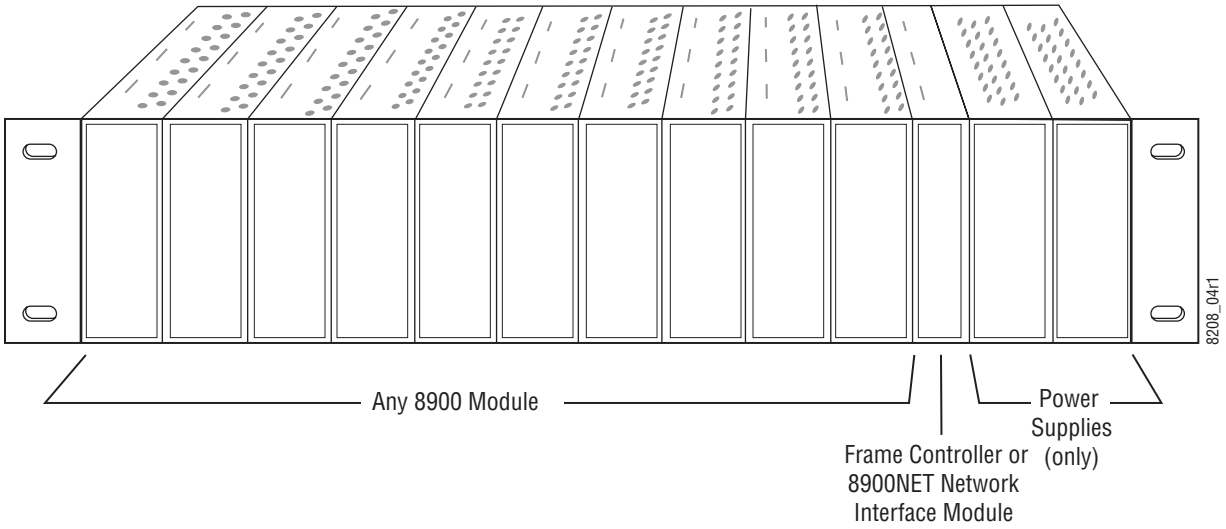
There are ten cell locations in the frame to accommodate either analog or digital modules. These are the left ten locations. Refer to Figure 1 on page 9.

The two cells on the right are allocated for the power supplies. For additional information concerning the Power Supply module, refer to the 8900 Power Supply manual.

The third cell from the right is allocated for the Frame Monitor or 8900NET Network Interface module. These modules provide health monitoring and control options.

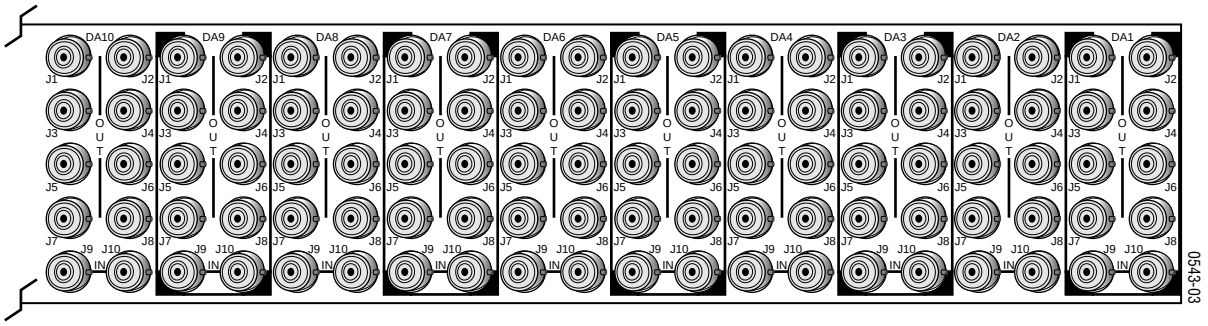
Note If using an 8900NET module in the frame, it must be running software version 3.2.0 or higher for proper remote operation of the 8964ENC module.

Figure 1. Gecko 8900 Series Frame



8900 module slots are interchangeable within the frame. There are 10 BNC connectors in each slot's I/O group. The functional assignment of each connector in a group is determined by the module that is placed in that slot. The maximum number of modules a Gecko 8900 frame can accept is ten. Figure 2 illustrates the rear connector plate for a Gecko 8900 frame.

Figure 2. Gecko 8900 Series Frame Rear Connector



To install a module in the frame:

1. Insert the module, connector end first, with the component side of the module facing to the right and the ejector tab to the top.
2. Verify that the module connector seats properly against the backplane.
3. Press in the ejector tab to seat the module.

Cabling

Cabling to and from the module is done at the back of the Gecko 8900 frame Refer to Figure 3.

Note At the back of this manual are overlay cards that can be placed over the rear connector BNCs to identify the specific 8964ENC connector functions.

Inputs

Four serial digital video inputs are provided at BNCs J1, J3, J5, and J7. The inputs are non-looping and internally terminated.

Outputs

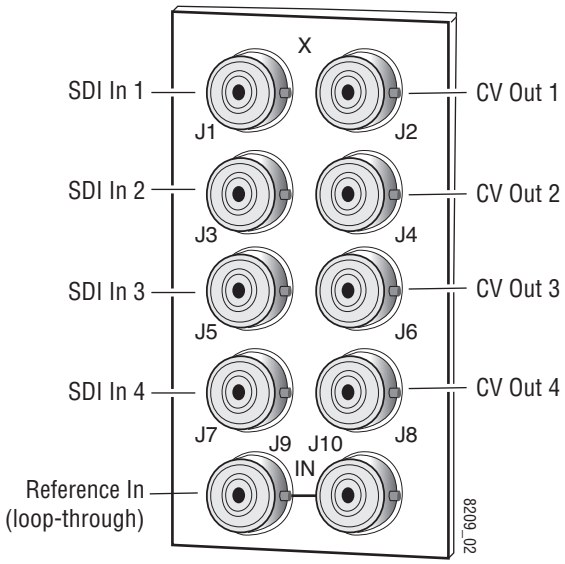
Four corresponding NTSC or PAL composite video outputs are provided at BNCs J2, J4, J6, and J8.

Reference Loop-through Input

Connect an NTSC/PAL analog color black reference source (with Signal to Noise specification of > 40 dB recommended) to one of the loop-through reference connectors, J9 or J10. Terminate the unused connector into 75 Ω if the signal is not looped to other equipment.

Note The line rate for the module (all four encoder channels) will be auto-detected from the Reference In signal. The line rate must match the reference input.

Figure 3. 8964ENC Input/Output Connectors



Power Up

The front LED indicators and configuration switches are illustrated in Figure 4. Upon power-up, the green PWR LED should light and the yellow CONF LED should illuminate for a few seconds for the duration of module initialization.

Operation Indicator LEDs

With factory default configuration and a valid input signal connected, the green PWR LED and one of the green signal standard LEDs (525 or 625) should illuminate (refer to Table 2 on page 12 to see the possible operating indicator combinations).

Video input presence on each encoder channel is indicated by the CH1–CH4 green LEDs on.

Figure 4. LEDs and Configuration Switches

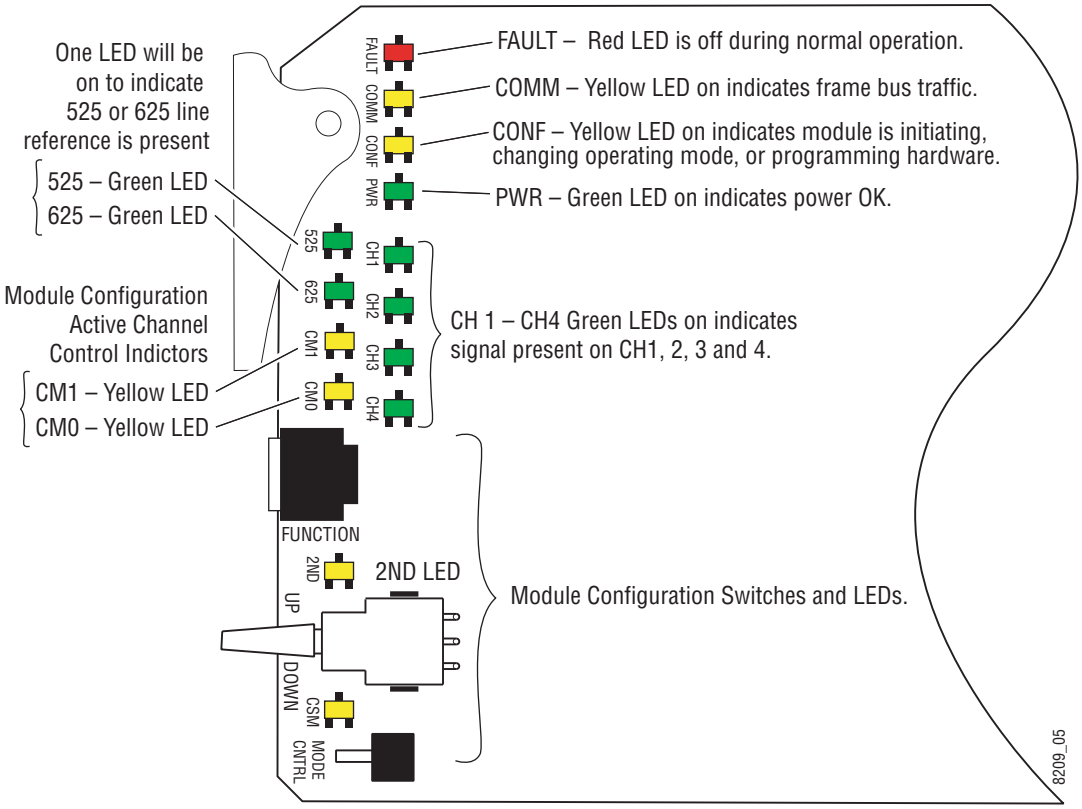


Table 2. Board Edge LED Names and Meaning

LED	Indication	Condition
FAULT (red)	Off	Normal operation.
	On continuously	Module has detected an internal fault. (Refer to *Service* on page 57.)
	Flashing	Configuration problems. Check inputs and settings. Missing video.
COMM (yellow)	Off	No activity on frame communication bus.
	3 Quick Pulses	Locate Module command received by the module from a remote control system.
	Short flash	Activity present on the frame communication bus.
CONF (yellow)	Off	Module is in normal operating mode.
	On continuously	Module is initializing, changing operating modes or programming hardware.
	3 Quick Pulses	Locate Module command received by the module from a remote control system.
PWR (green)	Off	No power to module or module's DC/DC converter failed.
	On continuously	Normal operation, module is powered.
625 (green)	Off	No reference or standard is other than 625.
	On continuously	Valid 625 video reference is present.
525 (green)	Off	No reference or standard is other than 525.
	On continuously	Valid 525 video reference is present.
CM1 (yellow)	Off	On/Off combination Indicates what channel is enabled for configuration when Channel Select Mode (CSM) LED is on (described in Table 6 on page 23).
	On	
CM0 (yellow)	Off	
	On	
CH1 (green)	Off	No signal present on Channel 1.
	On continuously	Valid signal is present on Channel 1.
	Flashing	Input signal line rate does not match reference.
CH2 (green)	Off	No signal present on Channel 2.
	On continuously	Valid signal is present on Channel 2.
	Flashing	Input signal line rate does not match reference.
CH3 (green)	Off	No signal present on Channel 3.
	On continuously	Valid signal is present on Channel 3.
	Flashing	Input signal line rate does not match reference.
CH4 (green)	Off	No signal present on Channel 4.
	On continuously	Valid signal is present on Channel 4.
	Flashing	Input signal line rate does not match reference.
2ND (yellow)	Off	Rotary switch is addressing Bank 1 configuration functions.
	On continuously	Rotary switch is addressing Bank 2 configuration functions.
	Flashing	Rotary switch is addressing Bank 3 configuration functions.
CSM (yellow)	Off	Paddle switch controls current Bank parameter mode.
	On continuously	Paddle switch controls channel selection.

Configuration

The 8964ENC can be configured locally using onboard switches or remotely using the 8900NET network interface GUI or a networked control panel.

Refer to the following sections for configuration instructions:

- Configuration Summary (page 13)
- Local Onboard Module Configuration (page 22)
- Remote Control and Monitoring (page 28)
- Control Panel Configuration (page 54)

Operation of these control types is explained in detail in their respective sections of this manual.

Configuration Summary

This section provides a summary of all parameters that can be configured on the 8964ENC module. Use this section in conjunction with the specific configuration method instructions for each configuration type. Table 5 on page 19 provides a summary in table format of all parameters and their ranges, default values, and remote, local, and control panel function names and locations for setting each value.

Video Timing and Freeze Controls

With a standard 8964ENC module with no Frame Sync the following line sync timing adjustments are available:

- Horizontal Timing – adjusts the horizontal delay of the channel output in half pixels. and
- Fine Phase Adjustment – adjusts the horizontal fine phase relative to the input sync reference (in percent of 37 ns).

With an 8964ENC-FS module (8964ENC with Frame Sync, see *Module Option Upgrade* on page 54), the following vertical timing adjustments can be made:

- Horizontal Timing – identical to the line sync timing above.
- Fine Phase Adjustment – identical to the fine phase timing above.
- Vertical Timing – adjusts vertical delay in line increments.

Also available with the 8964ENC-FS are the following freeze controls (one must be selected from the five choices):

- AutoBlue – when AutoBlue is enabled on a channel, the output will automatically freeze to a blue screen when the input signal is lost on that channel.
- AutoFreeze – when AutoFreeze is enabled on a channel, the output will automatically freeze on the last valid field when the input signal is lost on that channel.
- Field 1 – manually freeze the output signal on field 1 of the last frame.
- Field 2 – manually freeze the output signal on field 2 of the last frame.
- Frame – manually freeze the output signal on the last frame.

A field freeze provides less resolution and no motion artifacts in the output. In frame mode, the resolution is higher since both fields are present, but the presentation of the two fields can cause motion artifacts.

Picture Enhancer Controls

The Picture Enhancer feature is standard on the 8964ENC and 8964ENC-FS modules. This feature allows separate picture enhancement control on each channel output.

Use the following controls for bypassing or disabling picture enhancement:

- Bypass – the Picture Enhancer circuitry can be bypassed to decrease the amount of delay in the module if required.
- Disable – the Picture Enhancer process can be disabled, still routing the signal through the Picture Enhancement circuitry.

When Picture enhancement is enabled, the following controls are available:

- Split screen – split the output screen to view the original video on the left and the enhanced video on the right.
- Detail level – set the amount of picture enhancement detail based on the split screen comparison.
- Overshoot protection – set the amount of clipping looking at a waveform monitor.

Vertical Blanking Interval Controls

The 8964ENC provides line-by-line vertical blanking interval (VBI) processing.

Line Categories

The line categories used in the configuration of the video signal for the 8964ENC are defined as follows:

- F_Active Lines – the portion of the active video that is fixed and always treated by the module as carrying active video (not programmable).
- P_Active Lines – lines in the active video that can be configured by the user to carry either active video or be reserved for carrying user data.
- CVBI – the lines in the vertical interval that can be configured by the user.
- FVBI – the line in the vertical blanking interval that are fixed and are not configurable.

The line numbers for each category above are defined in Table 3 for both 525 and 625 line rates.

