grass valley

Kameleon HD

KAM-HD-FS/HDD/HDD-FS/HDD-PA

Instruction Manual

SOFTWARE VERSION 2.5.0

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10 Presidential Way
3rd Floor, Suite 300
Woburn, MA 01801
United States

Nederland B.V.
4800 RP BREDA
The Netherlands

Weiterstadt, Germany
Brunnenweg 9
D-64331 Weiterstadt
Germany

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29238 Brest Cedex 3
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Contacting Grass Valley

International Support Centers	**France 24 x 7**	+800 8080 2020 or +33 1 48 25 20 20	**United States/Canada 24 x 7**	+1 800 547 8949 or +1 530 478 4148
Local Support Centers (available during normal business hours)	**Asia**	**Hong Kong, Taiwan, Korea, Macau:** +852 2531 3058 **Indian Subcontinent:** +91 22 24933476 **Southeast Asia/Malaysia:** +603 7805 3884 **Southeast Asia/Singapore:** +65 6379 1313 **China:** +861 0660 159 450 **Japan:** +81 3 5484 6868		
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	Middle East: +971 4 299 64 40 **Near East and Africa:** +800 8080 2020 or +33 1 48 25 20 20			
	Europe	**Belarus, Russia, Tadzikistan, Ukraine, Uzbekistan:** +7 095 2580924 225 **Switzerland:** +41 1 487 80 02 **S. Europe-Italy-Roma:** +39 06 87 20 35 28 **Milan:** +39 02 48 41 46 58 **S. Europe-Spain:** +34 91 512 03 50 **Benelux-Belgium:** +32 (0) 2 334 90 30 **Benelux-Netherlands:** +31 (0) 35 62 38 42 1 **N. Europe:** +45 45 96 88 70 **Germany, Austria, Eastern Europe:** +49 6150 104 444 **UK, Ireland, Israel:** +44 118 923 0499		

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Software Downloads — Download software updates, drivers, and patches.

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Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive, the United States Environmental Protection Agency, and U.S. state and local agencies.

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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 or 530-478-4148, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.thomsongrassvalley.com/environment

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Contents

Preface

About This Manual

This manual describes the features of a specific module of the 2000 Series Modular Products family including the Kameleon HD/SD product lines. As part of this module family, it is subject to Safety and Regulatory Compliance described in the Kameleon 2000 Series frame and power supply documentation (see the *Kameleon 2000 Frames Instruction Manual*).

Kameleon HD-FS, HDD, HDD-FS, and HDD-PA Modules

Introduction

The Kameleon HD modules are part of the Grass Valley Kameleon Media Processing System family of products. They offer an ideal solution for high definition and serial digital video processing, frame synchronization, color correction, down conversion, VBI configuration, and timing. This manual covers installation, configuration, and operation of the KAM-HD-FS, KAM-HDD-FS, KAM-HDD-PA, and KAM-HDD modules.

Features offered in these modules include:

- SD video rates of:
  - 480i/59.94 or 576i/50
- HD video rates of:
  - HD 59.94: 1080i or 720p,
  - HD 50: 1080i or 720p, and
  - HD 24: 1080sf or 1080p (no down conversion).
- Separate HD and SD video processing for brightness, contrast, saturation and hue,
- Frame synchronization with horizontal and vertical timing delay adjustments,
- Minimum delay mode to allow an absolute minimum amount of delay through the module,
- Split Screen (horizontal or vertical) output mode,
- Auto and Manual Freeze controls,
- HD and SD color correction and gamma adjustments,
- Video down conversion (KAM-HDD, KAM-HDD-PA, and KAM-HDD-FS) with SD and composite monitoring outputs,
- VBI configuration for SD and composite outputs,

- Color bars test signal generator,
- Newton Modular Control Panel interface,
- NetConfig support, and
- SNMP support – remote monitoring.

System Requirements

Operation of the Kameleon HD modules in 2000 Series frames has the following hardware and software requirements:

- Modules must be installed in a 2000T1DNG or 2000T3DNG Kameleon 2000 Series frame containing a 2000GEN module.
- The frame must have a 2000NET module with assembly number 671-5231-01 or later running software version 4.0.0 or later.
- Existing Kameleon frames can be upgraded with the necessary modules and software for proper operation. Contact your sales representative for more information.

Module Overviews

There are four Kameleon HD module types covered in this manual:

- KAM-HD-FS HD/SD Frame Sync,
- KAM-HDD-PA HD/SD with Down Converter and Video Processing,
- KAM-HDD-FS HD/SD Frame Sync with Down Converter, and
- KAM-HDD HD/SD with Monitoring Down Converter.

An overview of each module type is provided below. Refer to Table 1 for a summarized list of functions on each module type.

Table 1. Model Feature Comparison

Model	Down Conversion	Proc Amps/Color Correction	Frame Sync	Rear Module
KAM-HD-FS		X	X	KAM-HD-R Rear Module
KAM-HDD	X		See *Kameleon HD Timing Considerations* on page 20	KAM-HD-R Rear Module
KAM-HDD-PA	X	X		KAM-HDD-R Rear Module
KAM-HDD-FS	X	X	X	KAM-HDD-R Rear Module

KAM-HD-FS HD/SD Frame Sync Module

The KAM-HD-FS module offers HD or SD signal video processing and color correction with frame synchronization. VBI configuration is also available on SD and composite video outputs. This module uses the single height KAM-HD-R Rear module.

This module is most useful in applications where both frame synchronization and signal correction are required.

The following configurations are available:

- One HD input with four HD outputs as illustrated in the Functional View block diagram in Figure 40 on page 60.
- One SD input with four SD outputs as illustrated in the Functional View block diagram in Figure 41 on page 61.

KAM-HDD-PA HD/SD Video Processor with Down Converter

The KAM-HDD-PA module offers HD or SD signal video processing and color correction plus down conversion to SD and encoded composite outputs. The required rear module for use with this module is the dual-height KAM-HDD-R Rear.

This module does not have frame sync capability so if the output from the KAM-HDD-PA must be in time with an external house reference, special considerations must be made. To match the external reference, the input signal to this module must already be in time with the required reference. The output timing on the System Config web page must then be set to Frame Reference.

The module can be configured in the following different ways:

- One HD input (HD 59.94 or HD 50) with two HD outputs, two down converted SD outputs, and two encoded composite outputs as shown in the Functional View block diagram in Figure 42 on page 62.
- One HD input with four HD outputs and two down converted encoded composite outputs as shown in the Functional View block diagram in Figure 43 on page 63.
- One HD input (HD 24 – no down conversion) with four HD outputs as shown in the Functional View block diagram in Figure 44 on page 63.
- One SD input with four SD outputs and two encoded composite outputs as shown in the Functional View block diagram in Figure 45 on page 64.

KAM-HDD-FS HD/SD Frame Sync with Down Converter

The KAM-HDD-FS module offers HD and SD signal video processing and frame synchronization with video proc amps plus color correction and down conversion. The required rear module for use with this module is the dual-height KAM-HDD-R Rear.

This module is most useful in applications where frame synchronization, down conversion, and signal correction are required.

The module can be configured in a number of different ways as follows:

- One HD input (HD 59.94 or HD 50) with two HD outputs, two down converted SD outputs, and two encoded composite outputs as shown in the Functional View block diagram in Figure 46 on page 65.
- One HD input with four HD outputs and two down converted encoded composite outputs as shown in the Functional View block diagram in Figure 47 on page 66.
- One HD input (HD 24 – no down conversion) with four HD outputs as shown in the Functional View block diagram in Figure 48 on page 66.
- One SD input, four SD outputs and two encoded composite outputs as shown in the Functional View block diagram in Figure 49 on page 67.

KAM-HDD HD/SD with Monitoring Down Converter

The KAM-HDD module offers HD or SD down conversion with composite outputs. This module can use the single height KAM-HD-R Rear module.

This module does not have frame sync capability so if the output from the KAM-HDD must be in time with an external reference, special considerations must be made. To match the external reference, the input signal to this module must already be in time with the required reference. and the output timing on the System Config web page must then be set to Frame Reference.

The module can be configured in the following different ways:

- One HD input (HD 59.94 or HD 50) with two HD outputs, two down converted SD outputs, and two encoded composite outputs as shown in the Functional View block diagram in Figure 50 on page 68.
- One HD input with four HD outputs and two down converted encoded composite outputs as shown in the Functional View block diagram in Figure 51 on page 69.
- One HD input (HD 24 – no down conversion) with four HD outputs as shown in the Functional View block diagram in Figure 52 on page 69.
- One SD input, four SD outputs and two encoded composite outputs as shown in the Functional View block diagram in Figure 53 on page 70.

Installation

Installation of the Kameleon HD module is a process of:

- Placing the rear module in a rear frame slot,
- Placing the media module in the corresponding front slot, and
- Cabling and terminating signal ports.

The Kameleon HD module can be plugged in and removed from a 2000 Series frame with power on. When power is applied to the module, LED indicators reflect the initialization process (see *Power Up* on page 18).

Note The Kameleon HD must be installed in a 2000T1DNG or 2000T3NG frame (2000NET and 2000GEN module installed) for access to a frame reference.

Module Placement in the 2000 Frame

There are twelve slot locations in both the front and rear of a Kameleon 3 RU frame to accommodate Kameleon HD modules. The KAM-HD-FS and KAM-HDD module set consist of a front media module and a single height KAM-HD-R Rear module allowing up to 12 modules per 3 RU frame, 4 in a 1 RU frame. The KAM-HDD-FS and KAM-HDD-PA require a dual height rear KAM-HDD-R Rear module that uses two rear module slots allowing up to 4 modules per 3 RU frame, 2 in a 1 RU frame. Dual-height modules can be placed in any rear slot as long as there is room in the frame.

To install a Kameleon HD module set in a 2000 Series frame:

1. Locate a vacant slot in the rear of the 3 RU frame (Figure 1) or the 2000T1DNG frame (Figure 2 on page 14).

Figure 1. 2000T3NG Frame, Rear View

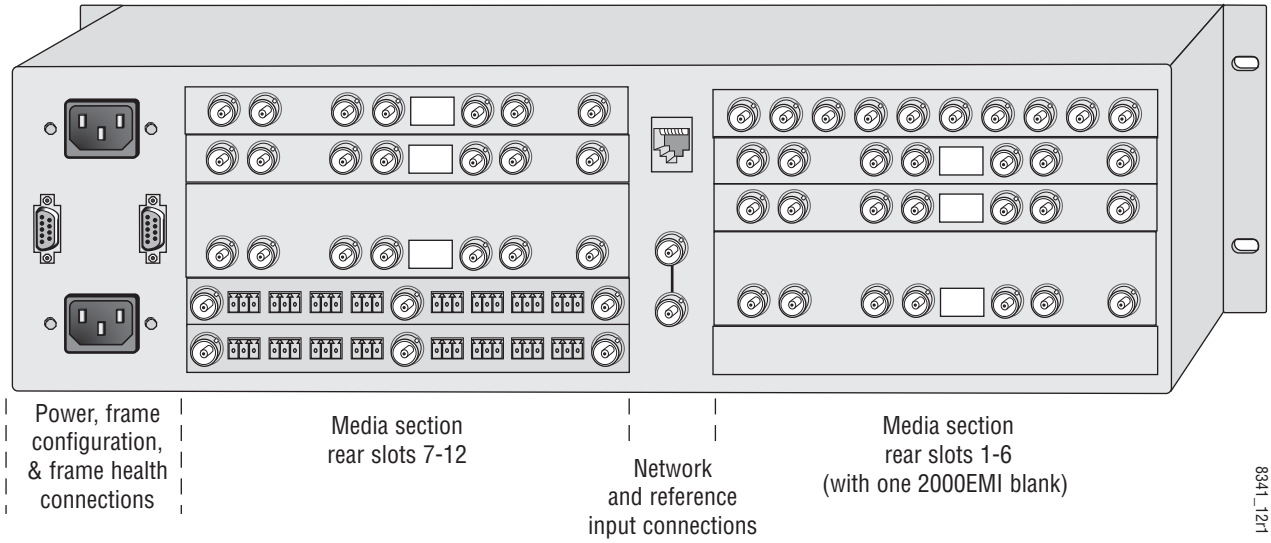
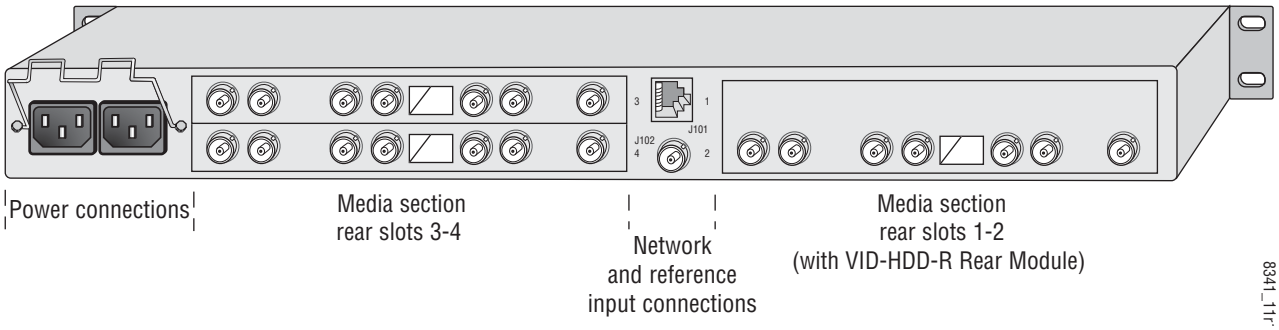


Figure 2. 2000T1DNG Frame, Rear View



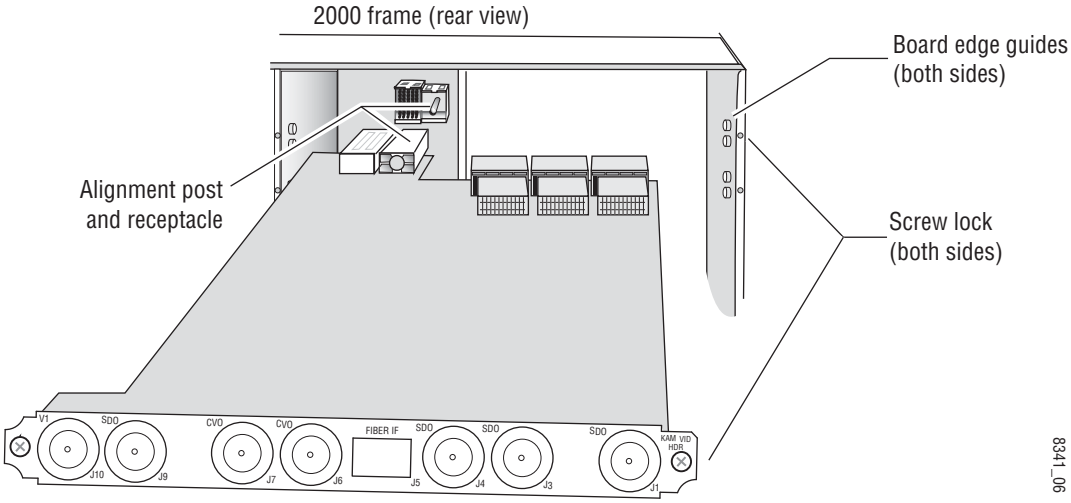
2. Insert the rear module into the vacant rear slot of the frame as illustrated in Figure 3.

3. Verify that the module connector seats properly against the midplane.

4. Using a crossblade screwdriver, tighten the two screw locks to secure the module in the frame.

CAUTION Using the incorrect rear module can cause overheating of the Kameleon 2000 frame.

Figure 3. Installing Passive Rear Module



5. Locate the corresponding front media slot (1 -12) in the 3 RU frame frame (Figure 4) or front media (slot 1-4) the 1 RU frame (Figure 5). Place the KAM-HDD/-FS module in the lower slot when using a dual-height rear module.

Figure 4. 2000T3NG Kameleon Frame, Front Slots

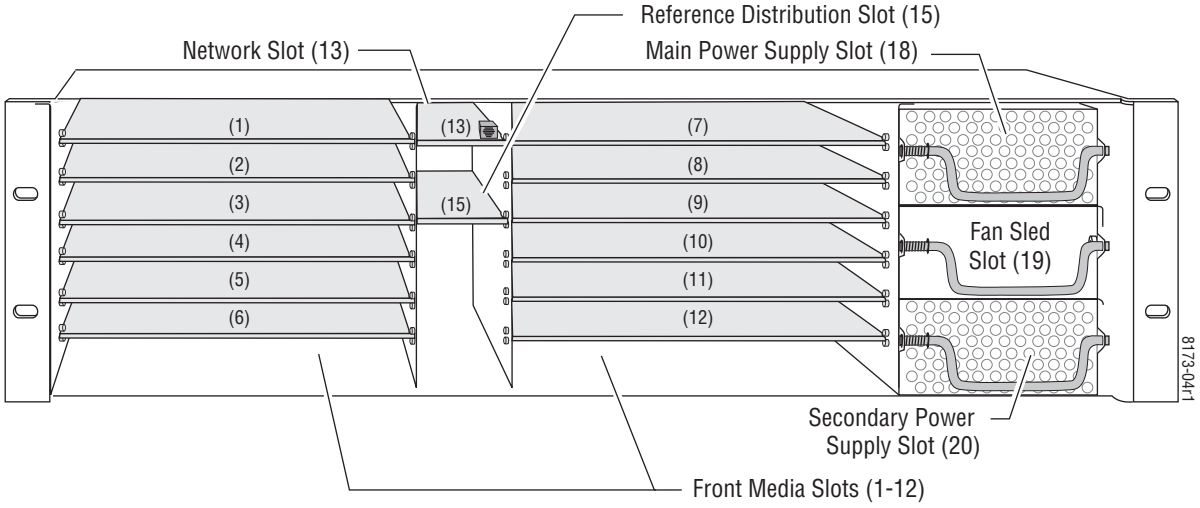
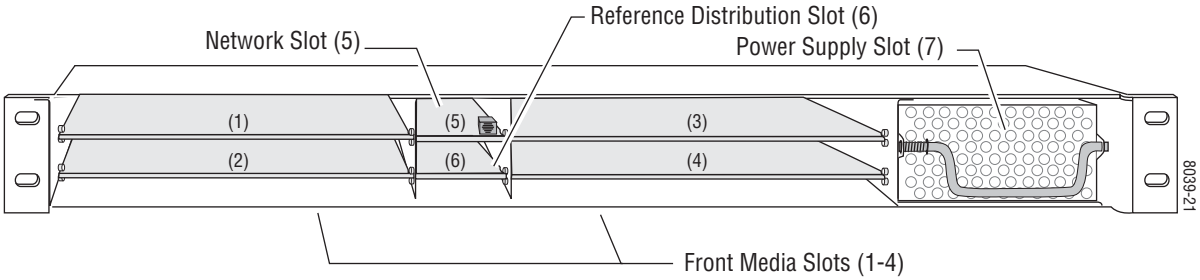


Figure 5. 2000T1DNG Kameleon Frame Front Slot

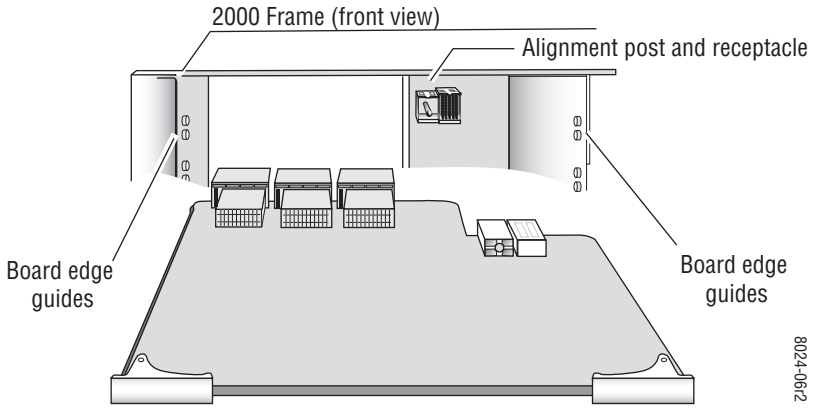


6. With the component side up, insert the front media module in the corresponding front slot (see Figure 6).

7. Verify that the module connector seats properly against the midplane and rear module connector.

8. Press firmly on both ejector tabs to seat the module.

Figure 6. Installing Front Media Module



Cabling

All cabling to the Kameleon HD module is done on the corresponding KAM-HD-R Rear module for the KAM-HD-FS and KAM-HDD modules (Figure 7 on page 17) or the dual height KAM-HDD-R Rear module required for the KAM-HDD-PA and KAM-HDD-FS modules (Figure 8 on page 17) at the back of the 2000 frame. There are a number of different input and output configurations possible depending on system configuration and module type.

To determine the correct cabling for your application, refer to *System Configuration* on page 45 and the *I/O Config Web Page* on page 39.

Serial or HD SDI Video Input

Connect an SD or HD SDI video input to BNC connector J10, labeled **V1**.

Video Outputs

There are four SDI video outputs at BNC connectors J1 J3, J4, and J9 labeled **SDO**. BNCs J3 and J4 are configurable as HD or SD in System Configuration (page 45) on modules with down conversion capability.

Composite Outputs

On the KAM-HDD or KAM-HDD-FS modules when the input type is SD or HD 59.94 or HD 50 (supporting down conversion), composite outputs become available on BNCs J6 and J7. Connect these to composite destinations.

Note KAM-HDD/-PA/-FS modules with an HD 24 video input do not support down conversion.

Fiber IF

This connection is for future use and currently not used.

Figure 7. KAM-HD-R Input/Output Connectors

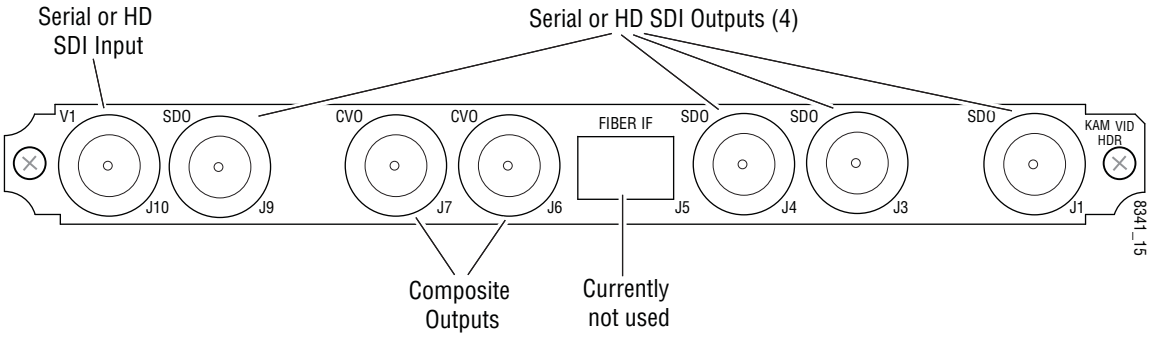
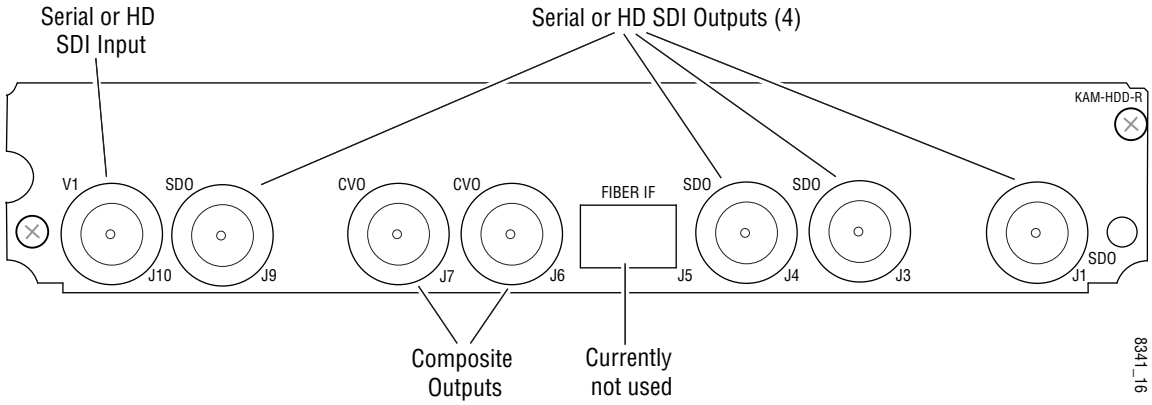


Figure 8. KAM-HDD-R Input/Output Connectors



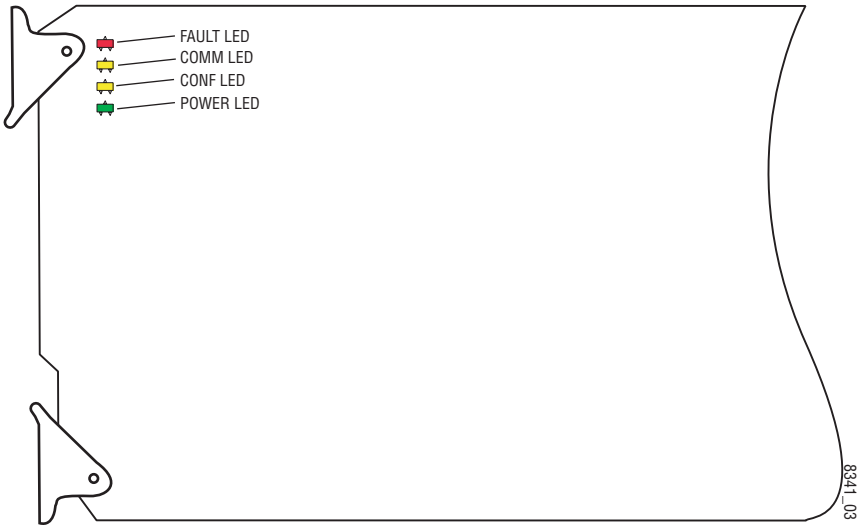
Power Up

The front LED indicators are illustrated in Figure 9. Upon power-up, the green PWR LED should light and the yellow CONF LED should illuminate for the duration of module initialization.

Operation Indicator LEDs

With factory default configuration and valid input and reference signals connected, the green PWR LED should be on.

Figure 9. Operation Indicator LEDs



A red FAULT LED indicates an error situation and, with the other LEDs, can indicate the operational conditions presented in Table 2.

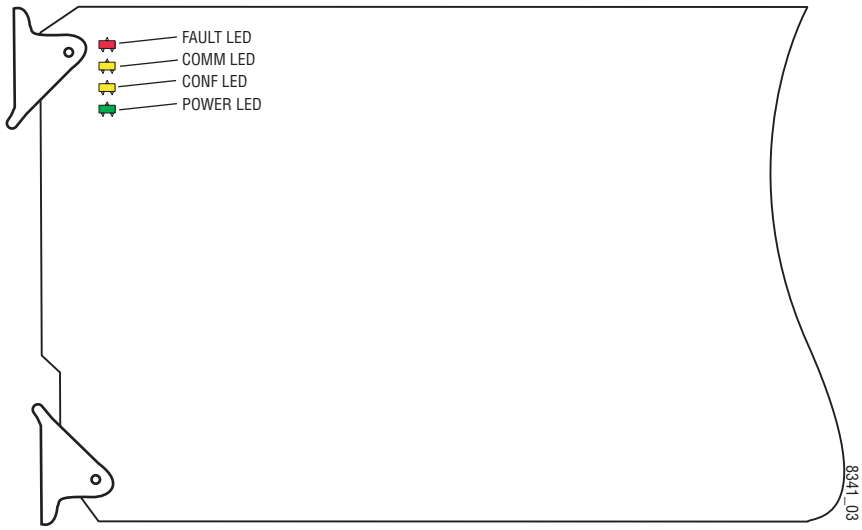
Table 2. Indicator LEDs and Conditions Indicated

LED	Indication	Condition
FAULT (red)	Off	Normal operation.
	On continuously	Module has detected an internal fault.
	Flashing	Frame reference or video input is missing, input does not match manual selection.
COMM (yellow)	Off	No activity on frame communication bus.
	Long flash	Location Command received by the module from a remote control system.
	Short flash	The new system configuration is being stored to the module.
CONF (yellow)	Off	Module is in normal operating mode.
	On continuously	Module is initializing, changing operating modes or updating firmware. Simultaneous CONF and FAULT LEDs on indicate FPGA load error.
	Long flash	Location 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.

