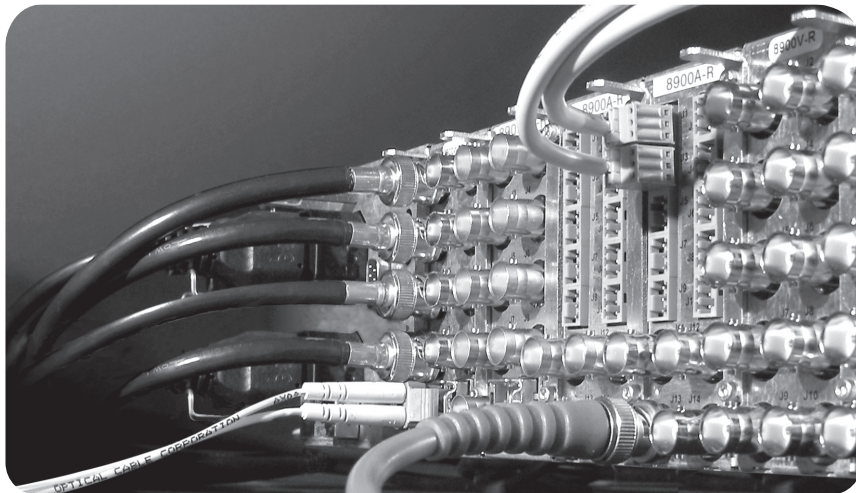# grass valley

8964DEC/-FS
4-CH NTSC/PAL TO SDI DECODER MODULE

Instruction Manual

Software Version 1.1.0

KEMA Quality

CERTIFICATE

Certificate Number: 510040.001

The Quality System of:

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Headquarters:

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Including its implementation, meets the requirements of the standard:

ISO 9001:2008

Scope:
The design, manufacture and support of video and audio hardware and software products and related systems.

This Certificate is valid until: June 14, 2012
This Certificate is valid as of: December 23, 2010
Certified for the first time: June 14, 2000

H. Pierre Sallé
President
KEMA-Registered Quality

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grass valley

8964DEC/-FS
4-CH NTSC/PAL TO SDI DECODER MODULE

Instruction Manual

Software Version 1.1.0

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Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

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For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.grassvalley.com/about/environmental-policy

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Preface

About This Manual

This manual describes the features of a specific 8900 module as part of the Gecko and GeckoFlex Signal Processing System families As part of this module family, it is subject to Safety and Regulatory Compliance described in the *Gecko 8900 Frames Instruction Manual* and the *GeckoFlex Frames 8900FX/FF/FFN Signal Processing System Instruction Manual.*

These manuals can be found on-line in PDF format at this link:

www.grassvalley.com/docs/modular

8964DEC/-FS 4-Channel NTSC/PAL to SDI Decoder

Introduction

The 8964DEC module offers four independent, full-function, high-density decoders on one module. With 10-bit A-to-D and full-adaptive decoding, it provides high quality conversion of NTSC/PAL video to broadcast quality component 4:2:2 signal despite the noisiest inputs (satellite and microwave links). A frame synchronization version is also available (8964DEC-FS).

The 8964DEC features:

- 4 NTSC/PAL to 270 Mb/s SDI decoders with independent controls for:

  - Line sync mode for horizontal timing,

  - Frame sync (option) adding vertical timing and freeze modes,

  - Automatic gain and chroma controls (AGC and ACC),

  - Monochrome In signal support,

  - Processing amplifier,

  - Line-by-line VBI processing with remote control,

  - Test signal generator (color bars and pathological signal outputs),

  - EDH insertion for error tracking, and

  - Picture detail enhancement.

- User adjustable 2D adaptive comb decoding,

- An OSD (On Screen Display) can be keyed in and out of video output,

- Analog color black NTSC/PAL reference inputs,

- Up to 10 8964DEC decoders in an 8900 Gecko video frame or a GeckoFlex frame providing up to 40 decoders in one frame, and

- Remote interface with the 8900NET module (version 4.3.0 or later):

  - Web browser configuration and control,

  - SNMP traps for use with NetCentral, and

  - Newton Control Panel interface.

Installation

The 8964DEC and 8964DEC-FS module can be installed in either an 8900 Gecko or a GeckoFlex frame. An 8900V-R rear module is required for use in the GeckoFlex frame.

Gecko 8900 Frame

Installation of the 8964DEC module in a Gecko 8900 frame is a process of:

1. Placing the module in the proper frame slot, and

2. Cabling and terminating signal ports.

The 8964DEC 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 18).

Frame Capacity

The 8964DEC 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
8964DEC (-FS) Modules	5	10	10

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

Using the latest 8900NET (Net Card) module (version 4.3.0 or later), a link to the 8900 Frame Status web page (Figure 11 on page 34) then select the link to the Power Supply/Demand web page for determining the power capacity for the frame. Using this function, the 8900NET module will determine how much power is being consumed and report back when power has been exceeded.

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.

The two cells on the right are allocated for the power supplies. For additional information concerning the Power Supply module, refer to the *8900 Gecko Frames* or the *GeckoFlex Frames 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 4.3.0 or higher for full networking functionality and proper remote operation of the 8964DEC module.

Figure 1. Gecko 8900 Series Frame

Any 8900 Module

Frame Controller or
8900NET Network
Interface Module

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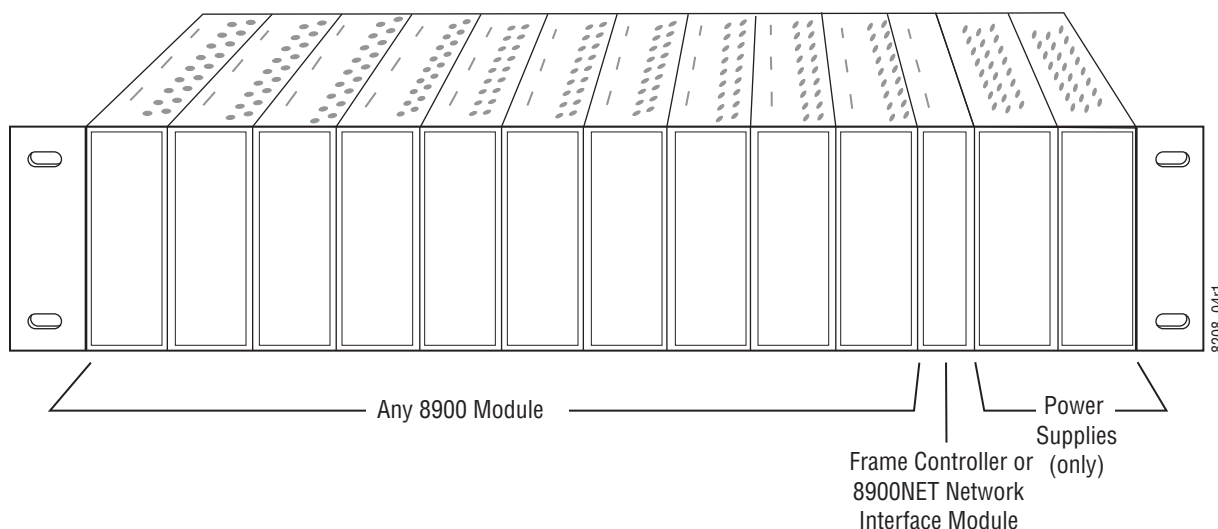
8900 module slots are interchangeable within the frame. There are 10 BNC connectors in each slot's I/O group. The functional assignment of each connector in a group is determined by the module that is placed in that slot. The maximum number of modules a Gecko 8900 frame can accept is ten. Figure 2 illustrates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

Figure 2. Gecko 8900 Series Frame Rear Connector
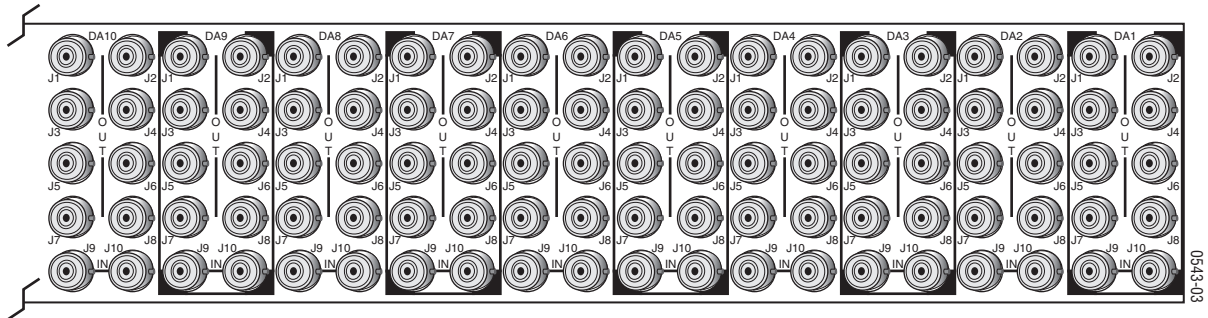
To install a module in the frame:

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.

GeckoFlex Frame

Installation of the 8964DEC/FS module in a GeckoFlex frame includes:

1. Installing the 8900V-R rear module into the rear of the frame,

2. Placing the 8964DEC/FS module in the corresponding front frame slot, and

3. Cabling and terminating signal ports.

Module Installation Precautions

Please read and follow the precautions listed below before installing the front and rear modules:

*   Use standard anti-static procedures during installation. As modules can be installed or removed when the GeckoFlex frame is powered up, before removing the cover, please use an anti-static bracelet or heel strap tied to a metal part of the frame.

*   Install the rear module first, then install the front module.

*   When installing or removing a rear module, loosen or tighten the screws holding the retainer clips to the frame manually with the retainer clip tool provided inside the front cover of the frame or use a 2 mm (5/64") hex screwdriver. Please do not use an electric screwdriver.

Note   On newer 751- version GeckoFlex frames, a Rear Retainer Clip removal tool and 2 extra retainer clips and screws for installing them are provided on the inside of the frame cover.

*   Make every effort to leave the screws holding the retainer clips in place (do not remove them completely). They are very small and can easily drop into other equipment causing a shorting hazard. (Two turns of the screw should be enough to loosen the screws, 3 turns or more will remove it.)