Table 3. Line Numbers for 8964ENC Line Categories

Line Categories				
Label	**525**		**625**	
	Start	**End**	**Start**	**End**
F_Active	25 (F1) 288 (F2)	263 (F1) 525 (F2)	29 (F1) 342 (F2)	310 (F1) 623 (F2)
P_Active	21 (F1) 284 (F2)	24 (F1) 287 (F2)	24 (F1) 337 (F2)	28 (F1) 341 (F2)
CVBI	10 (F1) 273 (F2)	20 (F1) 283 (F2)	6 (F1) 319 (F2)	23 (F1) 336 (F2)
FVBI	1 (F1) 264 (F2)	9 (F1) 272 (F2)	624 (F1) 311 (F2)	5 (F1) 318 (F2)

Line pairs in the P_Active line category can be reserved for carrying data by configuring Data Line Pairs with local or remote controls. Refer to Table 4 for a listing of the Data Line Pairs lines that are available with each setting.

Table 4. Lines Reserved for Carrying Data

525 Line Selection	Data Line Pairs Reserved	625 Line Selection	Data Line Pairs Reserved
None	None	None	None
21/284	21/284	24/337	24/337
22/285	21/284 – 22/285	25/338	24/337 – 25/338
23/286	21/284 – 23/286	26/339	24/337 – 26/339
24/287	21/284 – 24/287	27/340	24/337 – 27/340
		28/341	24/337 – 28/341

Programmable VBI and Active Picture Lines

The programmable lines in the vertical blanking interval include the configurable VBI lines (CVBI). Configurable active picture lines (P_Active) can be reserved for carrying data (refer to Table 4 on page 16).

These line pairs can be configured for the following:

- Blank – in local mode, select On to blank all lines of CVBI or Off to not blank. In remote mode, lines can be blanked or passed on a line-by-line basis with the web page (toothed blanking).
- VBI Setup – in 525 mode, a control is provided for turning VBI setup on or off. This is a global control that affects all lines of VBI.

Video Processing Adjustments

The controls for video processing on each channel are the following:

- Test signal generator – when on, enables the internal test signal generator to output a 75% Color Bars test signal to the channel output.

Note When the internally generated color bars test signal output is enabled, the relative sync and burst may be offset in relation to the input SDI stream timing.

- Chroma Kill – removes all chroma from the signal (black and white). This is a global control, affecting chroma on all lines of active video and includes the VBI.
- Black Clip – set the level of black clipping with the remote controls (no local control).
- Contrast/Y Gain – adjusts the percentage of luminance relative to white.
- Saturation/Chroma Gain – adjusts percentage of saturation and chroma gain relative to 100% saturation.
- Brightness/Y Offset – adjusts amount of brightness/Y offset in mV.
- Hue/Chroma Phase – adjusts hue/chroma phase in degrees for both line rates (525 and 625).

Note Test signals are not adjustable in the Video Processing controls.

Noise Reducer Controls

The Noise Reducer feature is standard on the 8964ENC and 8964ENC-FS modules. This feature allows separate noise reduction control on each channel output. The use of these controls depends on the amount and type of noise present on the signal.

The Noise Reducer process can be enabled or disabled.

When noise reduction is enabled, the following controls are available:

- Filter Select– the type of noise filter may be selected on the web page only. Choice of the noise filter depends on the type of noise present.
- Level – adjust the noise level (amount of noise reduction).
- Threshold – adjust the noise threshold until the noise is reduced but video distortion is minimal.

Composite Output Adjustments

The composite output on each channel can be adjusted for the following:

- Add Active Video Setup – add setup to active video.
- Output Video Gain – adjust the percent of output video gain relative to 1 V p-p.

Table 5 provides a complete summary of the 8964ENC functions and a comparison of the functionality available with each control type along with the ranges and default values for each parameter.

Table 5. Summary of 8964ENC Configuration Functions

Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	Function Switch Bank/Setting	Control Panel Mnemonic	Notes/ Conditions
OSD (On Screen Display)	Off	On/Off	OSD Control/ On Screen Display	1:1	N/A	Jumper JP3 must be enabled on module.
Horizontal Timing	0	0 - 857.5 pixels (525) 0 - 863.5 pixels (625) (0.5 pixel steps)	Timing/ Horizontal Timing (pixels)	2:B	HTim 1-4	8964ENC or 8964ENC-FS
Fine Phase	0	0-100 (1% steps)	Timing/ Fine Phase Adjustment (%)	2:A	FPhase1-4	
Vertical Timing	0	0 – 524 lines (525) 0 – 624 lines (625) (1line steps)	Timing/ Vertical Timing (lines)	2:C	VTim1-4	8964ENC-FS only.
Freeze Type	Auto-Blue	AutoFreeze, AutoBlue Field 1, Field 2, or Frame	Timing/Freeze Mode Select AutoFrz, AutoBlue, Field 1, Field 2, or Frame radio button	2:D 2:E 2:F	Frez1-4	
Test Signal Generator	Off	On/Off	Video Proc/ Select Enable or Color Bars radio button	1:C	Tst1-4	Video processing controls
Chroma Kill	Off	On/Off	Video Proc/ Chroma Kill checkbox	1:B	Chroma1-4	
Black Clip control	None	None, -11%, -6% or -1.5%	Video Proc/ Select None, -11%, -6% or -1.5% radio button	No local control	BlkClip1-4	
Saturation/Chroma Gain	100	50–150% (0.8% steps)	Video Proc/ Saturation/Chroma Gain (%)	1:8	ChroGn1-4	
Hue/Chroma Phase	0	± 22.3 degrees (0.2 degree steps)	Video Proc/ Hue/Chroma Phase (deg)	1:9	ChroPhs1-4	
Brightness/Y Offset	0	± 7.5% (0.5% steps)	Video Proc/ Brightness/Y Offset (mV)	1:7	YOff1-4	
Contrast/Y Gain	100	50–149.6% (0.4% steps)	Video Proc/ Contrast/Y Gain (%)	1:6	YGn1-4	
Output Video Gain	100	61-138.5% (0.5% steps)	Composite Out/ Output Video Gain	1:4	OutGn1-4	Composite out controls
Add setup to active video	On	On/Off	Composite Out/ Add setup to active video checkbox	1:2	N/A	
Reserve VBI lines for data	None	See Table 4 on page 16	VBI/ Select data line pair buttons	2:1/2:2/2:3 See Table 7 on page 26	N/A	See tables for line rate choices
Blank VBI Lines	On	On/Off	VBI/ Blank VBI/Data Line Pair or use Blank All or Pass All button	2:4	N/A	Line selectable in Remote. Global in Local.
Add VBI Setup	On	On/Off	VBI/ VBI Setup checkbox	2:5	N/A	525 only

Table 5. Summary of 8964ENC Configuration Functions

Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	Function Switch Bank/Setting	Control Panel Mnemonic	Notes/ Conditions
Picture Enhancer process	Disable	Bypass/Disable/ Enable	Picture Enhancer/ Select Bypass/Disable or Enable button	3:B Enable/Disable 3:C Bypass	PicEnh1-4	Picture Enhancer enabled
Picture Enhancer split screen	Off	On/Off	Picture Enhancer/ Select Split Screen checkbox	3:D	N/A	
PE Detail Enhancer Level	0	0-255	Picture Enhancer/ Detail Enhancer Level	3:E	N/A	
PE Overshoot Protection	0	0-7	Picture Enhancer/ Overshoot Protection	3:F	N/A	
Noise Reducer process	Off	On/Off	Noise Reducer/ Select Enable Noise Reducer checkbox	3:8	N/A	Noise Reducer enabled
Noise Reducer filter select	3.5 MHz Notch	3.5 MHz Low Pass 4.2 MHz Notch 3.5 MHz Notch 2.8 MHz Notch	Noise Reducer/ Select Filter Select button	No local control	N/A	
Noise Reducer level	0	0-8 (1.0 steps)	Noise Reducer/ Level	3:9	N/A	
Noise Reducer threshold	0	0-10 (1.0 steps)	Noise Reducer/ Threshold	3:A	N/A	
Learn/Recall E-MEM	N/A	E-MEM 1-5	E-MEM/ Standard View: Recall 1-5 Advanced View: Recall/Learn /Save to/Load from	1:E	N/A	E-MEM functions
Recall factory defaults	N/A	See Defaults column	E-MEM/ Recall factory settings button	1:F	N/A	

Timing and Genlock Considerations

This section is provided for information on some important points about module reference input sync and color frame timing considerations.

Reference Input Sync

The module is locked to the reference input sync. The following reference input sync considerations should be noted:

- Jitter performance of the module is influenced by the time base jitter of the reference input sync.
- Reference input sync timing determines the color burst/output timing. If a sync changeover is used for the sync reference, the timing of both sync sources must match. This ensures that the output burst phase of the module does not change and the timing from the 8964ENC remains consistent if the reference input sync switches.

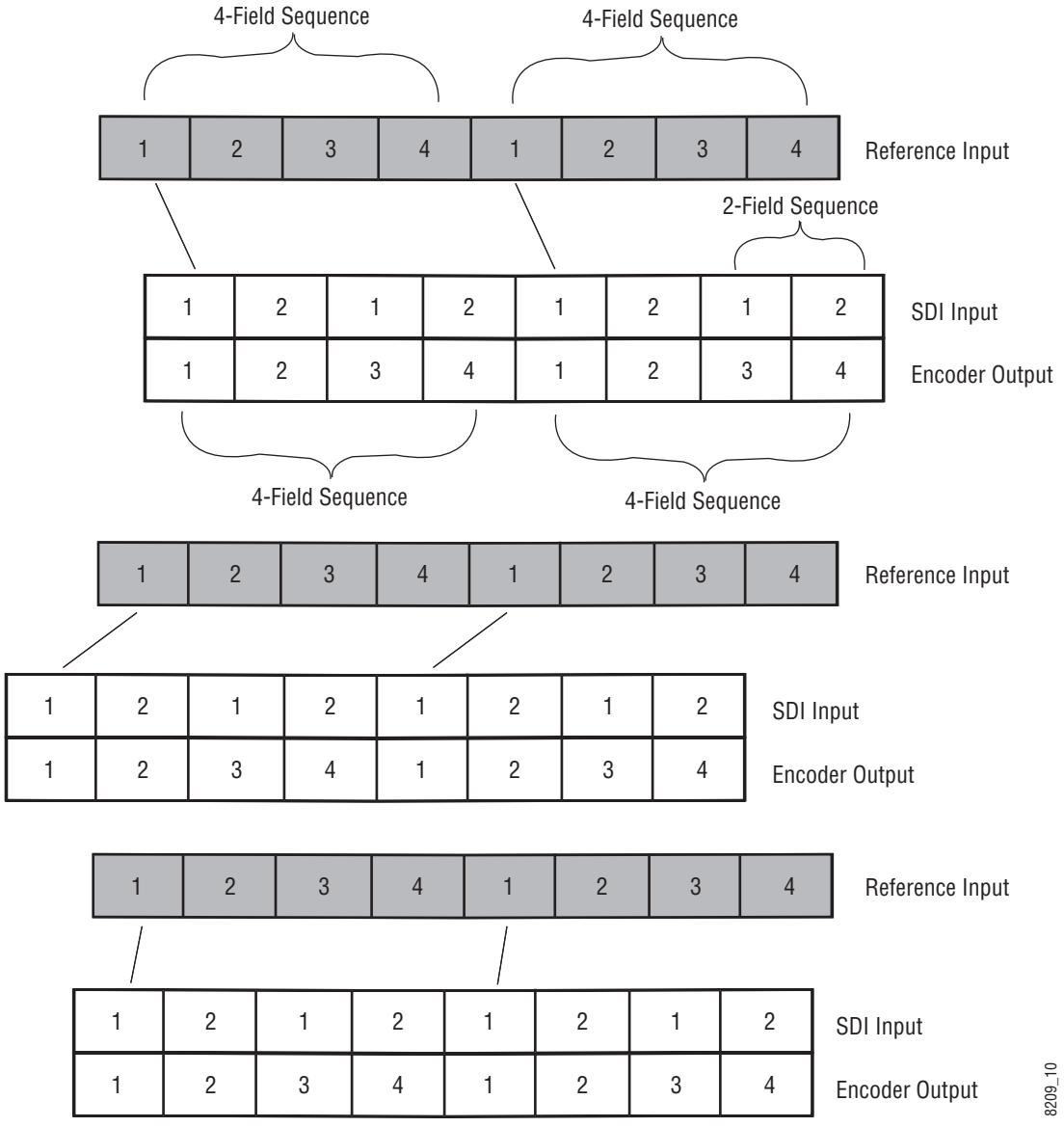
Color Frame

When converting from a SDI input signal to NTSC or PAL output, a color frame is chosen by the 8964ENC module based on the position of the closest SDI Field 1 to Field 1 of the reference input. NTSC video has a 4-field color frame sequence, while PAL has an 8-field sequence. SDI video coming into the module has a 2-field sequence.

As illustrated in the three examples in Figure 5 for a 525 reference input, the relationship of the SDI input Field 1 to the reference input Field 1 will determine the color frame of the encoder video output.

Note When the SDI video is delayed one field, the color frame jumps back two fields to the closest Field 1.

Figure 5. Color Frame Output (NTSC)



Local Onboard Module Configuration

The 8964ENC module can be configured locally using the rotary and paddle switches. Several LEDs interact with the switches to indicate status of the configuration process.

Configuration Switches and Controls

Each of the four encoder channels is adjusted separately. Selection of each channel is done with the paddle switch while in Channel Select Mode as explained below. Refer to Figure 6 on page 23 for the following descriptions. Use the onboard configuration components as follows:

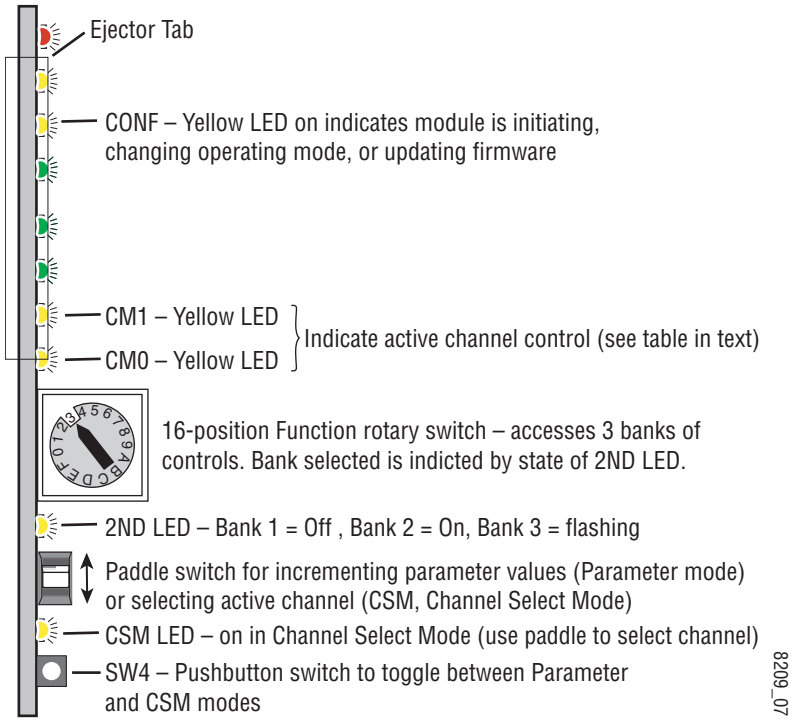
- Function (rotary) switch — This switch accesses a desired function for configuration (see Table 7 on page 26). The switch addresses three banks of functions; each bank has 16 possible positions (0 through 9 and A through F). Not all positions are used.

  The next bank of functions is accessed each time the Function switch makes a complete revolution past zero (or back through F): While in Bank 1, a complete revolution past zero accesses Bank 2; while in Bank 2, a complete revolution past zero accesses Bank 3. The yellow 2ND LED indicates which bank is currently being accessed.

Note The Function switch should be kept in position 0 in any bank (parked) when not in use to avoid any inadvertent change in configuration. Position 0 in each bank is inactive.