Remote Control Lockout

When a jumper is placed across pins 1 and 2 of jumper block JP2 (see Figure 10), module output mode settings are locked out from remote control. To have remote access, set the jumper across pins 2 and 3.

Figure 10. Local/Remote Jumper



Configuration and Adjustments

Kameleon HD configuration and monitoring can be performed using a web browser GUI interface or a networked Newton Control Panel. This section provides an overview of each of these controls along with the configuration parameters available with each type of control device.

It also provides any configuration discussions needed for understanding the different functionality of each model.

Kameleon HD Timing Considerations

Several models of the Kameleon HD are offered to meet the needs of different applications in a facility.

One of the primary needs in a facility is for modules whose outputs can be timed to an external (house) reference. If this is a requirement, modules with frame sync capability such as the KAM-HD-FS or KAM-HDD-FS are ideal for this purpose.

An external reference can be inserted into the Kameleon 2000 frame and fed to the 2000GEN module which distributes this external reference to every module in the frame. Each Kameleon HD module with frame sync capability can be set in System Configuration for an output timing source of Frame Reference and will match the external reference input to the frame with no special considerations for the input signal.

The other two modules available in this series, the KAM-HDD and the KAM-HDD-PA, can be used in the same frame but do not provide frame sync capability. In order for the outputs from these modules to be in time with an external reference, the input signal to these modules must already be in time with the external reference when it is input to the module and the Output Timing set to Frame Reference. If this condition is not met, an image break can occur when switching sources.

When the input signal is in time with the external reference, using the Frame Reference setting will put the delay of the output signal to within a very accurate and predictable delay of approximately one nanosecond thereby matching the external reference timing.

Configuration Summary

The configuration parameters and monitoring functions available with the web browser interface and the Newton Control Panel are summarized in Table 3. The parameter defaults, choices, ranges, and resolution are provided for each function.

Table 3. Summary of Kameleon HD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Notes/ Conditions
Input video type	HD 59.94	HD 59.94, SD, HD 50, or HD 24	System Config/ Input Type HD 59.94, SD, HD 50, or HD 24 radio button	HD/SDMode	Set video input type. This will reboot module to load a new configuration.
Input rate	1080i 59.94	HD 59.94: 1080i/59.94 or 720p/59.94 SD: 480i/59.94 or 576i/50 HD 50: 1080i/50 or 720p/50 HD 24: 1080sf/24 or 1080p/24	System Config/ Input Rate pulldown	VidRMode	Set video line rate.
Select output timing source	Input	Frame Reference or Input	System Config/ Output Timing Source Selection Frame Reference or Input radio button	OutClk	Controls available on all modules. Refer to *Kameleon HD Timing Considerations* on page 20.
Enable or disable all video processing: HD Video Proc, Color Correction, or SD Video Proc or set output to Color Bars test signal	Disable	Enable, Disable, or Color Bars	System Config/ Video Proc Amps Processing: Disabled, Enabled, or Color Bars radio button	VidPrcEn	Status of video processing is reported in each video proc web page header.
Enable or disable split screen	Disabled	Enabled or Disabled	System Config/, or Color Correction/, or HD Video Proc/, or SD Video Proc/ Split Screen Split: Enabled checkbox	SplitEn	Split screen controls appear on four different web pages and all controls are common, including control panel.
Split screen orientation	Vertical	Horizontal or Vertical	System Config/, or Color Correction/, or HD Video Proc/, or SD Video Proc/ Split Screen: Orientation: Vertical or Horizontal radio button	SSOrt	
Split screen position (% of unprocessed video)	50%	10 to 90% (1% steps)	System Config/, or Color Correction/, or HD Video Proc/, or SD Video Proc/ Split Screen: Position (%) control	SSPos	

Table 3. Summary of Kameleon HD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Notes/ Conditions
Enable minimum delay mode	Disabled	Enabled or Disabled	Frame Sync/ Minimum Delay Mode Enable checkbox	N/A	Frame Sync controls appear only on the KAM-HDD-FS or KAM-HD-FS modules. T Timing reference is set on System Config web page. For KAM-HDD and KAM-HDD-PA timing, see *Kameleon HD Timing Considerations* on page 20.
Adjust horizontal timing in pixels	0 pixels	HD 59.94: 1080i/59.94 = 0 to 2199 720p/59.94 = 0 to 1649 SD: 480i/59.94 = 0 to 857 576i/50 = 0 to 863 HD 50: 1080i/50 = 0 to 2639 720p/50 = 0 to 1979 HD 24: 1080sf/24 = 0 to 2749 1080p/24 = 0 to 2749 (1 pixel steps)	Frame Sync/ Timing Adjustments H Timing control	HTiming	
Adjust vertical timing in lines	0 lines	HD 59.94: 1080i/59.94 = 0 to 1124 720p/59.94 = 0 to 749 SD: 480i/59.94 = 0 to 524 576i/50 = 0 to 624 HD 50: 1080i/50 = 0 to 1124 720p/50 = 0 to 749 HD 24: 1080sf/24 = 0 to 1124 1080p/24 = 0 to 1124 (1 line steps)	Frame Sync/ Timing Adjustments V Timing control	VTiming	
Loss of signal operation (Frame Sync reference timing source selected)	Auto Freeze	Pass, Auto Freeze, or Auto Blue	Frame Sync/ Loss of Signal Operation Pass, Auto Freeze, or Auto Blue radio button	LOS Oper	
Manual Freeze mode	None	None, Frame, or Field (SD input only)	Frame Sync/ Manual Freeze Mode Selection None, Frame or Field radio button	ManFrzMode	

Table 3. Summary of Kameleon HD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Notes/ Conditions
Lock R, G, and B gains	Unlocked	Locked or Unlocked	Color Correction/ Video Gain Lock checkbox	RGBGnLok	Web page will display either SD or HD Color Correction title depending on input video type selected. Video Proc Amps must be enabled on System Config web page.
Adjust R gain	100%	0 to 200% (1% steps)	Color Correction/ R Gain (%)	RGn	
Adjust G gain	100%	0 to 200% (1% steps)	Color Correction/ G Gain (%)	GGn	
Adjust B gain	100%	0 to 200% (1% steps)	Color Correction/ B Gain (%)	BGn	
Adjust R offset	0	± 100% (1% steps)	Color Correction/ R Offset (%)	ROff	
Adjust G offset	0	± 100% (1% steps)	Color Correction/ G Offset (%)	GOff	
Adjust B offset	0	± 100% (1% steps)	Color Correction/ B Offset (%)	BOff	
Lock Gamma correction controls	Unlocked	Locked or Unlocked	Color Correction/ Gamma Lock checkbox	RGBGmLok	
Adjust R gamma	1.0	0.25 to 4.00	Color Correction/ R Gamma Correction	RGmC	
Adjust G gamma	1.0	0.25 to 4.00	Color Correction/ G Gamma Correction	GGmC	
Adjust B gamma	1.0	0.25 to 4.00	Color Correction/ B Gamma Correction	BGmC	
Lock HD Y, Cb. and Cr gains together	Unlocked	Lock or Unlock	HD Video Proc/ Video Proc: Video Gain Lock checkbox	YSatGnLok	HD Video Proc controls available only when HD input type is selected. Video Proc Amps must be enabled on System Config web page.
Adjust HD Y gain (contrast)	100%	0 to 200% (1% steps)	HD Video Proc/ Video Proc: Y Gain (%)	HdYGain	
Adjust HD color saturation (chroma gain)	100%	0 – 200% (1% steps)	HD Video Proc/ Video Proc: Color Saturation (%)	HdChroGn	
Adjust HD Cb gain	100%	0 to 200% (1% steps)	HD Video Proc/ Video Proc: Cb Gain (%)	HdCbGn	
Adjust HD Cr gain	100%	0 to 200% (1% steps)	HD Video Proc/ Video Proc: Cr Gain (%)	HdCrGn	
Adjust HD Y Offset (brightness)	0	± 100% (1% steps)	HD Video Proc/ Video Proc: Y Offset (%)	HdYOff	
Adjust HD Cb offset	0	± 100% (1% steps)	HD Video Proc/ Video Proc: Cb Offset (%)	HdCbOff	
Adjust HD Cr offset	0	± 100% (1% steps)	HD Video Proc/ Video Proc: Cr Offset (%)	HdCrOff	
Adjust HD Hue	0	-180 to +179 degrees (1 degree steps)	HD Video Proc/ Proc Amp: Hue (Deg)	HdChroPhs	
Adjust HD output delay	0.0	0 to 4095 (1.0 pixel steps)	HD Video Out/ Output Delay (Pixels)	HDODLY	Available only when HD input type is selected.

Table 3. Summary of Kameleon HD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Notes/ Conditions
Down Converter mode	Letterbox	Letterbox, 14x9 SP, Full Height, or Amorphous/16X9	Down Converter/ Standard Presets Mode Letterbox, 14x9 SP, Full Height, or Amorphous/16x9 radio button	DcMode	Down converter controls available on modules with down conversion capability or with SD input type selected.
Down Converter alignment	Center	Center, Top, Bottom, Left, or Right	Down Converter/ Standard Presets Alignment Center, Top, Bottom, Left, or Right radio button	DcAlign	
Down Converter crop	0 lines	0 lines, 1 lines, 2 lines, 4 lines	Down Converter/ Standard Presets Top/Bottom Crop Controls 0, 1, 2, or 4 lines radio button	DcCrop	
Down Converter matte color (all matte selections are 75%)	Black	Gray 1, Gray 2, Gray 3, Gray 4, Gray 5, Gray 6, White, Yellow, Cyan, Green, Magenta, Red, Blue, or Black	Down Converter/ Standard Presets Matte Color pulldown	DcMatte	
Down Converter apply Standard Presets	–	–	Down Converter/ Standard Presets Apply Standard Presets button	DcApply	
Closed Captioning (525 line rate only)	Disabled	Enabled or Disabled	Down Converter/ Embedded Audio/ Closed Captioning Closed Captioning Enabled checkbox	CCEnab	
Audio transcode (SD outputs only)	Disabled	Enabled or Disabled	Down Converter/ Embedded Audio / Closed Captioning Audio Transcode Enabled checkbox	AudTrscd	

Table 3. Summary of Kameleon HD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Notes/ Conditions
Lock SD video gains together	Unlocked	Lock or Unlock	SD Video Proc/ Video Proc: Video Gain Lock checkbox	SdVidGnLk	SD Video Proc controls available on modules with down conversion capability or with SD input type selected. Video Proc Amps must be enabled on System Config web page.
Adjust SD Y gain (contrast)	100%	0 to 200% (1% steps)	SD Video Proc/ Video Proc: Y Gain (%)	SdYGain	
Adjust SD color saturation (chroma gain)	100%	0 to 200% (1% steps)	SD Video Proc/ Video Proc: Color Saturation (%)	SdChroGn	
Adjust SD Cb gain	100%	0 to 200% (1% steps)	SD Video Proc/ Video Proc: Cb Gain (%)	SdCbGn	
Adjust SD Cr gain	100%	0 to 200% (1% steps)	SD Video Proc/ Video Proc: Cr Gain (%)	SdCrGn	
Adjust SD Y Offset (brightness)	0	± 100% (1% steps)	SD Video Proc/ Video Proc: Y Offset (%)	SdYOff	
Adjust SD Cb offset	0	± 100% (1% steps)	SD Video Proc/ Video Proc: Cb Offset (%)	SdCbOff	
Adjust SD Cr offset	0	± 100% (1% steps)	SD Video Proc/ Video Proc: Cr Offset (%)	SdCrOff	
Adjust SD Hue	0	-180 to +179 degrees (1 degree steps)	SD Video Proc/ Proc Amp: Hue (Deg)	SdChroPhs	
Adjust SD output delay	0.0	0 to 4095.5 (0.5 pixel steps)	SD Video Out/ Output Video: Output Delay (Pixels)	SDODLY	SD Video Out controls available on modules with down conversion capability or SD input type selected.
Configure Video SD VBI blanking	None	All, None, or line by line	SD VBI/ VBI Lines/Data Lines Blank: All or None button or individual VBI/Data Lines checkboxes	N/A	VBI configuration web page controls are available on modules with down conversion capability or SD input type selected. Data lines are configured in Advanced View on System Config web page.
Configure Video SD VBI chroma kill	None	All, None, or line by line	SD VBI/ Chroma Kill All or None button or individual VBI/Data Lines checkboxes		
Configure Video Encode VBI setup	Off	All, None, or line by line	Encode VBI/ Setup All or None button or individual VBI/Data Lines checkboxes		
Configure Video Encode VBI blanking	None	All, None, or line by line	Encode VBI/ Blank All or None button or individual VBI/Data Lines checkboxes		
Configure Video Encode chroma kill	None	All, None, or line by line	Encode VBI/ Chroma Kill All or None button or individual VBI/Data Lines checkboxes		

Table 3. Summary of Kameleon HD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Notes/ Conditions
Composite Output Video Signal Setup enable (525 line rate only)	Enabled	Enabled or Disabled	Composite Out/ Output Video Signal Setup checkbox	SigSetupEn	Composite Output controls are available on modules with down conversion capability or when an SD input type is selected on KAM-HDD/-PA/ -FS modules only.
Composite Output Video Burst Signal	Enabled	Enabled or Disabled	Composite Out/ Output Video Burst Signal checkbox	BurstSigEn	
Composite Output Video Chrominance Signal	Enabled	Enabled or Disabled	Composite Out/ Output Video Chrominance Signal checkbox	ChroSigEn	
Composite Output Video Gain	100.0%	– 61 to 138.5% (0.5% steps)	Composite Out/ Output Video Gain (%)	OutVidGain	
Composite Output Video Coarse Delay	100.0%	0 to 4079.5 pixels (0.5 pixel steps)	Composite Out/ Delay Coarse (%)	CoarsDelay	
Composite Output Video Adjustment enable	User	User Adjustable or Calibrated	Composite Out/ User Adjustable or Calibrated radio button	OutVidAdj	
Composite Luma Gain adjustment	100%	50 to 150% (1% steps)	Composite Out/ Luma Gain (%)	LumaGain	
Composite Chroma Gain adjustment	100%	50 to 150% (1% steps)	Composite Out/ Chroma Gain (%)	ChromaGain	
Composite Black Level adjustment	15%	–7.5 to 15% (0.5% steps)	Composite Out/ Black Level (%)	BlkLevel	
Composite Hue adjustment (525 line rate only)	0 degrees	± 22.5% (0.5% steps)	Composite Out/ Hue (Degrees)	OutVidHue	

Newton Control Panel Configuration

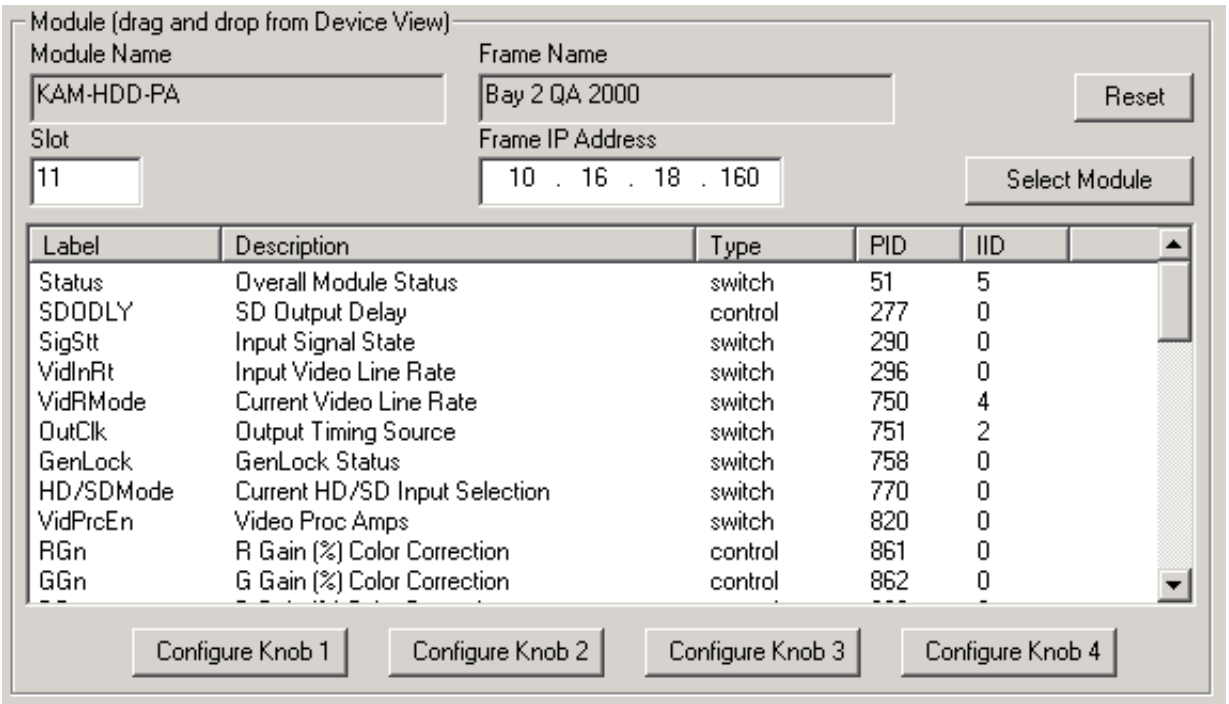
A Newton Control Panel (hard or soft version) can be interfaced to the Kameleon 2000 Series frame over the local network. Control panel access offers the following considerations for module configuration and monitoring:

- 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.
- Update software for applicable modules and assign frame and panel IP addresses with the NetConfig Networking application.
- 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 E-MEM and factory default recalls. The available control panel controls for the module are listed in Table 3 on page 21.

An example of the Newton Configurator is shown in Figure 11.

Figure 11. Newton Configurator Example



Refer to the documentation that accompanies the Newton Modular Control System for installation, configuration, and operation information.

Web Browser Interface

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

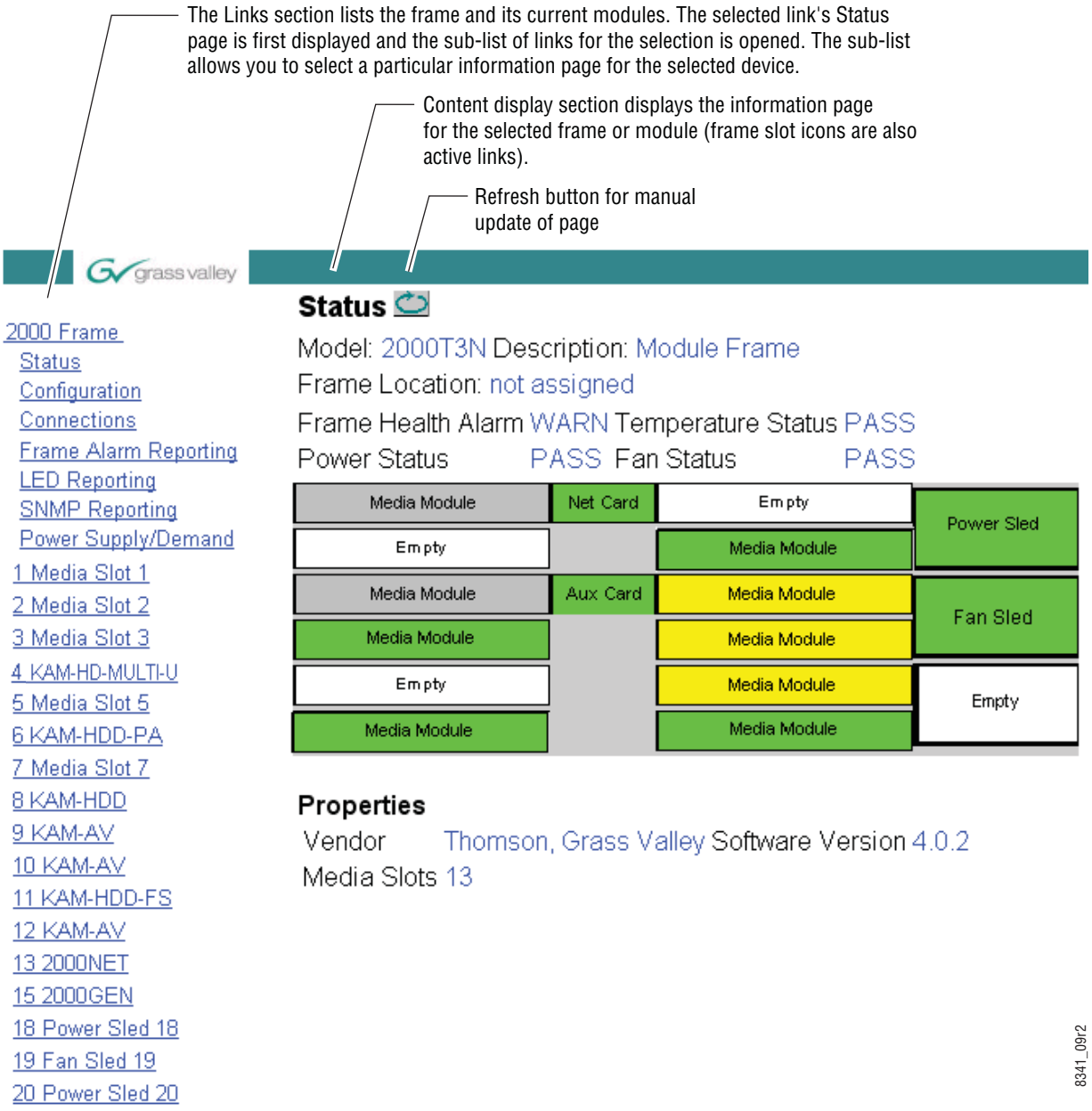
Use of the web interface offers the following considerations:

- Provides complete access to all module status and configuration functions, including naming of inputs and outputs, factory parameter and name default recalls, E-MEM functions, slot configuration, and SNMP monitoring controls.
- Web access will require some normal network time delays for processing of information.
- Configuration parameter changes may require pressing the **Apply** button or **Enter**, upload processing time, and a manual screen refresh to become effective.
- Web interface recommended for setting up module signal and slot names, E-MEMS, and reporting status for SNMP and monitoring.

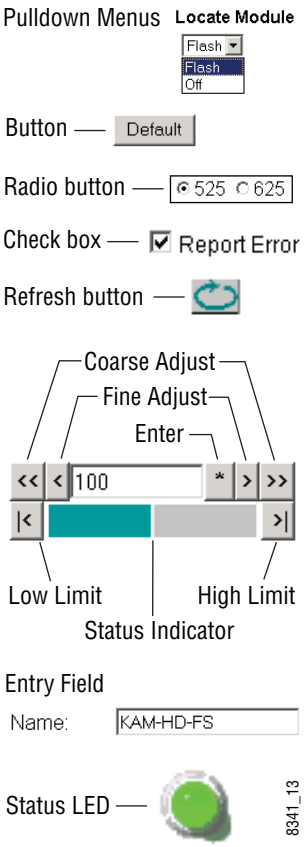
Refer to the Frame Status page shown in Figure 12 on page 29. The Kameleon and 2000 modules can be addressed by clicking either on a specific module icon in the frame status display or on a module name or slot number in the link list on the left.

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 2000NET 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 2000NET software installed in your system. This manual reflects 2000NET software version 4.0.2.

Figure 12. 2000NET GUI



Web Page Operations and Functional Elements



The following conventions and functional elements (shown at left) are used in Kameleon web page operations. (The examples shown throughout this manual represent 2000NET software version 4.0.0 or later):

- 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.
- An entry field allows naming of various module functions such as input or output signals, asset tag, and slot identification.
- The Status LED is explained in *Status LED icon* on page 32.

Status and Identification Headers

Each configuration web page has a Status and Identification Header (Figure 13 for KAM-HD-FS, Figure 14 for KAM-HDD-PA, Figure 15 for KAM-HDD-FS, and Figure 16 for KAM-HDD).

Figure 13. Status/ID Header – KAM-HD-FS

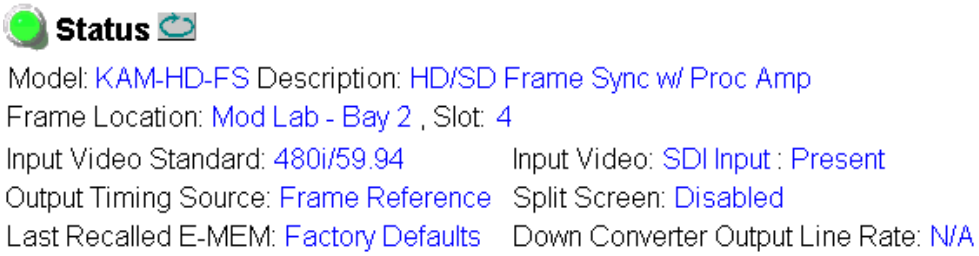


Figure 14. Status/ID Header – KAM-HDD-PA

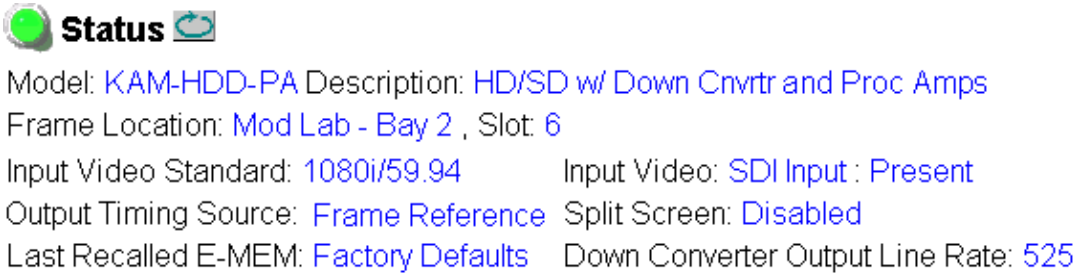


Figure 15. Status/ID Header – KAM-HDD-FS

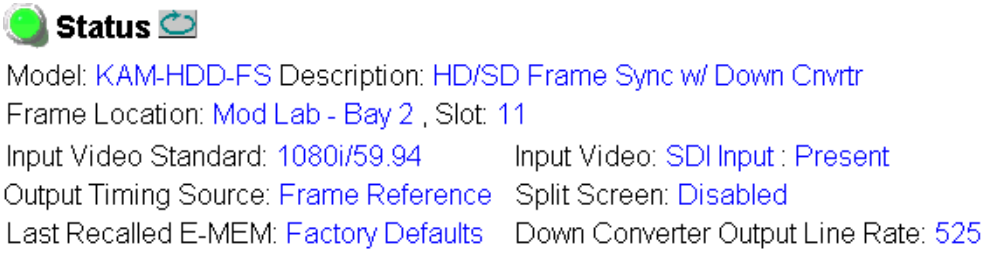
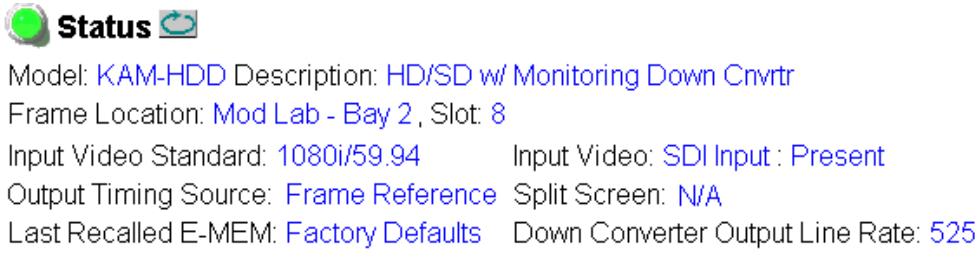


Figure 16. Status/ID Header – KAM-HDD



Status LED icon

The Status LED icon reports communication status for the frame slot and is a link to the module Status web page where Warnings and Faults are displayed. LED colors indicate:

- Green = Pass – no problems detected
- Yellow = Configuration error warning
- Red = Fault condition detected

- **Model** and **Description** are read-only generated by the module.
- **Frame Location** is defined on the 2000 Series Kameleon Frame Configuration web page.
- **Slot** number reports the module's location in the frame.
- **Input Video Standard** reports the input video type and rate selected on the System Config web page.
- **Input Video** reports the status of the video input to the module.
- **Output Timing Source** reports the output timing source (Frame Reference or Input) chosen on the System Config web page.
- **Split Screen** status is reported (**Enabled** or **Disabled**) as set on the System Config, Color Correction, or HD and SD Video Proc Amp web pages.
- **Last Recalled E-MEM** reports the last E-MEM configuration recalled.
- **Down Converter Output Line Rate** (valid only on HDD modules with HD 59.94 or HD 50 input type, not applicable on the KAM-HD-FS module) reports the line rate of the Down Converter output.