*   When installing a rear module, tighten the screws on the retainer clips just until snug. Do not apply more force than is necessary to seat the rear module. Do not use an electric screwdriver. Refer to the rear retainer screw torque specification in the **Mechanical** section of Table 7 on page 61.

Rear Module Installation

All unused rear slots in a GeckoFlex frame should have a blank rear adapter cover installed.

1. Each 8900V-R rear module or blank rear adapter cover is held in place by two retainer clips as shown in Figure 3. Loosen (but do not remove completely) the two screws holding each retainer clip to the frame with a 2 mm (5/64″) hex screwdriver or the Rear Retainer Clip tool provided (751- frames only). Pull up on the retainer to remove it, leaving the screws in place.

CAUTION Be careful to leave the screws in place as they can be easily lost or fall into equipment below the frame creating a shorting hazard.

2. Remove the blank rear adapter cover by inserting needlenose pliers into the slots in the top and bottom of the blank and pulling it off.

Note To remove a rear module already installed, follow the same steps. It is helpful to first remove the front module so the rear can be pulled out more easily.

3. Insert the rear module into the empty slot.

4. Replace each retainer clip over the two screws on both sides of the module and push down to seat the retainer.

5. Tighten the screws for each retainer clip just until they are snug. Do not force or torque the screws too tightly.

Figure 3. Installing Rear Module

Use retainer clip or
needlenose pliers
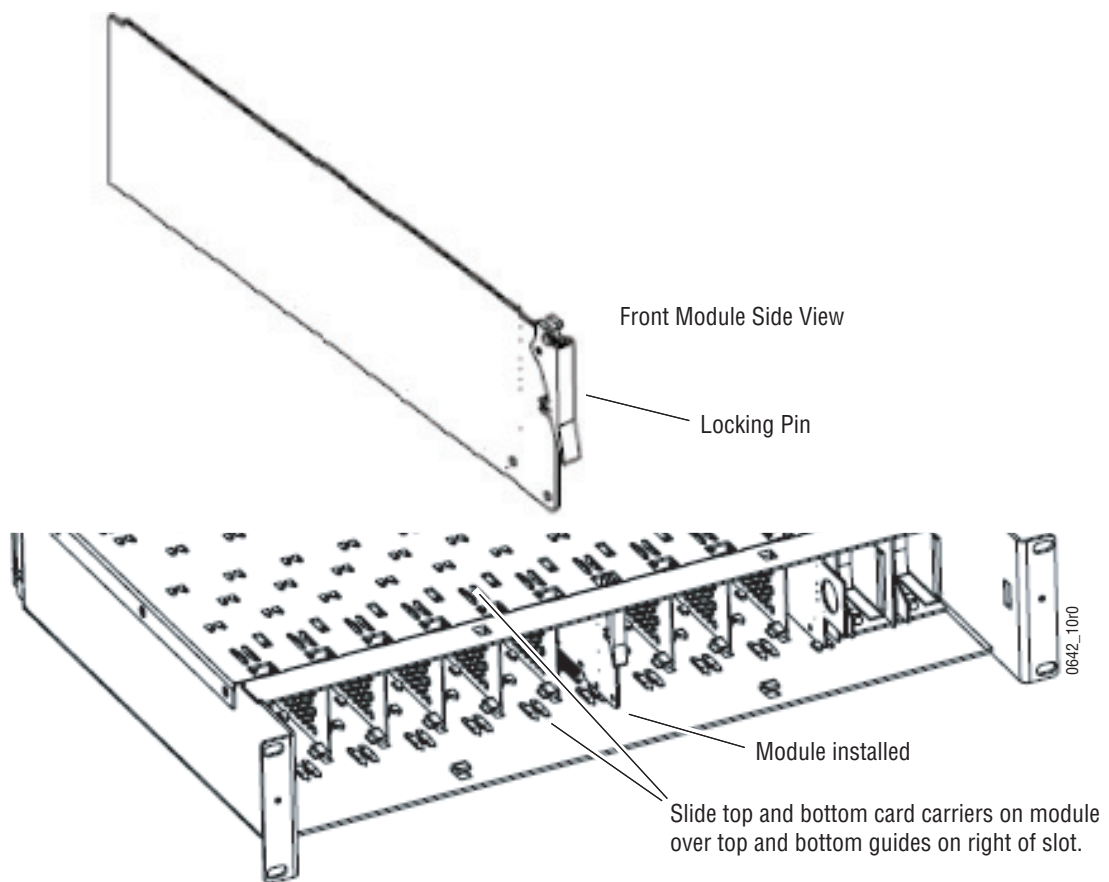to pull out blank after
removing retainer clips
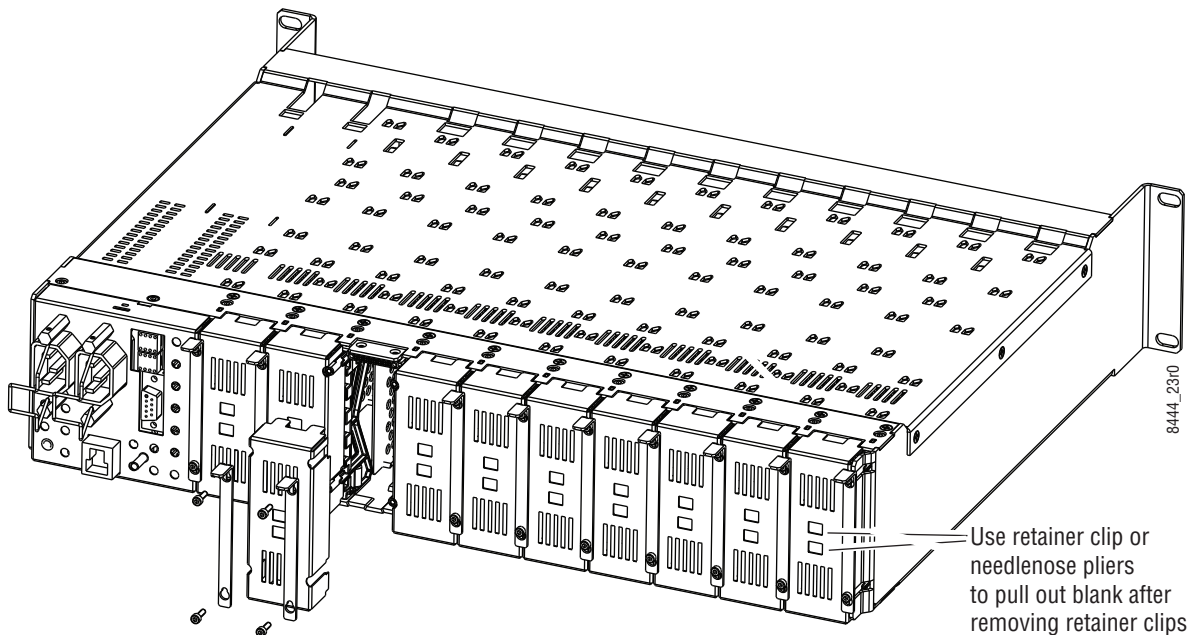
Front Module Installation

After installing the rear module, install the front module as follows:

1. Remove the front cover of the frame if required.

2. Locate the corresponding front slot.

3. Insert the front module so that the plastic card guides on the module top and bottom edges go over the upper and lower raised rail guides on the right of the top and bottom of the slot (Figure 4).

4. Carefully slide the module into the rear connector.

5. Lock the front module ejector tab into the locking pin.

Figure 4. Front Module Installation

Front Module Side View

Locking Pin

Module installed

Slide top and bottom card carriers on module over top and bottom guides on right of slot.

Cabling

Cabling to and from the module is done at the back of the Gecko frame (Figure 5) and the 8900V-R rear module on a GeckoFlex frame (Figure 6) as described below for both frame types.

Figure 5. 8964DEC Gecko Frame Connectors
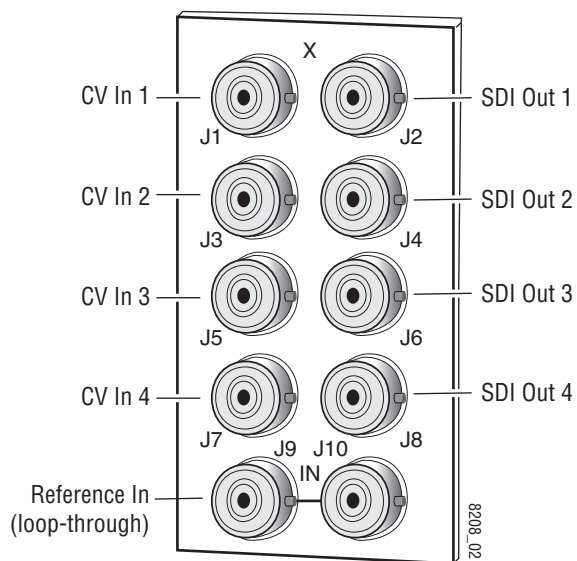
Figure 6. 8964DEC 8900V-R Rear Module Connector
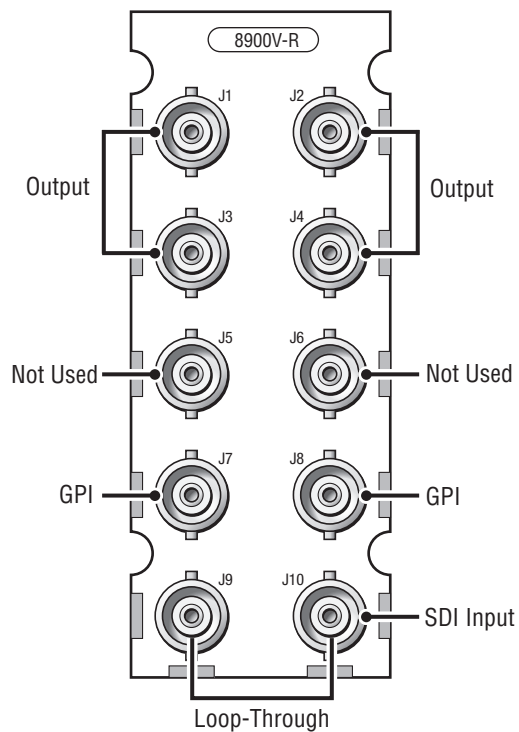
Inputs

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

Note   If feeding a monochrome signal to a channel, select **Monochrome In** with the Composite In controls. Refer to Table 8 on page 67 control summary.