- 2ND (second Function) yellow LED – when off, indicates that the rotary switch is addressing the first bank of functions. When on, indicates that the rotary switch is addressing the second bank of functions. When flashing, indicates that rotary switch is addressing the third bank of functions.
- SW2 (paddle) switch – actuates or selects the desired setting or channel selection for the selected function when the switch is held momentarily in either the up or down position. Switch between Parameter and Channel Select Mode with pushbutton SW4.
- CSM (Channel Select Mode) yellow LED – when on, paddle switch is in Channel Select Mode. Use the paddle switch to select channel 1, 2, 3, or 4. When off, paddle switch is in Parameter mode.
- CM1 and CM0 yellow LEDs – indicate what channel is active for adjustment. Refer to Table 6 on page 23.
- SW4 (pushbutton) switch – press to toggle assignment of paddle switch SW2 between Parameter mode (CSM LED off) and Channel Select Mode (CSM LED on).
- CONF (configuring) yellow LED – when on, indicates the module is programming hardware.

Figure 6. Onboard Configuration Components – Front View



Refer to Table 6 for reading the CM1 and CM0 active channel LED indicators.

Table 6. CM1 and CM0 LED Table

CM1 LED State	CM0 LED State	Channel Control
Off	Off	Channel 1 is active
Off	On	Channel 2 is active
On	Off	Channel 3 is active
On	On	Channel 4 is active

Onboard Jumpers

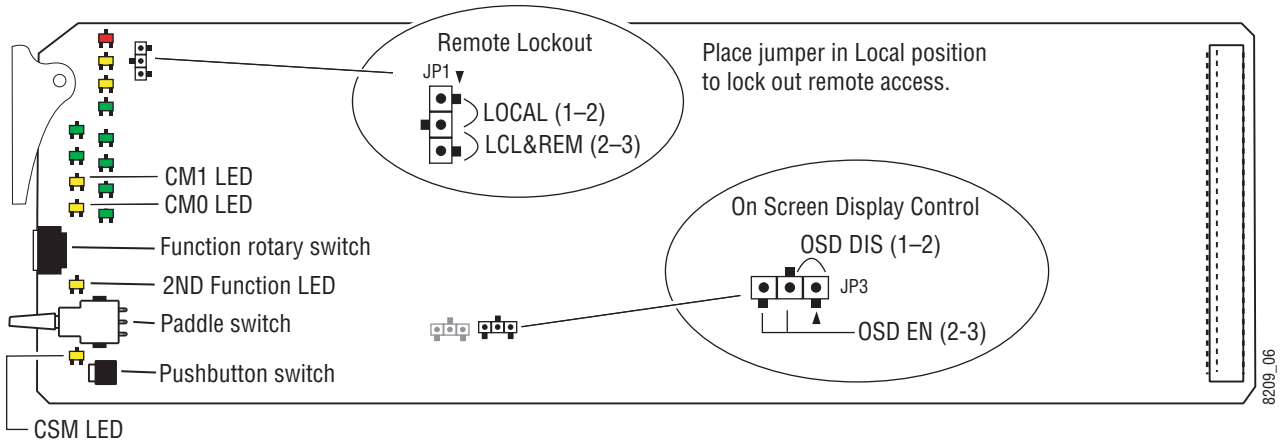
Two onboard jumpers must be set for the following:

- Jumper JP1 allows (LCL&REM position) or locks out (LOCAL position) remote control.
- Jumper JP3, OSD enables (OSD EN pins 2-3) or disables (OSD DIS pins 1-2) control of the OSD (On Screen Display).

  The On Screen Display (OSD) graphic can be enabled on the output of each channel to allow viewing of the currently selected Rotary switch function and the currently assigned parameters. The OSD is provided for an aid in configuring the module in local mode and should be turned off on each channel with either the local or remote controls before broadcasting the signal. You may also set this jumper to disable the OSD completely after the module is configured to prevent the OSD information from being put on-air.

  When control is enabled with jumper JP3, the OSD for each channel can be turned on or off with either local or remote controls.

Figure 7. Module Configuration Switches and LEDs



8964ENC Module Onboard Configuration Settings

Onboard configuration is done on a channel-by-channel basis, there is no gang mode (apply settings to all channels). You may use an on-screen display on the output of each channel to view the parameters being adjusted.

Control of the OSD function must first be enabled locally by setting jumper JP3 (Figure 7) to either disabled, OSDIS (pins 1-2), or enabled, OSDEN (pins 2-3). Once OSD control has been enabled with JP3, it can be turned on or off with individual local channel controls (Bank 1/Position 1) or through the web browser (refer to *OSD Control Page* on page 50).

To make a configuration setting:

1. Select the channel to be adjusted by pressing pushbutton SW4 to toggle to the Channel Select Mode (yellow CSM LED on). This allows using the paddle switch to increment through the channel selections. The currently selected channel is indicated by the state of the CM1 and CM0 LED. Refer to Table 6 on page 23 for reading LED states.

2. When the desired channel is active, use pushbutton SW4 to toggle back to Parameter mode (CSM LED off).

3. Rotate the Function switch to Bank 1 (2ND LED off) or Bank 2 (2ND LED on) or Bank 3 (2ND LED slow flash) and to the desired function within that bank.

4. Move the paddle switch to the up or down position and hold momentarily to set the desired function (refer to Table 7 on page 26).

Note Holding the paddle switch in the up or down position for more than a half second will automatically accelerate through the value range for parameters with 256 or more values. The full range can be accessed in about 10 seconds.

Table 7. Local Rotary and Paddle Switch Functions

	Function Switch Setting	Paddle Switch Up	Paddle Switch Down	Function Description	OSD Text Summary
Bank 1 (2ND LED off)					
Bank 1 (2ND LED off)	0	–	–	Default position for normal operation (parked)	Ch#, Channel Name 1:0 (bank/#) Model # HW ver x.x FW ver x.x SN: xxxxxxxxxx
	1	On	Off	Turn OSD (on screen display) on or off	Ch#, Channel Name 1:1 Video: rate or NO Ref: rate or NO On screen disp: (current state) Choices or scroll bar
	2	Yes	No	Add setup to active video	1:2 Add Setup
	3	–	–	–	–
	4	Increase	Decrease	Adjust output video gain (% relative to 1 V p-p)	1:4 Output video gain
	5	Increase	Decrease	Adjust contrast/Y gain	1:5 Contrast/Y Gain
	6	Increase	Decrease	Adjust brightness/Y offset	1:6 Bright/Y Offset
	7	Increase	Decrease	Adjust saturation/chroma gain	1:7 Sat/Chroma Gain
	8	Increase	Decrease	Adjust hue/chroma phase	1:8 Hue/Chroma Phase
	9-A	–	–	Not used	
	B	On	Off	Turn Chroma Kill on and off	1:B Chroma Kill
	C	On	Off	Turn output test signal generator on or off	1:D test Signal
	D	–	–	Not used	
	E	>2s Learn	Recall	Hold paddle for more than 2 seconds to learn current channel settings into E-MEM register. Select down to Recall.	1:E >2s Learn
	F	–	Recall	Recall factory defaults	1:F Factory default
Bank 2 (2ND LED on)					
Bank 2 (2ND LED on)	0	–	–	Default position for normal operation (parked).	2:0 (parked position information)
	1	None	21/284 or 24/337	Select P_Active lines to reserve for data (525 or625). See Table 4 on page 16.	2:1 Rsv for data
	2	22/285 or 25/338	23/286 or 26/339		2:2 Rsv for data
	3	24/287 or 27/340	28/341 (625 only)		2:3 Rsv for data
	4	On	Off	Turn VBI blanking on or off (all VBI lines).	2:4 VBI Blank
	5	On	Off	Turn VBI setup on for off (all VBI lines)	2:5 VBI Setup
	6 – 9	–	–	Not used	
	A	Increase	Decrease	Adjust fine phase of output signal	2:A Fine Phase
	B	Increase	Decrease	Adjust horizontal timing	2:B Horizontal Timing
	These controls (2C – 2F) active for the 8964ENC -FS only				
	C	Increase	Decrease	Adjust vertical timing	2:C Vertical Timing
	D	AutoBlue	Field 1	Select Freeze mode	2:D Frz Mode
	E	Field 2	Frame	Select Freeze mode	2:E Frz Mode
	F	AutoFrz	AutoBlue	Select Freeze mode: AutoFreeze	2:F Frz Mode: AutoFrz

Table 7. Local Rotary and Paddle Switch Functions

	Function Switch Setting	Paddle Switch Up	Paddle Switch Down	Function Description	OSD Text Summary
Bank 3 (2ND LED flashing)					
Bank 3 (2ND LED flashing)	0	–	–	Default position for normal operation (parked).	3:0 (parked position information)
	1 – 7	Not used			
	8	Enable	Disable	Enable or disable noise reducer process	3:8 NR Process:
	9	Increase	Decrease	Adjust noise reducer level	3:9 NR Level:
	A	Increase	Decrease	Adjust noise threshold level	3:A NR Threshold:
	B	Enable	Disable	Enable or disable Picture Enhancer process	3:B PE Process:
	C	Bypass	–	Bypass Picture Enhancer circuitry	3:C PE Process:
	D	On	Off	Turn split screen on or off	PE Split Scrn:
	E	Increase	Decrease	Adjust Picture Enhancer detail level	PE Detail Level:
	F	Increase	Decrease	Adjust Picture Enhancer overshoot protection	PE Overshoot Protect:

Remote Configuration and Monitoring

8964ENC configuration and monitoring can be performed using a web browser GUI interface when the 8900NET Network Interface module is present in the frame (Gecko 8900TFN frame). This section describes the GUI access to the module configuration functions.

For remote access, make sure the jumper block on the module is set for both Local and Remote access (Figure 7 on page 24).

Refer to the *8900NET Network Interface Module Instruction Manual* for information on the 8900NET Network Interface module and setting up and operating the Gecko 8900 frame network.

Note The 8900NET module in the frame must be running software version 3.2.0 or higher for proper remote and control panel operation. Upgrade software and instructions for the 8900NET are available on a separate CD-ROM with the module or can be downloaded from the Grass Valley web site.

Refer to the Frame Status page shown in Figure 8 on page 29. The 8900 modules can be addressed by clicking either on a specific module icon in the frame status display or on a module name or slot number in the link list on the left.

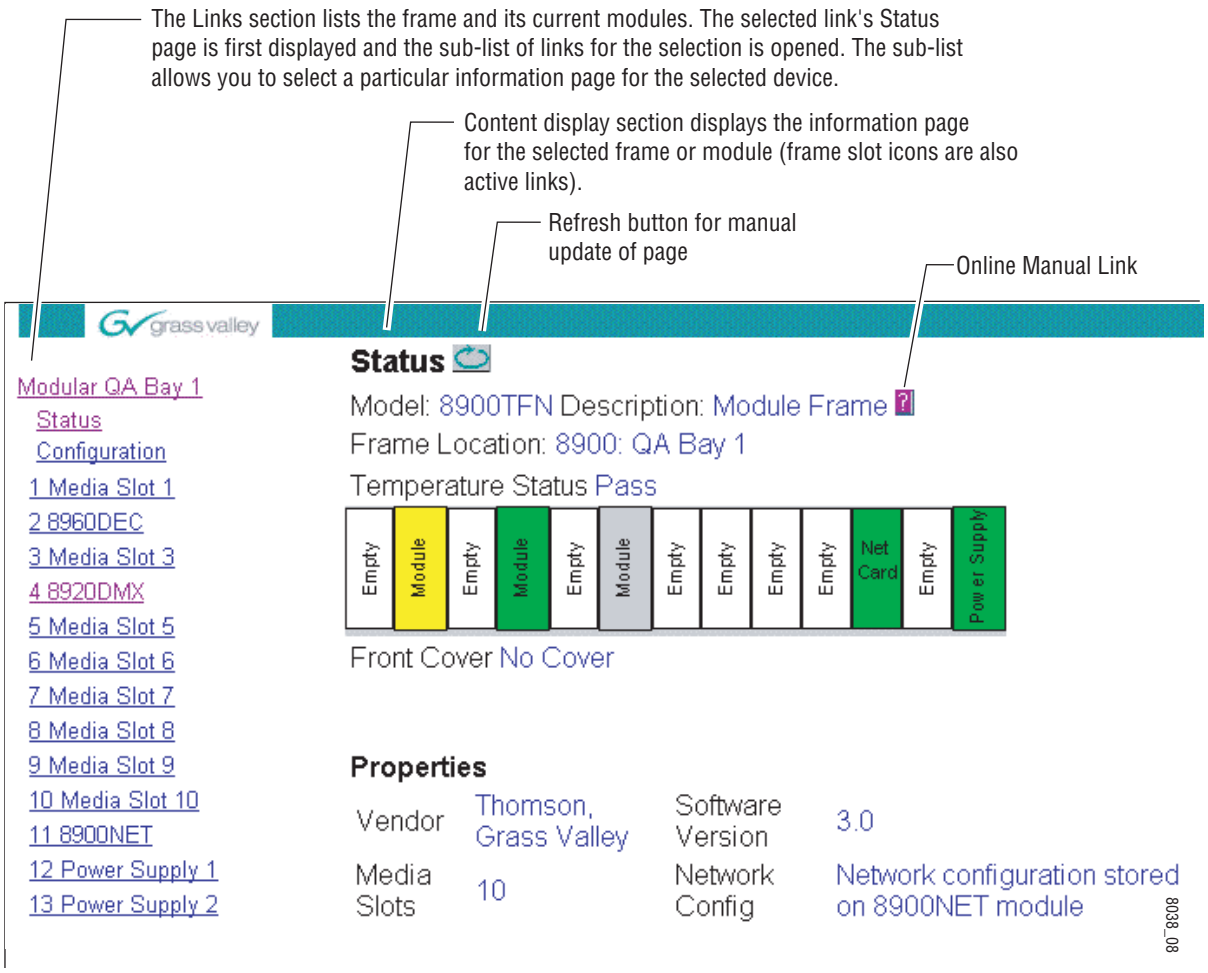
Note The physical appearance of the menu displays on the web pages shown in this manual represent the use of a particular platform, browser and version of 8900NET module software. They are provided for reference only. Displays will differ depending on the type of platform and browser you are using and the version of the 8900NET software installed in your system.

Use the **Refresh** button to update the display (available with 8900NET software version 3.0 and later).

The **Online Manual Link** button can be set up to link to the documentation in pdf format. Link configuration is done on the Frame Configuration page.

For information on status and fault monitoring and reporting shown on the Status page, refer to *Status Monitoring* on page 58.

Figure 8. Gecko 8900 Frame Status Page



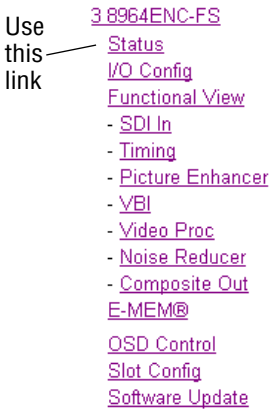
8964ENC Links and Web Pages

The 8900 GUI provides the following links and web pages for the 8964ENC module (Figure 9):

- Status – reports input and reference signal status and module information (page 31),
- I/O Config – shows a graphic representation of inputs and outputs to the module and allows naming of each input (page 33),
- Functional View – shows a block diagram of the module with links to each configuration page (page 34),
- Module Configuration pages for setting up the module (page 35),
- E-MEM – provides Learn and Recall functions for up to 5 E-MEM registers along with **Save to** and **Load from** file operations (page 46),
- OSD Control – provides controls to enable or disable the OSD for each channel (page 50),
- Slot Config – provides a Locate Module function and Slot Memory (page 51), and
- Software Update – allows updating of software from a CD-ROM or the web site (page 53).