Initial Configuration Process Overview

To configure the Kameleon module proceed as follows:

1. Go to the I/O Config web page (find the applicable module configuration starting on page 39) to name inputs and outputs.
2. Go to the System Config web page (find the applicable module configuration starting on page 45) to configure the input video type (HD or SD), the video input rate, and the output timing source; and for modules supporting down conversion, BNCs J3 and J4 as SD or HD outputs. Split Screen controls are also available on this page as well as on the HD Video Proc, SD Video Proc, and Color Correction web pages.
3. If not already connected, connect all input and output signals and verify component and signal presence and condition on the Status web page (page 37).
4. Go to the Functional View web page (find the applicable module configuration starting on page 60) to use the block links to configure each function in turn. Video processing must be enabled on the System Config web page or with the Newton control panel.

Note **Next**, **Functional View**, and **Back** links are provided to help you navigate through a logical configuration sequence.

5. Use the Slot Config web page (page 100) to assign Slot Configuration information such as slot name and asset number. Also link to the 2000NET module web pages to enable and disable Frame Health and SNMP trap reporting.
6. Use E-MEM memory (page 95) to store or recall configurations as necessary.
7. Software Updating is performed using the NetConfig Networking application (page 103).

Kameleon HD Links and Web Pages

The 2000 GUI provides the following links and web pages for the KAM-HD series modules:

- Status – reports input, reference, and frame bus status and module information (page 37),
- I/O Config – shows a graphic representation of inputs and outputs to the module and allows naming of the input and output signals (page 39),
- System Config – provides output timing selection, input video type select, video rate select, video processor enable, color bars test signal enable, a split screen control, and an advanced view for VBI configuration (page 45),
- Functional View – shows a block diagram of the module with links to each module configuration page (page 60),
- HD and SD module configuration pages for setting up the module (page 71),
- E-MEM® – provides Standard and Advanced E-MEM for Learn and Recall functions for up to 5 E-MEM registers, and Recall of Factory settings and names (page 95), and
- Slot Config – provides a Locate Module function, Slot Identification fields, Slot Memory, and links to the Frame Health, LED, and SNMP Trap reporting web pages on the 2000NET module (page 100).

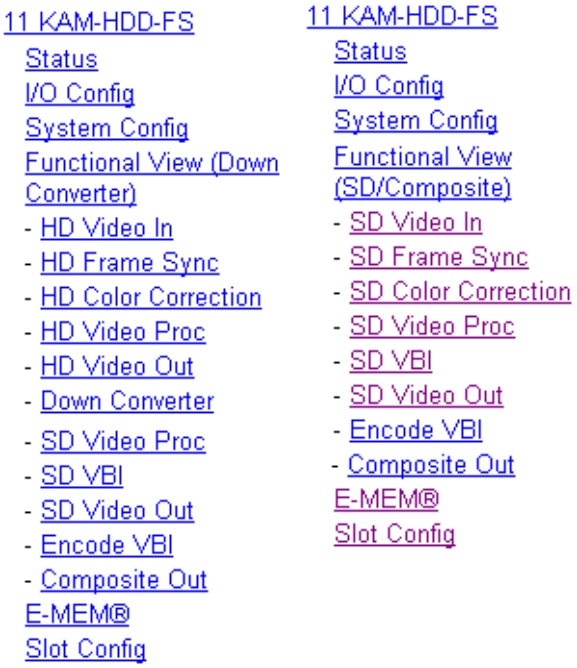
The KAM-HD-FS module links are shown in Figure 17 for available web pages when an HD input type is selected (left) or an SD input (right).

Figure 17. KAM-HD-FS Web Page Links

The KAM-HDD-PA (Figure 18) and KAM- HDD-FS (Figure 19) module links are shown for available web pages when an HD input type (HD 59.94 or HD 50) is selected (left) or an SD input (right).

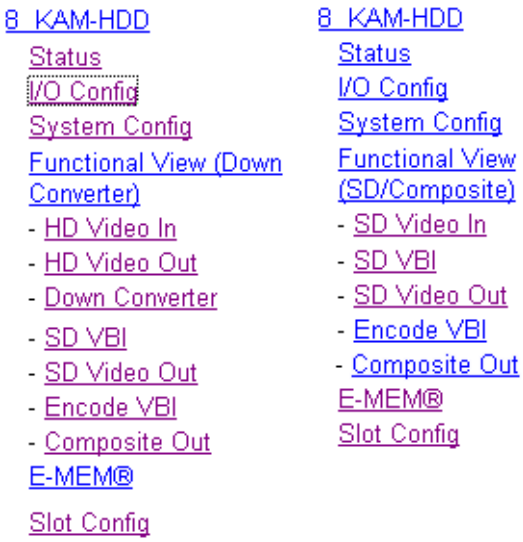
Figure 18. KAM-HDD-PA Web Page Links

Figure 19. KAM-HDD-FS Web Page Links

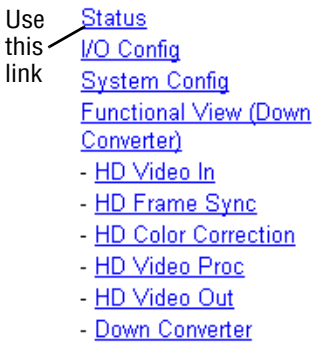


The KAM-HDD (Figure 20) module links are shown for available web pages when an HD input type (HD 59.94 or HD 50) is selected (left) or an SD input (right).

Figure 20. KAM-HDD Web Page Links



Status Web Page



The Status web page for the Kameleon HD modules (Figure 21 on page 38, KAM-HDD-FS module shown) provides an overall indication of the health of the system and links to web pages for the active components:

- Status Header – the same on all Kameleon configuration pages (see *Web Page Operations and Functional Elements* on page 30),
- Color-coded communication status for each component and path,
- Summary of all fault/warning conditions, and
- Textual module status, front module, and rear module properties.

Color-coded Status Indicators and Links

Each box represents a Kameleon front or rear module as indicated in Figure 21 on page 38. The KAM-HD-R link in the Rear I/O Module box will take you to the I/O Config web page for setting input and output names. The module link in the Front Processing module box will take you to the Functional view web page containing the configuration links.

The arrows represent signal paths that may or may not be monitored. These elements act as links when their function is active (indicated by underlined function name).

Color code:

- Green = Pass – operating as expected.
- Yellow = Warning – signal is absent, has errors, or is misconfigured.
- Red = Fault – a component has failed.
- Gray = Not monitored.

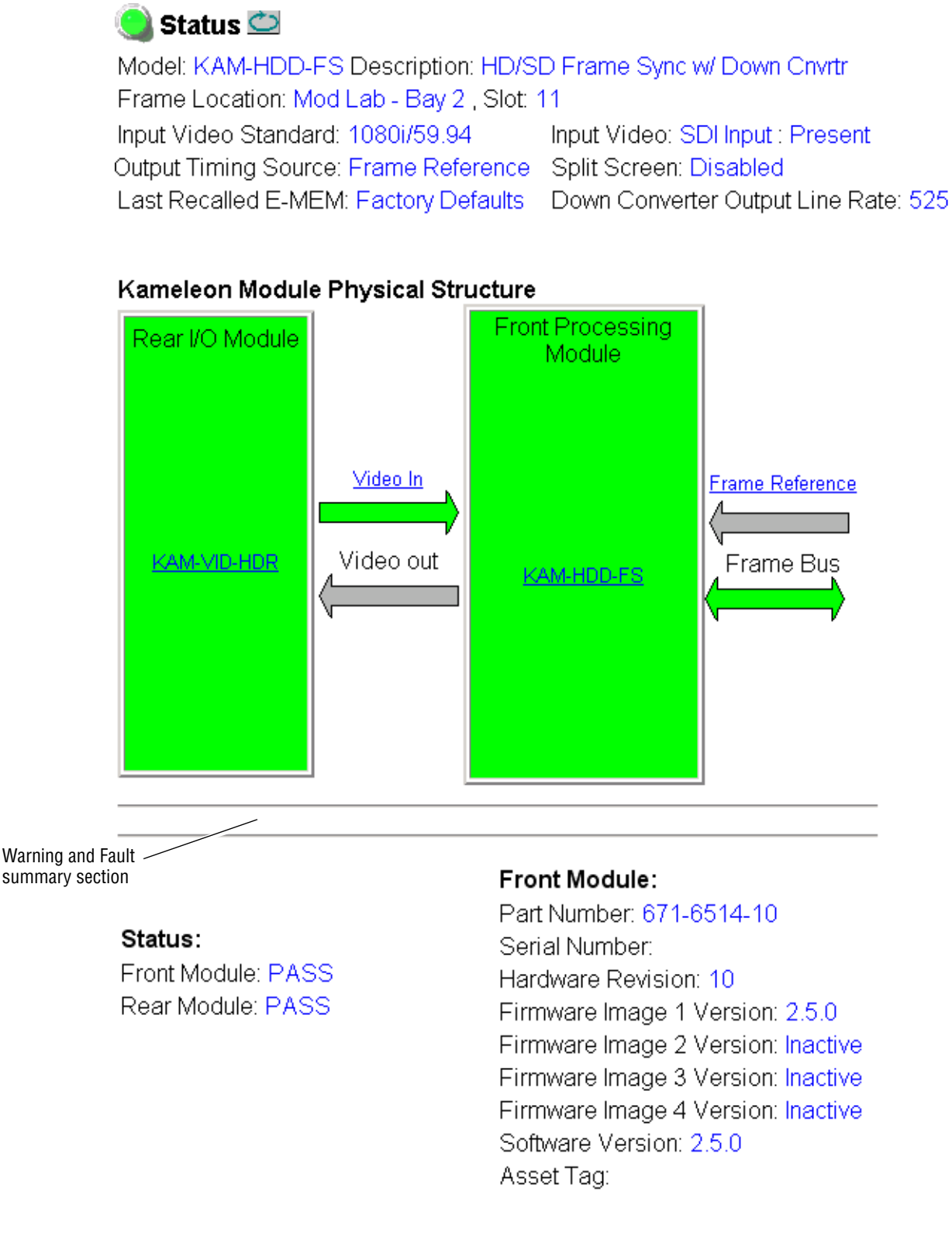
Warning/Fault Summary

The warnings and faults are reported in the Warning/Fault summary section of the Status web page as indicated in Figure 21 on page 38. When a fault or warning is detected, it will be reported in this area. A Fault indicates a serious condition that prohibits proper operation. A Warning indicates a condition which may or may not adversely affect operating conditions, but should be noted. Warnings may possibly be corrected by changing configuration, settings or input signals.

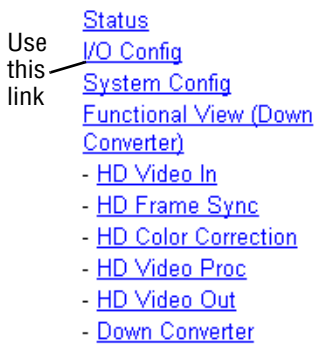
Status/Front Module Properties

The Status/Front Module properties in the footer provide a textual summary of the color-coded module status. Front module properties provide hardware, firmware, software identification, and serial number and asset tag assignment for the Kameleon HD module.

Figure 21. Kameleon HD Status Web Page



I/O Config Web Page



Use the I/O Config web page to:

- View a graphical overview of the rear module connectors,
- See signal status of inputs, and
- Assign easily recognizable signal names that will help later in the configuration process.

An overall description of the I/O web pages is provided below. Refer to *KAM-HD-FS I/O Config Web Pages* on page 40 and *KAM-HDD-PA/KAM-HDD-FS/KAM-HDD I/O Config Web Pages* on page 42 for specific illustrations of the possible I/O Config web pages for each model type and system configuration.

- **Header Row** – The top header row provides the connector hardware physical label (J#) and the dedicated signal type for the connector. This information is determined by the settings of the System Configuration web page and the module type (refer to the *System Config Web Page* on page 45).
- **Connector** – The connector row illustrates connector types provided for each port.
- **Input/Output Mode** – the I/O mode is static read-only based on the type of module and the settings made on the System Configuration web page.
- **Signal Naming** – enter a signal name (up to 12 characters) for each operational input/output. The name will be used to identify the signal in other configuration web pages. Factory default names for all models are shown in Figure 22 on page 40.
- **Status Boxes** – as shown in the Legend at the bottom of the I/O Config web page, each connector is monitored and status reported with the following color code:
  - Green = Pass – signal is present.
  - Yellow = Warning – signal is absent, has errors, or is misconfigured.
  - Light gray = connector is not monitored.
  - Dark gray = connector is unused.

KAM-HD-FS I/O Config Web Pages

The I/O Config web pages for the possible KAM-HD-FS module configurations are illustrated in the following figures:

- KAM-HD-FS with HD input – refer to Figure 22. For a graphical block diagram, refer to Figure 40 on page 60.
- KAM-HD-FS with SD input – refer to Figure 23 on page 41. For a graphical block diagram, refer to Figure 41 on page 61.

Figure 22. KAM-HD-FS I/O Config Web Page – HD Input Type

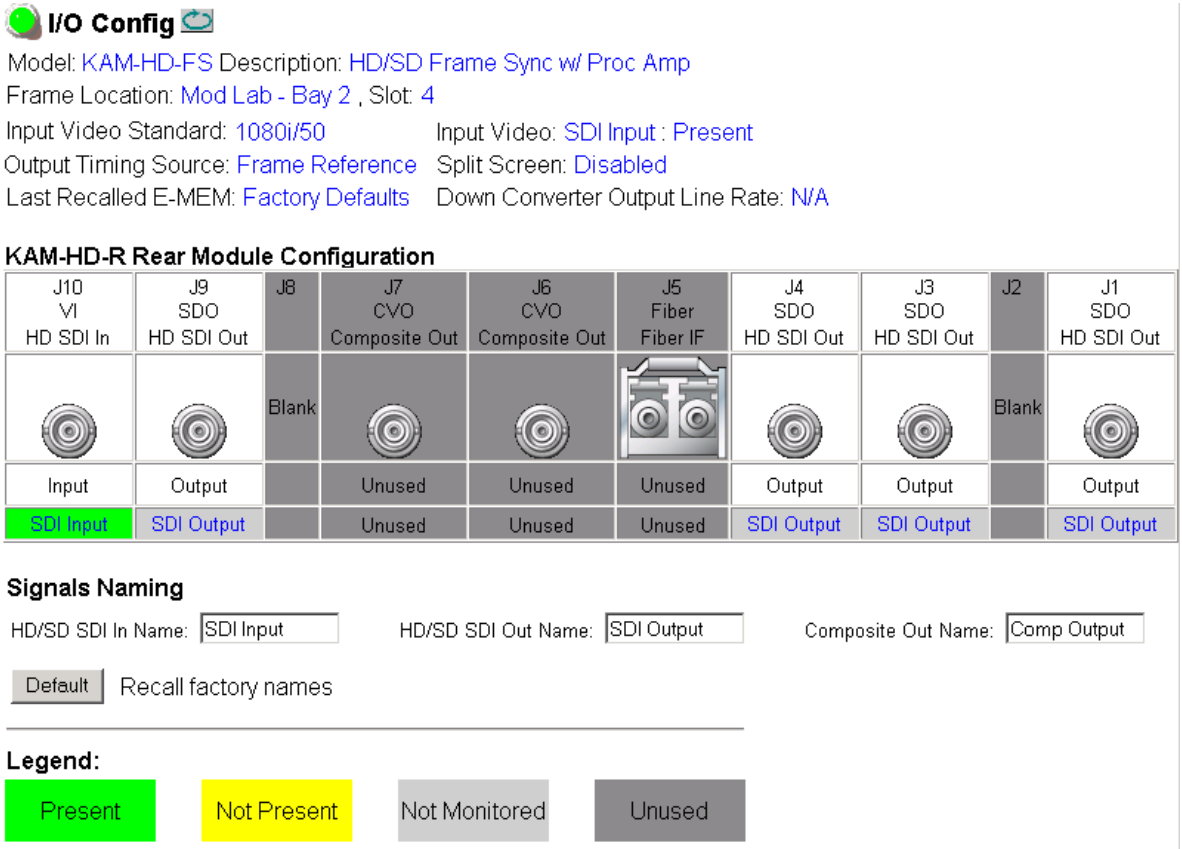
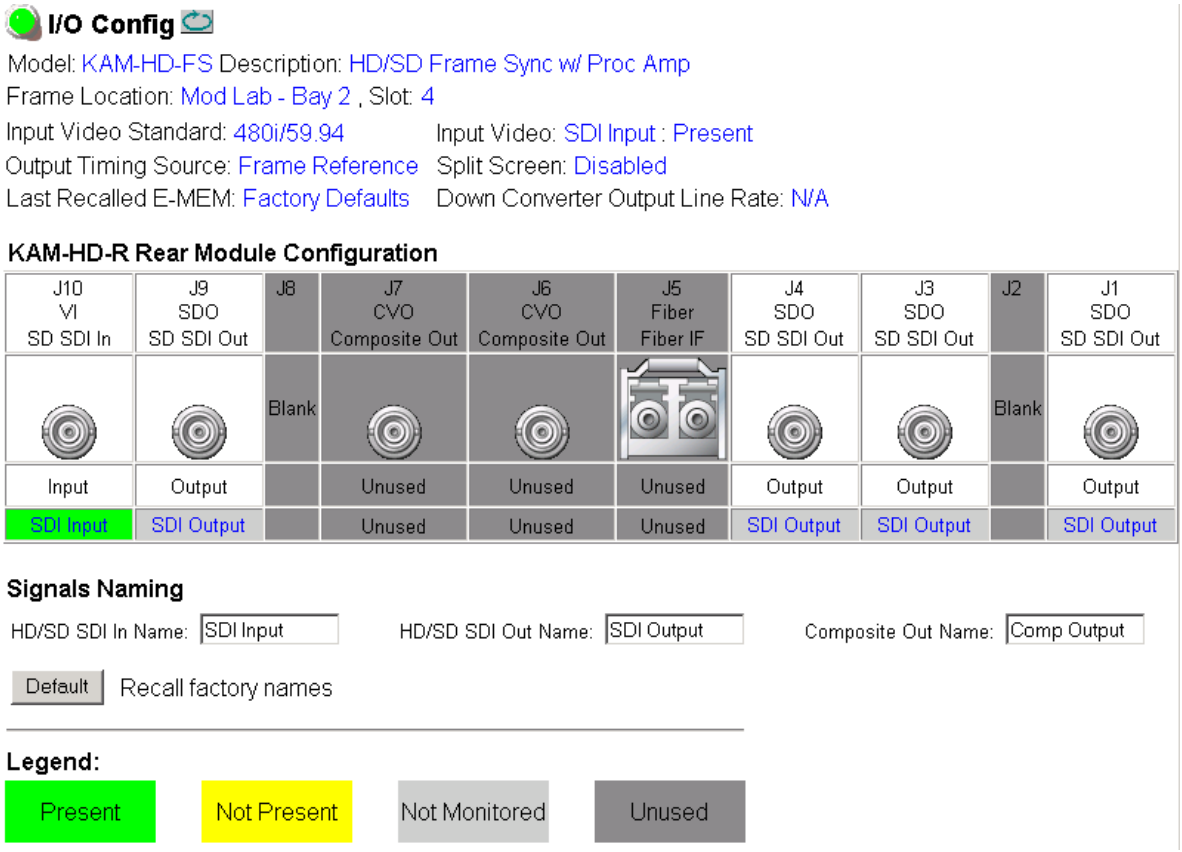


Figure 23. KAM-HD-FS I/O Config Web Page – SD Input Type



KAM-HDD-PA/KAM-HDD-FS/KAM-HDD I/O Config Web Pages

The I/O Config pages for the possible KAM-HDD-PA, KAM-HDD-FS, and KAM-HDD configurations are illustrated in the following figures:

- KAM-HDD-PA/KAM-HDD-FS/KAM-HDD with HD 59.94 or HD 50 Input, BNCs J3 and J4 set for SD Outputs – refer to Figure 24.
- KAM-HDD-PA/KAM-HDD-FS/KAM-HDD with HD 59.94 or HD 50 Input, BNCs J3 and J4 set for HD Outputs – refer to Figure 25 on page 43.
- KAM-HDD-PA/KAM-HDD-FS/KAM-HDD with HD 24 Input (no down conversion) – refer to Figure 26 on page 43.
- KAM-HDD-PA/KAM-HDD-FS/KAM-HDD with SD Input – refer to Figure 27 on page 44.

Figure 24. KAM-HDD/-PA/-FS I/O Config – HD 59.94 or HD 50 In (J3/J4 SD)

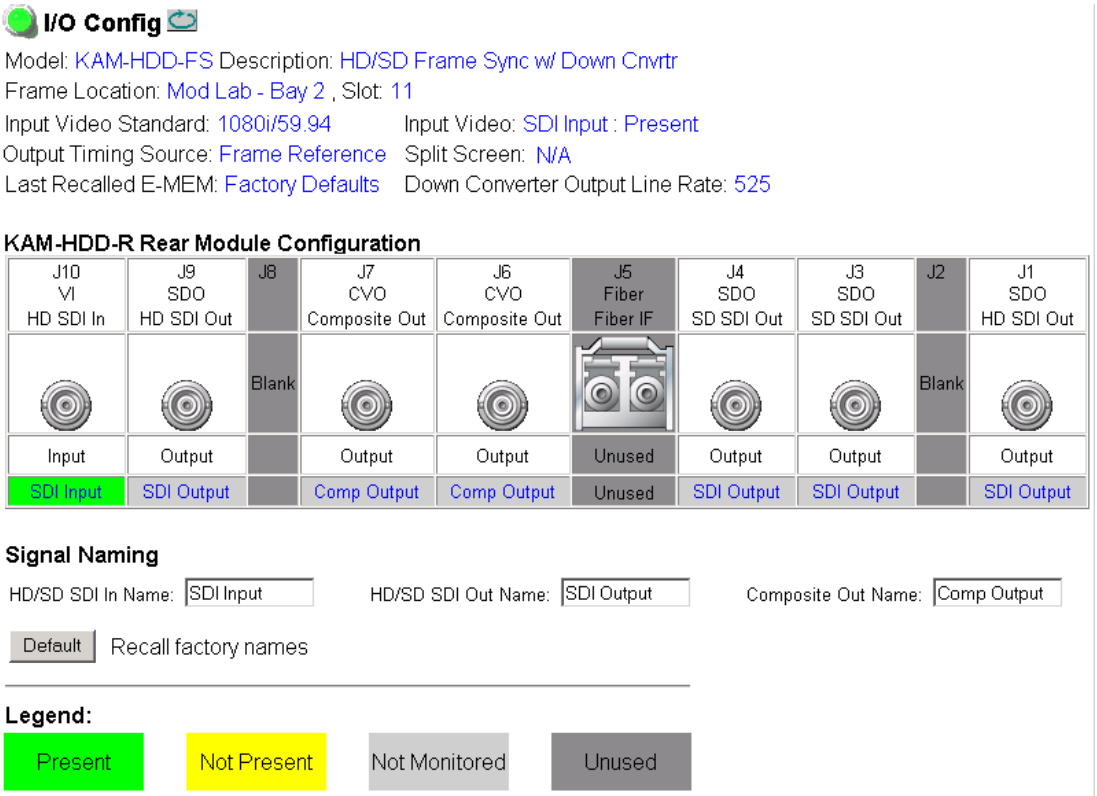


Figure 25. KAM-HDD /-PA/- FS I/O Config – HD 59.94 or HD 50 In (J3/J4 HD)