Outputs

Four corresponding serial digital video outputs are provided at BNCs J2, J4, J6, and J8 as shown in Figure 5 and Figure 6. There is no audio tracking output on the output of the module.

Reference Loop-through Input

Connect an NTSC/PAL analog color black reference source to one of the loop-through reference connectors, J9 or J10. Terminate the unused connector into 75 ¾ if the signal is not looped to other equipment.

Note   The line rate for the module (all four decoder channels) will be auto-detected from the Reference In signal.

Power Up

The front LED indicators and configuration switches are illustrated in Figure 7. 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 19 to see the possible operating indicator combinations).

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

Figure 7. LEDs and Configuration Switches

One LED will be on to indicate 525 or 625 line reference is present
525 – Green LED
625 – Green LED

Module Configuration Active Channel Control Indictors
CM1 – Yellow LED
CM0 – Yellow LED

FAULT – Red LED is off during normal operation.

COMM – Yellow LED on indicates frame bus traffic.

CONF – Yellow LED on indicates module is initiating, changing operating mode, or updating firmware.

PWR – Green LED on indicates power OK.

CH 1 – CH4 Green LEDs on indicates signal present on CH1, 2, 3 and 4.

FUNCTION

2ND LED

Module Configuration Switches and LEDs.

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 65.)
	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 updating firmware.
	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 5 on page 27).
	On	
CM0 (yellow)	Off	
	On	
CH1 (green)	Off	No signal present on Ch 1 or input signal line rate does not match reference.
	On continuously	Valid signal is present on Channel 1.
CH2 (green)	Off	No signal present on Ch 2 or input signal line rate does not match reference.
	On continuously	Valid signal is present on Channel 2.
CH3 (green)	Off	No signal present on Ch 3 or input signal line rate does not match reference.
	On continuously	Valid signal is present on Channel 3.
CH4 (green)	Off	No signal present on Ch 4 or input signal line rate does not match reference.
	On continuously	Valid signal is present on Channel 4.
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 8964DEC 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 20)

- Local Onboard Module Configuration (page 26)

- Remote Control and Monitoring (page 32)

Operation of these control types is explained in detail in their respective sections of this manual. Table 8 on page 67 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.

Configuration Summary

This section provides a summary of all parameters that can be configured on the 8964DEC module. The video processing configuration is described by what line types will be affected by the adjustments or choices made. Use this section in conjunction with the specific configuration method instructions for each configuration type.

Video Processing Controls

The 8964DEC provides video processing controls for the decoding process for all four channels independently. How the video data is processed depends on what line the video is on. Some processing affects all lines, other processing affects just the active picture lines, programmable VBI lines or the fixed VBI lines.

Line Categories

The line categories used in the configuration of the video signal for the 8964DEC 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 on the 8964DEC module.

Table 3. Line Numbers for 8964DEC 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)

Note   The categories may not match the line definition as specified in the applicable standard.

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

All Lines – Composite In Video Path Processing

The incoming video composite signal path for each channel can be processed before decoding. These processing functions affect all lines of video at once, both active picture lines and VBI lines.

The following processing functions are available for the video composite input signals:

- AGC and ACC on or off – the Auto Gain Control (AGC) and Auto Chroma Control (ACC) are set to default to the off condition (**Enable AGC** and **ACC** checkboxes not checked). This is the recommended state and provides the following controls for video and chroma gain:

    - Input Video Gain – adjust the input video gain in percent relative to 100% (100% = 1 V p-p). AGC operation is based on sync tip.

Note   Manually adjusting Input Video Gain may shift picture position slightly
(± 1 clock).

- Input Chroma Gain – adjust the percentage of chroma gain relative
  to 100%.

  Checking the **Enable AGC** or **Enable ACC** checkbox will enable the
  respective automatic gain settings.

- Monochrome In – check this box when a monochrome input signal (or
  any signal that does not contain burst) is being fed to a channel. This
  checkbox must be checked for the module to recognize the signal as
  valid and light the corresponding input LED. This will also enable the
  Chroma Kill function on the Video Proc page, changing it to a read-only
  state.

Active Picture Lines – Video Path Processing

The video processing functions described below affect all active picture
lines (F_Active lines and the P_Active the user has chosen to be part of the
active picture).

The available video path processing controls are the following:

- 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).

- Remove Setup – set to **NO** when no setup is present (Japanese NTSC), or
  YES when setup is present (NTSC). Available in 525 mode only.

- TSG (100% Color Bars) – when on, enables the internal test signal gen-
  erator to output a 100% Color Bars test signal to the channel output.

- TSG (Pathological) – when on, enables the internal test signal generator
  to output a Pathological test signal to the channel output.

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

- On Screen Display (OSD) – enables or disables the On Screen Display
  on the selected channel output. Jumper JP3 on module must be set to
  enable control. Refer to *8964DEC Module Onboard Configuration Settings
  on page 29*.

- 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.

- EDH insertion – allows EDH to be inserted in any of the four channel outputs (available in Remote mode only).

- Decode Mode – select the type of decoding (filtering) for each input from comb adaptive, comb non-adaptive or notch. Adaptive decoding is 3-line in NTSC and 4-line in PAL.

Programmable VBI and Active Picture Lines – Composite Input

Programmable lines in the composite input vertical blanking interval include the configurable VBI lines (CVBI). Programmable active picture lines (P_Active) are the lines reserved for carrying data (Data Lines) (refer to Table 4 on page 21). Both of these line pair types can be configured for the following:

- Decode Mode – select from Notch Decode or Pass Through (blank U and V). (Global control – all line pairs are affected in the same manner.)

Note   When Notch Decode is selected, active picture lines reserved for data are actually comb decoded with potential artifacts.

- Chroma Kill – removes all chroma on VBI and P_Active lines reserved for data. (Global control – all line pairs are affected in the same manner.)

Note   This control has no affect when Chroma Kill is already enabled on the Video Proc web page.

- Remove Setup from VBI – with local onboard controls, select YES to remove setup or NO to not remove setup from all lines of CVBI (global). In remote mode on the web page, setup can be removed on a line-by-line basis.

Note   When **Remove Setup from active video** is not selected on the Video Composite In web page (No removal), the VBI Setup Removal function will have no affect.

- Blank – in local mode, select YES to blank all lines of CVBI or NO to not blank. In remote mode, lines can be blanked on a line-by-line basis with the web page (toothed blanking).

Video Timing and Freeze Controls

With a standard 8964DEC module with no Frame Sync enabled the following Line Sync timing adjustment is available:

- Horizontal Timing – adjusts the horizontal delay on the channel output in pixels. This will add an additional delay of up to one line.

Note   For the 8964DEC (Line Sync) model: The timing between the incoming composite video start of lines for all four input channels must be within ±31μs ±1μs in relation to start of lines of the black burst external reference to the module. This is because there is a very short timing zone at ±32μs ±1μs where a line jump in the output timing may be produced after jitter has occurred or after a power up cycle. To avoid this, make sure the composite input timing in relation to the external black burst reference is within the safe zone of ±31μs ±1μs for stable output timing.

With an 8964DEC-FS module (8964DEC with Frame Sync enabled, see *Module Option Upgrade* on page 60), the following Frame Sync timing adjustments can be made:

- Horizontal Timing – identical to the line sync timing above.

- Vertical Timing – adjusts vertical delay in line increments.

Also available with the 8964DEC-FS are the following freeze controls:

- None – when signal is lost, no automatic freeze occurs and no manual freeze is activated.

- 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 freezes the output signal on field 1 of the last frame.

- Field 2 – manually freezes the output signal on field 2 of the last frame.

- Frame – manually freezes 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 8964DEC and 8964DEC-FS modules. This feature allows separate picture enhancement control on each channel output. Picture enhancement affects all lines of video.

Use the following controls for picture enhancement:

- Disable – the Picture Enhancer process can be turned off by selecting Disable.

- Picture enhancement can be enabled by selecting one of three settings, Low, Medium, or High. Amount of adjustment will depend on picture type and noise level.

Local Onboard Module Configuration

The 8964DEC 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 decoder 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 8 on page 27 for the following descriptions. Use the onboard configuration components as follows:

- SW1 Function (rotary) switch – this switch accesses a desired function for configuration (see Table 6 on page 30). 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.

- SW4 (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 LEDs – indicate what channel is active for adjustment. Refer to Table 5 on page 27.

- SW2 (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 initializing or processing configuration information.

Figure 8. Onboard Configuration Components – Front View

Ejector Tab

CONF – Yellow LED on indicates module is initiating, changing operating mode, or updating firmware

CM1 – Yellow LED
CM0 – Yellow LED
} Indicate active channel control (see table in text)

SW1 16-position Function rotary switch – accesses 3 banks of controls. Bank selected is indicted by state of 2ND LED.

2ND LED – Bank 1 = Off , Bank 2 = On, Bank 3 = flashing

SW4 Paddle switch for incrementing parameter values (Parameter mode) or selecting active channel (CSM, Channel Select Mode)

CSM LED – on in Channel Select Mode (use paddle to select channel)

SW2 – Pushbutton switch to toggle between Parameter and CSM modes

8208_07r1

Refer to Table 5 for reading the CM1 and CM0 active channel LED indicators.

Table 5. 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 (Figure 9) must be set for the following:

- Jumper JP1 allows or locks out (Local) remote control.