Figure 9. 8964ENC Web Page Links

Status Page



The Status page (Figure 10) shows the input signal status of each of the encoder channels and the reference input. Color coding of the display indicated the signal status. Refer to *Status Monitoring* on page 58 for an explanation of the color coding.

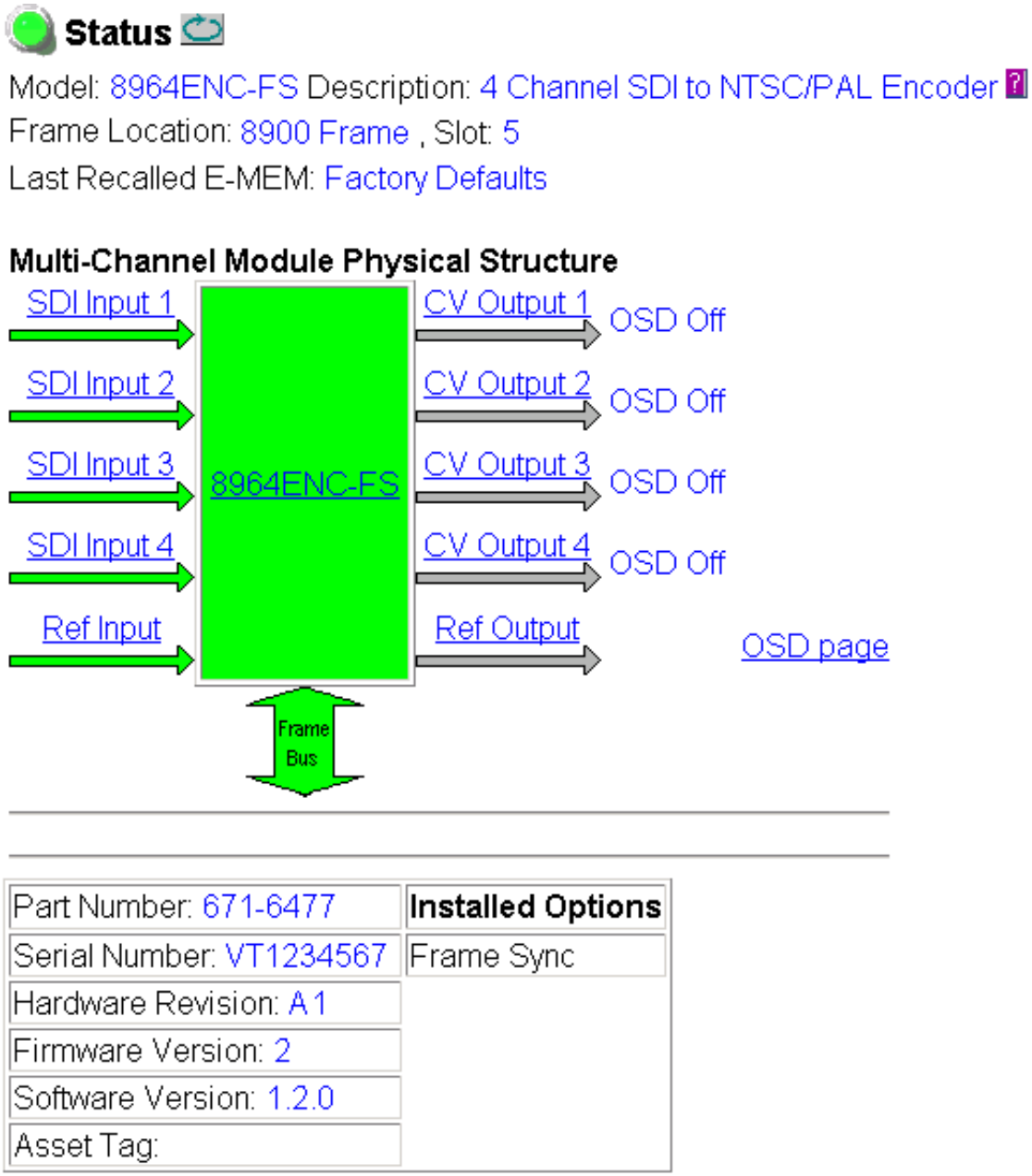
Status of the OSD displays on each output is also shown. A link to the OSD Control page is provided so the OSD can be enabled or disabled from the browser. For more information on enabling or disabling an OSD display through the web browser, refer to *OSD Control Page* on page 50.

Information about the module, such as part number, serial number, hardware revision and software and firmware versions are given in a read-only section at the bottom of the display. Enabled options are also reported.

The Asset Tag field will be utilized in future software releases.

Clicking on the model number in the center box will take you to the Functional View page illustrating a block diagram overview of the module with links to each of the configuration pages.

Figure 10. 8964ENC Status Page



I/O Config Page

Use this link

3 8964ENC-FS
Status
I/O Config
Functional View
- SDI In
- Timing
- Picture Enhancer
- VBI
- Video Proc
- Noise Reducer
- Composite Out
E-MEM®
OSD Control
Slot Config
Software Update

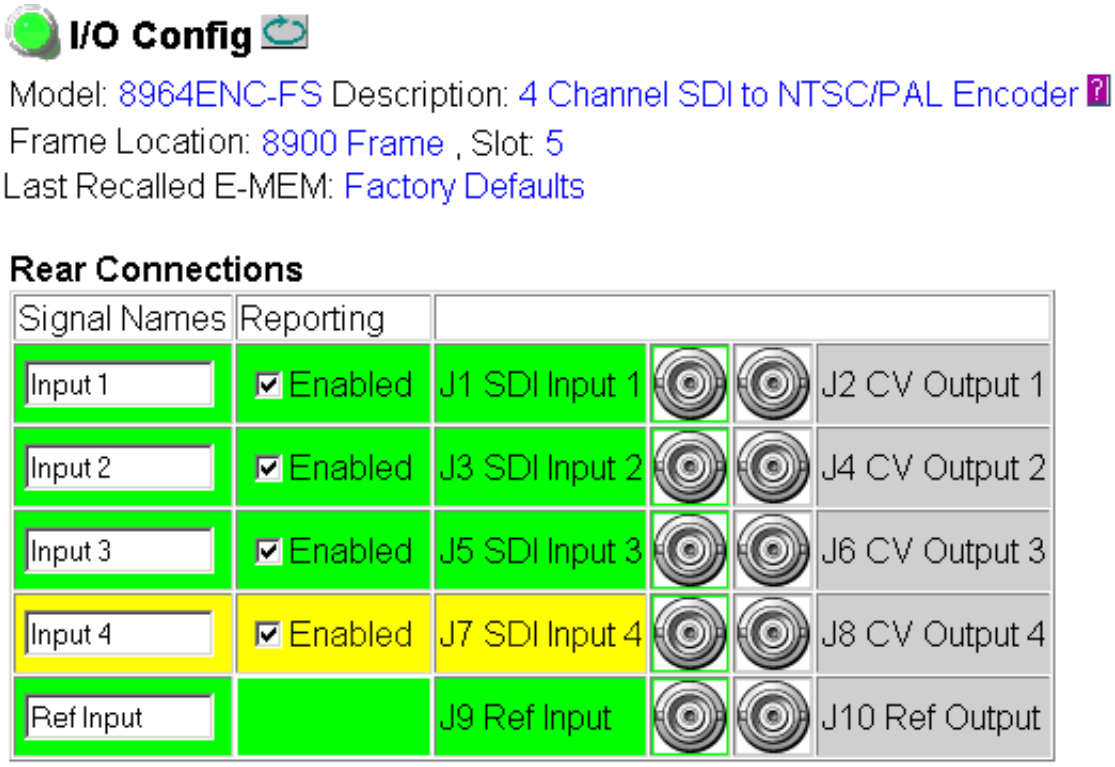
The I/O Config page (Figure 11) shows the rear input and output connections to the module and allows you to name each input. Type the desired input name (up to 11 characters) into the corresponding box. The status of each input is indicated by the color of the display.

Note Outputs are not monitored in this application.

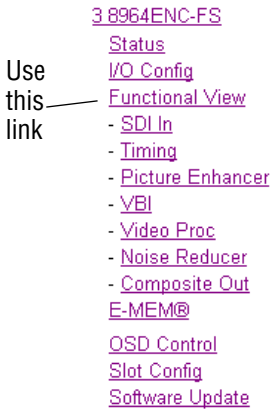
SNMP trap reporting of each channel input can be enabled or disabled by selecting or deselecting the corresponding checkbox in the **Reporting** column. You may disable reporting for channels not being used if desired. The **Reporting** column is also used when an SNMP monitoring application such as NetCentral is installed.

Refer to *Status Monitoring* on page 58 for an explanation of the color coding and using an SNMP monitoring application.

Figure 11. 8964ENC I/O Config Page



Functional View Page

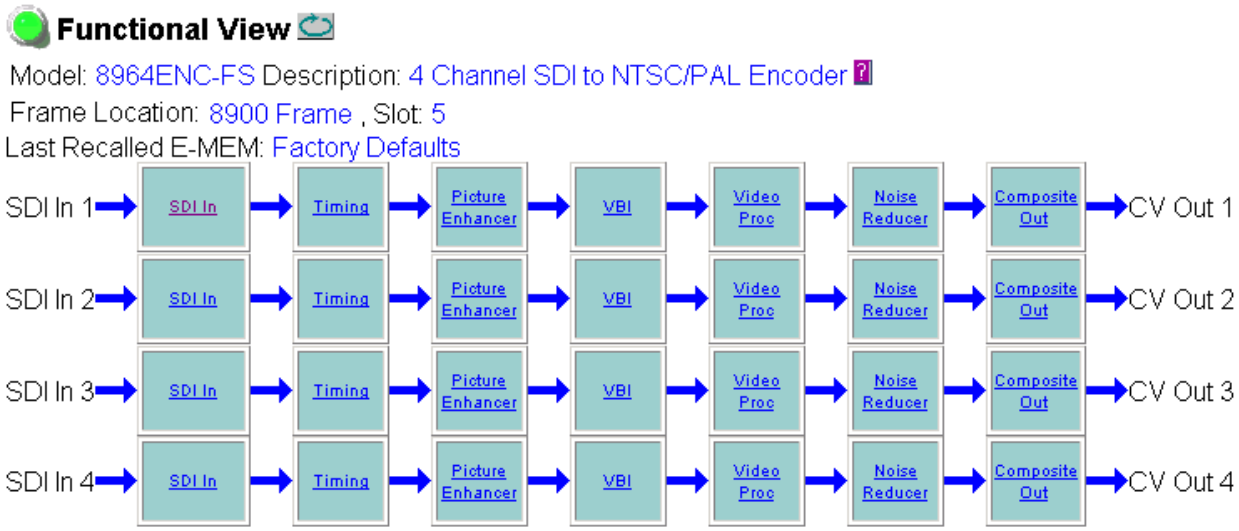


The Functional View page (Figure 12) illustrates a block diagram of the 8964ENC module showing module functions and signal paths that are active or inactive in the current configuration. It can be used as a link map for configuring module functions. Each block has a link to the configuration page for that function.

Color coding indicates active functions and signal flow. Grayed components are inactive due to hardware and/or software constraints. Underlined module functions are links to the web page for that function.

Use the Functional View to configure the 8964ENC module in the order of the signal flow. Refer to each of the module configuration web pages given in the next section.

Figure 12. 8964ENC Functional View Page



Module Configuration Pages

Module configuration is provided for the following functions with the GUI interface:

- SDI In (page 36)
- Timing (page 37)
- Picture Enhancer (page 40)
- VBI (page 40)
- Video Proc (page 42)
- Noise Reducer (page 44)
- Composite Out (page 45)

Read-only information about the module is given on the top of each page including model name and description, frame and slot location and last E-MEM register recalled.

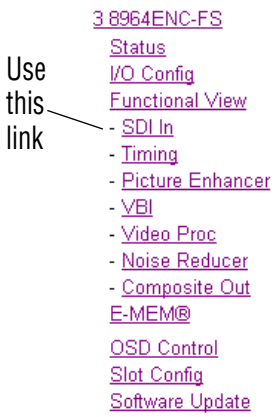
When a channel is selected to configure, the input name (as defined on the I/O Config page) will be displayed under the selected channel or will show the default name. Each channel will show the signal reference type (NTSC or PAL).

After making a parameter value change, click on **Apply** to activate settings in each selection. Each of the four encoder channels can be adjusted separately or settings can be applied to other or all channels. Use the **Apply Setting To** (**Channel 1**, **2**, **3** or **4** as applicable) or **All** buttons to apply the same values to the other channels selected or all channels.

To reset the current channel or all channels to factory defaults, select the Reset defaults for **Current Channel** or **All Channels** buttons.

Select the **Back**, **Functional View**, or **Next** link to navigate to the next function or use the links on the left of the web page.

Click on the **Refresh** button at the top of the display to update the entire display.



SDI In Page

The SDI In page (Figure 13) provides the following status information on each of the SDI video inputs:

- Input Signal State (**Present** or **Not Present**)
- Input Signal Line Rate
- Detected EDH Errors

Press the **Clear Errors** button for each channel to reset the error counter and begin a new error counting sequence or the **Clear All Errors** button to clear all channel counters.

Errors are also reset when the module is removed and re-installed.

Figure 13. 8964ENC SDI In Page

SDI In

Model: 8964ENC-FS Description: 4 Channel SDI to NTSC/P

Frame Location: 8900 Frame , Slot: 5

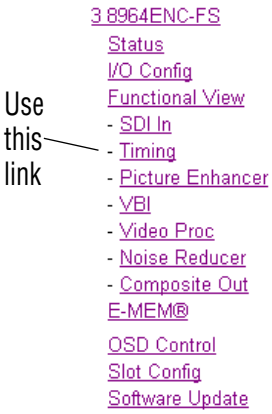
Last Recalled E-MEM: Factory Defaults

Current Line Rate: 525

Channel 1:	**Input 1**
Input Signal State	Present
Input Signal Line Rate	525
Detected Errors	0
Clear Errors	Channel 1 Next
Channel 2:	Input 2
Input Signal State	Not Present
Input Signal Line Rate	-
Detected Errors	No Error Info
Clear Errors	Channel 2 Next
Channel 3:	Input 3
Input Signal State	Present
Input Signal Line Rate	525
Detected Errors	0
Clear Errors	Channel 3 Next
Channel 4:	Input 4
Input Signal State	Present
Input Signal Line Rate	525
Detected Errors	0
Clear Errors	Channel 4 Next
Clear All Errors	

Back Functional View Next

Timing Page



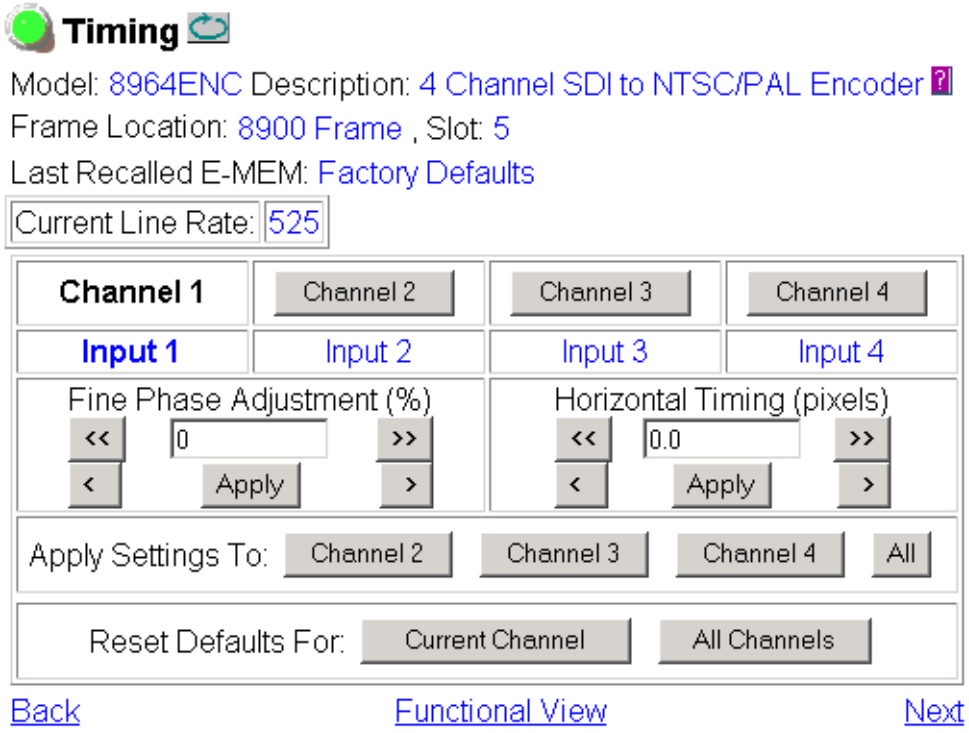
A Horizontal timing adjustments is provided on all models of the 8964ENC. When no Frame Sync option is enabled, the Timing page will display a Line Sync adjustments for horizontal timing and fine phase control. When frame sync is enabled (8964ENC-FS), the Timing page will include horizontal, fine phase, and vertical timing as well as freeze controls. Table 5 on page 19 gives a summary of controls, defaults, and parameter ranges.