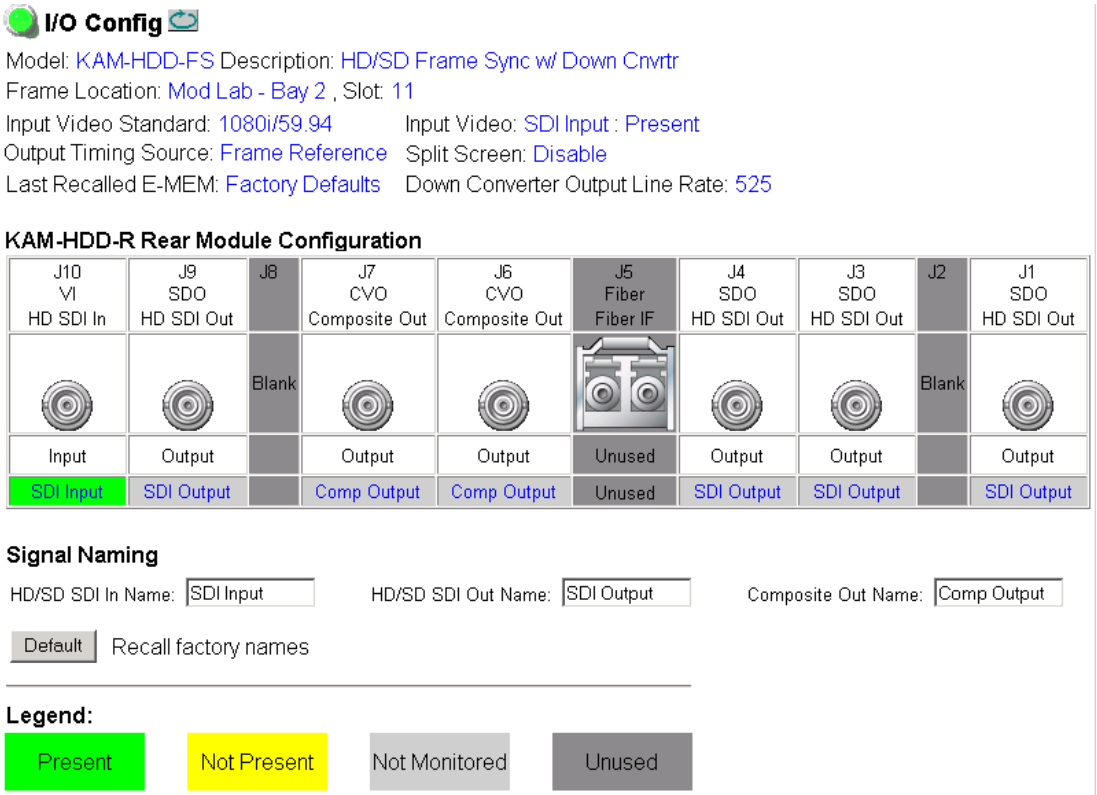


Figure 26. KAM-HDD/-PA/- FS I/O Config – HD 24 In

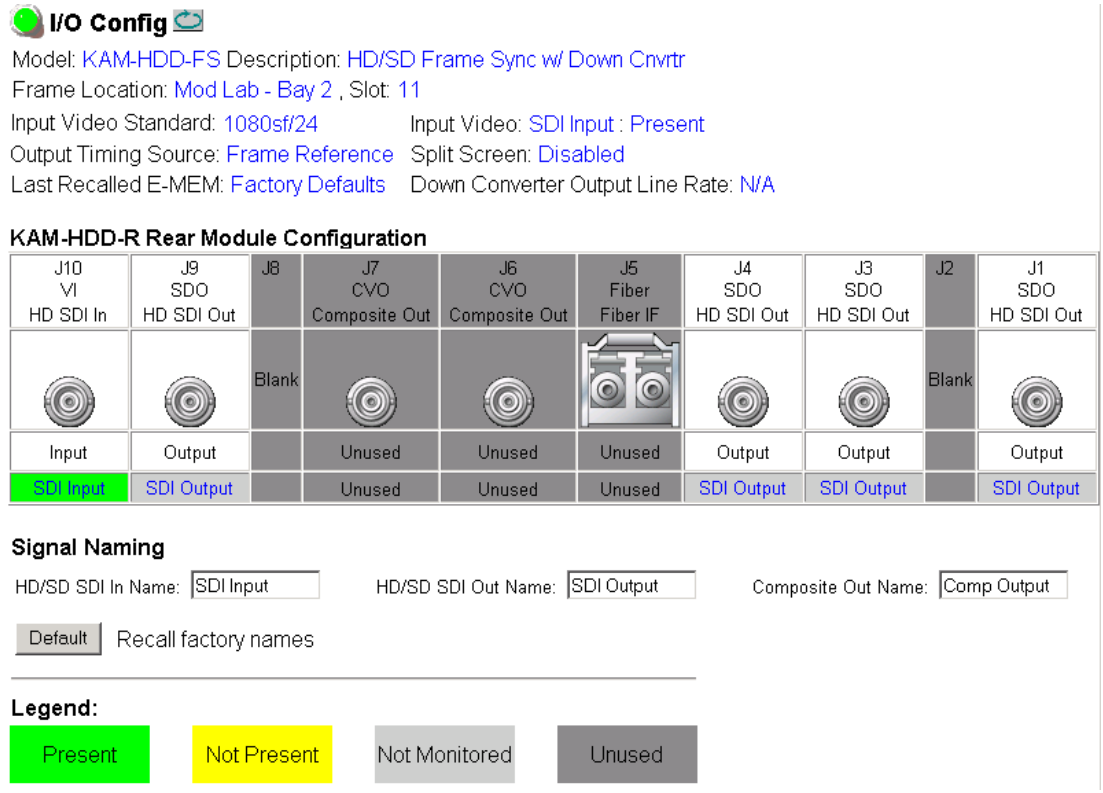
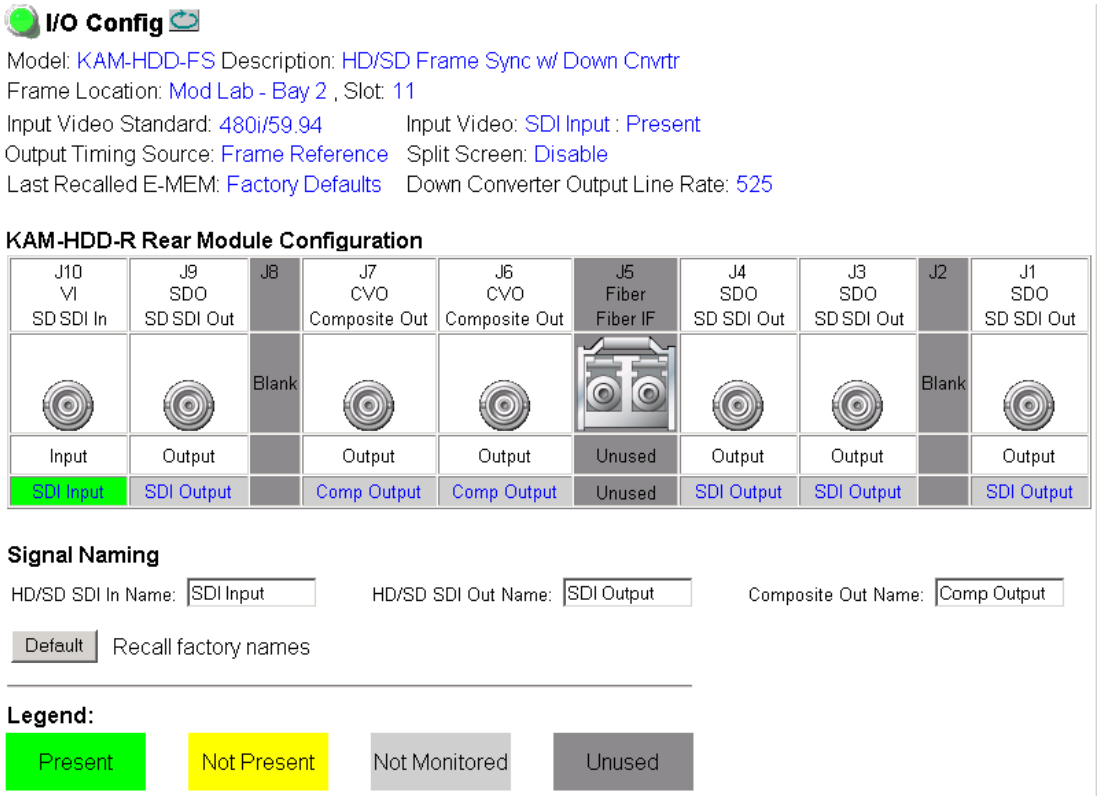
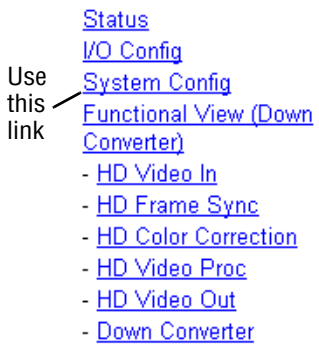


Figure 27. KAM-HDD/-PA/-FS I/O Config – SD In



System Config Web Page



The System Config web page provides the following system configuration controls:

- Selection of the SD or HD input video type and rate for the module.
- Enabling or disabling all HD and SD video processing, including color correction or enable a color bars output test signal.
- For modules with down conversion capability (KAM-HDD-PA/KAM-HDD-FS/KAM-HDD with HD 59.94 or HD 50), assignment of output BNCs J3 and J4 to be either HD or SD outputs.
- Enabling of an Advanced View to configure VBI lines as data lines if desired for modules with SD and/or composite outputs.
- Selection of an output timing source.
- Enabling or disabling of the split screen function and screen position for comparing the input video to the processed video. This function is also on the HD and SD Video Proc and Color Correction web pages.

System Configuration

Set the following parameters for system configuration:

View Select

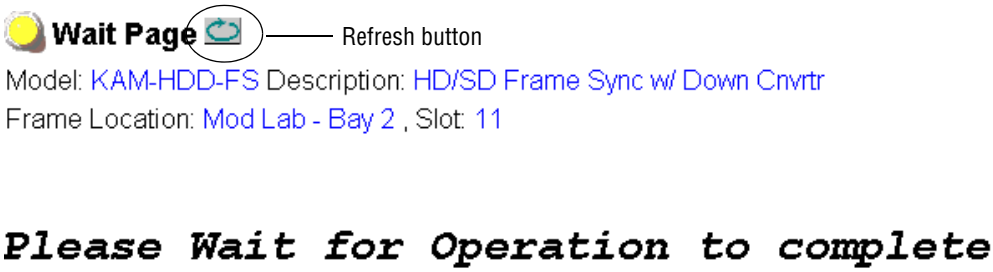
Set the view to **Standard** (Figure 29 on page 47) or **Advanced** (Figure 30 on page 48). **Advanced** view will bring up the **Standard Definition VBI/Data Lines** controls for modules with SD/and or composite outputs.

Input Video

Select the desired video input type and rate from the **Input Type** and **Input Rate** pulldowns. Refer to Table 3 on page 21 for a complete list of available input types and rates.

Note Pressing the **Defaults** button, changing the Input Type, or BNCs J3 and J4 from HD to SD on the System Config web page or with an E-MEM recall will cause the module to reboot. It will take approximately 30 seconds to re-initialize. During this time a Wait Page (Figure 28) will appear. Wait for the operation to complete then select the **Refresh** button to update the web page.

Figure 28. Wait Page



Video Proc Amps

Enable or disable all HD and SD video processing, including color correction on the module with the **Enable** or **Disable** radio button. Proc amp status will be reported on each of the Video Proc and Color Correction web pages. Select the **Color Bars** radio button to enable the internal color bars test signal on the module output.

Note The internal Color Bars test signal is inserted at the output after the video processing and is not adjustable with the video processor.

J3 and J4 Output Selection

For modules with HD 59.94 or HD 50 input type, output BNCs J3 and J4 may be either HD or SD video. Select the **HD** or **SD** radio button to set the BNCs to the desired output. This choice is also reflected in the graphics on the Functional View and I/O Config web pages. Changing this parameter will cause re booting of the module and the Wait web page (Figure 28 on page 45) will appear until initialization is complete.

Standard Definition VBI/Data Lines

For modules with SD outputs, when the **Advanced (VBI Config)** radio button is selected in the View Select, a control for defining data lines in the SD and composite video VBI will be present. This control will only appear when down converted SD or encoded composite video is present.

Advanced VBI configuration allows you to extend VBI into the active picture range for special data insertion requirements. Active video lines that are used to carry data are referred to as Data Lines.

Select the **480i/59.94** or **576i/50** radio button to match the SD or composite output rate. Select the last line (includes all previous active video lines) that will be used for data. Selected active video lines will be shown in the **Reserved for Data** section of the web page as shown in the example for lines 21/284, 22/285, and 23/286 in Figure 30 on page 48.

Active video lines that can be made available for data insertion are:

- For 525, lines 21 – 24 in Field 1, lines 284 – 287 in Field 2
- For 625, lines 24 – 28 in Field 1, lines 337 – 341 in Field 2

Output Timing

For all modules, an output timing source can be selected from **Frame Reference** or **Input**. When **Frame Reference** is selected, modules with frame sync capability (KAM-HD-FS and KAM-HDD-FS) can be genlocked to the frame reference inserted into the 2000 frame. For these modules, a Frame Sync web page provides horizontal and vertical timing and freeze modes.

For modules without frame sync, when the Output Timing source is selected as **Frame Reference**, the start of any line of the output signal will sync to the start of any horizontal line in the frame reference.

Split Screen

Use a horizontal or vertical split screen to compare the unprocessed input video (top or right) to the processed output video (bottom or left).

- **Split Enabled –** enable the split screen by checking the Split **Enabled** checkbox.
- **Orientation** – set the orientation of the split screen with the **Vertical** or **Horizontal** radio button.
- **Position** – use the **Position** control to set the amount of horizontal or vertical split (10 to 90%) of unprocessed video to appear on the screen.

  This control is the same as the other Split Screen controls on the Color Correction, HD Video Proc, and SD Video Proc web pages for the KAM-HD-FS, KAM-HDD-FS, and KAM-HDD-PA modules.

KAM-HD-FS System Config Web Pages

The System Config web pages for the KAM-HD-FS module are shown in Figure 29 for an HD input type selected and Figure 30 on page 48 for an SD input type selected.

Figure 29. KAM-HD-FS System Config – HD Input Type

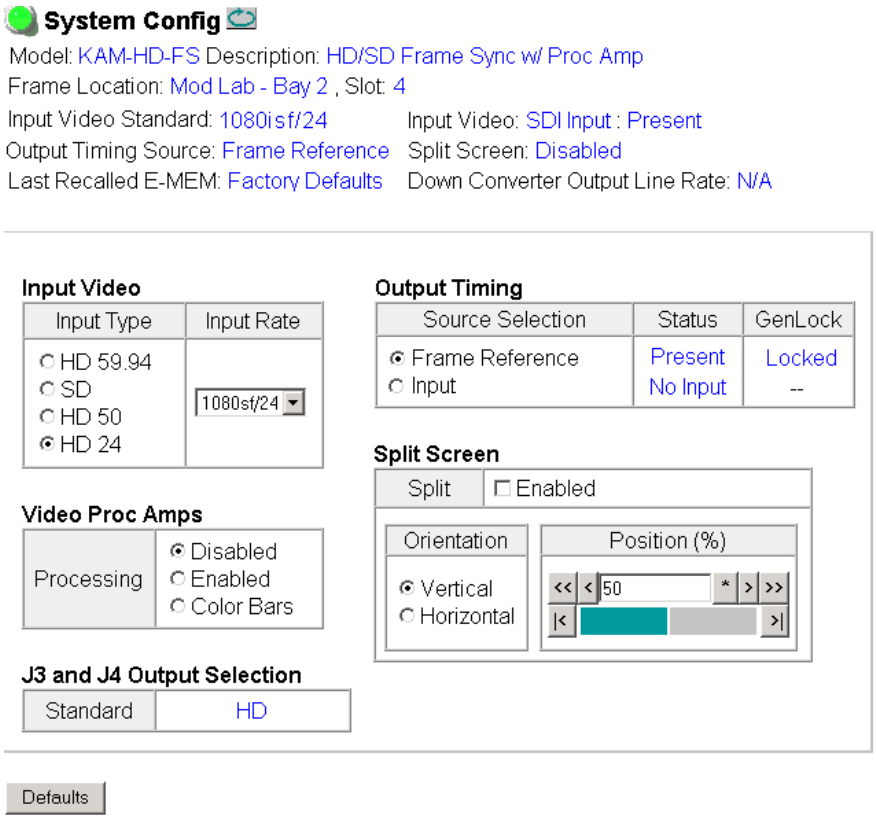
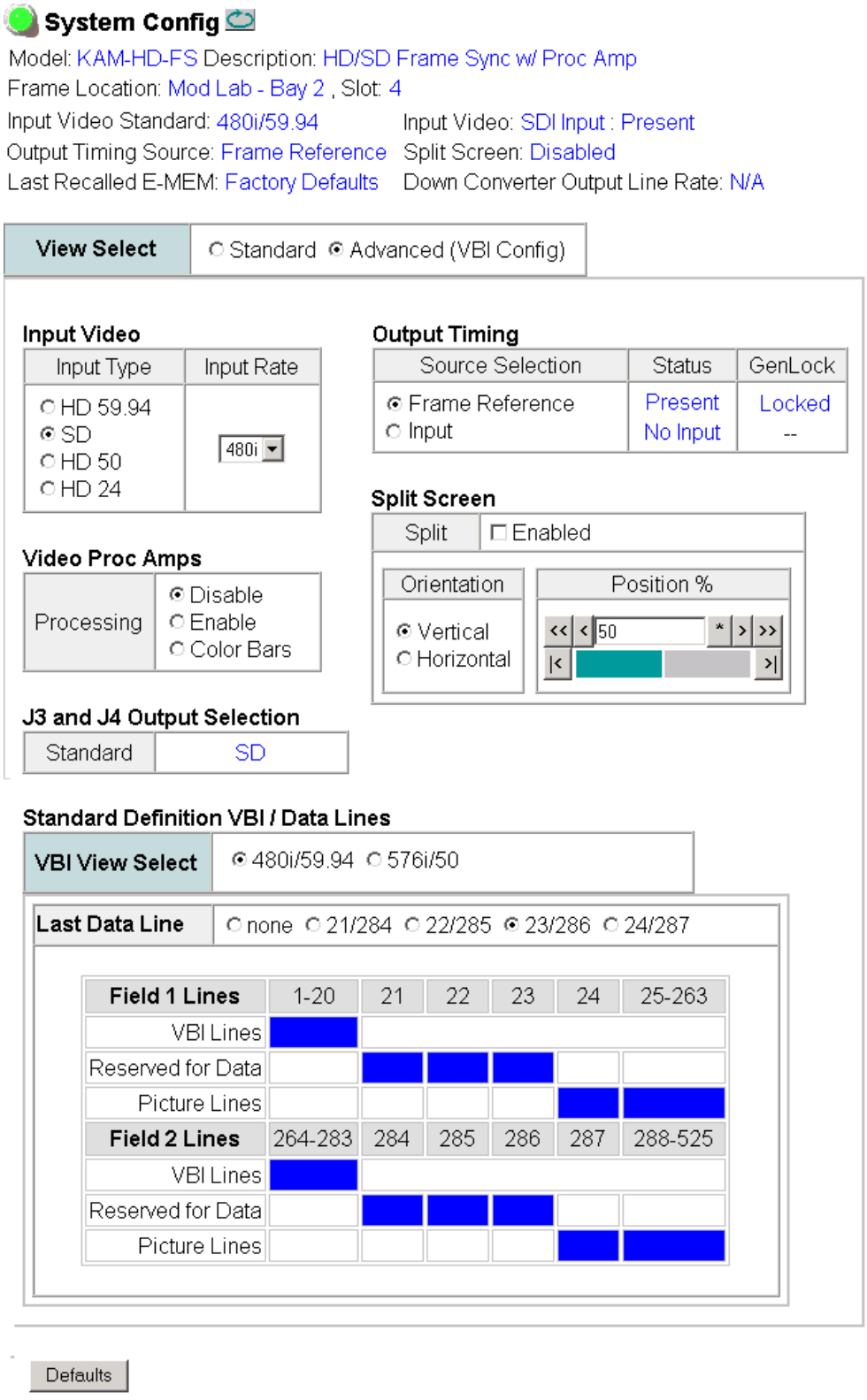


Figure 30. KAM-HD-FS System Config – SD Input Type



KAM-HDD-PA System Config Web Pages

The System Config web pages for the various configurations on the KAM-HDD-PA are shown in the following figures:

- KAM-HDD-PA with HD 24 input type selected (no down conversion) – Figure 31 on page 50.
- KAM-HDD-PA with an HD 59.94 or HD 50 input type selected – Figure 32 on page 51.
- KAM-HDD-PA with SD input type selected – Figure 33 on page 52.

KAM-HDD-PA Output Timing

Since the KAM-HDD module does not have a Frame Sync function, it requires some special timing considerations as described here. Refer also to the discussion on *Kameleon HD Timing Considerations* on page 20.

There are two output timing source selections available on the KAM-HDD-PA System Config web page, **Input** and **Frame Reference**.

- When the **Input** choice is selected, the video output will be in time with the input video, not in time with any external frame reference or any other modules in the frame. This can result in a delay of up to two pixels, so this mode should only be used when timing to an external reference is not a consideration.
- When **Frame Reference** is selected, the module is actually in a line sync mode since there is no frame sync capability on this model. Instead of locking to an external frame reference, the output signal will lock to the start of the next internal horizontal line. Using this setting will put the timing of the output signal to within a very accurate and predictable delay of approximately one nanosecond. However, it will not put this output signal in time with an external reference.
- In order for the KAM-HDD output to be in time with an external house reference, the input signal must already be in time with the external reference when it is input to the module and **Frame Reference** must be selected as the Output Timing source. If this condition is not met, an image break can occur when switching sources.

Figure 31. KAM-HDD -PA System Config Web Page – HD 24 Input Type

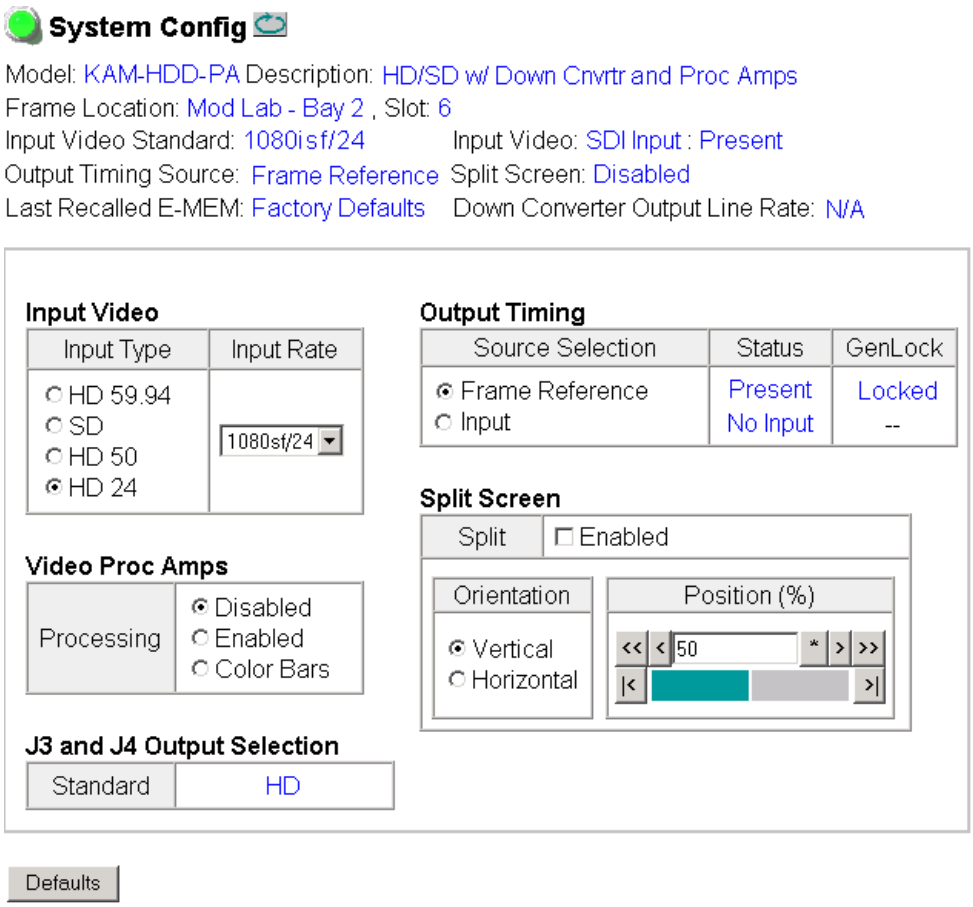


Figure 32. KAM-HDD-PA System Config – HD 59.94 or HD 50 Input Type

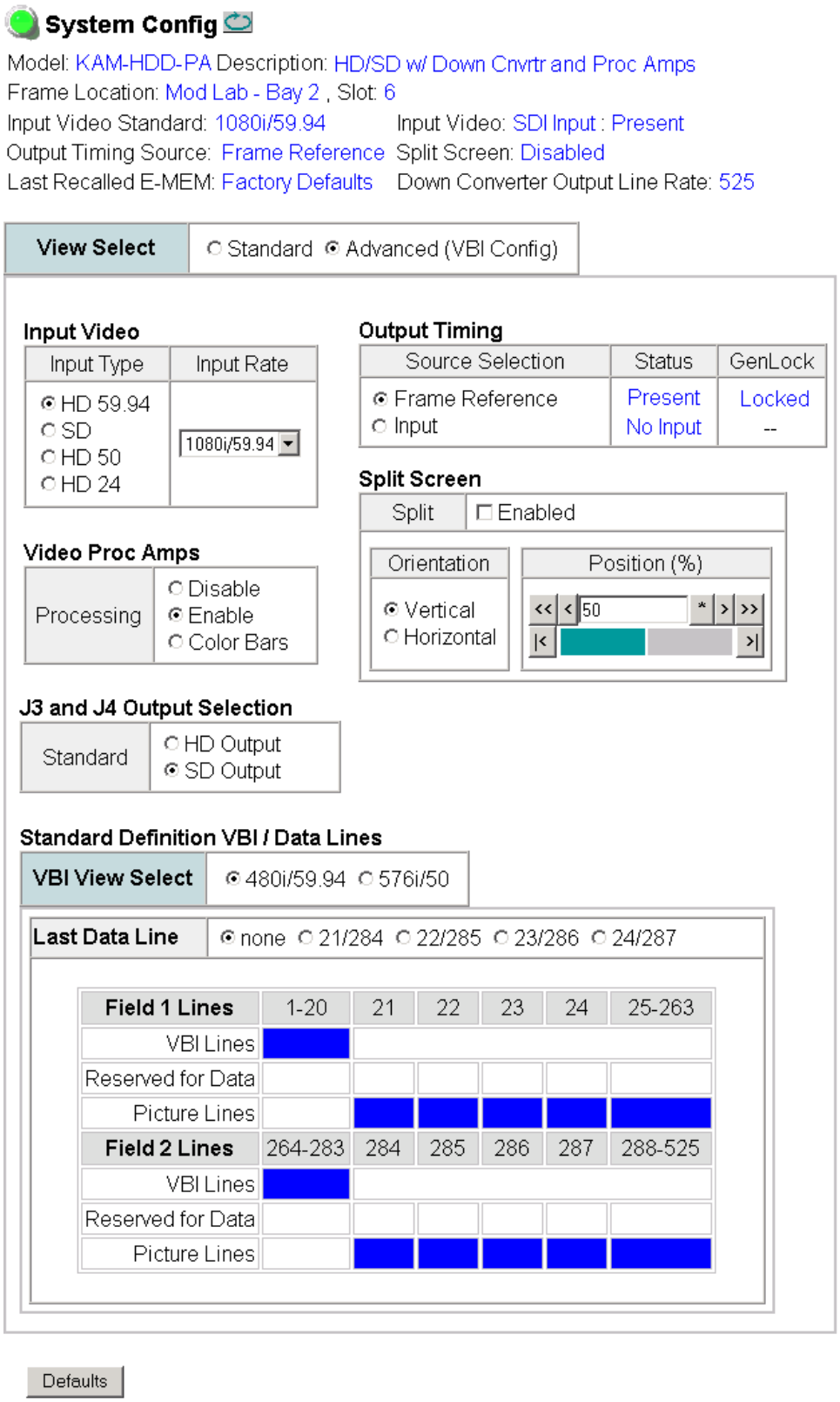
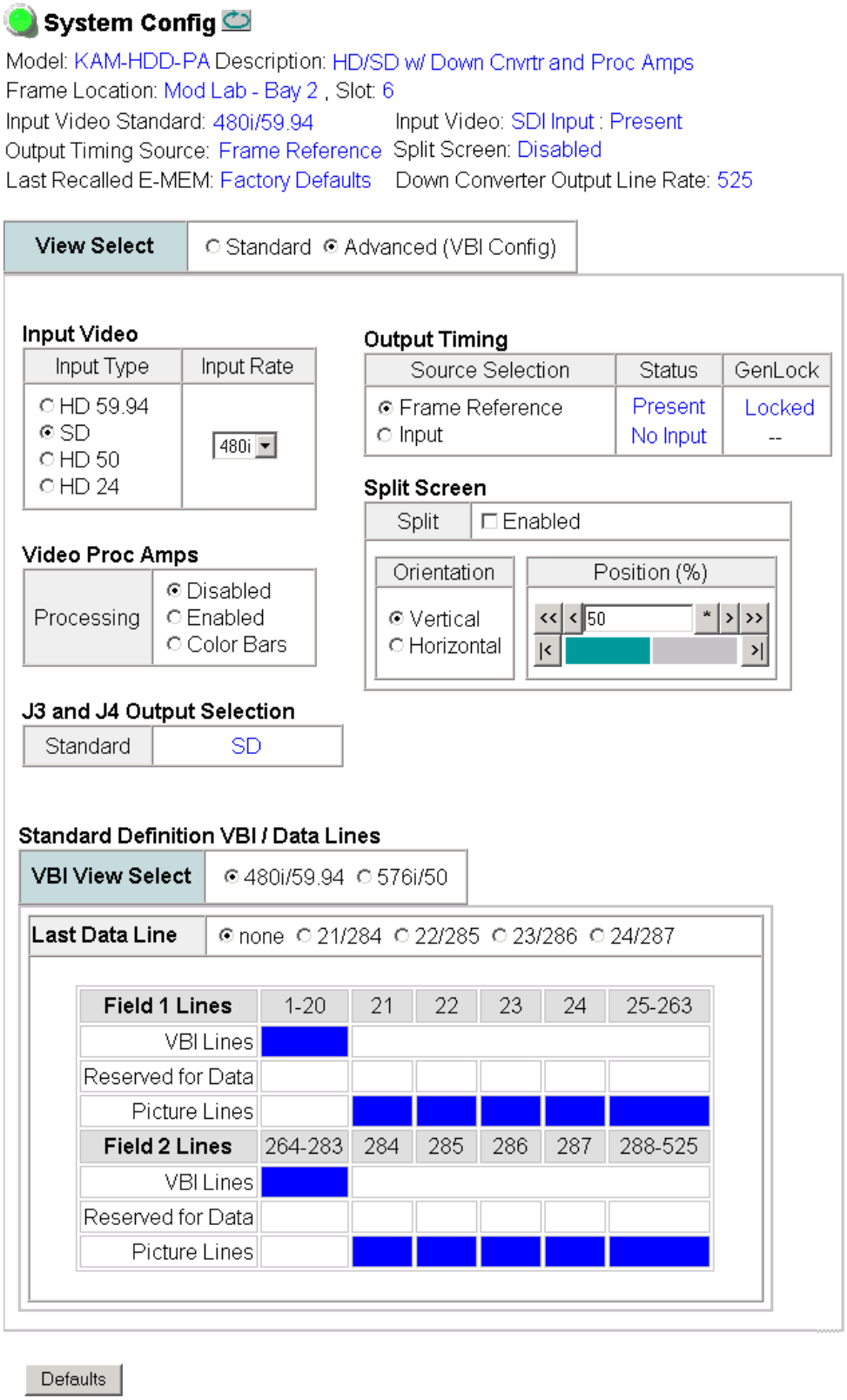


Figure 33. KAM-HDD-PA System Config – SD Input Type



KAM-HDD-FS System Config Web Pages

The System Config web pages for the various configurations on the KAM-HDD-FS module are shown in the following figures:

- KAM-HDD-FS with HD 24 input type – Figure 34.
- KAM-HDD-FS with HD 59.94 or HD 50 input type – Figure 35 on page 54.
- KAM-HDD with SD input type selected – Figure 36 on page 55.