- Jumper JP3, OSD enables (OSD_EN pins 2-3) or disables (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. 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 9. Module Configuration Switches and LEDs
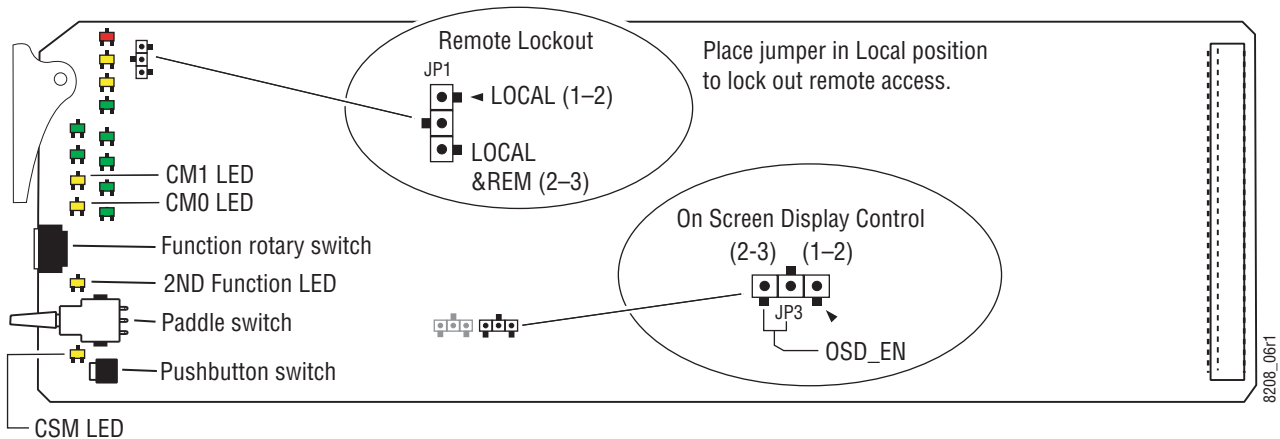
8964DEC Module Onboard Configuration Settings

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 9 on page 28) to either disabled (pins 1-2), or enabled (pins 2-3, labeled OSD_EN). 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 Web Page* on page 56).

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 5 on page 27 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 6 on page 30).

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 6. 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)				
Adjust individual channels for input video path and video processing.				
0	–	–	Default position for normal operation (parked)	Ch#, Channel Name 1:0 (bank/#) Model # HW ver x.x SW ver x.x FW: xx 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	Remove setup in composite input video	1:2 Remove Setup (525 only)
3	On	Off	Turn AGC (Auto Gain Control) on or off	1:3 AGC
4	Increase	Decrease	Adjust input video gain (% relative to 1 V p-p)	1:4 Input Video Gain
5	Increase	Decrease	Adjust input chroma gain	1:5 Input Chroma Gain
6	Increase	Decrease	Adjust contrast/Y gain	1:6 Contrast/Y Gain
7	Increase	Decrease	Adjust brightness/Y offset	1:7 Bright/Y Offset
8	Increase	Decrease	Adjust saturation/chroma gain	1:8 Sat/Chroma Gain
9	Increase	Decrease	Adjust hue/chroma phase	1:9 Hue/Chroma Phase
A	Comb	Notch	Select decoding mode	1:A Decoding mode
B	Adaptive	Fixed	In Comb mode, select type of filtering	1:B Comb Type
C	On	Off	Turn Global Chroma Kill on or off	1:C Chroma Kill
D	On	Off	Turn output test signal generator on or off	1:D Vid Proc
E	Bars	Pathological	When test signal on, select signal type	1:E Test Sig
F	–	Recall	Recall factory defaults	1:F Factory Default
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 or 625). See Table 4 on page 21.	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 Chroma Kill on or off (all VBI lines).	2:4 VBI Chroma Kill
5	On	Off	Turn VBI blanking on or off (all VBI lines).	2:5 VBI Blanking
6	Pass Thr	Notch	Select VBI decoding mode (all VBI lines).	2:6 VBI mode
7	Yes	No	Remove VBI setup (525 only).	2:7 Remove VBI Setup
8	>2s Learn	Recall	Hold paddle for more than 2 seconds to learn current channel settings into E-MEM register. select down to Recall.	2:8 EMEM
9	On	Off	Turn ACC (Auto Chroma Control) on or off	2:9 ACC
A	On	Off	Turn Monochrome In on or off	2:A Monochrome In
B-E	–	–	Not used	
F	Increase	Decrease	Adjust horizontal timing	2:F Horizontal Timing

Table 6. 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)				
Adjust Frame Sync (8964DEC-FS) and Picture Enhancer functions.				
0	–	–	Default position for normal operation (parked).	3:0 (parked position information)
1	Increase	Decrease	Adjust vertical timing	3:1 Vertical Timing [1]
2	None	AutoBlue	Select None or Autoblue freeze type	3:2 Frz mode [1]
3	Field 1	Field 2	Select Field 1 or Field 2 manual freeze	3:3 Frz mode [1]
4	Frame	AutoFreeze	Select Frame manual freeze or AutoFreeze	3:4 Frz mode [1]
5 – A	–	–	Not used	
B	Disable	Low	Disable or enable Picture Enhancer to Low	3:B PE Level
C	Medium	High	Set Picture Enhancer to Medium or High	3:C PE Level

(Left side vertical label: **Bank 3 (2ND LED flashing)**)

[1] These controls are active only in the 8964DEC-FS model.

Remote Configuration

The 8964DEC and 8964DEC-FS configuration and monitoring can also be performed remotely using a web browser interface or a networked Newton Control Panel with an 8900NET Network Interface module present in the GeckoFlex frame (8900FFN). Each of these interfaces is described below. A summary table of all module parameters including defaults, ranges, and Newton Control Panel controls is given in Table 8 on page 67.

8900NET Module Information

Refer to the *8900NET Network Interface Module Instruction Manual* (software version 4.3.0) for information on the 8900NET Network Interface Module and setting up and operating the GeckoFlex 8900 frame network.

Note   Upgrade software and instructions for the 8900NET can be downloaded from the Grass Valley web site. Refer to *Contacting Grass Valley on page 4*.

Newton Control Panel Configuration

A Newton Control Panel (hard or soft version) can be interfaced to the GeckoFlex frame over the local network. Refer to the documentation that accompanies the Newton Modular Control System for installation, configuration, and operation information.

Control panel access offers the following considerations for module configuration and monitoring:

- Ability to separate system level tasks from operation ones, minimizing the potential for on-air mistakes.

- Ability to group modular products—regardless of their physical locations—into logical groups (channels) that you can easily manipulate with user-configured knobs.

- Recommended for real-time control of module configuration parameters, providing the fastest response time.

Note   Not all module functions are available with the control panel, such as factory default recalls.

An example of the Newton Configurator is shown in Figure 10.

Figure 10. Newton Configurator Example

Web Browser Interface

The web browser interface provides a graphical representation of module configuration and monitoring.

Use of the web interface offers the following considerations (some functions depend on individual module functionality):

* Provides complete access to all module status and configuration functions, including naming of inputs and outputs, factory parameter and name default recalls, Save/Load module configuration functions, slot configurations, and SNMP monitoring controls.

* Web access will require some normal network time delays for processing of information.

* Configuration parameter changes may require pressing **Apply** button or **Enter**, upload processing time. A manual screen refresh is recommended after changing parameters.

* Web interface recommended for setting up module signal and slot names, and reporting status for SNMP and monitoring.

Refer to the Status web page shown in Figure 11 on page 34. 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 graphics 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. Web pages will differ depending on the type of platform and browser you are using and the version of the 8900NET software installed in your system. This manual reflects an 8900NET module with software version 4.3.0, using Internet Explorer, the recommended web browser, and Windows XP operating system.

For information on module status, fault monitoring and reporting shown on the Status web page, refer to *Status Web Page* on page 37.

Figure 11. Frame Status Web Page

The Links section lists the frame and its current modules. The selected link's Status page is first displayed and the sub-list of links for the selection is opened. The sub-list allows you to select a particular information page for the selected device.

Content display section displays the information page for the selected frame or module (frame slot icons are also active links).

Refresh button for manual update of page

Web Page Operations and Functional Elements

The following conventions and functional elements (shown at left) are used in web page operations. (The examples shown throughout this manual represent 8900NET software version 4.3.0):

Pulldown Menus   Locate Module

Button —— Default

Radio button —— 525 625

Check box —— ☑ Report Error

Refresh button ——

Coarse Adjust
Fine Adjust
Enter

<< < 100 * > >>
|< ▮▮▮▮ >|

Low Limit   High Limit
Status Indicator

Entry Field

Name: KAM-HD-FS

Status LED ——

8341_13
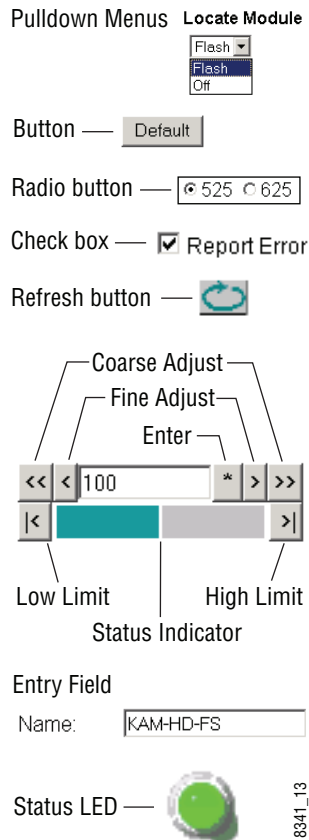
- Pulldown menus allow you to choose selections from a list.

- Clicking on a button performs an immediate action such as recall of defaults, clearing of states, learning configurations, and selecting all or none of a selection.

- Radio buttons are used to make a choice of one parameter in a group.

- Check boxes are used when a selection can be enabled or included in a group. Multiple check box selections or enables can be made for some parameters.

- A **Refresh** button (circular arrow) is provided at the top of each web page for manual refresh to view recently changed parameters.

- Each numerical adjustment control has a **Coarse** adjust button (left and right top double arrows) which increases or decreases the step value by a factor of 10. The **Fine** adjust button (left and right inside single arrows) increases or decreases the step value by 1.

  To change a value, use the arrow button controls or enter a value into the number field and select the **Enter** button (*****) or use the **Enter** key on your keyboard. The Status Indicator bar will follow the value selected.

  Use the **Low** and **High Limit** buttons to go directly to the lowest and highest limits for the parameter.

  After a parameter has been changed, it will take approximately 10 seconds for the change to be entered into the module backup memory. Allow the module enough time to update the change before removing the module from its slot.

- An entry field allows naming of various module functions such as input or output signals, asset tag, and slot identification.

- The **Status** LED icon indicates module status and is a link to the module Status web page where status is reported.