Select the channel to be adjusted from the **Channel 1 – 4** buttons.

For the 8964ENC model with Line Sync (Figure 14), adjust the following controls:

- Horizontal Timing – adjust the correct timing output (in pixels) for each channel.
- Fine Phase Adjustment – adjust the percentage of fine horizontal phase for each channel.

Figure 14. 8964ENC Timing Page



When the Frame Sync option is enabled (8964ENC-FS), the Timing page (Figure 15) will also include a Vertical timing adjustment and Freeze controls.

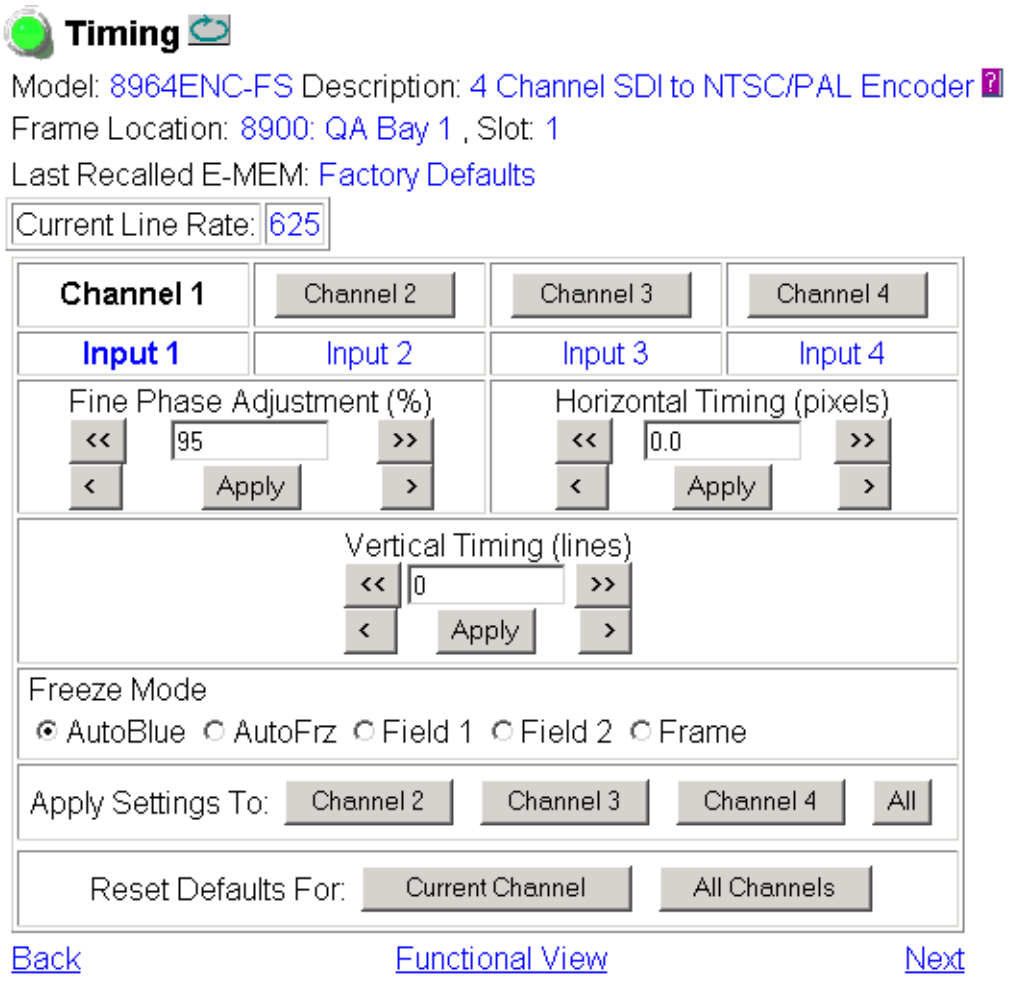
Select the channel to be adjusted from the **Channel 1 – 4** buttons and adjust the following Frame Sync timing controls:

- Horizontal Timing (in pixels)
- Fine Phase (in percent relative to input sync)
- Vertical Timing (in lines)

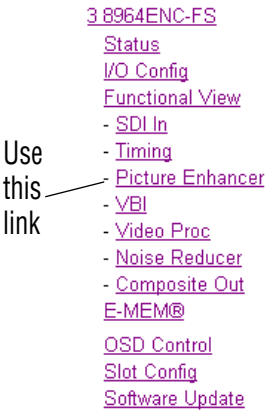
Select one of the following buttons from Freeze Mode:

- **AutoFreeze** – auto freeze to last valid field will occur upon loss of signal.
- **AutoBlue** – auto freeze to blue screen will occur upon loss of signal.
- **Field 1**, **Field 2**, or **Frame** – selecting one of these buttons performs an immediate manual freeze on the selected channel output.

Figure 15. 8964ENC-FS Timing With Frame Sync and Freeze Controls



Picture Enhancer

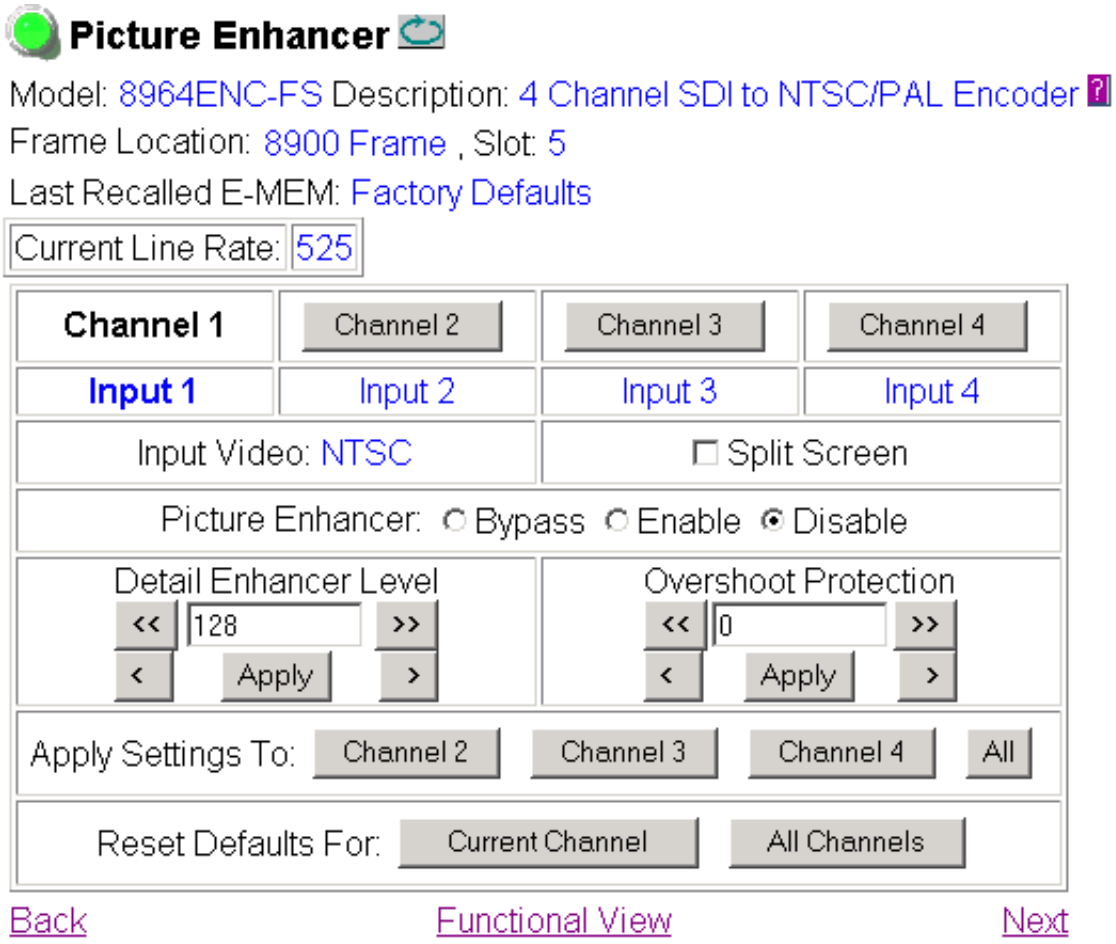


The Picture Enhancer function (Figure 16) can be enabled to adjust picture detail or can be bypassed or disabled for each channel.

Select the channel to be adjusted from the **Channel 1 – 4** buttons. Set the following adjustments with this page:

- Select the **Bypass** button to bypass the Picture Enhancement circuitry (for less delay through the module).
- Select the **Disable** button to turn off picture enhancement.
- Use the Detail Enhancer Level control to adjust the amount of detail enhancement on the channel output.
- Adjust the Overshoot Protection control to minimize overshoot.

Figure 16. 8964ENC Picture Enhancer Page



VBI Page

Use this link

Use the VBI page (Figure 17 for 525 line rate or Figure 18 for 625 line rate) to configure the programmable line pairs in the vertical blanking interval of each channel. Refer to *Vertical Blanking Interval Controls* on page 15 for information on VBI lines. Table 5 on page 19 gives a summary of controls, defaults, and parameter ranges.

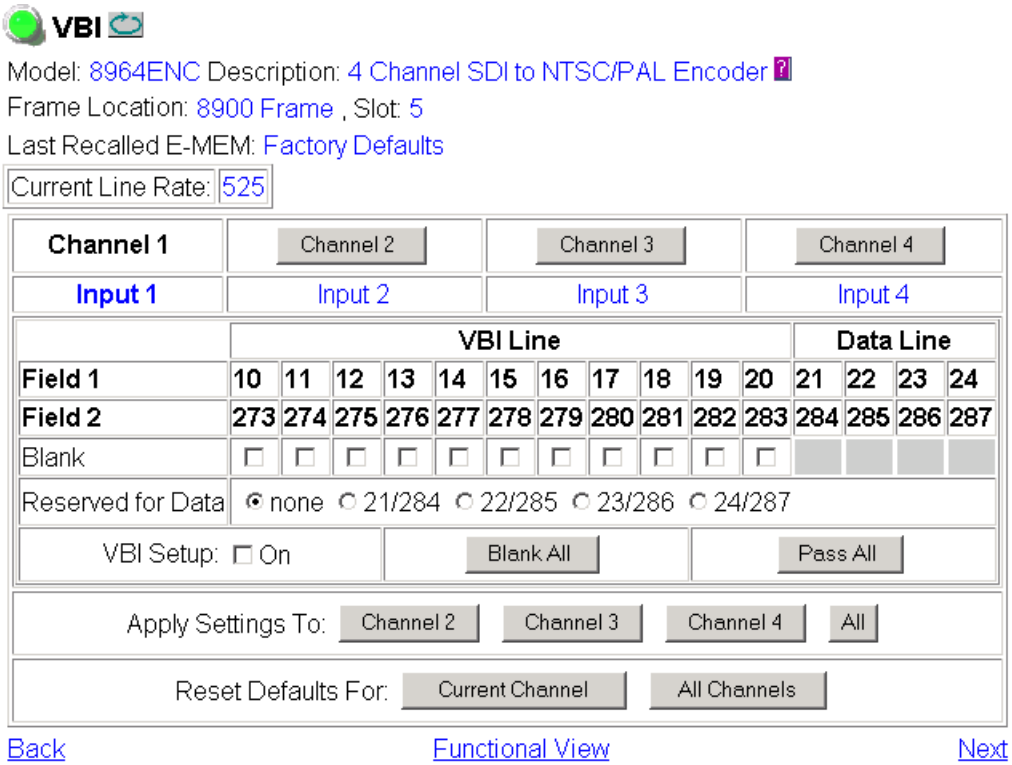
Select the channel to be adjusted from the **Channel 1 – 4** buttons. The line rate for the selected channel (525 or 625) will appear in the upper left of the display.

The display will show each of the programmable VBI line pairs available for that line rate and any Data Line Pairs that have been reserved for carrying data.

Configure the VBI Line Pairs in each channel for the following:

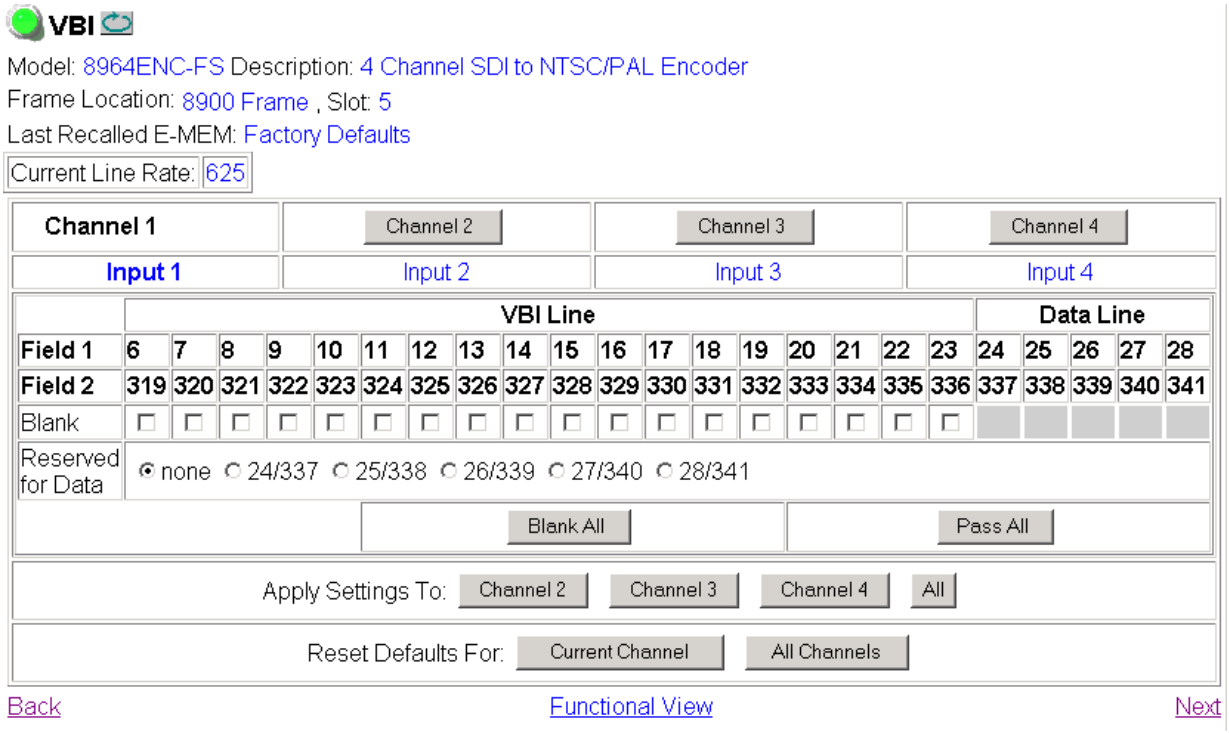
- Blank – select to blank the Field 1/Field 2 line pair. Select the **Blank All** button to blank data on all line pairs or the **Pass All** button to pass data on all line pairs.
- Data Line Pairs – check one of the Reserved for Data selections to reserve the line pair for carrying data. Line pairs reserved for data will be graphically displayed.
- VBI Setup – in 525 mode, turn VBI setup On or Off for all VBI lines.