Figure 34. KAM-HDD-FS System Config – HD 24 Input Type

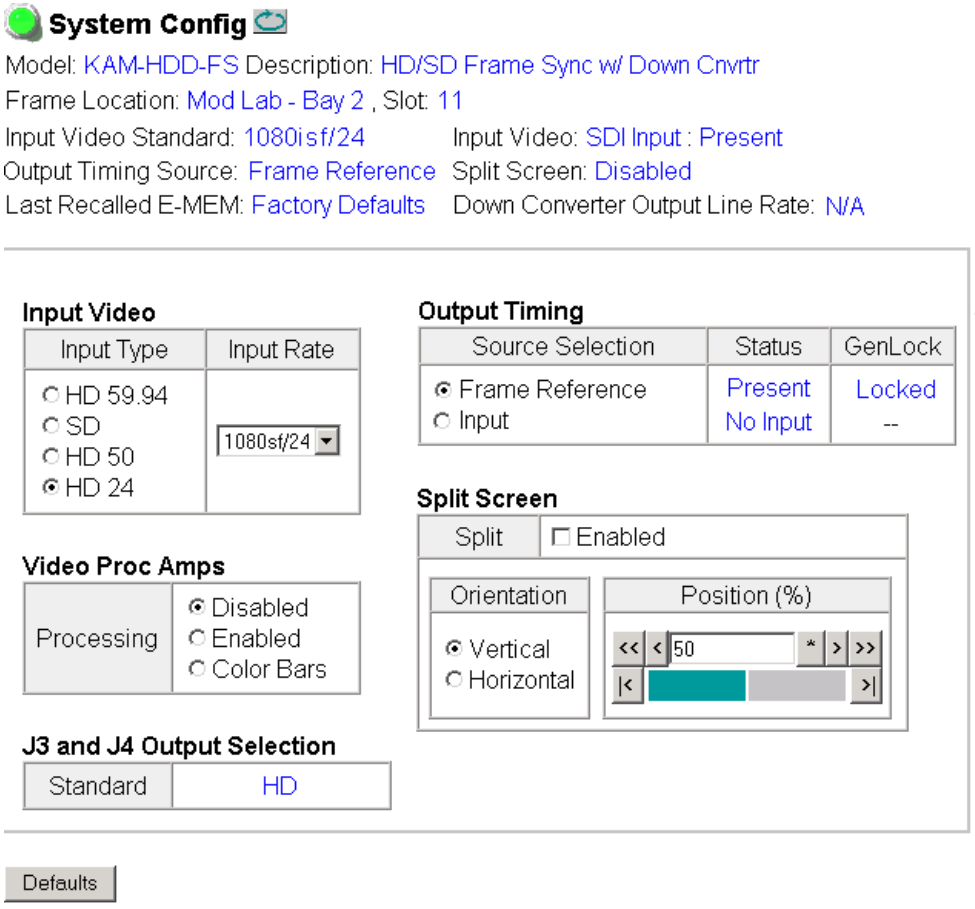


Figure 35. KAM-HDD-FS System Config – HD 59.94 or HD 50 Input Type

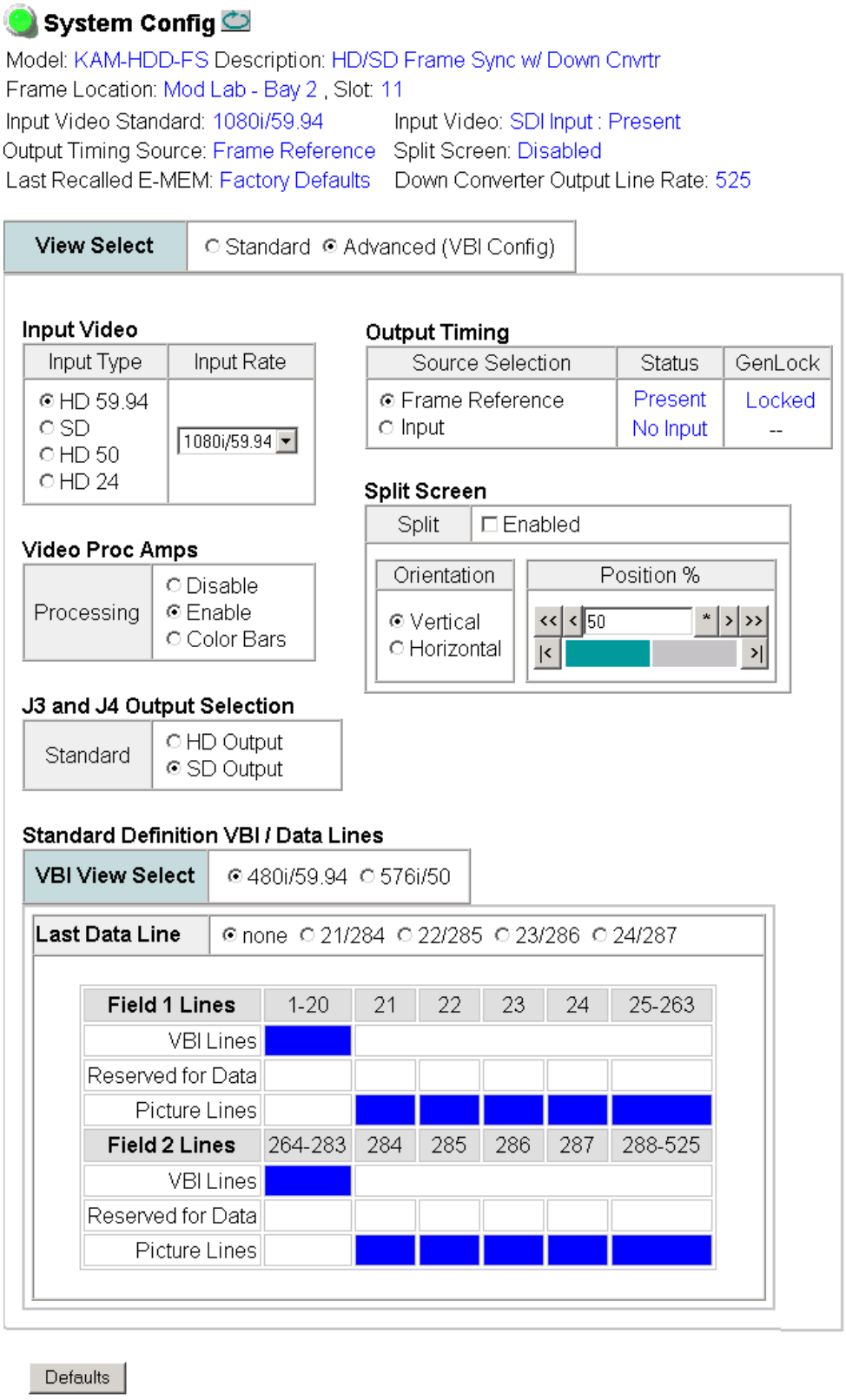
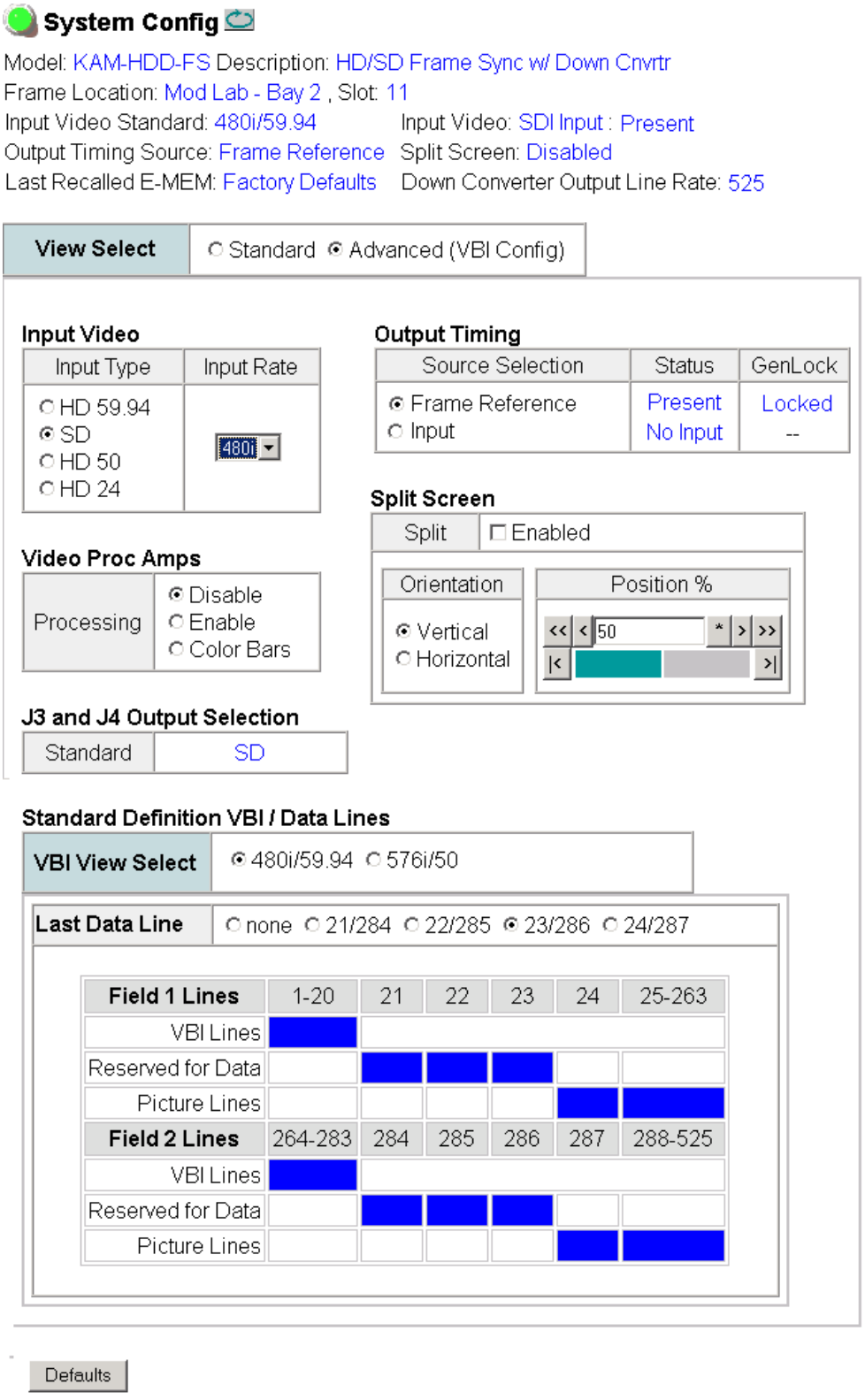


Figure 36. KAM-HDD-FS System Config – SD Input Type



KAM-HDD System Config Web Pages

The System Config web pages for the various configurations on the KAM-HDD are shown in the following figures:

- KAM-HDD with HD 24 input type selected (no down conversion) – Figure 37 on page 57.
- KAM-HDD with an HD 59.94 or HD 50 input type selected – Figure 38 on page 58.
- KAM-HDD with SD input type selected – Figure 39 on page 59.

KAM-HDD Output Timing

Since the KAM-HDD module does not have a Frame Sync function, it requires some special timing considerations as described here. Refer also to the discussion on *Kameleon HD Timing Considerations* on page 20.

There are two output timing source selections available on the KAM-HDD System Config web page, **Input** and **Frame Reference**.

- When the **Input** choice is selected, the video output will be in time with the input video, not in time with any external frame reference or any other modules in the frame. This can result in a delay of up to two pixels, so this mode should only be used when timing to an external reference is not a consideration.
- When **Frame Reference** is selected, the module is actually in a line sync mode since there is no frame sync capability on this model. Instead of locking to an external frame reference, the output signal will lock to the start of the next internal horizontal line. Using this setting will put the timing of the output signal to within a very accurate and predictable delay of approximately one nanosecond. However, it will not put this output signal in time with an external reference.

  In order for the KAM-HDD output to be in time with an external house reference, the input signal must already be in time with the external reference when it is input to the module and **Frame Reference** must be selected as the Output Timing source. If this condition is not met, an image break can occur when switching sources.

Figure 37. KAM-HDD System Config Web Page – HD 24 Input Type

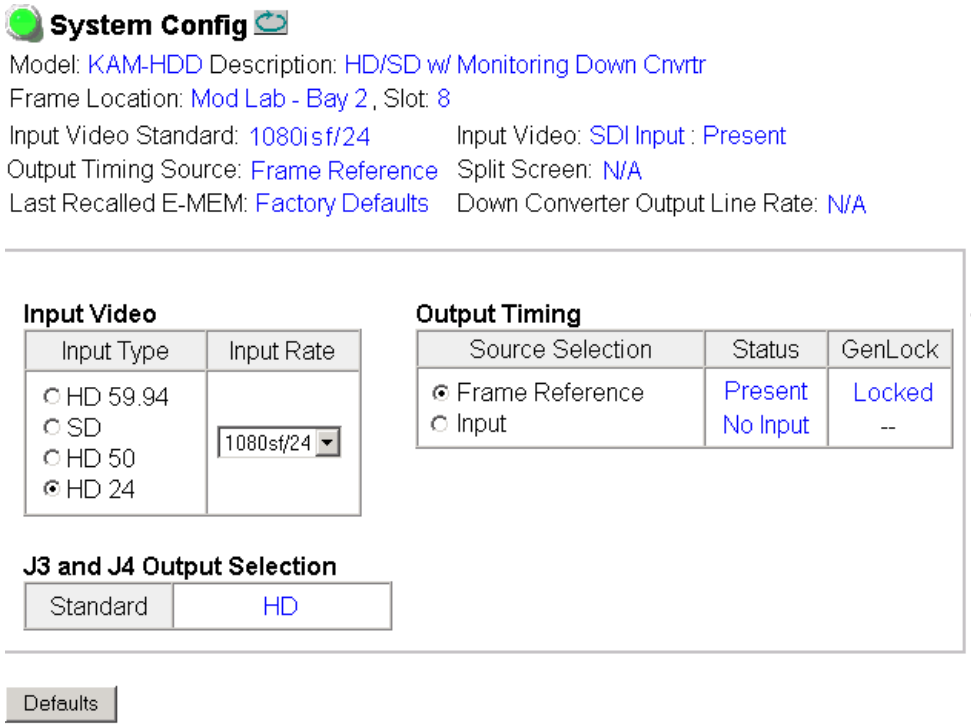


Figure 38. KAM-HDD System Config – HD 59.94 or HD 50 Input Type

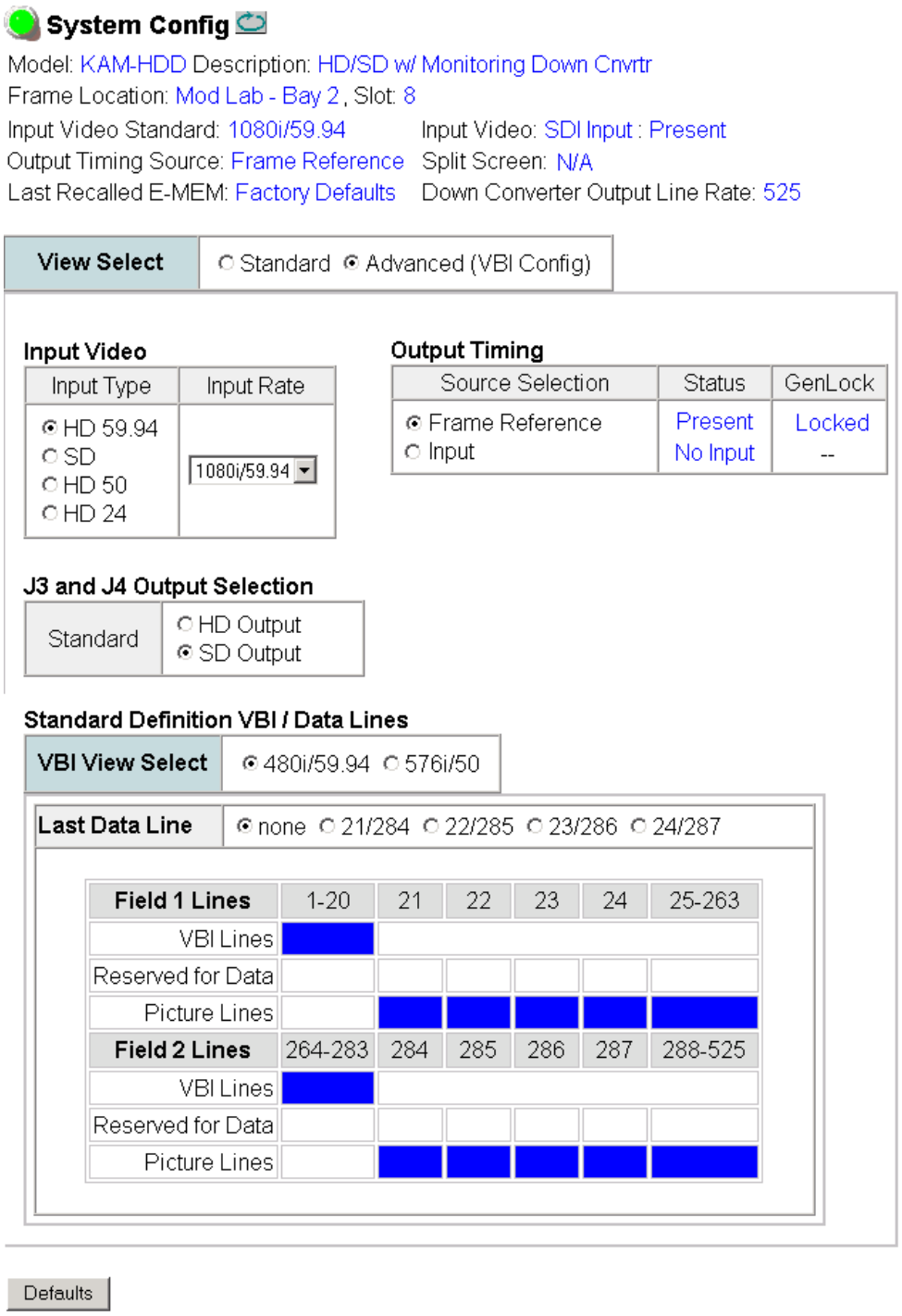
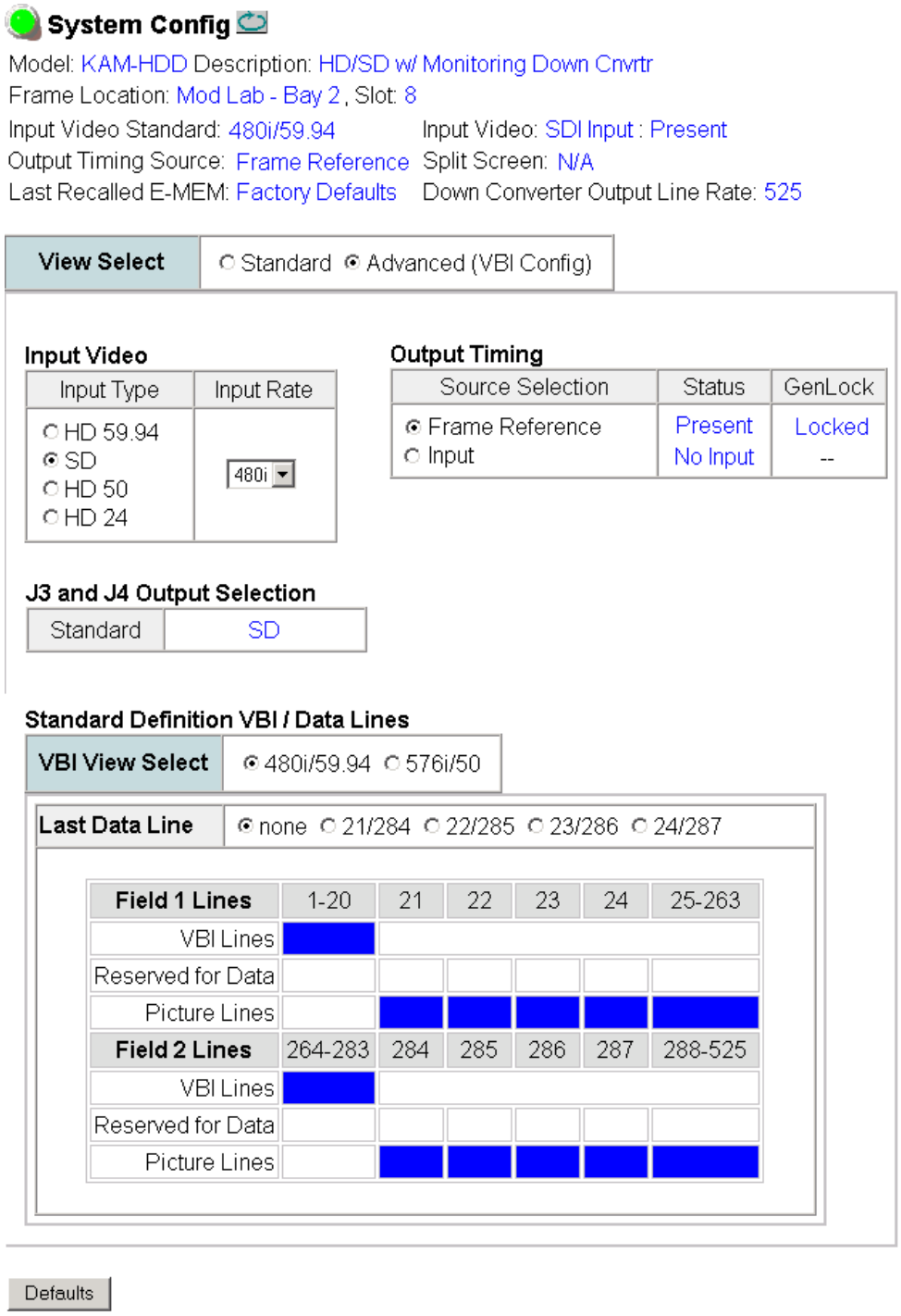


Figure 39. KAM-HDD System Config – SD Input Type



Functional View Web Pages

The Functional View web pages illustrate a block diagram of the Kameleon HD front media modules 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.

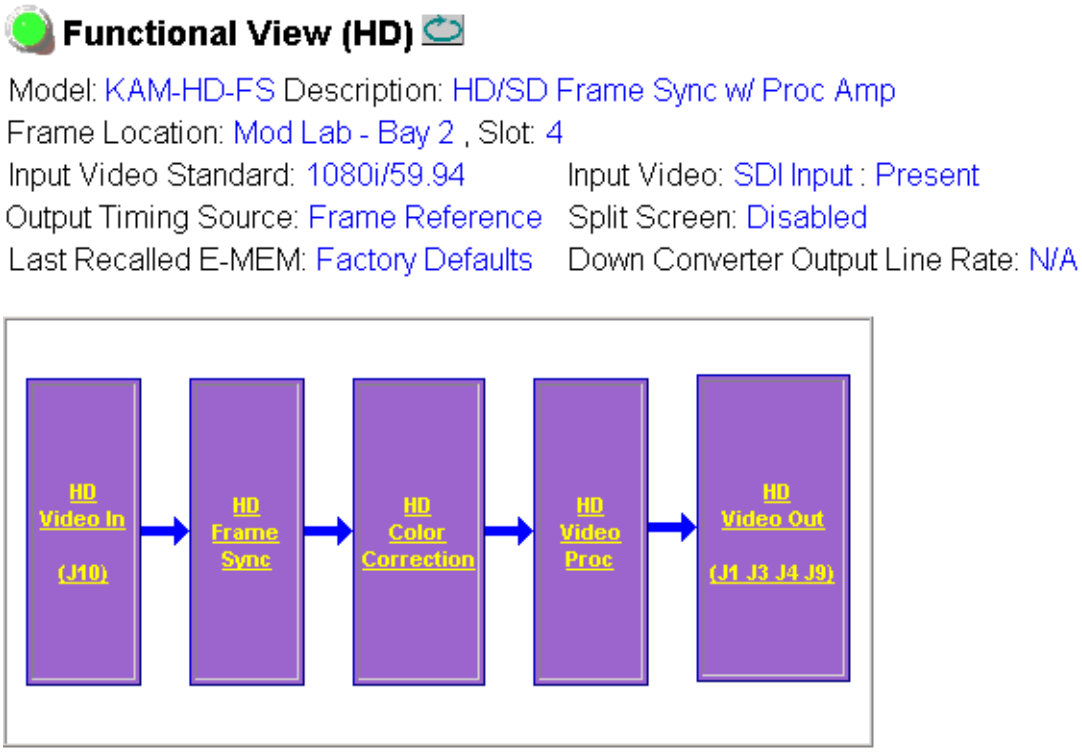
Use the Functional View to configure the Kameleon HD modules in the order of the signal flow. Refer to each of the module Functional View web pages given in the next section.

KAM-HD-FS Functional Views

Status
I/O Config
System Config
Use this link — Functional View (HD)
- HD Video In
- HD Frame Sync

The Functional View for the KAM-HD-FS module with an HD input type selected is shown in Figure 40.