  LED colors indicate:

  - Green = Pass – no problems detected

  - Yellow = Configuration error warning

  - Red = Fault condition detected (presence of at least one alarm)

8964DEC Links and Web Pages

The 8900 GUI provides the following links and web pages for the 8964DEC module (Figure 12):

- Status – reports input and reference signal status and module information (page 37),

- I/O Config – shows a graphic representation of inputs and outputs to the module and allows naming of each input (page 40),

- Functional View – shows a block diagram of the module with links to each configuration web page (page 41),

- Module Configuration web pages for setting up the module (page 42),

- E-MEM – provides Learn and Recall functions for up to 5 E-MEM registers along with **Save to** and **Load from** file operations (page 52),

- OSD Control – provides controls to enable or disable the OSD for each channel (page 56), and

- Slot Config – provides a Locate Module function, Slot Identification, and Slot Memory in addition to links to the Frame Reporting, LED Reporting and SNMP Reporting web pages (page 57).

Figure 12. 8964DEC Web Page Links

10 8964DEC-FS
  Status
  I/O Config
  Functional View
  - Video Composite In
  - Video Proc
  - VBI
  - Timing
  - Picture Enhancer
  E-MEM®
  OSD Control
  Slot Config

Status Web Page

10 8964DEC-FS
Status
I/O Config
Functional View
- Video Composite In
- Video Proc
- VBI
- Timing
- Picture Enhancer
E-MEM®
OSD Control
Slot Config

Use this link

The Status web page (Figure 13 on page 38 for the 8964DEC-FS and Figure 14 on page 39 for the 8964DEC (Line Sync)) shows the input signal status of each of the decoder channels and the reference input. Color coding of the display indicated the signal status. Refer to *Status Monitoring* on page 63 for an explanation of the color coding.

Status of the OSD displays on each output is also shown. A link to the OSD Control web 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 Web Page* on page 56.

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.

An Asset Tag identifier can be assigned to the module on the Slot Config web page (see *Slot Config Web Page* on page 57).

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

Figure 13. 8964DEC-FS Status Web Page

Figure 14. 8964DEC (Line Sync) Status Web Page
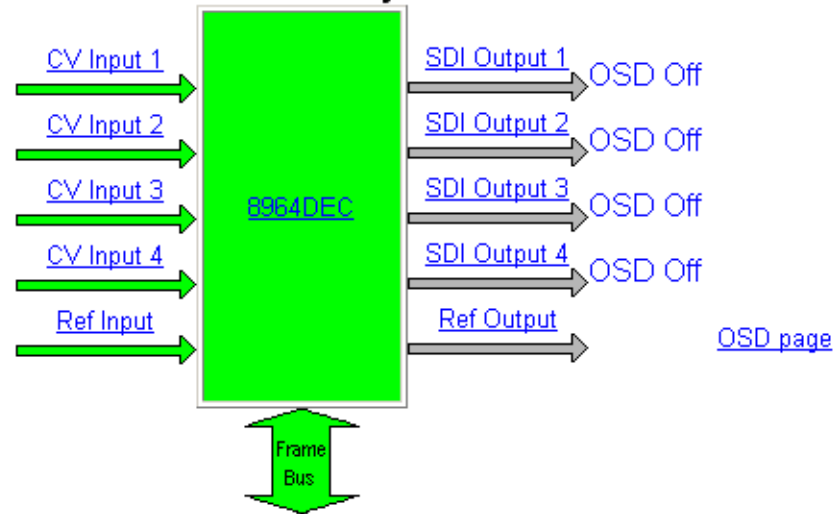
I/O Config Web Page

Use this link

The I/O Config web page (Figure 15) shows the rear input and output connections to the module and allows you to name each input. Type the desired input name (up to 10 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. The **Reporting** column will appear only when an SNMP monitoring application such as NetCentral is installed.

Refer to *Troubleshooting* on page 65 for an explanation of the color coding and using an SNMP monitoring application.

Figure 15. 8964DEC I/O Config Web Page

I/O Config

Model: 8964DEC Description: 4 Channel NTSC/PAL to SDI Decoder
Frame Location: Bay 9 QA 8900 frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

Rear Connections

Signal Names	Reporting			
Input 1	☑ Enabled	J1 CV Input 1	⊚ ⊚	J2 SDI Output 1
Input 2	☑ Enabled	J3 CV Input 2	⊚ ⊚	J4 SDI Output 2
Input 3	☑ Enabled	J5 CV Input 3	⊚ ⊚	J6 SDI Output 3
Input 4	☑ Enabled	J7 CV Input 4	⊚ ⊚	J8 SDI Output 4
Ref Input		J9 Ref Input	⊚ ⊚	J10 Ref Output

Functional View Web Page

Use this link

The Functional View web page (Figure 16) illustrates a block diagram of the 8964DEC module showing module functions and signal paths that are active or inactive in the current configuration and provides control for EDH insertion. It can be used as a link map for configuring module functions. Each block has a link to the configuration web 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 8964DEC module in the order of the signal flow. Refer to each of the module configuration web pages given in the next section.

EDH Insertion

Select the corresponding **Insert** checkbox to insert EDH into the SDI output for each channel. Uncheck the box to not insert EDH.

Figure 16. 8964DEC Functional View Web Page
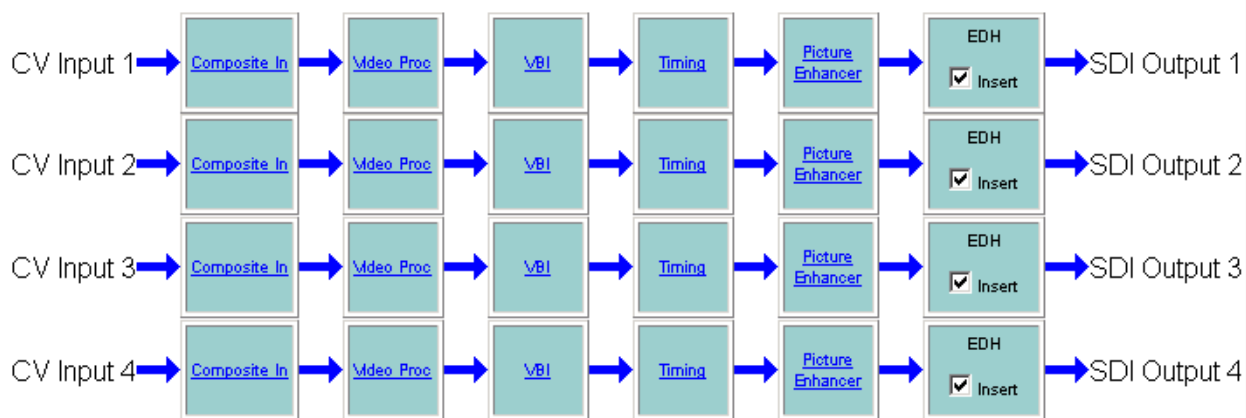
Module Configuration Web Pages

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

- Video Composite In (page 43)

- Video Processing (page 45)

- VBI (page 47)

- Timing (page 49)

- Picture Enhancer (page 51)

Read-only information about the module is given on the top of each web 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 web page) will be displayed under the selected channel or will show the default name in bold type. Each channel will show the signal reference type (NTSC or PAL).

After making a change, click on **Apply** to activate settings in each selection then click on the **Refresh** button at the top of the display to see the changes.

Each of the four decoder 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.

Video Composite In Web Page

10 8964DEC-FS
Status
I/O Config
Functional View
- Video Composite In
- Video Proc
- VBI
- Timing
- Picture Enhancer
E-MEM®
OSD Control
Slot Config
Use this link

The Video Composite In web page provides adjustments for the video composite input signals prior to decoding. Refer to Table 8 on page 67 for a summary of controls, defaults, parameter ranges and what lines of video are affected by each control.

Select the channel to be adjusted from the **Channel 1 – 4** buttons. Configure the following for each channel:

- The **Enable AGC** and **Enable ACC** are set to default to disabled as shown in Figure 17 on page 44 and provide the following corresponding gain controls:
  - Input Video Gain – adjust the percentage of gain relative to 100%.
  - Input Chroma Gain – adjust the percentage of gain relative to 100%.

    When either checkbox is selected (enabled), the automatic gain or chroma controls will be enabled, setting the display to a read-only condition (100%) as shown in Figure 18 on page 44.

Note The setting of the ACC affects the status of the Sat/Chroma control on the Video Proc web page (see page 45).

- **Report Signal Loss** checkbox– checking this selection enables the SNMP status reporting of all input signals to the module. Leave this box unchecked to disable reporting of all inputs in SNMP and on web page indicators.

  Individual inputs can also be enabled or disabled for SNMP reporting on the I/O Config web page (see *I/O Config Web Page* on page 40).
- **Monochrome In** checkbox – select this checkbox when the input signal to this channel is a monochrome signal. This must be checked for the module to recognize a signal with no burst as a valid signal and light the respective input LED.
- **Remove setup from active video** checkbox – for NTSC signals only, select the checkbox when setup is present (NTSC). Leave the box unchecked (no removal) when no setup is present (Japanese NTSC).

Note When **Remove active video from setup** is unchecked (no removal), setup removal is disabled on the VBI web page.

- Decode Mode – select the type of decoding for the input signal with one of the radio buttons.

Configuration

Figure 17. *8964DEC Video Composite In Web Page with AGC and ACC Disabled*

Figure 18. *8964DEC Video Composite In Web Page with AGC and ACC Enabled*

Video Processing Web Page

10 8964DEC-FS
Status
I/O Config
Functional View
- Video Composite In
- Video Proc
- VBI
- Timing
- Picture Enhancer
E-MEM®
OSD Control
Slot Config

Use this link

The Video Proc web page (Figure 19 on page 46) provides access to processing amplifier controls for each channel. Refer to Table 8 on page 67 for a summary of controls, defaults, parameter ranges and what lines of video are affected by each control.

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

Configure the following for each channel:

- Video Processing – enable or disable video processing for the channel or select a test signal (100% Color Bars or Pathological).

Note Test signals are not adjustable with the video processing controls. The video processing controls can be changed while using the test signals but will have no affect on the test signal output.

- Chroma Kill – select this checkbox to shut off chroma on the channel output. This control will also affect the VBI lines.

  If the channel is assigned as a monochrome signal (see *Video Composite In Web Page* on page 43), the Chroma Kill function will be forced to a read-only state as shown in Figure 20 on page 46. If the monochrome status is turned off, the checkbox will return to its previous state.

When the **Enable** button is checked in the Video Processing section, the following controls will be active:

- Contrast/Y Gain – adjusts the percentage of luminance relative to white.