Figure 17. 8964ENC VBI Page in 525 Line Rate

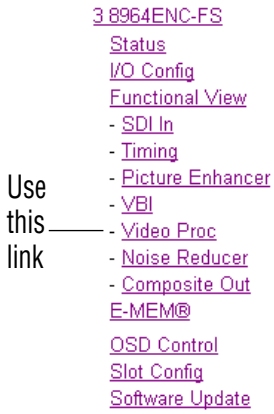


Refer to Figure 18 for the web page display in 625 line rate.

Figure 18. 8964ENC VBI Page for 625 Line Rate



Video Proc



Use the Video Proc page (Figure 19 on page 43) to adjust the composite output of each channel. Select the channel to be adjusted from the **Channel 1 – 4** buttons.

Make the following video processing adjustments on this page:

- Enable a color bars test signal to the channel output by selecting the **Color Bars** radio button in the Test Signal Generator control.

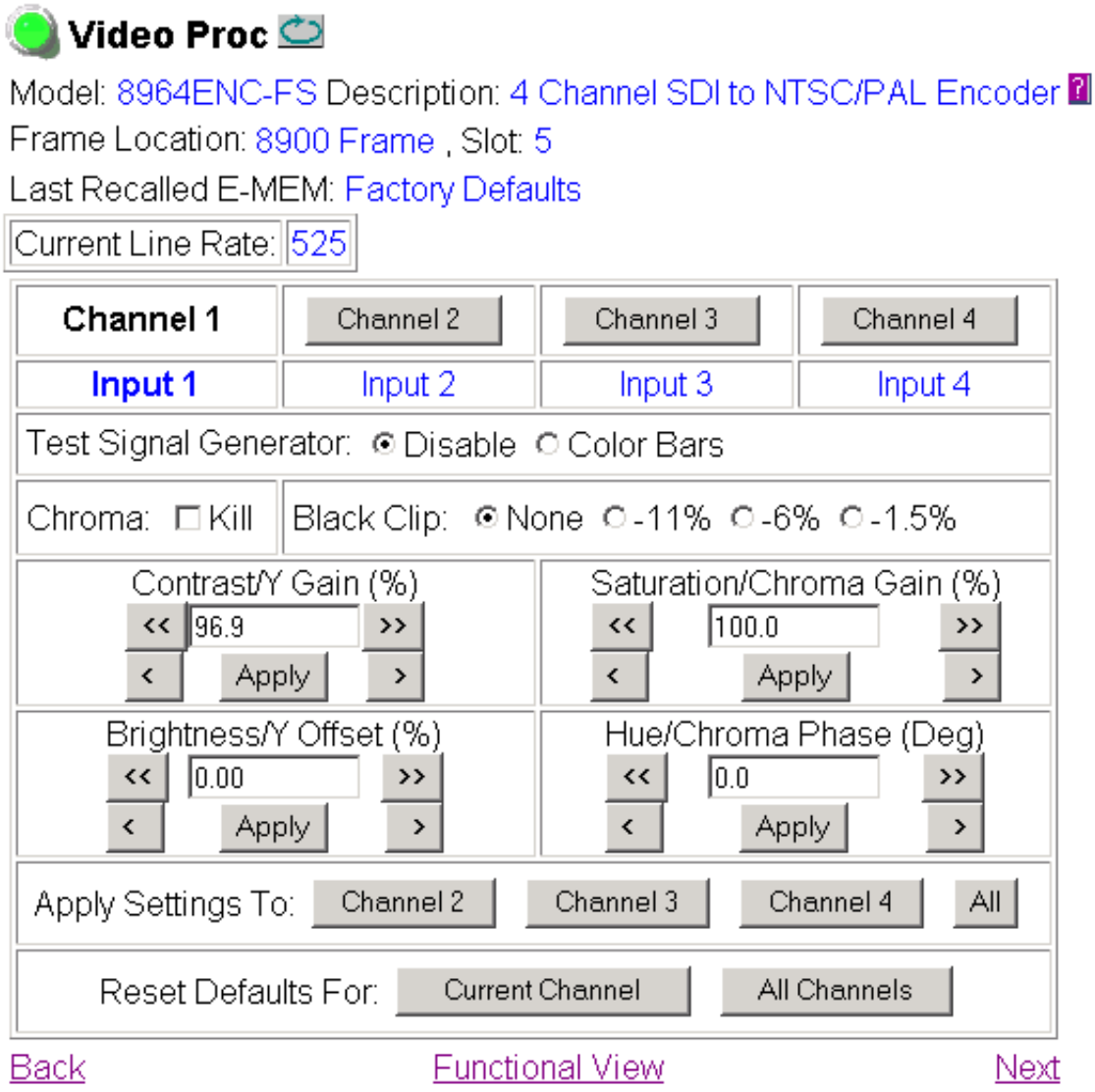
  Select the **Disable** button for normal operation.
- Check the **Chroma Kill** checkbox to shut off chroma for a black and white picture on the channel output.
- Set the amount of Black Clip level with one of the radio buttons. Select **None** for no black clipping.

The Video Processing section provides the following controls:

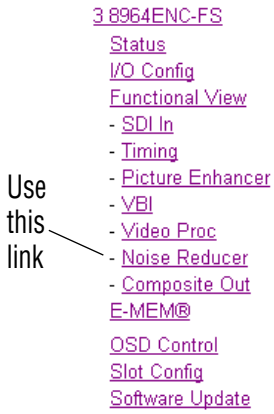
- Contrast/Y Gain – adjusts the percentage of luminance relative to white.
- Saturation/Chroma Gain – adjust the percentage of saturation and chroma gain relative to 100% saturation.
- Brightness/Y Offset – adjusts amount of brightness/Y offset in percent.
- Hue/Chroma Phase – adjust hue/chroma phase in degrees for both line rates.

Note The Contrast Y Gain control interacts with the Brightness/Y Offset control. Adjusting the former will affect the latter in order to maintain optimum performance and range. This is normal operation and part of the design of these controls.

Figure 19. 8964ENC Video Proc Page



Noise Reducer

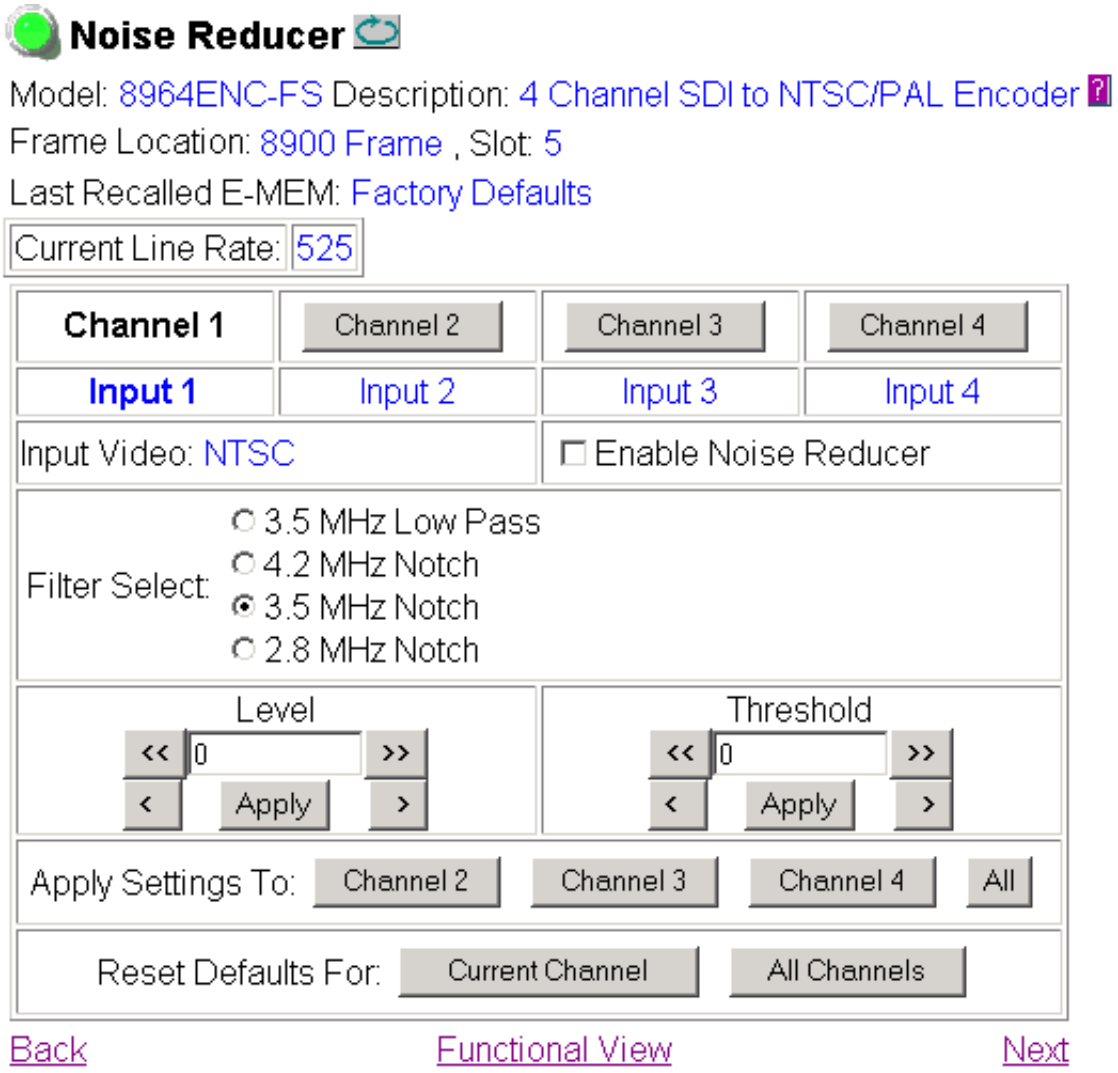


The Noise Reducer function (Figure 20) can be enabled to adjust picture detail or can be bypassed or disabled for each channel.

Select the channel to be adjusted from the **Channel 1 – 4** buttons. Set the following adjustments with this page:

- Check the **Enable Noise Reducer** checkbox to turn on noise reduction.
- Select the type of noise filter from the **Filter Select** radio buttons.
- Use the Level control to adjust the amount of noise reduction on the channel output.
- Adjust the Threshold control for whatever signal amplitude the Noise Reducer will work on. The higher the threshold number the more noise is reduced but more video distortion will occur.

Figure 20. 8964ENC Picture Enhancer Page



Composite Out

Use the Composite Out page (Figure 21) to make final adjustments to the composite output video. Select the channel to be adjusted from the **Channel 1– 4** buttons.

Set the following adjustments with this page:

- In 525 mode, check the **Add** button in the **Active Video Setup** checkbox to add setup to the active output video.
- Adjust the percent of Output Video Gain on each channel.

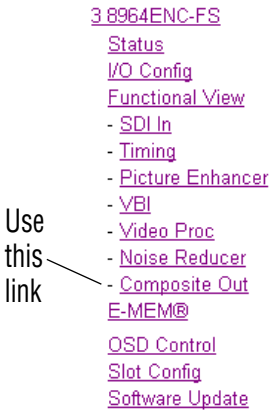
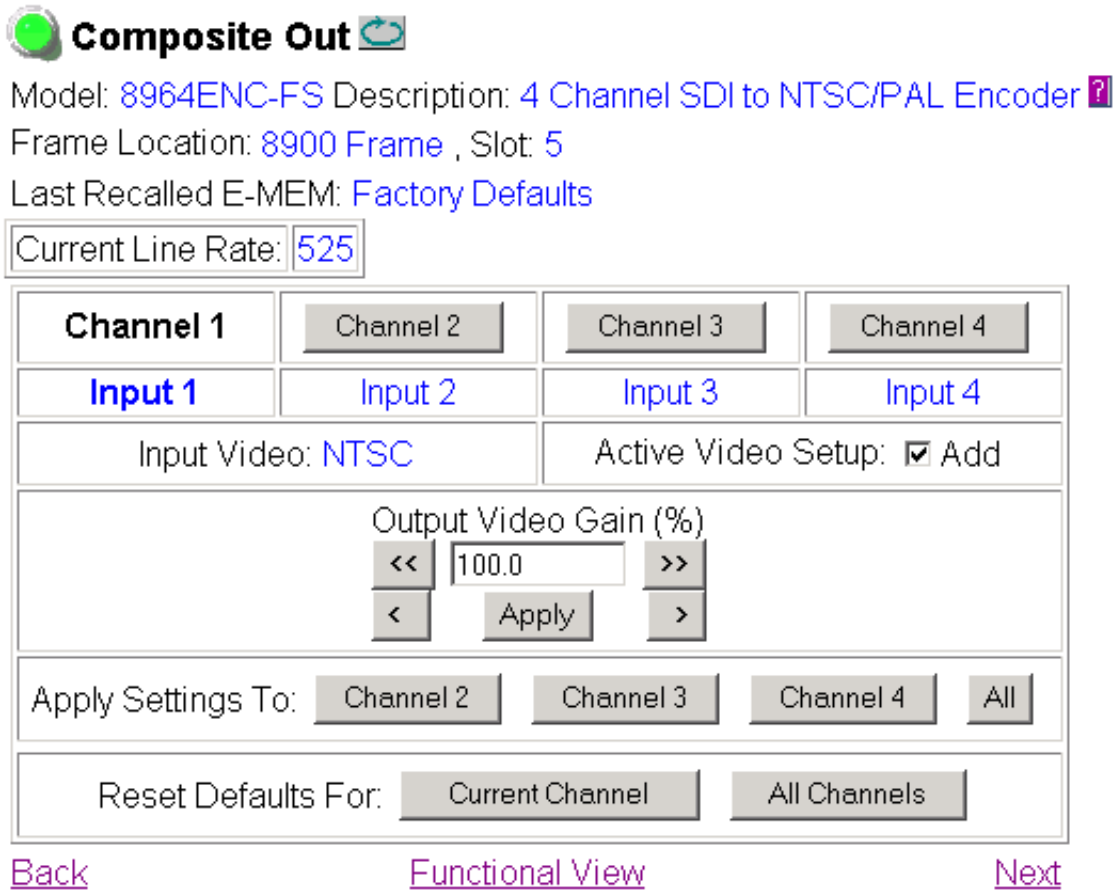
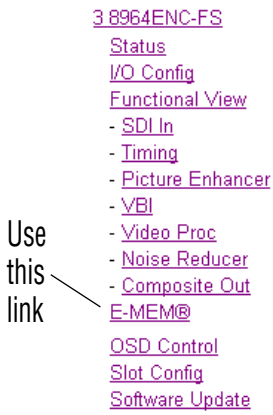


Figure 21. 8964ENC Composite Out Page



E-MEM Page



The E-MEM page provides local operations for learning and recalling configurations into E-MEM registers. File operations are also available for saving or loading the learned E-MEM files to and from a hard disk or other accessible media.