Figure 40. KAM-HD-FS Functional View Web Page – HD Input Type

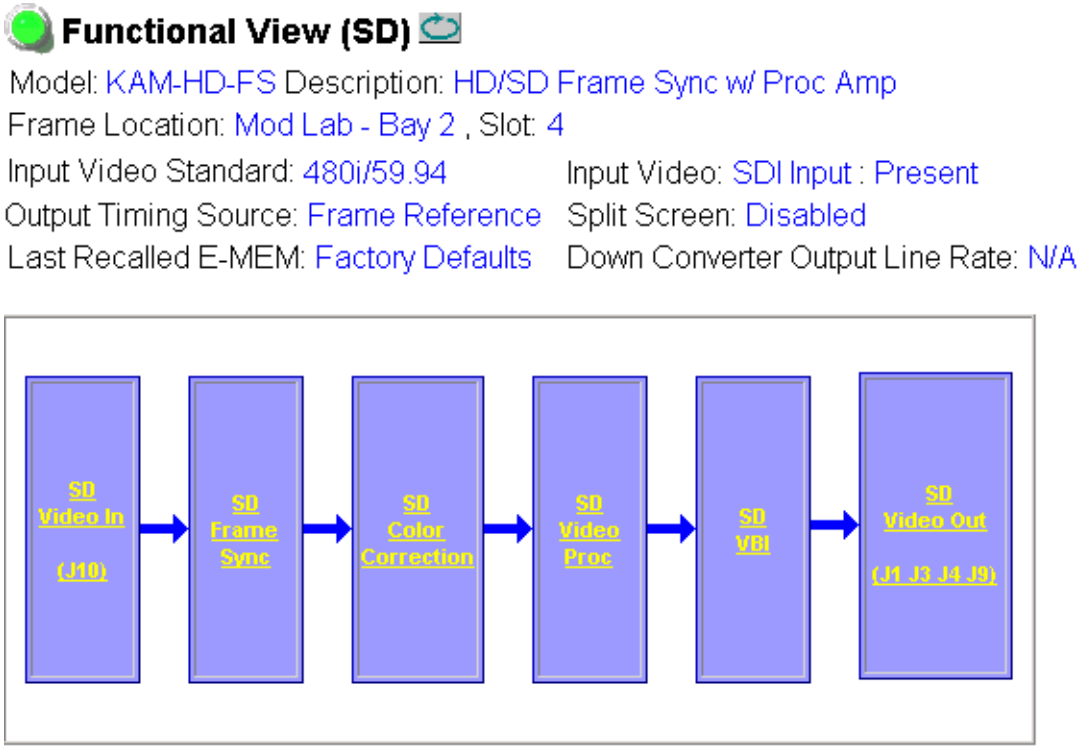


Status
I/O Config
System Config
Functional View (SD)
- SD Video In

Use this link

Figure 41 shows a Functional View for a KAM-HD-FS module with an SD input type selected.

Figure 41. KAM-HD-FS Functional View Web Page – SD Input Type

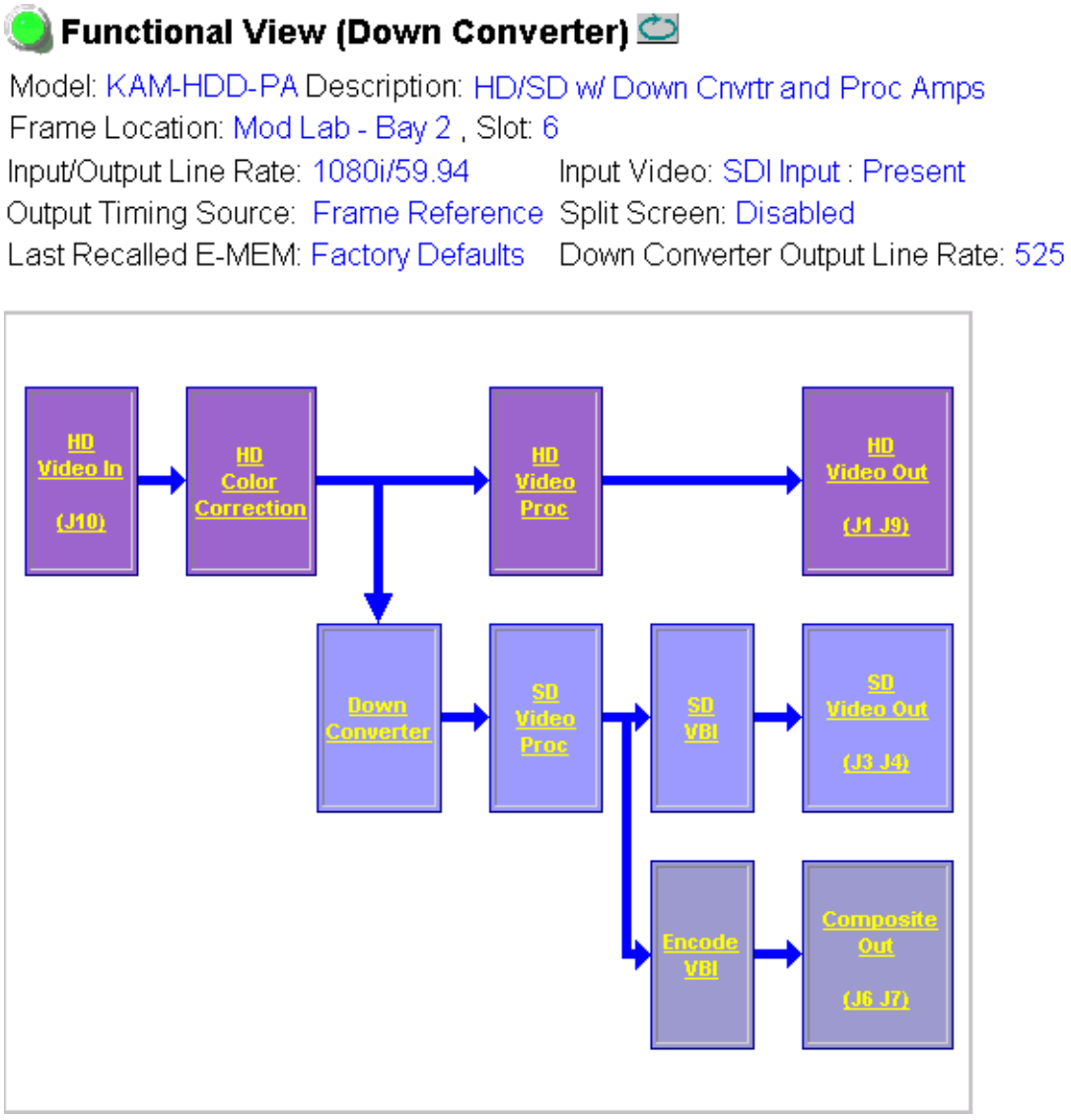


KAM-HDD-PA Functional Views

Status
I/O Config
System Config
Use this link → Functional View (Down Converter)
- HD Video In
- HD Frame Sync

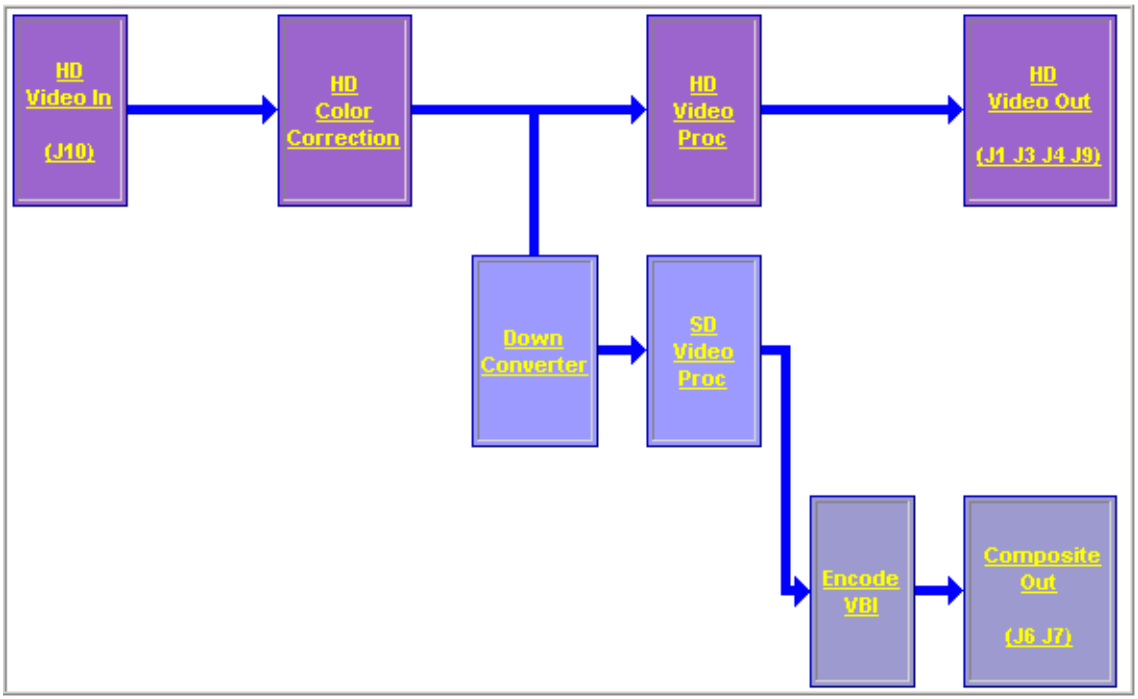
The Functional View for a KAM-HDD-PA module with an HD 59.94 or HD 50 video input with BNCs J3 and J4 configured for SD outputs is illustrated in Figure 42.

Figure 42. KAM-HDD-PA Functional View – HD 59.94 or HD 50 Input Type (J3/J4 SD)



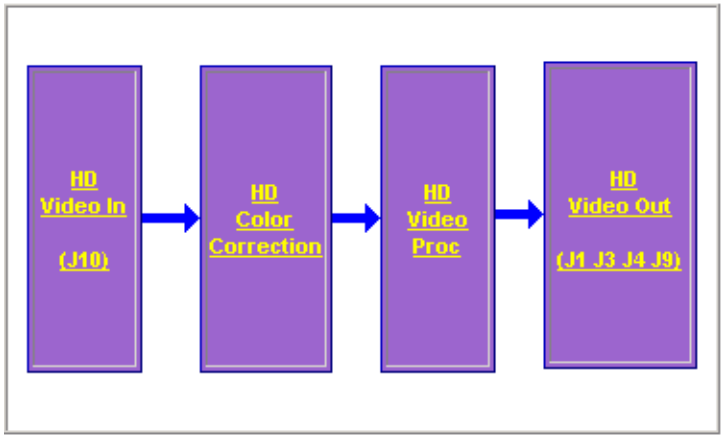
The Functional View for a KAM-HDD-PA module with an HD 59.94 or HD 50 video input with BNCs J3 and J4 configured for HD outputs is illustrated in Figure 43.

Figure 43. KAM-HDD-PA Functional View – HD 59.94 or HD 50 Input Type (J3/J4 HD)



The Functional View for a KAM-HDD-PA module with an HD 24 video input (no down conversion) is illustrated in Figure 44.

Figure 44. KAM-HDD-PA Functional View – HD 24 Input Type



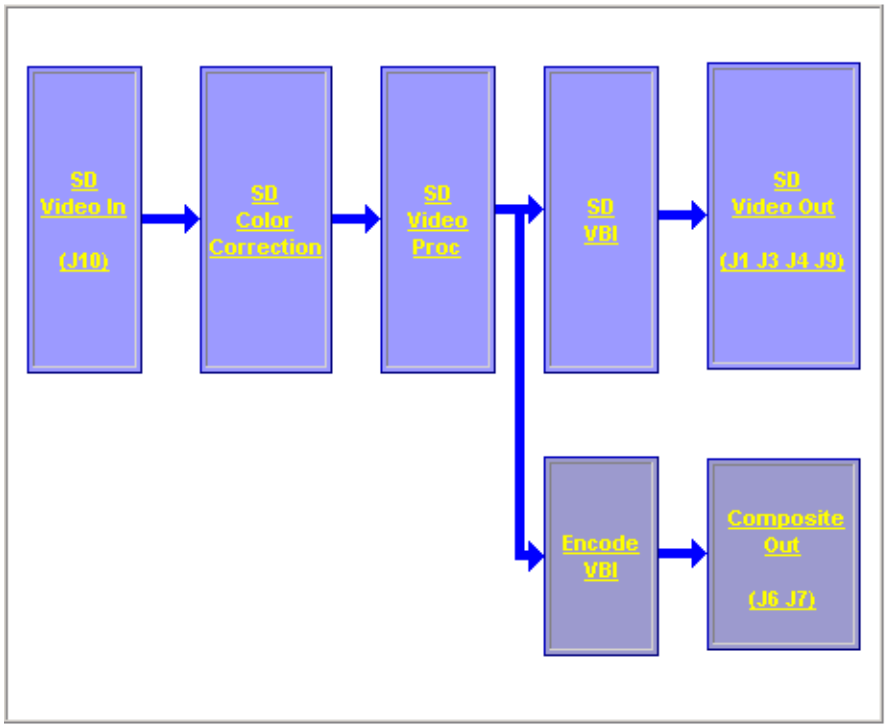
Status
I/O Config
System Config
Use this link → Functional View (SD/Composite)
- SD Video In
- SD VBI

The Functional View for a KAM-HDD-PA module with an SD video input is illustrated in Figure 45.

Figure 45. KAM-HDD-PA Functional View Web Page – SD Input Type

Functional View (SD/Composite)

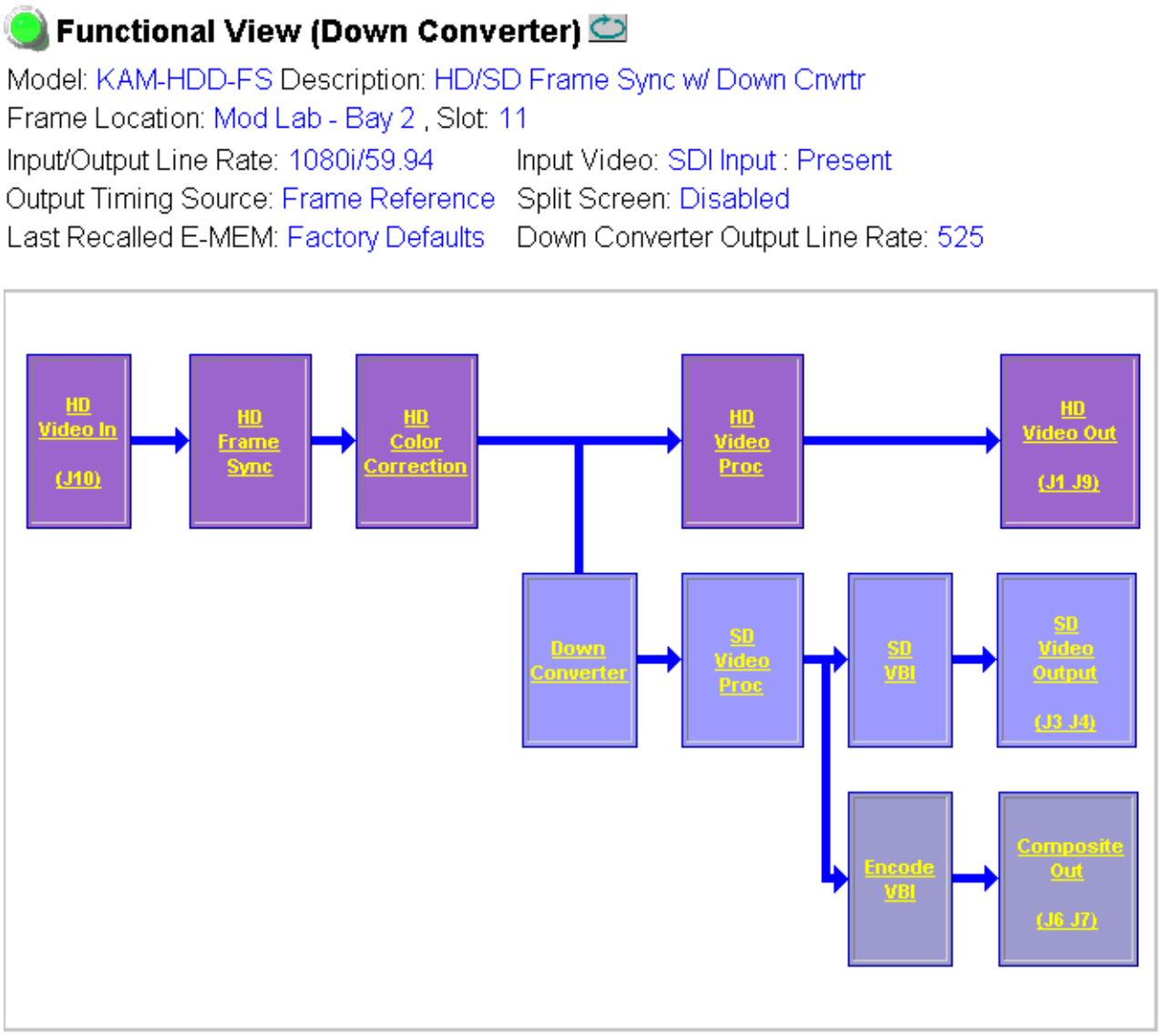
Model: KAM-HDD-PA Description: HD/SD w/ Down Cnvrtr and Proc Amps
Frame Location: Mod Lab - Bay 2 , Slot: 6
Input/Output Line Rate: 480i/59.94 Input Video: SDI Input : Present
Output Timing Source: Frame Reference Split Screen: Disabled
Last Recalled E-MEM: Factory Defaults Down Converter Output Line Rate: 525



KAM-HDD-FS Functional Views

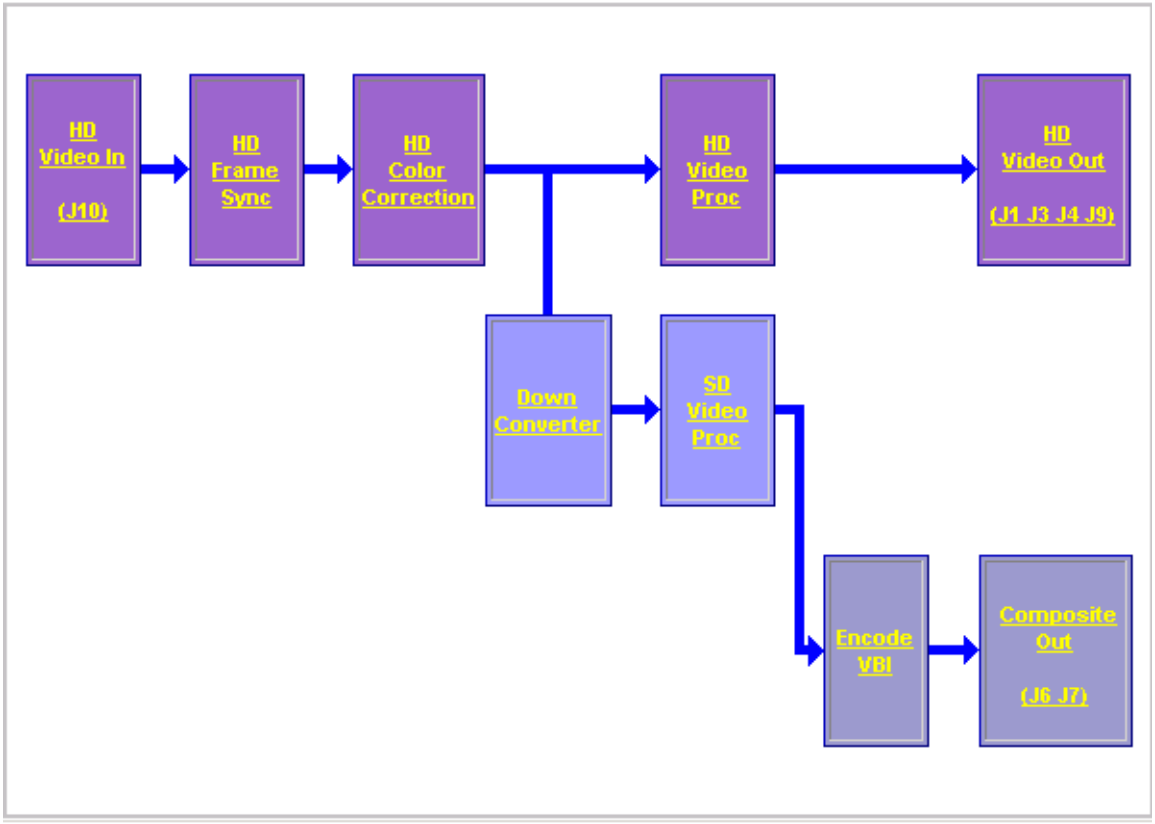
The Functional View for a KAM-HDD-FS module with an HD 59.94 or HD 50 video input with BNCs J3 and J4 configured for SD outputs is illustrated in Figure 46.

Figure 46. KAM-HDD-FS Functional View – HD 59.94 or HD 50 Input Type (J3/J4 SD)



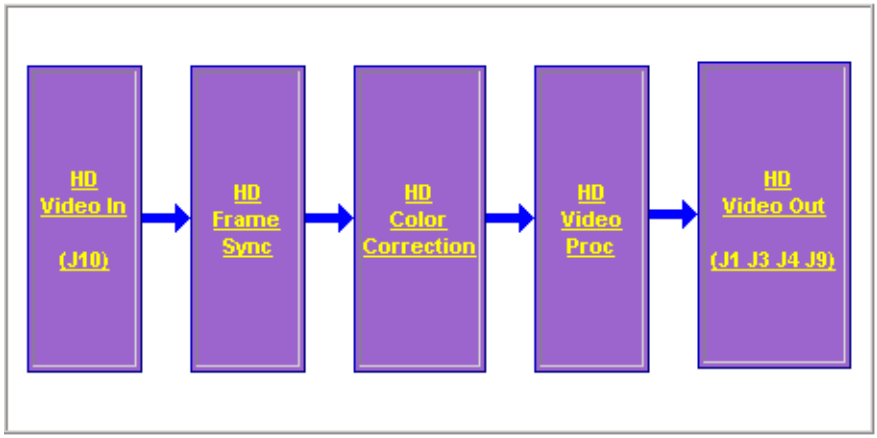
The Functional View for a KAM-HDD-FS module with an HD 59.94 or HD 50 video input with BNCs J3 and J4 configured for HD outputs is illustrated in Figure 47.

Figure 47. KAM-HDD-FS Functional View – HD 59.94 or HD 50 Input Type (J3/J4 HD)



The Functional View for a KAM-HDD-FS module with an HD 24 video input (no down conversion) is illustrated in Figure 48.

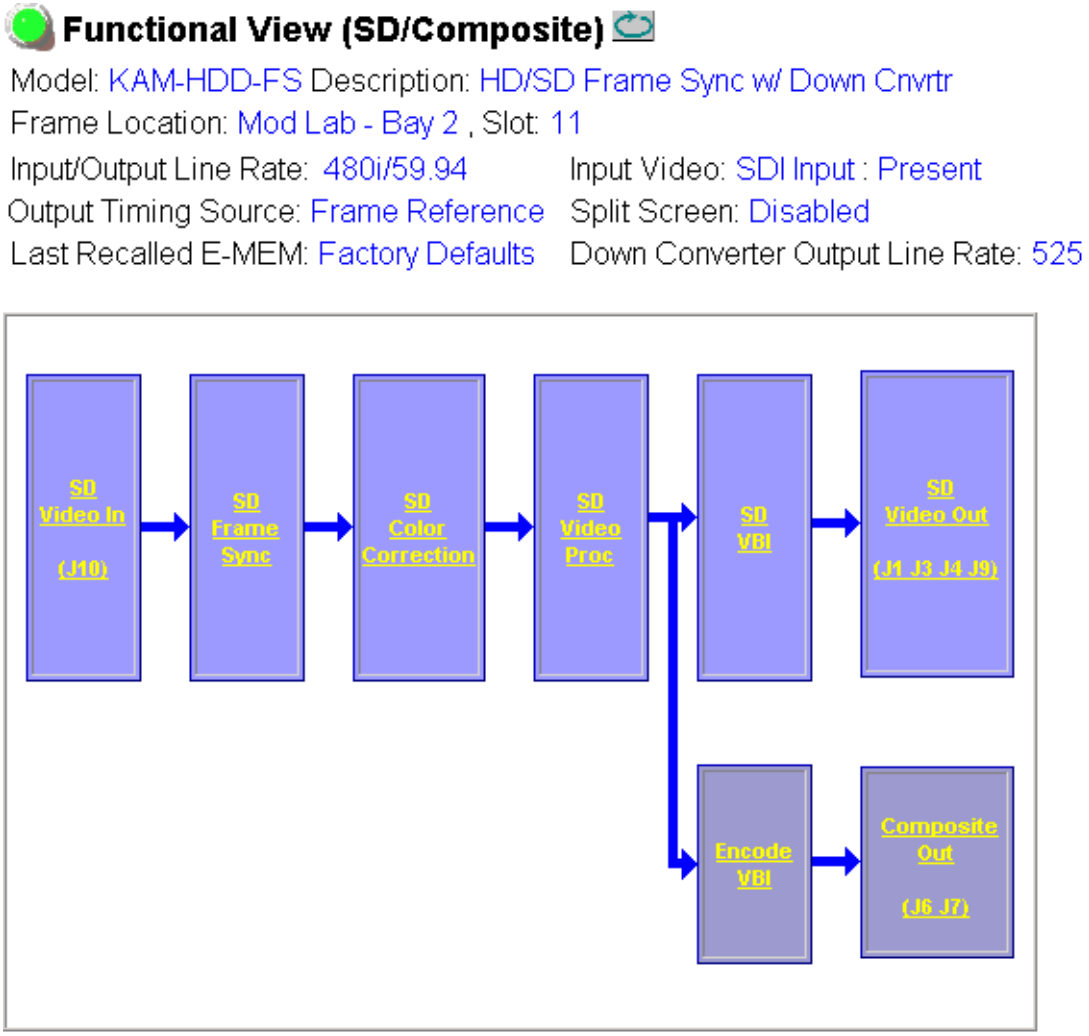
Figure 48. KAM-HDD-FS Functional View – HD 24 Input Type



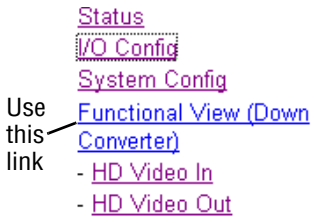
Status
I/O Config
System Config
Use this link → Functional View (SD/Composite)
- SD Video In
- SD Frame Sync
- SD Color Correction

The Functional View for a KAM-HDD-FS module with an SD video input is illustrated in Figure 49.