- Saturation/Chroma Gain – when ACC is enabled on the Video Composite In web page, adjust the percentage of saturation and chroma gain relative to 100% saturation. When ACC is disabled (the default), this control will be a read-only value (100%).

- Brightness/Y Offset – adjusts amount of brightness/Y offset in mV.

- 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. 8964DEC Video Proc Web Page

ACC control on
Video Composite In
web page must
be enabled

Figure 20. 8964DEC Video Proc Web Page with Monochrome Signal

VBI Web Page

10 8964DEC-FS
Status
I/O Config
Functional View
- Video Composite In
- Video Proc
Use
this —————- VBI
link
- Timing
- Picture Enhancer
E-MEM®
OSD Control
Slot Config

Use the VBI web page (Figure 21 on page 48 for 525 line rate or Figure 22 on page 48 for 625 line rate) to configure the programmable line pairs in the vertical blanking interval of each channel. Refer to *Programmable VBI and Active Picture Lines – Composite Input* on page 23 for information on VBI lines. Table 8 on page 67 gives a summary of controls, defaults, parameter ranges and what lines of video are affected by each control.

Select the channel to be adjusted from the **Channel 1 – 4** buttons. The current line rate for the selected channel 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:

- Decode Mode – select the type of decoding for the channel VBI and Data Line Pairs as **Notch Decode** or **Pass Through**. This is a global control and affects all lines of programmable VBI lines.

- Chroma Kill – select this checkbox to shut off chroma on the programmable VBI lines. This is a global control and affects all lines of programmable VBI lines.

Note   This control has no affect when Chroma Kill has already been enabled on Video Proc web page.

The following controls can be applied to each programmable VBI Line Pair on a line selectable basis:

- Remove Setup (525 only) – select to remove setup on the selected line pair.

Note   Only adjustable when **Remove active video from setup** is checked on Video Composite In web page. When **Remove active video from setup** is unchecked (no removal), setup removal has no affect on the VBI web page.

- Blank – select to blank the line pair.

- 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.

Configuration

Figure 21. 8964DEC VBI Web Page in 525 Line Rate

Refer to Figure 22 for the web page display in 625 line rate.

Figure 22. 8964DEC VBI Web Page for 625 Line Rate

Timing Web Page

Use this link

Timing adjustments are provided on all models of the 8964DEC. When no Frame Sync option is enabled, the Timing web page will display a Line Sync adjustment for horizontal timing (Figure 23). Refer to the note on page 24 for important information about the composite video input timing relationship to the black burst reference timing to ensure stable output timing in line sync mode.

When Frame Sync is enabled (8964DEC-FS), the Timing web page will include horizontal and vertical timing as well as freeze controls. Table 8 on page 67 gives a summary of controls, defaults, parameter ranges and what lines of video are affected by each control.

Select the channel to be adjusted from the **Channel 1 – 4** buttons. For the 8964DEC model with Line Sync (Figure 23), adjust the Horizontal Timing control in pixels for the correct timing output for each channel.

Figure 23. 8964DEC Timing with Line Sync

When the Frame Sync option is enabled (8964DEC-FS), the Timing web page (Figure 24) 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)

• Vertical Timing (in lines)

Select one of the following buttons from Freeze Mode:

• **None** – no manual or auto freeze enabled.

• **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 24. 8964DEC-FS Timing With Frame Sync and Freeze Controls

Picture Enhancer Web Page

Use this link

The Picture Enhancer function can be enabled to adjust picture detail or can be disabled for each channel on the web page shown in Figure 25.

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

• Select the **Disable** button to turn off picture enhancement.

• Select the **Low**, **Medium**, or **High** button to enable the amount of picture enhancement on the channel output.

Figure 25. 8964DEC Picture Enhancer Web Page

E-MEM Web Page

10 8964DEC-FS
  Status
  I/O Config
  Functional View
  - Video Composite In
  - Video Proc
  - VBI
  - Timing
  - Picture Enhancer
  E-MEM®
  OSD Control
  Slot Config

Use this link →

The E-MEM web 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 26), 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 8964DEC. 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 27 on page 53).

Figure 26. 8964DEC E-MEM Web Page (Standard View)

E-MEM®

Model: 8964DEC Description: 4 Channel NTSC/PAL to SDI Decoder
Frame Location: Bay 9 QA 8900 frame , Slot: 2
Last Recalled E-MEM: 5pm_News

Current Line Rate	525

View Selection:	⦿ Standard ○ Advanced

	Local Operations	
E-MEM 1:	5pm_News	Recall
E-MEM 2:	10pm_News	Recall
E-MEM 3:		Recall
E-MEM 4:		Recall
E-MEM 5:		Recall

Recall Recall factory settings   Recall Recall factory names

The Advanced View (Figure 27) 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 27. E-MEM Web Page (Advanced View)

E-MEM®

Model: 8964DEC Description: 4 Channel NTSC/PAL to SDI Decoder
Frame Location: Bay 9 QA 8900 frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

Current Line Rate 525

View Selection: ○ Standard ⦿ Advanced

	Local Operations			**File Operations**	
E-MEM 1:	5pm_News	Recall	Learn	Save to…	Load from…
E-MEM 2:	10pm_News	Recall	Learn	Save to…	Load from…
E-MEM 3:		Recall	Learn	Save to…	Load from…
E-MEM 4:		Recall	Learn	Save to…	Load from…
E-MEM 5:		Recall	Learn	Save to…	Load from…

Recall   Recall factory settings   Recall   Recall factory names

Configuration

To Save an E-MEM 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 (not shown). To continue, select the **Save** button.

3. In the resulting **Save As** screen (Figure 28), 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 .bin file type.

Figure 28. Save As Screen
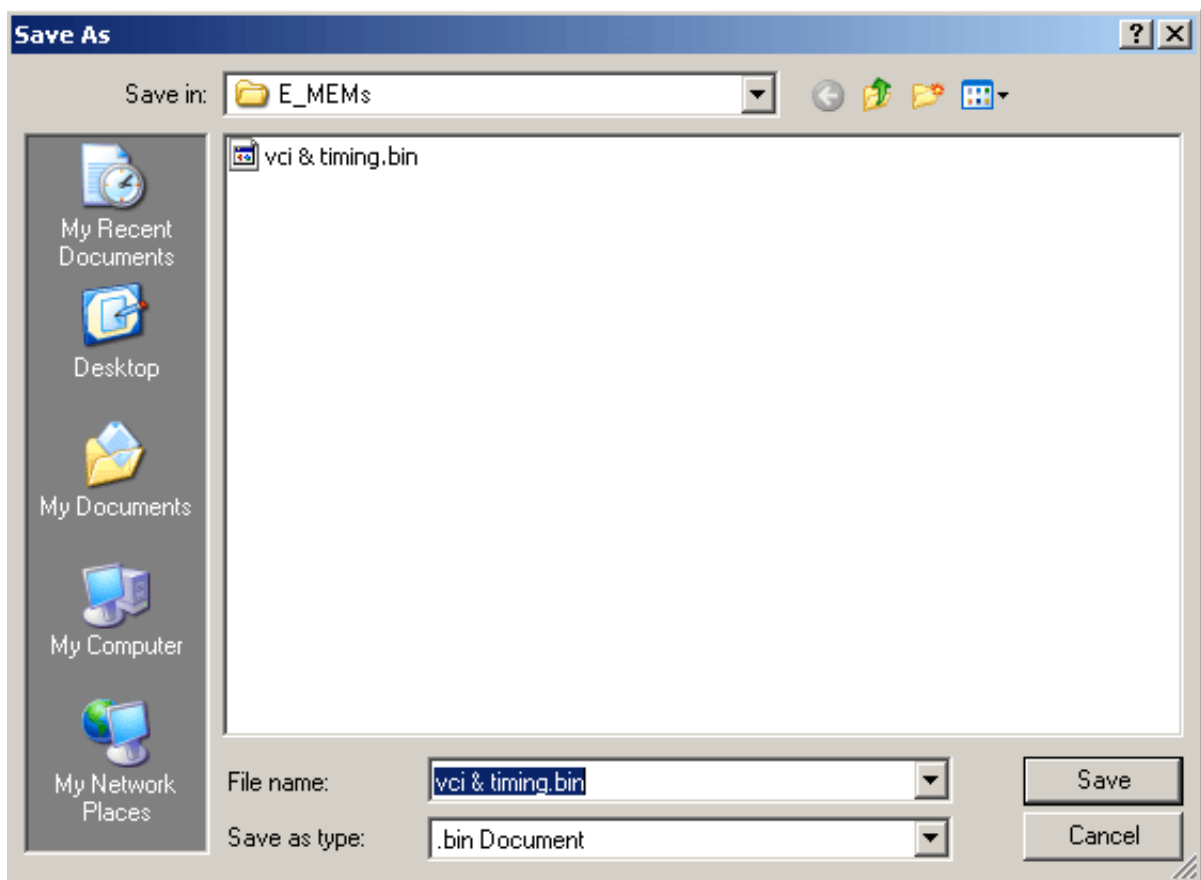
Note   You may rename the file during the Save process but the E-MEM name entered into the Local Operations window will not change on the web page to match the Save As name. Best practice is to leave the Save As file name the same as the E-MEM name.