Factory default settings for all channels can be recalled by selecting the **Recall factory settings** button. To return the module to the factory signal names (such as the signal inputs), select the **Recall factory names** button.

There are two E-MEM view selections: **Standard** and **Advanced**.

In Standard view (Figure 22), any one of five learned E-MEMs can be recalled by selecting the corresponding **Recall** button in the Local Operations window. This will place the configuration for all four channels learned into that E-MEM into the 8964ENC. This change will occur immediately upon recall. The name of the last recalled E-MEM will appear in the top header of each web page for the module.

To learn an E-MEM select the **Advanced** button in the View Selection section. This will open the Advanced view (Figure 23 on page 47).

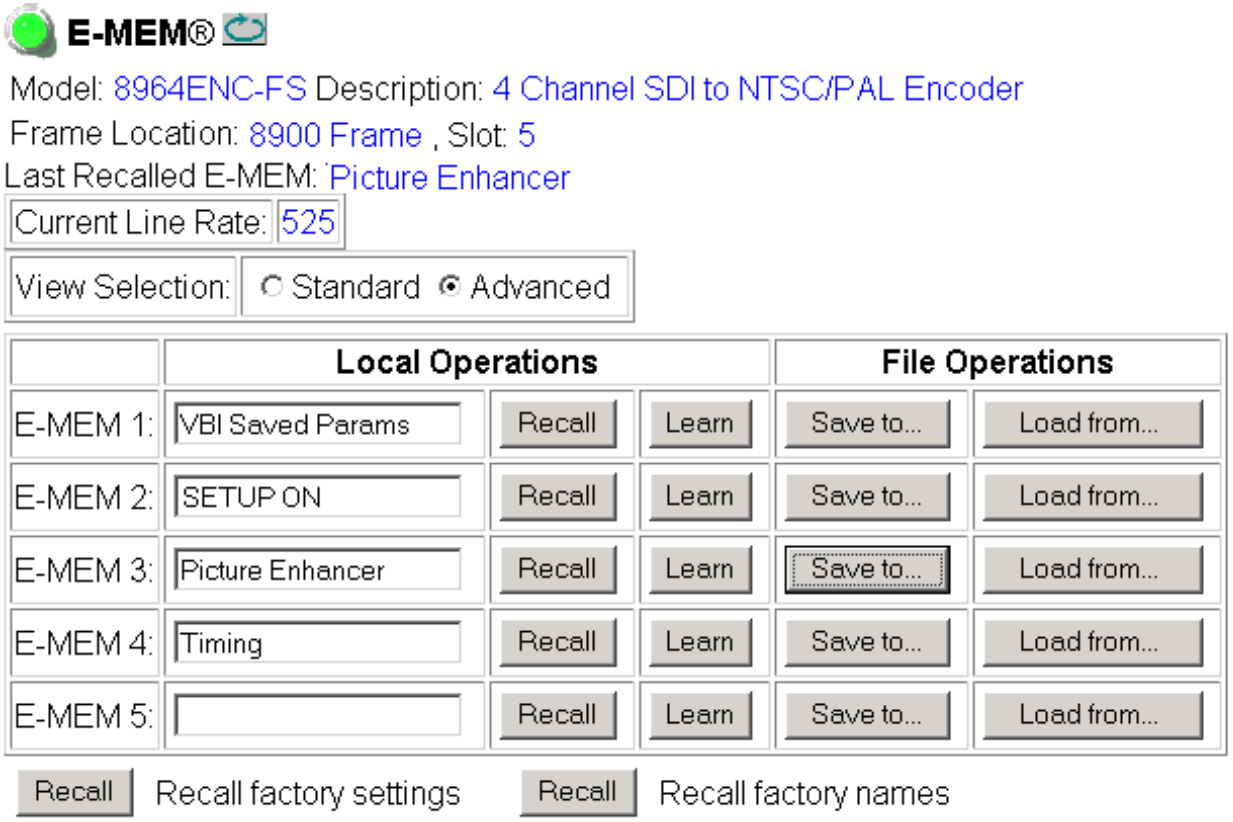
Figure 22. 8964ENC E-MEM Page (Standard View)

The Advanced View (Figure 23) includes a File Operations section to Learn a configuration into E-MEM (**Learn**), save a file to a disk location (**Save to…**) or load a file from a disk location (**Load from…**).

To learn an E-MEM:

1. Open the Advanced view.
2. When the configuration is complete for all channels on the module, type a descriptive name for the configuration into an unused E-MEM register (or overwrite an existing one).
3. Learn the E-MEM to memory by selecting the corresponding **Learn** button. All channel configurations are learned at once and stored in the same register. This register is now learned and ready for recall.

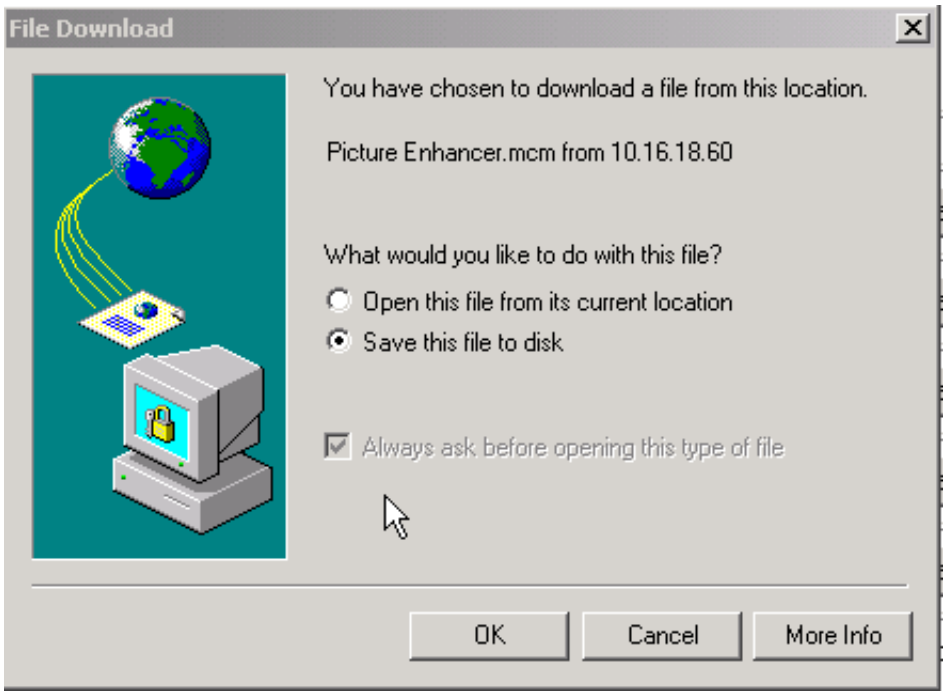
Figure 23. E-MEM Page (Advanced View)



To Save an E-MEM to configuration to a file on a hard drive or other accessible media:

1. Select the corresponding **Save to...** button.
2. This will bring up a File Download screen (Figure 24).
3. Select the **Save this file to disk** button and **OK**.

Figure 24. E-MEM Save to Operation



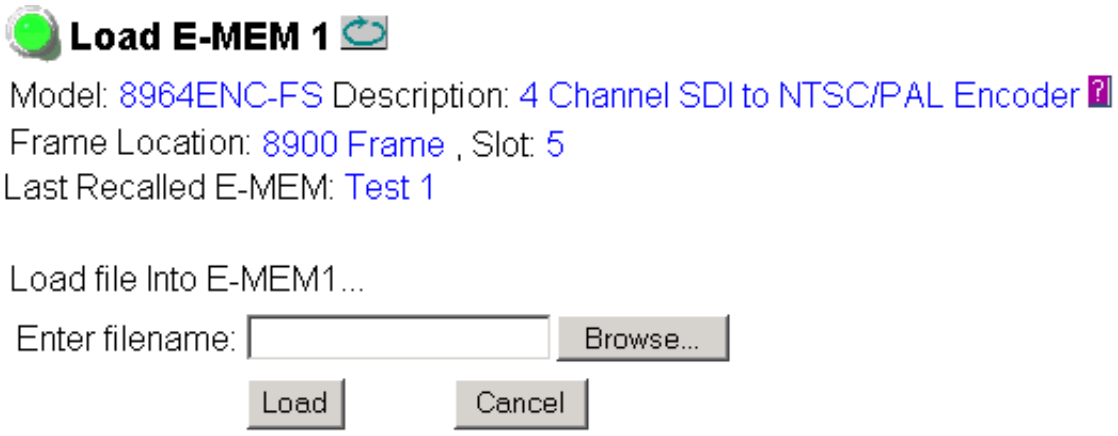
4. In the resulting Save As dialog box, the file name default to the E-MEM name. Browse to the folder where you want to save the configuration and select **Save**. The file saves as a .mcm file type.

Note You may rename the file during the Save process but the E-MEM name entered into the Local Operations window will not change on the web page to match the Save As name. Best practice is to leave the Save As file name the same as the E-MEM name.

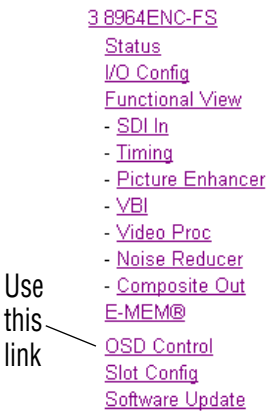
To load a saved E-MEM from a location

1. Select the **Load from ...** button.
2. This will bring up the Load E-MEM page (Figure 25).
3. Browse to the location of the file you wish to load and select the file then the **Open** button to load the file or enter the filename and path in the Enter filename box.
4. Once the correct path and filename is loaded, select the **Load** button on the Load E-MEM page.
5. This should place the recalled E-MEM file into the corresponding E-MEM window. Select the corresponding **Recall** button to invoke this configuration.

Figure 25. Load E-MEM Page



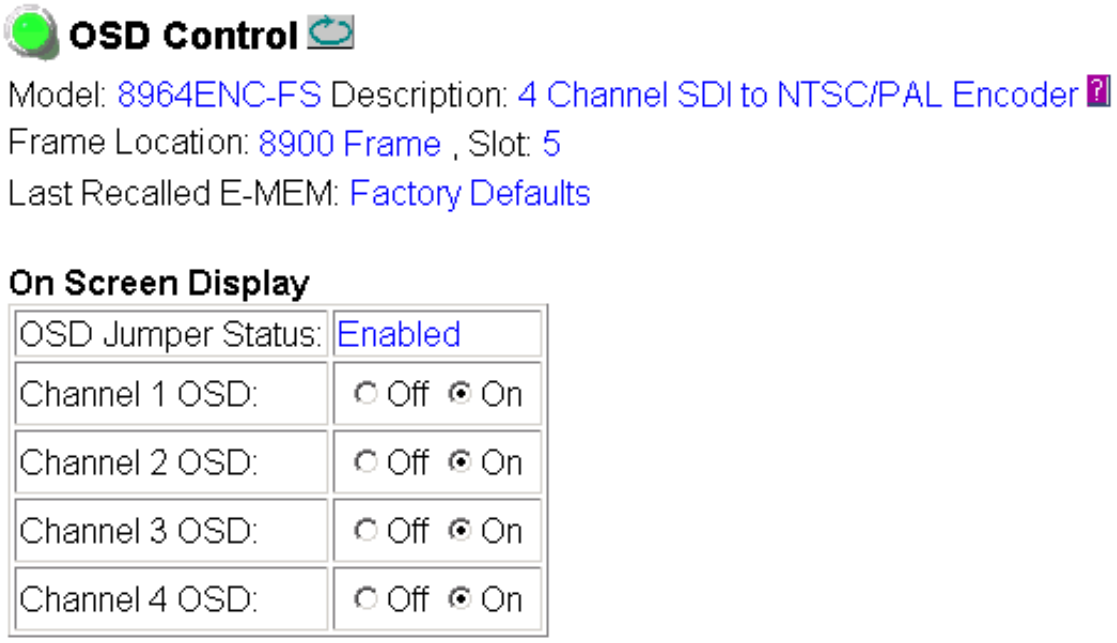
OSD Control Page



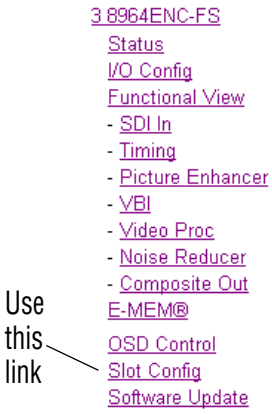
The OSD Control page (Figure 26) allows enabling and disabling of the OSD image on any of the four channel outputs. It also displays the status of the onboard OSD jumper, JP3 (see *8964ENC Module Onboard Configuration Settings* on page 25). Jumper JP3 on the module enables control of the OSD by either the local onboard controls or this OSD Control web page. Once the OSD control is enabled, it can be turned on and off for each channel with the controls in this display or with the local onboard controls.

After module configuration, set the jumper to disable the OSD and prevent it from being put on-air inadvertently.