Figure 49. KAM-HDD-FS Functional View – SD Input Type

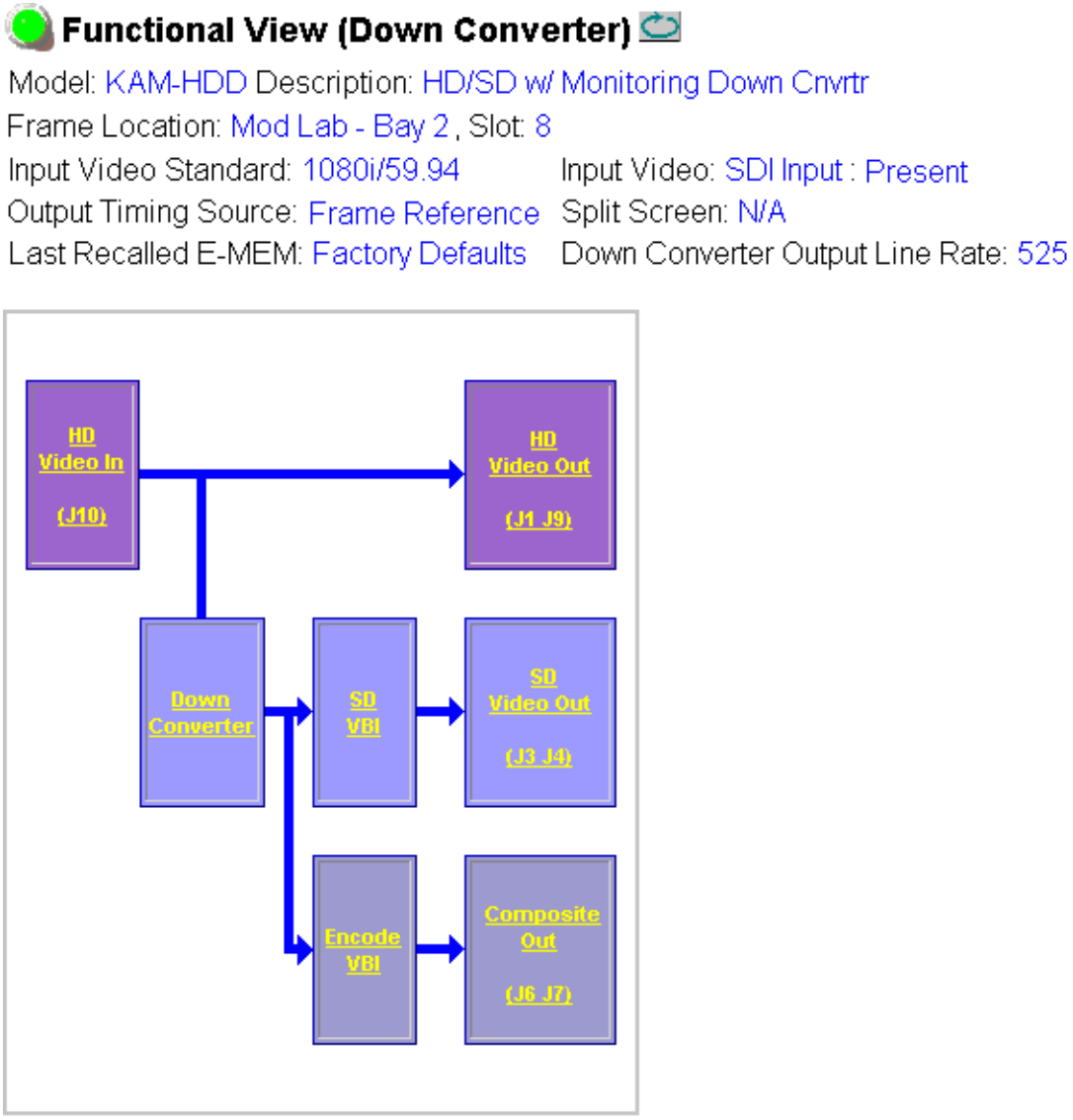


KAM-HDD Functional Views



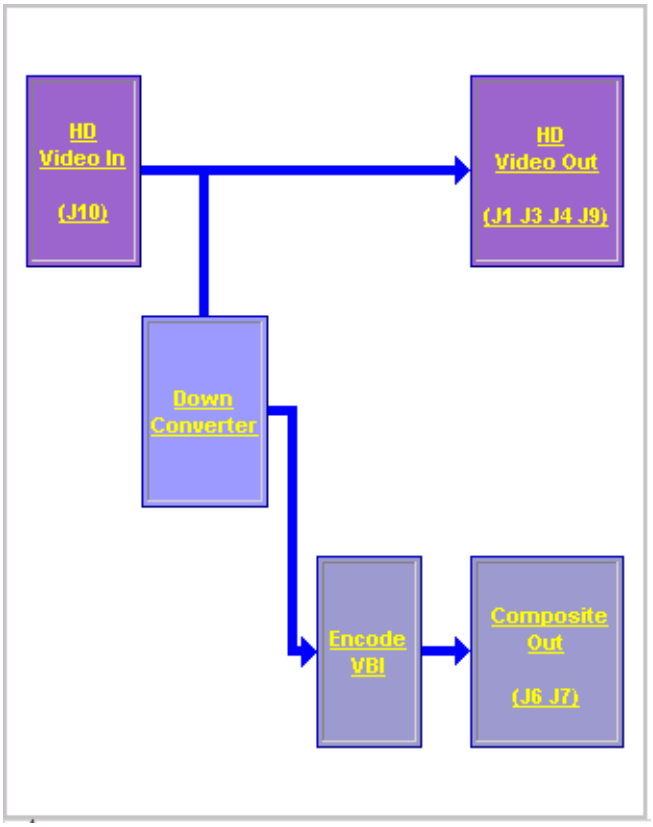
The Functional View for a KAM-HDD module with an HD 59.94 or HD 50 video input with BNCs J3 and J4 configured for SD outputs is illustrated in Figure 50.

Figure 50. KAM-HDD Functional View – HD 59.94 or HD 50 Input Type (J3/J4 SD)



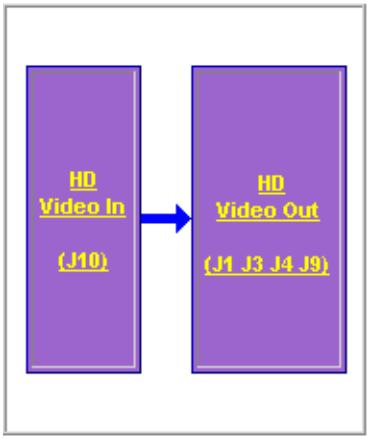
The Functional View for a KAM-HDD module with an HD 59.94 or HD 50 video input with BNCs J3 and J4 configured for HD outputs is illustrated in Figure 51.

Figure 51. KAM-HDD Functional View – HD 59.94 or HD 50 Input Type (J3/J4 HD)



The Functional View for a KAM-HDD module with an HD 24 video input (no down conversion) is illustrated in Figure 52.

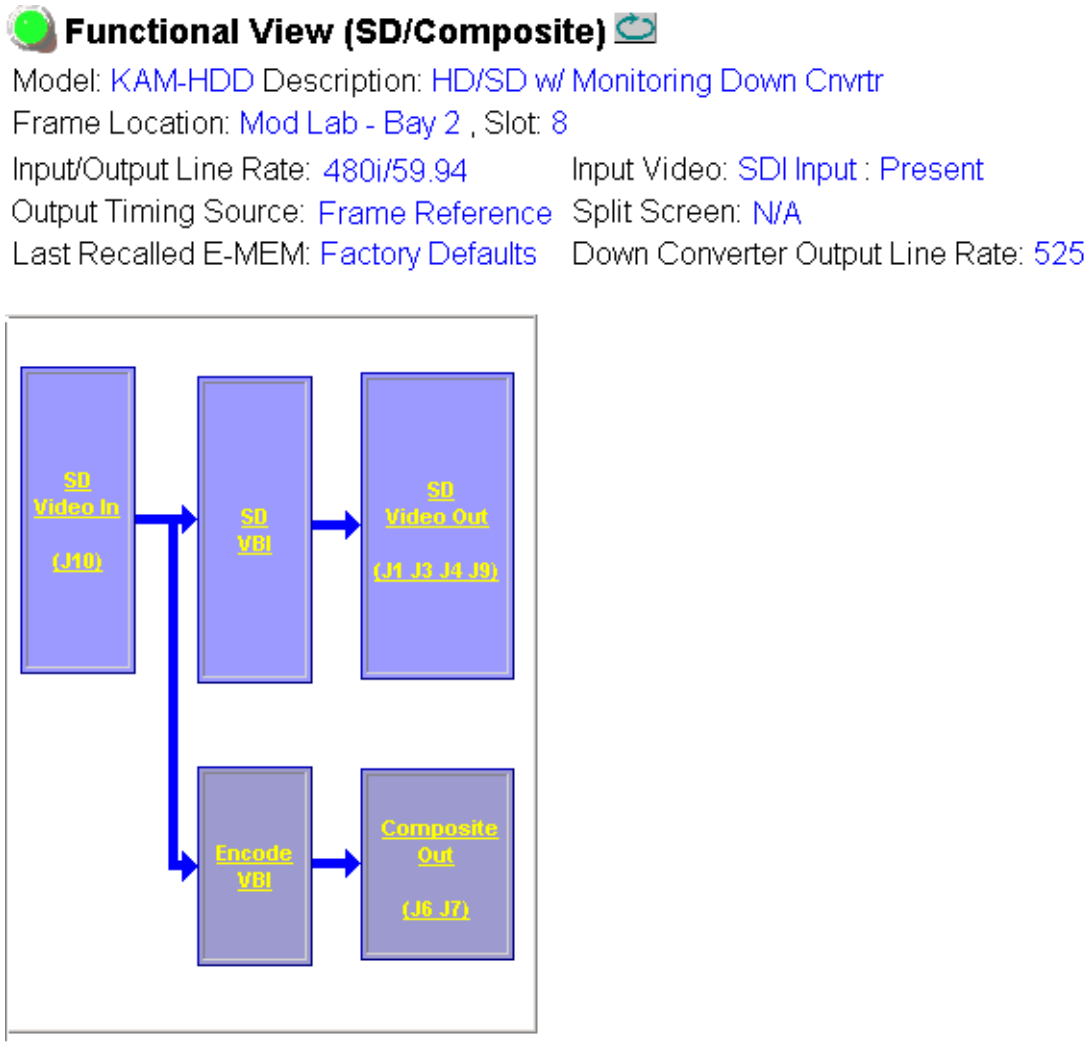
Figure 52. KAM-HDD Functional View – HD 24 Input Type



Status
I/O Config
System Config
Use this link → Functional View (SD/Composite)
- SD Video In
- SD VBI

The Functional View for a KAM-HDD module with an SD video input is illustrated in Figure 53.

Figure 53. KAM-HDD Functional View Web Page – SD Input Type



Module Configuration Web Pages

Module configuration and monitoring is provided for the following HD or SD functions (depending on video input type) with the web browser GUI or control panel interface:

- HD or SD Video In (page 72)
- HD or SD Frame Sync (page 73)
- HD or SD Color Correction (page 77)
- HD Video Proc (page 79)
- HD Video Out (page 81)
- Down Converter (page 82)
- SD Video Proc (page 85)
- SD VBI (page 87)
- SD Video Out (page 89)
- Encode VBI (page 90)
- Composite Out (page 92)

Note Presence of some web pages depends on module type and system configuration. HD or SD video input type is set on the System Config web page.

A summarized list of all control parameters and default values is given in a Configuration Summary table on page 21.

Use the **Defaults** button on the bottom left of the configuration web pages to return the values on that page to the defaults listed in the Configuration Summary table.

Note Pressing the **Defaults** button on the System Config web page will reboot the module as it resets the Input Type. Refer to *System Configuration* on page 45.

Select the **Back**, **Functional View**, or **Next (HD**, **SD** and **Composite)** link to navigate to the next function or use the links on the left of the web page. Return to the **Functional View** at any time for configuration flow or to see where the control is in the block diagram for the module.

Note KAM-HDD-FS web pages will be shown in this module configuration section. Differences between other modules will be noted in text.

Video In Web Page

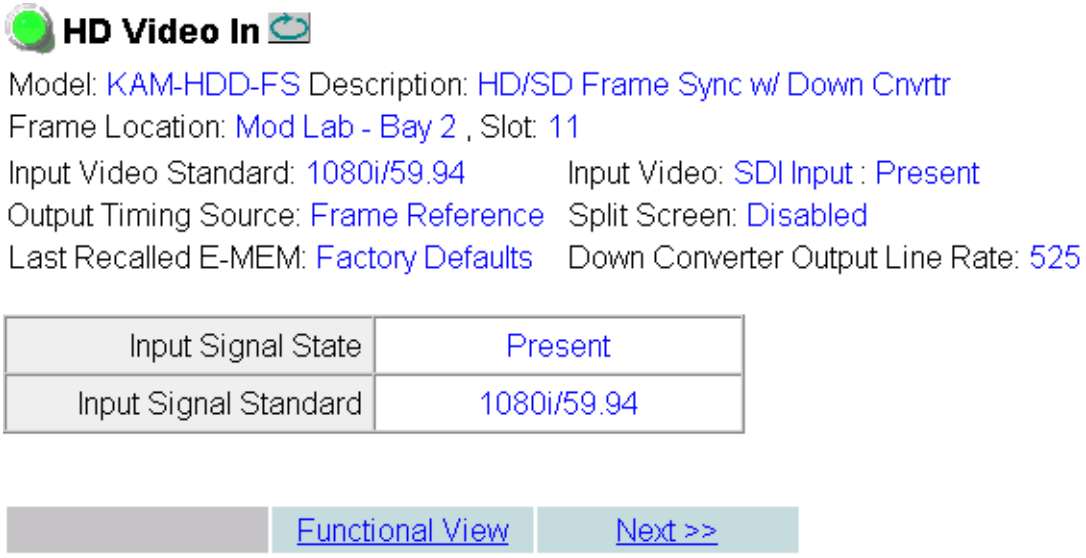
Status
I/O Config
System Config
Functional View (Down Converter)
- HD Video In
- HD Frame Sync
- HD Color Correction
- HD Video Proc
- HD Video Out
- Down Converter

Use this link

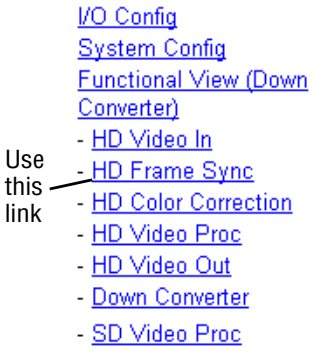
The HD or SD Video In web page (Figure 54 shows HD input type) provides status on the HD or SD Video input for the following:

- **Input Signal State** – indicates the presence or absence of the input video signal.
- **Input Signal Standard** – indicates the HD or SD format standard of the input video signal as selected on the System Config web page.

Figure 54. HD Video In Web Page



Frame Sync Web Page



The HD or SD Frame Sync web page (applicable for modules with Frame Sync capability, KAM-HD-FS or KAM-HDD-FS) provides adjustments for horizontal and vertical output timing, a minimum delay mode, loss of signal controls, and a delay wrap position graphic.

Note For KAM-HDD and KAM-HDD-PA module timing capabilities, refer to *Kameleon HD Timing Considerations* on page 20.

The Frame Sync web page (Figure 55 on page 75 for **Frame Reference** and Figure 56 on page 76 for **Input** reference) provides horizontal and vertical timing, a minimum delay mode, loss of signal controls, manual freeze controls, and a delay wrap position graphic.

Note The controls available on the Frame Sync page depend on the Output Timing Source selected on the System Config web page.

Timing Adjustment

When the Frame Sync capability is present, horizontal and vertical timing adjustments can be made on the output video as required relative to the input video signal (output timing source = **Input**), or relative to the external reference (output timing source = **Frame Reference**) with the following controls:

- **H Timing (Pixels)** – the horizontal timing can be adjusted in pixels.
- **V Timing (Lines)** – the vertical timing can be adjusted in lines.

Note On any HD input signal at any line rate, down converted SD and Composite outputs will be within ± 1/2 SD pixel of the timing setting.

Minimum Delay Mode

A minimum delay can be enabled to bypass portions of the frame sync memory to allow an absolute minimum amount of delay through the module. To enable this mode, check the **Enabled** checkbox. Refer to the Electrical Length in the *Specifications* on page 103 for notes on using this mode.

Loss of Signal Operation

When the output timing source is set to **Frame Reference**, set this control to define the action of the output when the input signal is detected as lost. The choices are to either **Pass** the video, do an **Auto Freeze** (on the last good video frame), or take the output to a blue screen (**Auto Blue**).

This control will default to **Pass** (no **Auto Freeze** or **Auto Blue**) when the output timing source is set to **Input**.

Manual Freeze Mode

Select a manual freeze mode from **None**, **Frame**, or **Field** to freeze the output immediately.

Delay Wrap Position

This indicator will display with a blue bar, the fraction of the final frame of actual video delay through the frame sync.

For example, with 1080i video and Minimum Delay Mode not selected, if 600 lines is entered by the user, that actual delay through the module will be anywhere from about 1 to 2 frames depending on the following conditions:

a. If the module is in Input timing mode, the delay through the module will be about 1.5 frames, and the Delay Wrap Position will be at about 50% of full scale.

b. If the module is in Frame Reference timing mode, the delay through the module will be about 1.5 frames if the input video has zero delay with respect to the genlock reference frame position, and the Delay Wrap Position will be at about 50% of full scale. As this input video delay with respect to the genlock reference frame position is changed from -0.5 to +0.5 frame periods, the delay through the module will change from about 1 to 2 frame periods, with the Delay Wrap Position changing from about 0 to 100% of full scale.

In summary, the Electrical Length of the module can be estimated as the following:

- 1 frame minus 5 lines (Minimum Delay Mode not selected), or
- ~ 300 pixels (Minimum Delay Mode selected) + Delay Wrap Position (% of full scale) X (1 frame period).

Figure 55. Frame Sync Web Page – Frame Reference

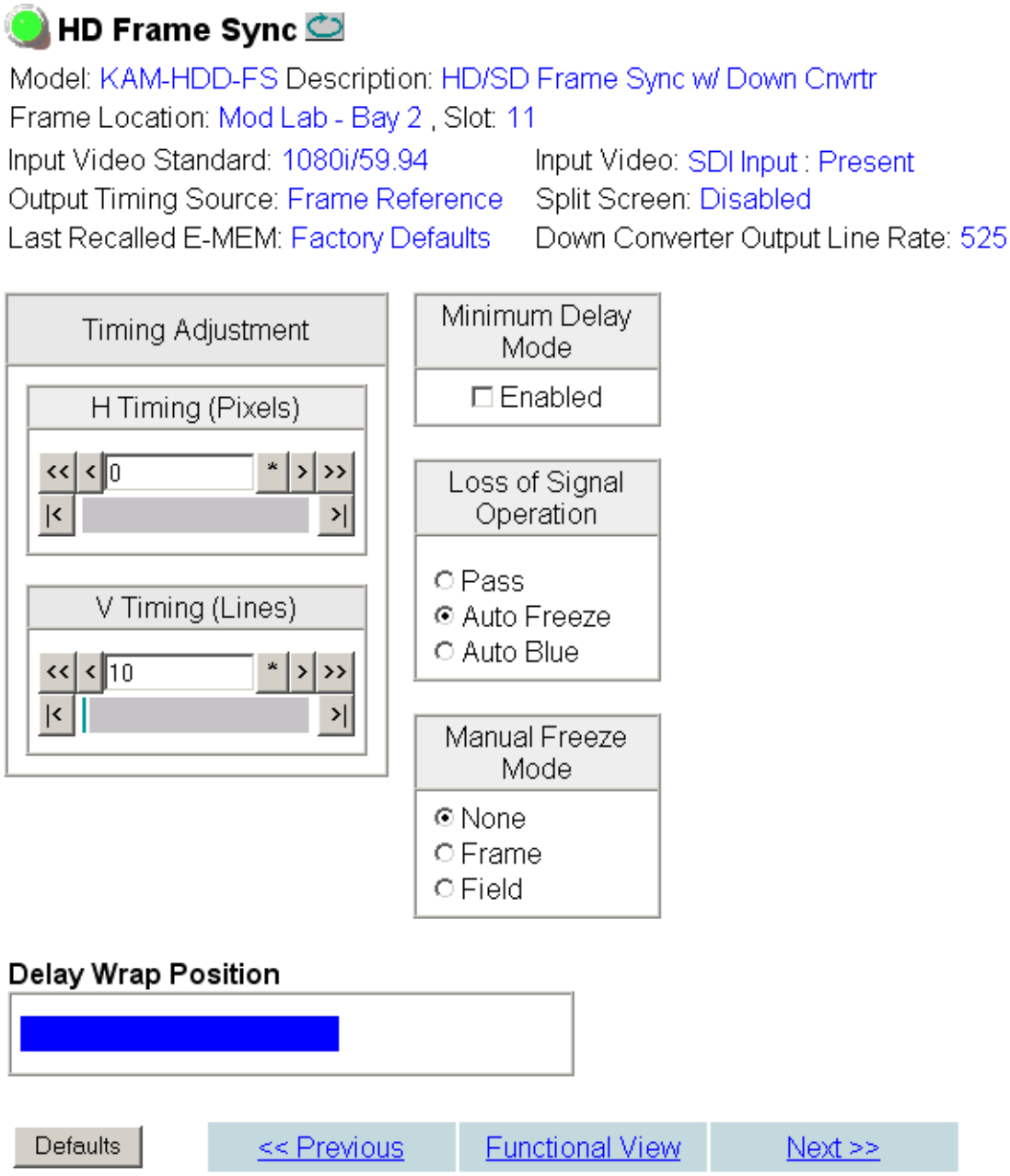
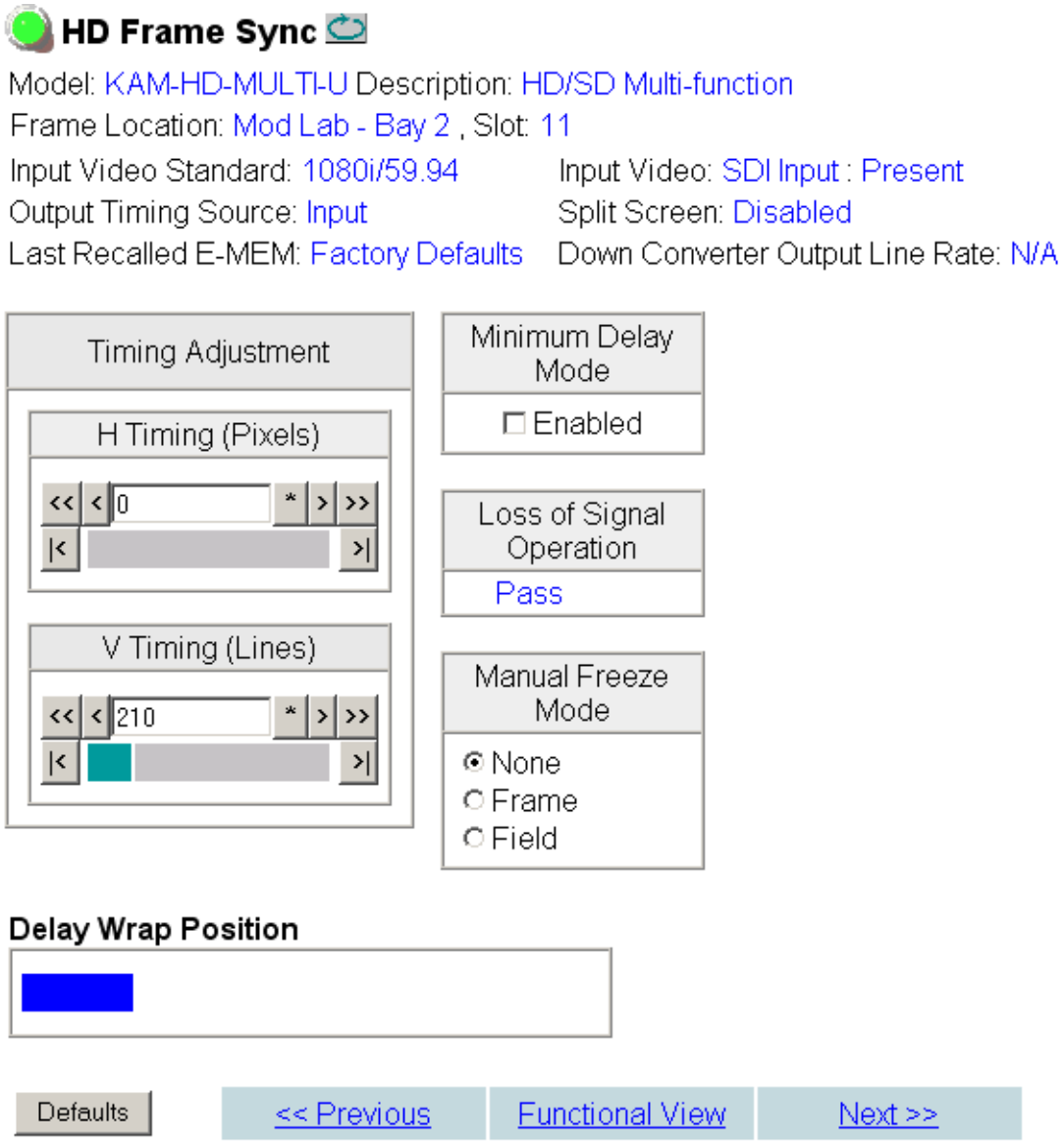
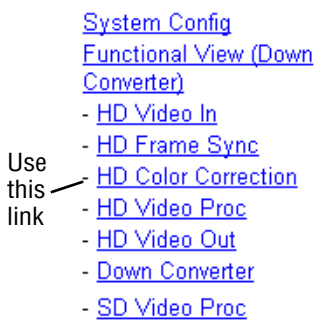


Figure 56. Frame Sync Web Page – Input Reference



Color Correction Web Page



The HD or SD Color Correction web page (Figure 57 on page 78 for an HD input type) provides specific R, G, and B gain and offset video processing controls for the input signal.

Controls are also provided for correcting the gamma (lightening or darkening the intensity) of the signal.

Color Correction

The Color Correction processing must be enabled on the *System Config Web Page* on page 45 with the Video Proc Amps Processing controls. Select the **Enabled** checkbox to enable these controls. Proc Amp status is reported in the Color Correction web page header.

- **R/G/B Gain Adjustments** – set the gain from 0 to 200% for the R, G, and/or B channel with the corresponding control or lock the controls together by checking the **Video Gain Lock** checkbox and adjust any one of the gain controls.
- **R/G/B Offset Adjustments** – set the offset from ± 100% for the R, G, or B channel with the corresponding control.
- **Gamma Correction** – set gamma correction for the R, G, and/or B channel with the corresponding control or lock the controls together by checking the **Gamma Lock** checkbox and adjust any one of the gamma controls. Raising the gamma above 1.0, brightens the gray intensity. Lowering the gamma below 1.0, darkens the gray intensity.

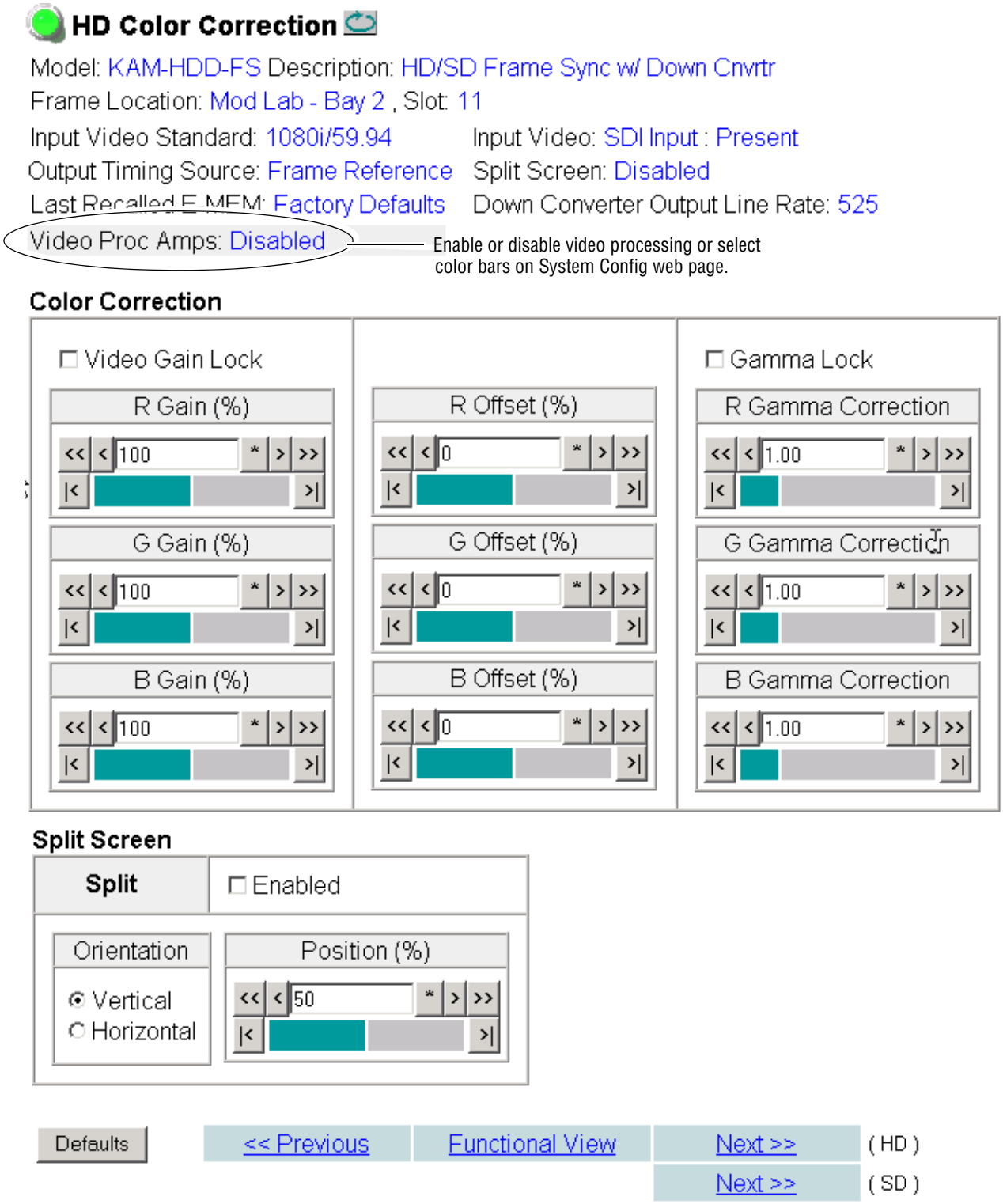
Split Screen

Use a horizontal or vertical split screen to compare the unprocessed input video (top or right) to the processed output video (bottom or left).