To load a saved E-MEM from a location

1. Select the **Load from** ... button.

2. This will bring up the Load E-MEM web page (Figure 29).
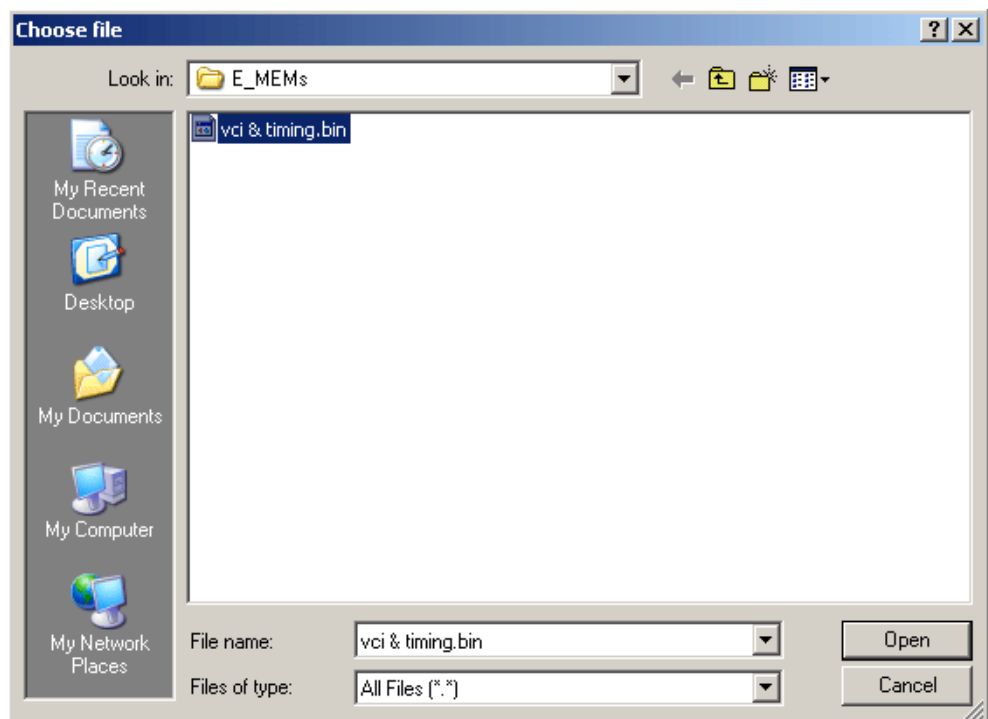
Figure 29. Load E-MEM Web Page

3. Select the **Browse** button to bring up the **Choose File** screen (Figure 30).

Figure 30. Choose File Screen

4. Locate the directory in which the E-MEM files are saved.

5. Select the file to be loaded, then the **Open** button to load the file or enter the filename and path in the **Enter filename** box.

6. Once the correct path and filename is loaded, select the **Load** button on the Load E-MEM page.

7. This should place the recalled E-MEM file into the corresponding E-MEM window. Select the corresponding **Recall** button to invoke this configuration.

OSD Control Web Page

10 8964DEC-FS
Status
I/O Config
Functional View
- Video Composite In
- Video Proc
- VBI
- Timing
- Picture Enhancer
E-MEM®

Use
this
link

OSD Control
Slot Config

The OSD Control web page (Figure 31) allows enabling and disabling of the OSD on any of the four channel outputs. It also displays the status of the onboard OSD jumper, JP3 (see *8964DEC Module Onboard Configuration Settings* on page 29).

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.

Figure 31. 8964DEC OSD Control Web Page

OSD Control

Model: 8964DEC Description: 4 Channel NTSC/PAL to SDI Decoder
Frame Location: Bay 9 QA 8900 frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

On Screen Display

OSD Jumper Status:	Enabled
Channel 1 OSD:	⦿ Off ○ On
Channel 2 OSD:	○ Off ⦿ On
Channel 3 OSD:	⦿ Off ○ On
Channel 4 OSD:	⦿ Off ○ On

Slot Config Web Page

Use the Slot Config web page (Figure 32) to perform the following functions on the module:

- Locate Module

- Slot Identification

- Slot Memory

- Frame Health Reports link

- LED Reports link

- SNMP Trap Reports link

Note This web page reflects an 8900NET module running version 4.3.0 in the frame with the NetCentral monitoring application installed on the 8900NET (Net Card) module. Other 8900NET versions will vary in the appearance of this web page.

Figure 32. Slot Config Web Page

Locate Module

Selecting **Flash** from the **Locate Module** 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 identify the module by typing 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.

An asset identification may be entered in the **Asset Tag** field. This will appear on the module Status web page and in the NetConfig inventory report.

Slot Memory

The slot configuration for each media module is automatically polled and refreshed periodically (about every 50 minutes) by the 8900NET module when the **Always Slot Refresh** checkbox on the 8900NET Configuration web page (with 4.3.0 software) and/or the **Restore upon Install** checkbox on any media module Slot Config web page is selected.

When the **Restore upon Install** checkbox on any media module Slot Config web page has been selected, the current configuration from that module is saved in slot memory on the 8900NET module. This allows the current module to be removed and when another module of the same part number, and software version is installed, the configuration saved to the 8900NET module will be downloaded to the installed module. The **Restore upon Install** checkbox must be selected before the current module with the saved configuration is removed.

Note   Make sure all modules of the same model type are running the same software version and have the same part number silk-screened on the printed circuit board. Downloading a configuration to a module with a different software version or part number can produce unexpected results.

If a different type of module is installed in this slot, a warning message will state that the original module type has been replaced with another module type. In this case, a **Clear** button will appear allowing you to clear the stored configuration from the previous module.

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 no **Restore upon Install** checkboxes on any of the media module Slot Config web pages are selected and the **Always Slot Refresh** checkbox on the 8900NET Configuration web page is unchecked, the slot refresh polling function on the 8900NET module will be disabled. See the **Always Slot Refresh** checkbox description in the *8900NET (Net Card) Network Interface Module Instruction Manual* for more details.

Note   Uncheck the **Restore Upon Install** button before downloading new software.

Frame Health Reporting

This web page allows configuration of the alarms and warnings that are reported to the external Frame Health Alarm connector on the rear of the GeckoFlex frame. Refer to *8900NET Instruction Manual* for more details.

LED Reports

This link appears when the 8900NET module has software version 4.0.2 or later installed. When the link is selected, a read-only status report of the 8900NET Hardware Switch state is given. In the LED Reporting section of the web page, LED Reporting can be enabled or disabled as desired.

SNMP Trap Reports

Select the SNMP Trap Reports link to open the 8900NET SNMP Reporting web page. this link will only be present when SNMP Agent software, such as NetCentral, has been installed on the 8900NET module. This web page allows configuration of which alarms and warnings that are reported to the SNMP management software.

Refer to *8900NET Instruction Manual* for more details on the links to the 8900NET module.

Software Updating

Software updating of the 8964DEC and 8964DEC-FS modules is done using the NetConfig Networking Application PC option. This application is available free of charge from the Grass Valley web site.

The procedure for updating software with NetConfig is given in the 8964DEC Release Notes when software updates become available. Check the Grass Valley web site for update information. Refer to *Contacting Grass Valley on page 4* for more information.

Module Option Upgrade

The 8964DEC 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 7. 8964DEC/FS Specifications

Parameter	Value
Composite Input (per channel)	
Number of inputs	4, one for each decoder
Signal type	Composite analog video conforming to: NTSC (525/59.9) SMPTE170M PAL-B/PAL-I (625/50) CCIR624-4
Signal level	0.5 p-p to 2 V p-p, 1 V p-p nominal
Signal source	75 ohm BNC on rear of frame
Impedance	75 ohm terminating
Return loss	> 40 dB to 5.75 MHz
Common mode rejection ratio	None
Composite Input Performance	
Sampling	27 MHz (2 x oversampling)
Input quantization	10 bits
Overall processing accuracy	8.5 bits
Luma frequency response	± 0.1 dB to 5 MHz
Chroma (R-Y, B-Y) response	-1.5 dB at 1.3 MHz
Group delay	1 line +55 µs
Chroma/luma delay	< 10 ns
Chroma/luma gain	<1%
Luma non-linearity	< 0.8%
K factor (2T)	< 0.5%
Line tilt	< 0.5%
Field tilt	< 0.5%
Differential phase	< 1 degree
Differential gain	< 1%
Signal/noise ration (CCIR410 or EIA RS-250B)	> 54.5 dB RMS to 5 MHz
Phasing	None
Picture centering error	0.0 ± 20 ns (non-adjustable)
Decoding modes	3-/4-line adaptive/non-adaptive multiple modes
Blanking start/end	SMPTE170M or CCIR624, non-adjustable
Input locking noise level	> 15 dB RMS S/N

Table 7. 8964DEC/FS Specifications

Parameter	Value
SDI Outputs	
Number of outputs	4, one for each decoder
Signal type	Serial digital video conforming to SMPTE259M 10-bit 4 2:2 component digital signal
Signal level	800 mV ±10%
Connector type	75 ohm BNC on rear of frame
DC offset	< 0.5 V when terminated into 75 ¾
Output return loss	> 15 dB up to 270 Mb/s
Jitter	Conforms to SMPTE 17.12/002 < 400 ps above 1 kHz
Rise/Fall times	700-900 ps (20 – 80% amplitude)
Error checking	EDH embedded
Timing Control Parameters (line/frame synchronizer delay)	
Reference input return loss w/75 ohm termination	> 45 dB
Reference signal level	300 mV sync tip ± 37 ns steps
Reference signal noise level	> 40 dB S/N RMS
Timebase offset tolerance	< ± 40 ppm
Locking time	< 1.5 sec, critically damped
Delay adjustment	Frame sync: 0 to 1 frame, 37 ns steps Line sync: 0 to 1 line, 37 ns steps
Electrical length (8964DEC)	101.5 µs (1 line + 37.5 µs)
Frame sync latency (8964DEC-FS) (video output delay compared to reference signal)	+ 90.2 µs (1line + 26.2 µs) (additional horizontal and vertical delay can be added with Frame Sync controls)
Fine phase subpixel delay	None
Freeze control	Auto (last valid field or blue) or Manual (Field 1, Field 2 or Frame)
Environmental	
Frame temperature range	Refer to the Gecko Frames or GeckoFlex Frames 8900FX/FF/FFN Signal Processing Systems Instruction Manual at www.grassvalley.com/docs/modular
Operating humidity range	
Non-operating temperature	
Mechanical	
Frame type	Gecko 8900 Video or GeckoFlex with 8900V-R rear module
Rear Retainer clip screw torque (GeckoFlex frame)	4-5 inch-lb./0.45-0.6Nm
Power Requirements	
Supply voltage	+12V
Power consumption	< 8.2 W (2A slow blow fuse)

Status Monitoring

There are a number of ways to monitor frame and module status. These methods are summarized here. For more detailed information, refer to the *8900NET (Net Card) Network Interface Module Instruction Manual* and the *8900 Gecko* or *8900 GeckoFlex Frame Instruction Manuals.*

All modular product documentation is available on-line in PDF format at this link*:*

www.grassvalley.com/docs/modular

The main status monitoring methods include the following:

- External frame alarm output on the rear of the 8900 frame with reporting from the Module Health Bus and other frame status alarm reports,

- LEDs on the Frame, 8900NET module, and individual frame media modules,

- Web browser status reporting for each frame component, and

- SNMP traps, captured by Grass Valley's NetCentral or another SNMP Manager Application.