Figure 26. 8964ENC OSD Control Page



Slot Config Page



Use the Slot Config page (Figure 27 on page 52) to perform the following functions on the 8964ENC module:

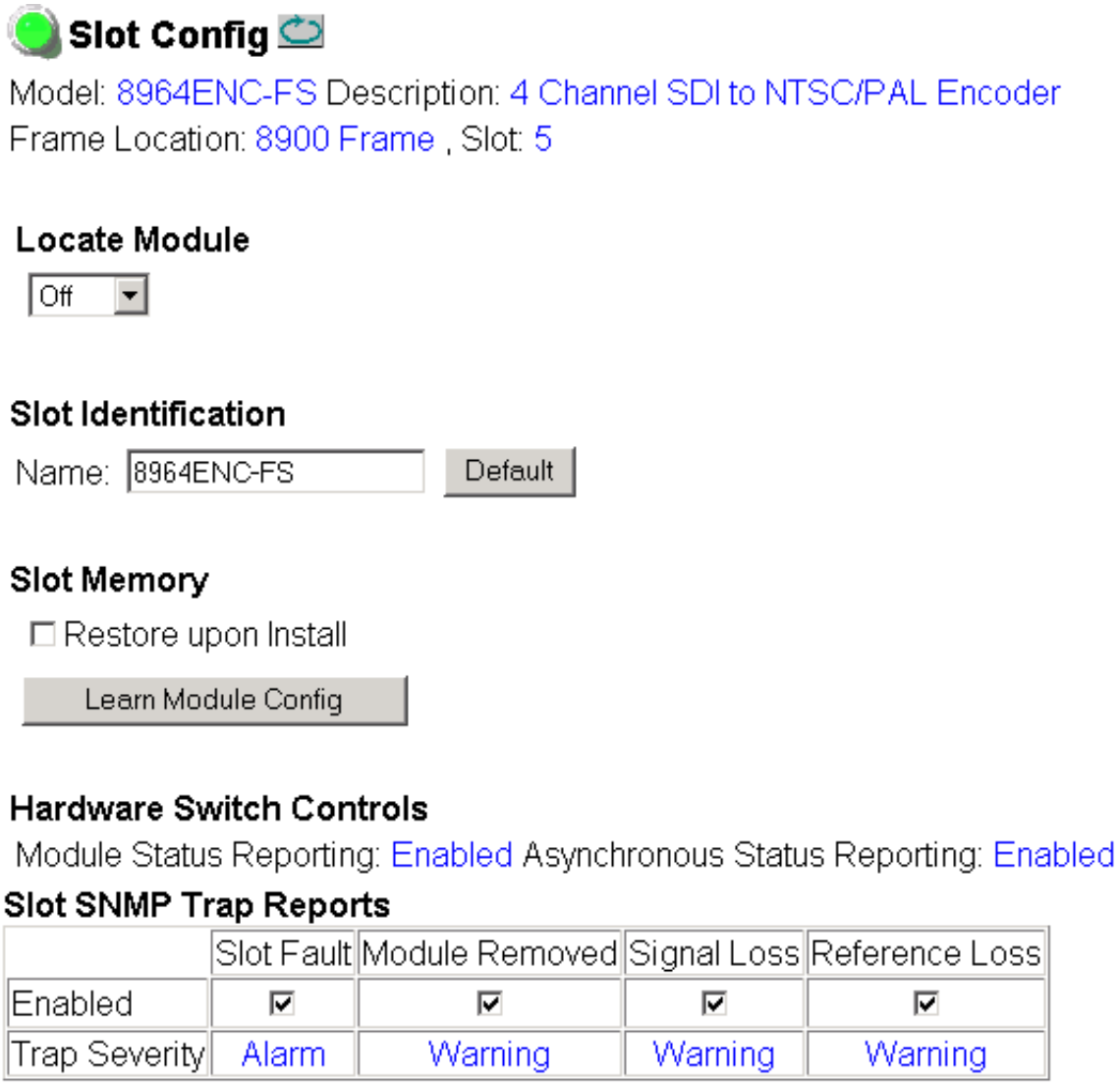
- **Locate Module** – selecting the On pulldown flashes the yellow COMM and CONF LEDs on the front of the module so it can be located in the frame.
- **Slot Identification** – You may type a specific name in the **Name** field The assigned name is stored on the 8900NET module and travels with the 8900NET module if it is moved to another frame. Select **Default** to enter the factory default module name.
- **Slot Memory** – the slot configuration for each media module is automatically saved periodically (once an hour) to the 8900NET module in that frame. You may also select the **Learn Module Config** button at any time to save the current configuration for this slot. The configuration is saved on the 8900NET module. If the 8900NET module is removed or powered down, the stored configurations are not saved.

  When the **Restore upon Install** box has been checked, the current configuration saved to this slot is saved as slot memory. When the current module is removed and another module of the same type is installed, the configuration saved to the 8900NET module will be downloaded to the new module. The box must be checked before the current module with the saved configuration is removed.
- **Hardware Switch Controls** – a read-only status report of 8900NET module switch settings for Module Status Reporting and Asynchronous Status Reporting. These functions must be enabled for the following Slot SNMP Trap Reports to function.
- **Slot SNMP Trap Reports** – displayed only when the SNMP Agent software has been installed on the 8900NET module. Slot SNMP traps can be enabled only when the hardware switches for Module Fault reporting and Asynchronous Status reporting are in enabled on the 8900NET module (dipswitch S1 segment 7 and dipswitch S2 segment 1).

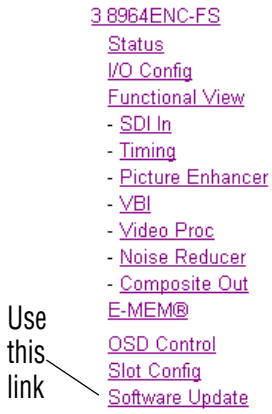
  The enabled SNMP traps will be reported to any SNMP manager that is identified as an SNMP Report Destination in 8900NET configuration. Trap severity is read-only hard-coded information that is interpreted and responded to by the SNMP Manager software configuration.

  SNMP reporting can be also be disabled for individual signal inputs on the I/O Config and Video Composite In web pages.

Figure 27. 8964ENC Slot Config Page



Software Update Page

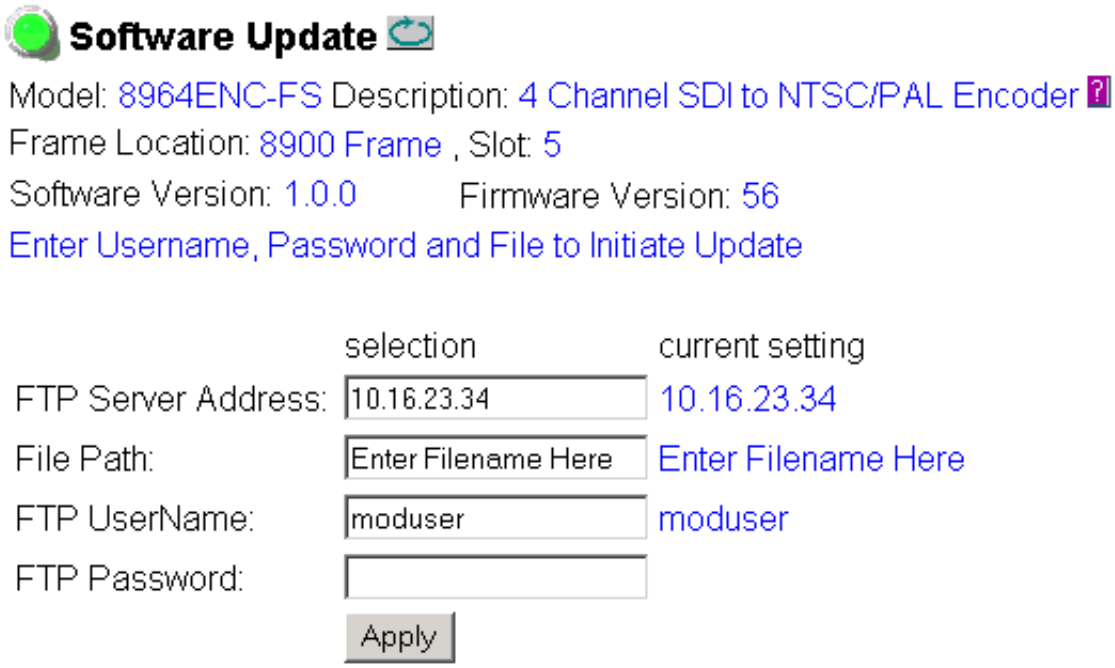


The Software update page (Figure 28) allows updating of software from remote locations such as a CD-ROM or the Grass Valley web site. For instructions on updating to the latest software, refer first to the 8964ENC Release Notes that accompany the software update for compete details.

Updating with this method requires the use of an ftp server application available from the Grass Valley web site. Refer to the *8900NET Network Interface Instruction Manual* for instructions for installing and using the ftp server application.

Software updates may also be performed using the NetConfig application available from Grass Valley. Refer to the *NetConfig Instruction Manual* for more information.

Figure 28. 8964ENC Software Update Page



Control Panel Configuration

An external control panel is available to interface over the network to the 8964ENC module. The configuration functions available with the Grass Valley Newton Control System are summarized in Table 5 on page 19. In addition, the Control Panel mnemonics that will appear with each available function are given in the table.

Note Not all configuration parameters may be available with the Control Panel.

Installation, configuration, and operation of the Newton Modular Control System is provided in a separate manual provided with option.

Module Option Upgrade

The 8964ENC module can be upgraded to enable the Frame Sync option. This upgrade must currently be done at the factory. Contact your nearest Grass Valley Sales or Service representative for more information.

Specifications

Table 8. 8964ENC Specifications

Parameter	Value
SDI Input (per channel)	
Number of inputs	4, one for each encoder
Signal type	SMPTE 259M, 10-bit 270 Mb/s serial component digital
Signal source	75 Ω terminating BNC on rear of frame
Return loss	> 15 dB, 5 to 270 MHz
Error checking	EDH monitored
Reference Input	
Number of inputs	One
Signal type	Color black, SMPTE170M,140 mV to 560 mV, 525 or 625
Connector type	75 Ω BNC loop-through
Return Loss	> 40 dB to 5.0 MHz
Signal to noise requirement	> 40 dB
Composite Output (per channel)	
Number of outputs	4, one for each encoder
Signal type	Composite analog video conforming to SMPTE170M for NTSC and CCIR624 for PAL
Connector type	75 Ω BNC
Signal level	1 V p-p nominal, adjustable in ± 3 dB range
Output return loss	> 40 dB to 5.0 MHz
Signal to noise	> 70 dB to 6 MHz
Field time distortion	< 0.5%
Line time distortion	< 0.5%
K-2T	< 1%
K-PB	< 1%
Frequency response	± 0.1 dB to 5 MHz
Differential phase	< 0.5 degrees
Differential gain	< 0.7%
Chroma luma delay	< 10 ns
Chroma luma gain	< 1%
Timing	
Range – Line Sync (PAL and NTSC)	1 line
Range – Frame Sync (PAL and NTSC)	1 frame
Delay from reference, all timing controls set to 0 line sync (PAL and NTSC)	2 lines
Delay from reference, all timing controls set to 0 frame sync PAL NTSC	 4 lines + 16.65 µsec 4 lines + 16.58 µsec

Table 8. 8964ENC Specifications

Parameter	Value
Performance	
Quantization	10-bit
Accuracy	9.2-bit EDH detection
Output phasing	Full frame with frame synchronizer firmware
Cable length	300M of 1694A cable
Environmental	
Frame temperature range	0 to 45 degrees C
Operating humidity range	0 to 90% non-condensing
Mechanical	
Frame type	Gecko 8900 Video
Power Requirements	
Supply voltage	+12V
Power consumption	< 8.5 W (2 A fast blow fuse)

Service

The 8964ENC modules make extensive use of surface-mount technology and programmed parts to achieve compact size and adherence to demanding technical specifications. Circuit modules should not be serviced in the field unless directed otherwise by Customer Service.

If your module is not operating correctly, proceed as follows:

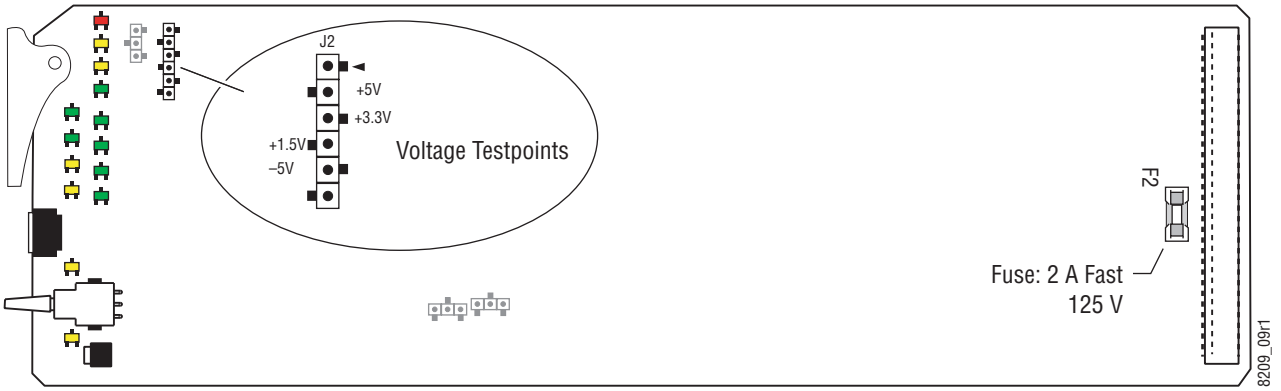
- Check frame and module power and signal present LEDs.
- Verify power at the voltage testpoints (see Figure 29) and check Fuse if no voltage is detected.
- Check for presence and quality of input signals.
- Verify that source equipment is operating correctly.
- Check cable connections.
- Check output connections for correct I/O mapping (correct input connector is used for the corresponding channel output).

Refer to Figure 4 for the location of PWR LED and Table 2 on page 12 for proper LED indications.

If the module is still not operating correctly, replace it with a known good spare and return the faulty module to a designated Grass Valley repair depot. Call your Grass Valley representative for depot location.

Refer to the *Contacting Grass Valley* at the front of this document for the Grass Valley Customer Service Information number.

Figure 29. 8964ENC Fuse and Voltage Testpoint Locations



Status Monitoring

This section provides a summary of status monitoring and reporting for a Gecko 8900 Series system. It also summarizes what status items are reported and how to enable/disable reporting of each item. There are a number of ways to monitor status of modules, power supplies, fans and other status items depending on the method of monitoring being used.

8900 Frame status will report the following items:

- Power supply health,
- Status of fans in the frame front cover,
- Temperature,
- Module health, and
- Frame bus status.

Module health status will report the following items:

- Internal module state (and state of submodule or options enabled) including configuration errors (warning), internal faults, and normal operation (Pass).
- Signal input states including valid/present (pass), not present or invalid (warning), not monitored, and not available (no signal inputs).
- Reference input states including locked/valid (pass), not locked/invalid (warning), and not monitored.
- Signal output states with reporting functionality (reference output).

LEDs

LEDs on modules in the frame and on the front of the 8900TF/TFN frames indicate status of the frame and the installed power supplies, fans in the front covers, and modules. (The 8900TX-V/A frames have no LED indicators on the front cover.)

When a red FAULT LED is lit on a frame front cover, the fault will also be reported on the 8900NET or Frame Monitor module. The LEDs on the front of these modules can then be read to determine the following fault conditions:

- Power Supply 1 and 2 health,
- Fan rotation status,
- Frame over-temperature condition,
- Frame Bus fault (8900NET only), and
- Module health bus.

In general, LED colors used on the frame and modules indicate:

- Green = normal operation, (Pass) or signal present, module locked.
- Red – On continuously = fault condition, flashing = configuration error.
- Yellow – On continuously = active condition (configuration mode or communication), flashing in sequence = module locator function.

Status LEDs for this module are described in *Operation Indicator LEDs* on page 11. LEDs for the 8900NET module are described in the *8900NET Network Interface Instruction Manual*.

Frame Alarm

A Frame Alarm connection is available on pins 8 and 9 of the RS-232 connector on the rear of 8900 frame (Frame Monitor or 8900NET Network Interface module required). This will report any of the status items enabled with the 8900NET or Frame Monitor module configuration DIP switch. Connection and use of the Frame Alarm is covered in detail in the *8900NET Network Interface Instruction Manual.*

Web Browser Interface

When the 8900NET module is installed in the frame, a web browser GUI can indicate frame and module status on the following web pages:

- Frame Status page – reports overall frame and module status in graphical and text formats.
- Module Status page – shows specific input and reference signal status to the module along with enabled options and module versions.
- A Status LED icon on each web page to report communication status for the frame slot and acts as a link to the Status page where warnings and faults are displayed (8900NET version 3.0 or later).

In general, graphics and text colors used indicate the following:

- Green = Pass – signal or reference present, no problems detected.
- Red = Fault – fault condition.
- Yellow = Warning – signal is absent, has errors, or is mis-configured.
- Gray = Not monitored (older 8900 module).
- White = Not present.

Status reporting for the frame is enabled or disabled with the configuration DIP switches on the 8900NET module. Most module status reporting items can be enabled or disabled on individual configuration web pages.

SNMP Reporting

The Gecko 8900 Series system uses the Simple Network Monitoring Protocol (SNMP) internet standard for reporting status information to remote monitoring stations. When SNMP Agent software is installed on the 8900NET module, enabled status reports are sent to an SNMP Manager such as the Grass Valley's NetCentral application.

There are both hardware and software report enable switches for each report. Both must be enabled for the report to be sent. Software report switches are set on the 8900NET Configuration page for the Frame, the 8900NET module, and each module slot. Refer to the *8900NET Network Interface Instruction Manual* for installation instructions.

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