Note   SNMP trap information is only available when an SNMP Agent has been installed and configured.

External Frame Alarm

An external Frame Alarm output is available on pins 8 and 9 of the RS-232 connector on the rear of the frame. The Frame Alarm outputs a voltage level indicating there is an alarm condition on the Module Health Bus or one of the other frame components reported to the Frame Monitor module in a Gecko 8900TF or GeckoFlex 8900FF frame or the 8900NET module in an 8900TFN and GeckoFlex 8900FFN frame.

- The Module Health bus is a separate line on the frame motherboard that provides a means for older or less capable modules (such as DAs with no microprocessor) that cannot communicate over the Frame (serial) bus to report warning and alarm conditions to the external Frame Alarm. All media modules in the frame report a voltage level to this line when a warning condition occurs on the module. The specific warning or module location is not reported, only an indication that an warning condition has occurred.

- Frame alarm reporting from other frame components can be enabled and disabled using DIP switches on the Frame Monitor and 8900NET module. For frames with an 8900NET module, the Frame Alarm Reporting web page allows configuration of the alarms and warnings that are reported to this external Frame Health Alarm*.*

LED Reporting

LEDs on the front of media modules, the Frame Monitor or 8900NET modules, and the front covers of the 8900TF/TFN and GeckoFlex FF/FFN frames indicate status of the frame and the installed power supplies, fans in the front covers, and module status. (The 8900TX-V/A and GeckoFlex 8900FX frames have no LED indicators on the front cover.)

• LED reporting from the modules in the frame to the 8900NET module is configurable using the 8900NET LED Reporting web page.

• The Status LEDs for this module are described in *Operation Indicator LEDs* on page 18. LEDs for the 8900NET module are described in the *8900NET (Net Card) Network Interface Instruction Manual*.

Web Browser Interface

The 8900NET module controls a web browser GUI that indicates frame and module status on the following web pages:

• Frame Status web page – reports overall frame and module status in colored graphical and text formats. Refer to Figure 11 on page 34 for an example.

• Module Status web page (Figure 13 on page 38) – shows specific input and reference signal configuration error status to the module along with module status and information (part number, serial number, hardware version, software/firmware/boot versions, and Asset number (as assigned on the Slot Config web page).

• A Status LED icon on each web page reflects the module status on the module Status web page where warnings and faults are displayed and is a link to the module Status web page.

SNMP Reporting

The GeckoFlex 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.

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.

Service

The 8964DEC 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.

Power-Up Diagnostic Failure

If the module has not passed self-diagnostics, do not attempt to troubleshoot. Return the unit to Grass Valley (see *Module Repair* below).

Troubleshooting

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 33) and check Fuse F1 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 7 on page 18 for the location of PWR LED and Table 2 on page 19 for proper LED indications.

Figure 33. 8964DEC Fuse and Voltage Testpoints Locations
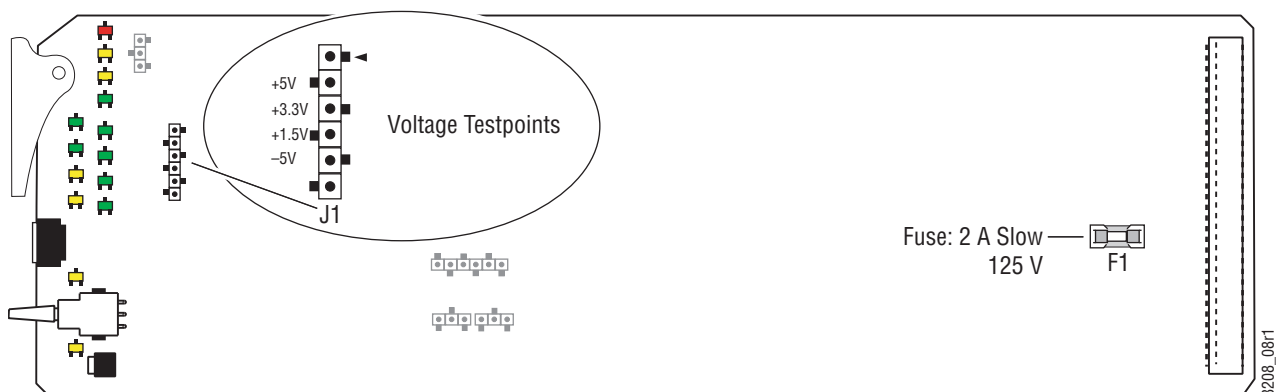
Module Repair

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 Customer Service representative for depot locations.

Contacting Grass Valley

If you need to contact Grass Valley for any module issues, refer to *Contacting Grass Valley on page 4* at the front of this document for the Grass Valley Customer Service Information number.

Configuration Summary

Table 8 provides a complete summary of the 8964DEC processing functions and a comparison of the functionality available with each control type along with the ranges and default values for each parameter. The table is organized to provide a breakdown of the video path processing adjustments by specific grouping of line type in the video signal.

Table 8. Summary of 8964DEC Configuration Functions By Line Type

Processing Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	Rotary Switch Bank/Setting	Newton Control Panel	Notes/ Conditions
All Lines, Channels 1–4. Composite In Video Path Processing (before decoding).						
Input signal status	N/A	Present/Not Present	Status/ CV Input 1-4 status	N/A	SigStt1-4	Read-only signal input reporting
Reference input status	N/A	Present/ Warn- Not Locked	Status/ Ref Input status	N/A	RefStt	
AGC (Auto Gain Control)	Off	On/Off	Video Composite In/ Enable AGC checkbox	1:3	N/A	On enables AGC
ACC (Auto Chroma Control)	Off	On/Off	Video Composite In/ Enable ACC checkbox	2:9	N/A	On enable ACC
Input Video Gain	100%	72.5–200% (0.5% steps)	Video Composite In/ Input Video Gain (%)	1:4	vciGain1-4	AGC off.
Input Chroma Gain	100%	50–200% (0.6% steps)	Video Composite In/ Input Chroma Gain (%)	1:5	vciChGn1-4	ACC off.
Detail Enhancer	Disable	Disable, Low, Medium or High	Picture Enhancer/ Select Disable, Low, Medium or High radio button	3:B (Disable or Low) 3:C (Medium or high)	N/A	8964DEC and 8964DEC-FS
Active Picture Lines, Video Path Processing, Channels 1–4. All settings Global (affects all active picture lines).						
Saturation/Chroma Gain	100%	50–200% (0.6% steps)[1]	Video Proc/ Saturation/Chroma Gain (%)	1:8	ChrGain1-4	
Hue/Chroma Phase	0	± 180 degrees (1.4 degree steps)[1]	Video Proc/ Hue/Chroma Phase (deg)	1:9	ChrmPhs1-4	Active only when Video Proc is enabled.
Brightness/Y Offset	0	± 400 mV (3 mV steps)[1]	Video Proc/ Brightness/Y Offset (mV)	1:7	YOffset1-4	
Contrast/Y Gain	100%	50–200% (0.6% steps)[1]	Video Proc/ Contrast/Y Gain (%)	1:6	YGain1-4	
Remove setup from active video	Yes	Yes/No	Video Composite In/ Remove setup from active video checkbox	1:2	N/A	525 only.
TSG (Test Signal Generator) (100% Color Bars)	Off	On/Off	Video Proc/ Color Bars 100% checkbox	1:D (enable mode) 1:E (choose type)	TstSig1-4	Test signals are not adjustable.
TSG (Test Signal Generator) (Pathological)	Off	On/Off	Video Proc/ Pathological Test checkbox			
OSD (On Screen Display)	Off	On/Off	OSD Control/ On Screen Display	1:1	N/A	Jumper JP3 must be enabled on module.

Table 8. Summary of 8964DEC Configuration Functions By Line Type

Processing Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	Rotary Switch Bank/Setting	Newton Control Panel	Notes/ Conditions
Decode Mode	Comb Adaptive	Adaptive/Notch	Video Composite In/ comb adaptive, comb non-adaptive, or notch	1:A (enable mode) 1:B (choose type)	N/A	
Chroma Kill	Off	On/Off	Video Proc/ Chroma Kill checkbox	1:C	ChrmKill1-4	Global, also affects CVBI lines.
Monochrome In	Off	On/Off	Video Composite In/ Monochrome In checkbox	2:A	N/A	On indicates monochrome input signal.
Insert EDH	On	On/Off	Functional View/ Insert EDH checkbox	N/A	N/A	Remote control only.
Programmable VBI Lines, Composite Input, Channel 1–4						
Blank VBI Lines	Off	On/Off	VBI/ Blank VBI/Data Line Pair	2:5	N/A	Line selectable in Remote. Global in Local.
VBI Decoding Mode	Notch Decode	Notch Decode/ Pass Through	VBI/ Notch Decode or Pass Through button	2:6	N/A	Global, effects all CVBI lines. Active when Blanking off.
Remove VBI Setup (525 only)	No	Yes/No	VBI/ Remove Setup checkboxes	2:7	N/A	Line selectable in Remote. Global in local.
VBI Chroma Kill	Off	On/Off	VBI/ Chroma Kill checkbox	2:4	N/A	Global, effects all CVBI lines. No affect when Video Proc chroma kill on.
Frame Sync Functions						
Horizontal Timing	0	0 - 857.5 pixels (525) 0 - 863.5 pixels (625) (0.5 pixel steps)	Timing/ Horizontal Timing (pixels)	2:F	HTiming1-4	8964DEC (Line Sync) or 8964DEC-FS (Frame Sync)
Vertical Timing	0	0 – 524 lines (525) 0 – 624 lines (625) (1line steps)	Timing/ Vertical Timing (lines)	3:1	VTiming1-4	8964DEC-FS only.
Freeze Mode	None	None, AutoFreeze, AutoBlue, Field 1, Field 2, or Frame	Timing/Freeze Mode Select None, AutoFreeze, Auto-Blue, Field 1, Field 2, or Frame radio button	3:2 3:3 3:4	FrzMode1-4	

[1] Approximate step sizes.

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