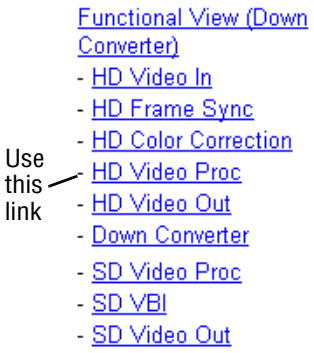
- **Split Enabled –** enable the split screen by checking the Split **Enabled** checkbox.
- **Orientation** – set the orientation of the split screen with the **Vertical** or **Horizontal** radio button.
- **Position** – use the **Position** control to set the amount of horizontal or vertical split (10 to 90%) of unprocessed video to appear on the screen.

This control also controls the other Split Screen controls on the System Config and HD and SD Video Proc web pages.

Figure 57. Color Correction Web Page



HD Video Proc Web Page



The HD Video Proc web page (Figure 58 on page 80) is present when an HD input type is selected on the System Config web page. It provides overall video processing for the HD output signal.

Note The internal Color Bars test signal is not adjustable with the proc amp.

Video Proc Controls

The HD Video Proc is enabled or disabled on the *System Config Web Page* on page 45 with the Video Proc Amps **Enabled/Disabled** control. Proc Amp status is reported in the HD Video Proc web page header.

The HD Video Proc provides the following controls:

- **Y/Cb/Cr Gain** – Set the gain for the Y, Cb, or Cr channel from 0 – 200% (total effective Y Gain will reach approximately 188%) with the corresponding control or lock the controls together by checking the **Video Gain Lock** checkbox and adjust any one of the gain controls.
- **Y/Cb/Cr Offset** – Set the offset ± 100% for the Y, Cb, and Cr channels with the corresponding control.
- **Color Saturation** – set the overall color saturation (chroma gain) from 0 – 200%. (This setting will affect Cb and Cr gain slightly.)
- **Hue** – adjust the output hue from – 180 to + 179 degrees.

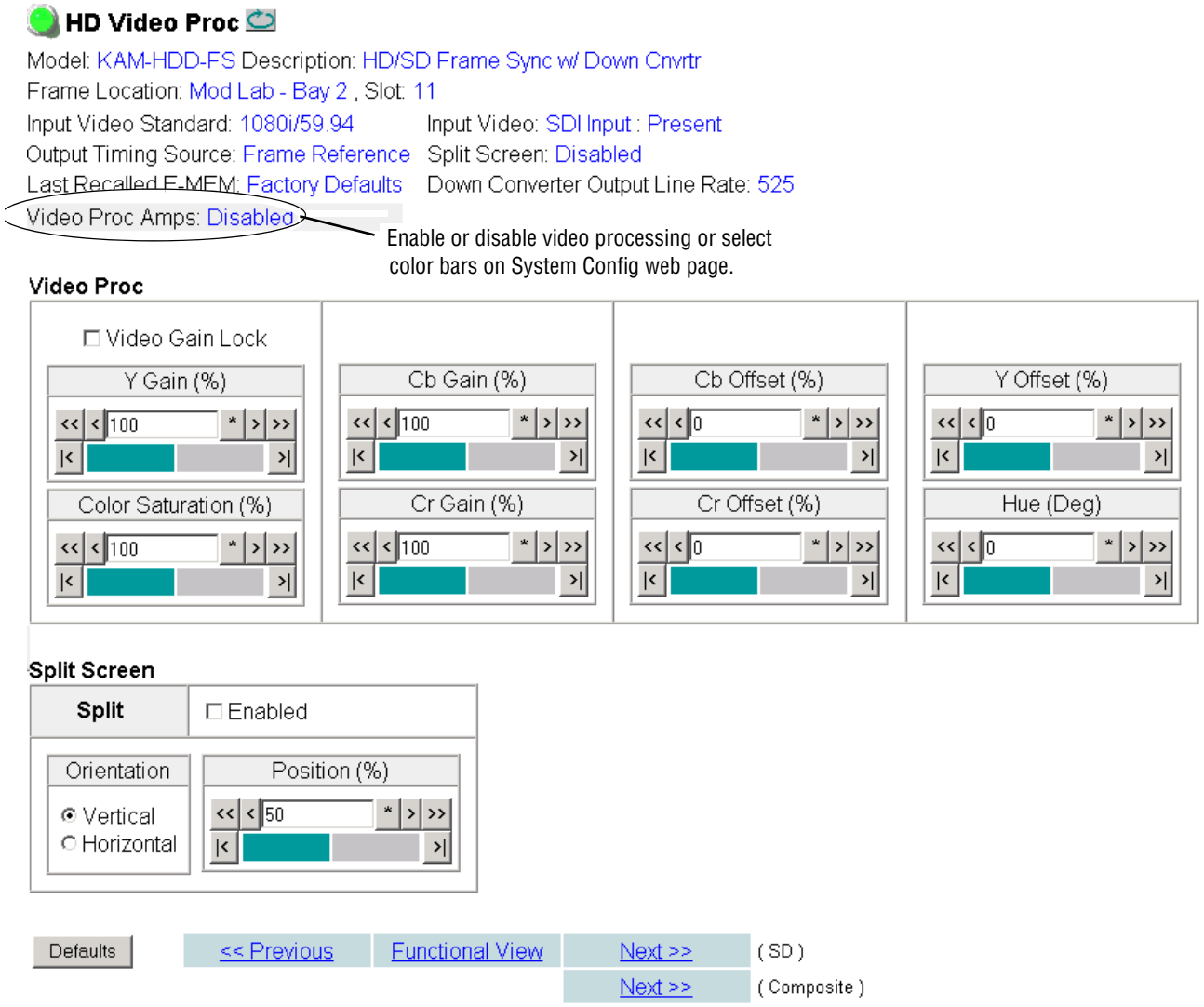
Split Screen

Use a horizontal or vertical split screen to compare the unprocessed input video (top or right) to the processed output video (bottom or left).

- **Split Enabled –** enable the split screen by checking the Split **Enabled** checkbox.
- **Orientation** – set the orientation of the split screen with the **Vertical** or **Horizontal** radio button.
- **Position** – use the **Position** control to set the amount of horizontal or vertical split (10 to 90%) of unprocessed video to appear on the screen.

This control is the same as the other Split Screen controls on the Color Correction, SD Video Proc, and System Config web pages.

Figure 58. HD Video Proc Web Page



HD Video Out Web Page

- HD Video In
- HD Frame Sync
- HD Color Correction
- HD Video Proc
- HD Video Out
- Down Converter
- SD Video Proc
- SD VBI
- SD Video Out
- Encode VBI
- Composite Out

Use this link

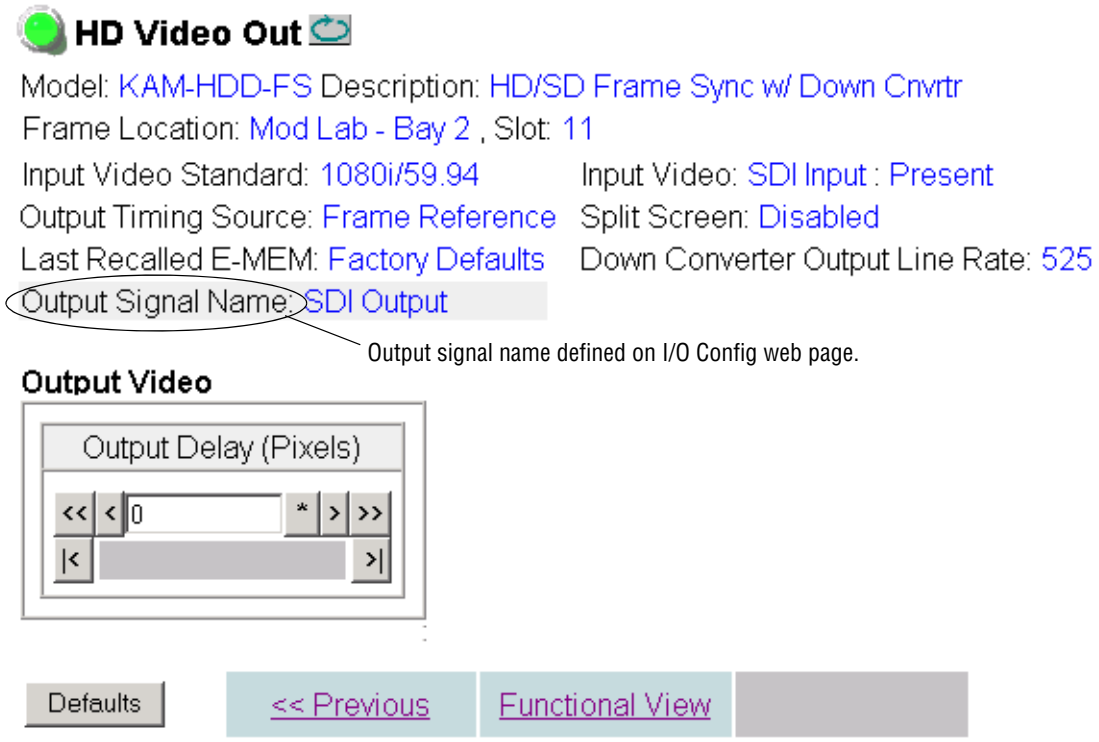
The HD Video Out web page (Figure 59) is present when an HD input type is selected as the input to the module. It provides controls for adjusting the HD SDI video output. The name of the output video signal assigned on the I/O Config web page is displayed in the lower left corner of the web page header.

Output Video

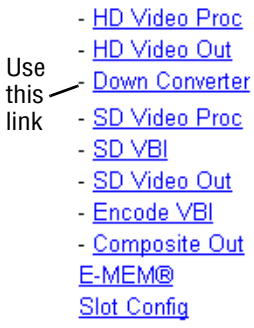
Use the following control to adjust the HD video output signal:

- **Output Delay (Pixels)** – adjust the coarse delay of the video output in pixels.

Figure 59. HD Video Out Web Page



Down Converter Web Page



The Down Converter web page (Figure 60 on page 83) provides controls for setting the output parameters for the down converted video image. The controls available include Standard Presets and Embedded Audio and Closed Captioning controls shown below and described on page 82.

Standard Presets

Set the parameters for the down converted video output with the controls listed below.

- **Mode** – set the desired output mode (aspect ratio) for the down converted video image with one of the radio buttons. Refer to Figure 61 on page 84 for examples of each mode selection.
- **Alignment** – align the video image depending on the mode selected above by selecting a radio button.
- **Top/Bottom Crop** – crop the top and bottom of the down converted image from 0 to 4 lines in applicable aspect ratios.
- **Matte Color** – select the color of the matte blanking margins when present in the video image. Matte colors are at 75% of color bar colors. Gray Mattes are Gray 1– darkest to Gray 6 – lightest
- Press the **Apply Standard Presets** button to return to **Letterbox**, **Center**, **0 lines**, and **Black** matte presets.

Embedded Audio and Closed Captioning Controls

Enable or disable the following for closed captioning (525 line rate only) and embedded audio in the down converted video:

- **Audio Transcode** – checking the Audio Transcode **Enabled** checkbox copies the embedded audio (all groups) information from the HD input video to the down converted SD video. The status of this control will be reported in the lower left of the web page header.

Note This function only works for a down converted SD output.

- **Closed Captioning** – In 525 line rate only, checking the Closed Captioning **Enabled** checkbox copies the closed captioning information from the HD input video to the down converted SD video. The status of this control will be reported in the lower right of the web page header.

Figure 60. Down Converter Web Page

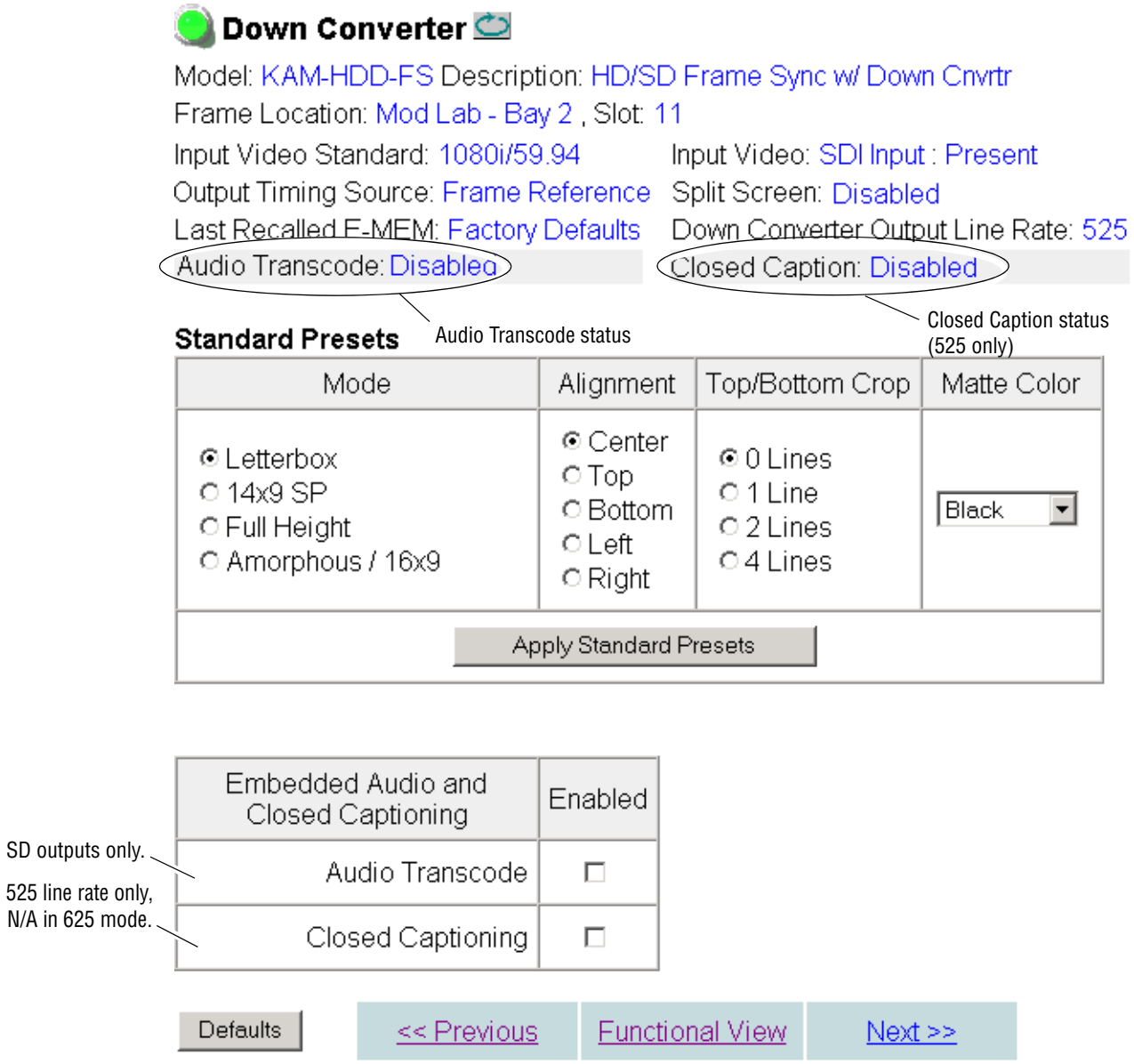
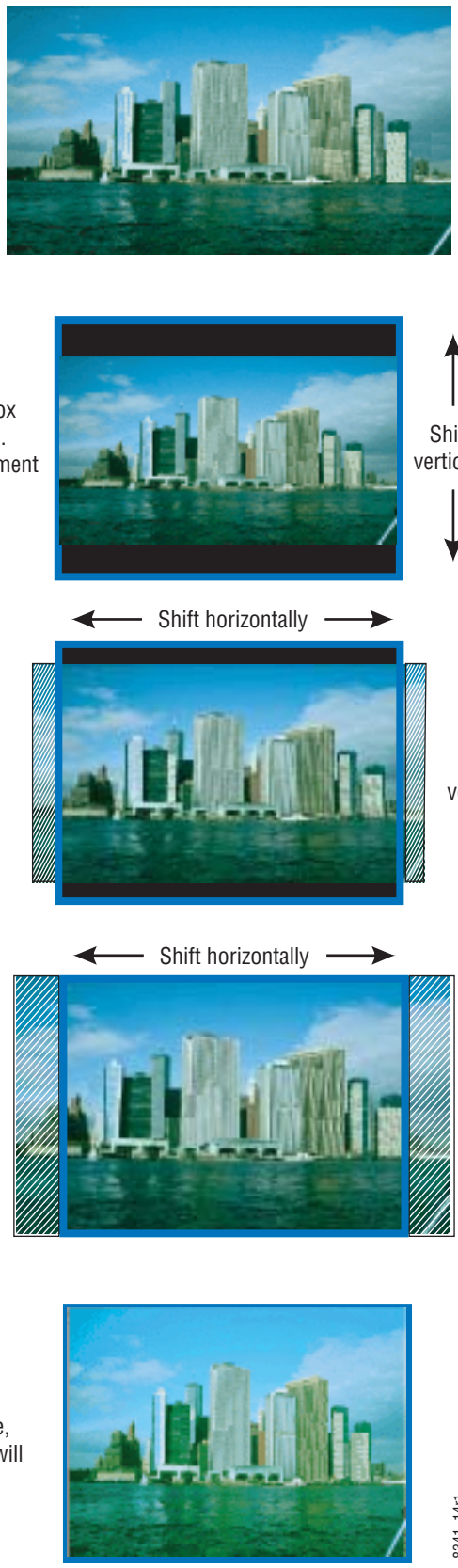


Figure 61. Down Converted Video Output Modes



SD Video Proc Web Page

- HD Color Correction
- HD Video Proc
- HD Video Out
- Down Converter

Use this link → - SD Video Proc

- SD VBI
- SD Video Out
- Encode VBI
- Composite Out

E-MEM®

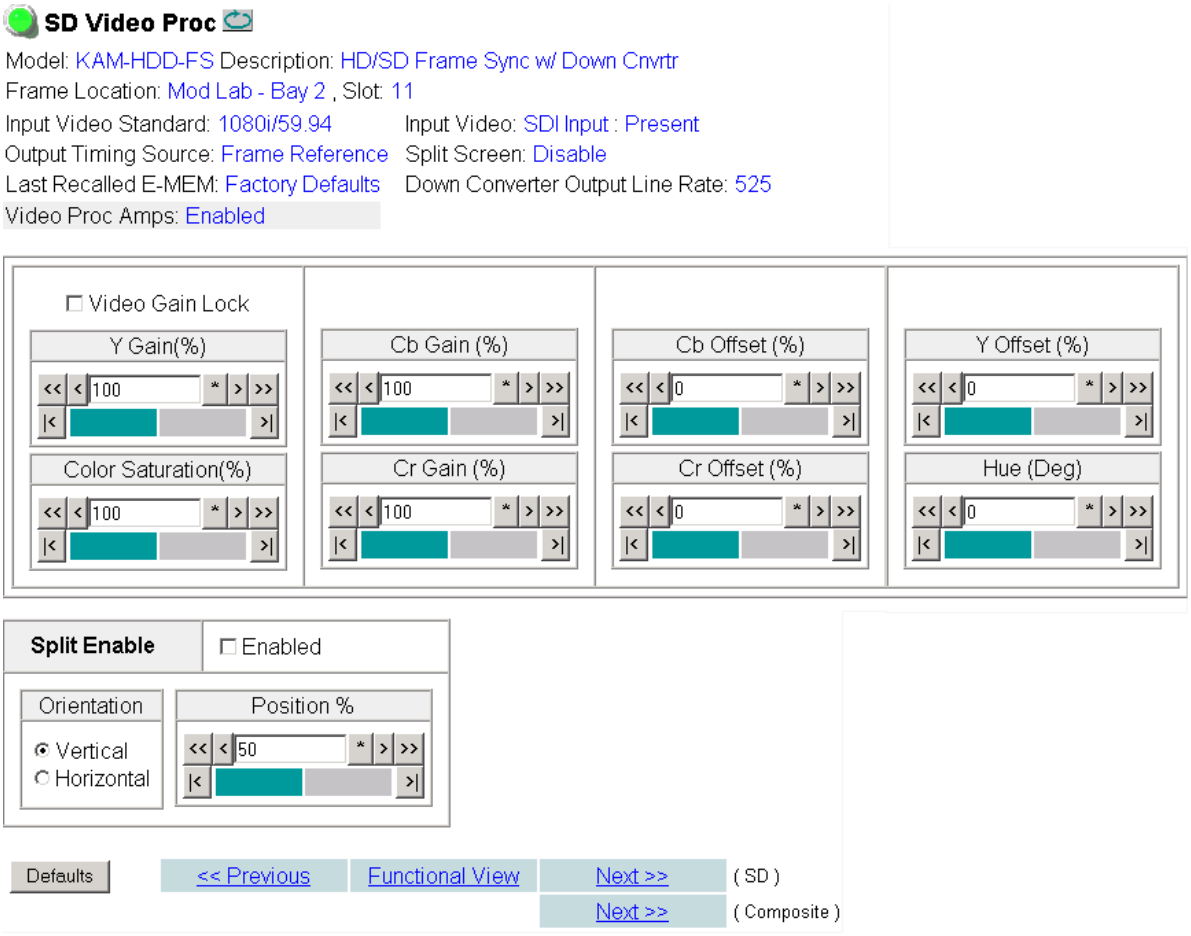
Slot Config

The SD Video Proc web page (Figure 62) provides overall video processing for a down converted HD signal or an SD input type signal when in SD mode. The SD Video Proc is enabled or disabled on the *System Config Web Page* on page 45 with the Video Proc Amps **Enabled/Disabled** control or a color bars signal (not adjustable) can be enabled and sent to the output. Proc Amp status is reported in the lower left of the SD Video Proc header.

Use the following controls to make adjustments to the SD video output:

- **Y/Cb/Cr Gain** – Set the gain for the Y, Cb, or Cr channel from 0 – 200% (total effective Y Gain will reach approximately 188%) with the corresponding control or lock the controls together by checking the **Video Gain Lock** checkbox and adjust any one of the gain controls.
- **Y/Cb/Cr Offset** – Set the offset ± 100% for the Y, Cb, and Cr channels with the corresponding control.
- **Hue** – adjust the output hue from – 180 to + 179 degrees.
- **Color Saturation** – set the overall color saturation (chroma gain) from 0 – 200%. (This setting will affect Cb and Cr gain slightly.)

Figure 62. SD Video Proc Web Page



Split Screen

Use a horizontal or vertical split screen to compare the unprocessed input video (top or right) to the processed output video (bottom or left).

- **Split Enable –** enable the split screen by checking the Split **Enabled** checkbox.
- **Orientation** – set the orientation of the split screen with the **Vertical** or **Horizontal** radio button.
- **Position** – use the **Position** control to set the amount of horizontal or vertical split (10 to 90%) of unprocessed video to appear on the screen.

This control is the same as the other Split Screen controls on the Color Correction, HD Video Proc, and System Config web pages.

SD VBI Web Page

- HD Video Proc
- HD Video Out
- Down Converter
- SD Video Proc
- SD VBI
- SD Video Out
- Encode VBI
- Composite Out

E-MEM®
Slot Config

Use this link

Use the SD VBI web page (Figure 63 for 525, Figure 64 on page 88 for 625 line rate) to configure the VBI and Data Line configuration for the SD output signal on modules with SD video outputs. The currently detected line rate will be reported in the **Down Converter Output Line Rate** in the header information. Data lines are configured on the System Config web page.

View Select

Select the correct line rate for configuration with the **525** or **625** radio button in the View Select box.

VBI Lines/Data Lines

This web page allows you to configure the VBI/Data Lines for the SD video out when the input is configured as an SD in. The following can be set on a line-by-line basis for VBI and data lines in Field 1 and Field 2 or set to **All** to apply the control to every line or **None** to remove the control from every line:

- **Blank** – blank existing VBI and Data Line information.
- **Chroma Kill** – Remove all chroma from VBI and Data Lines with the Chroma Kill control.

Figure 63. SD VBI Web Page – 525 Line Rate

SD VBI

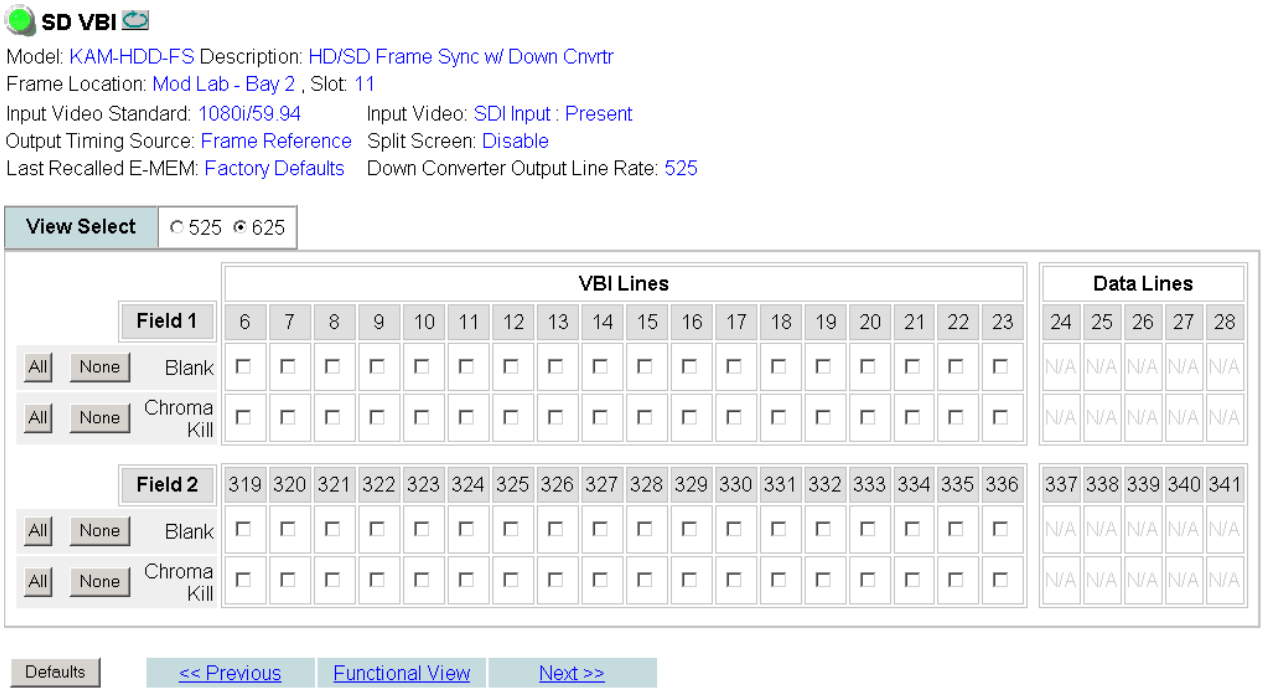
Model: KAM-HDD-FS Description: HD/SD Frame Sync w/ Down Cnvrtr
Frame Location: Mod Lab - Bay 2 , Slot: 11
Input Video Standard: 1080i/59.94 Input Video: SDI Input : Present
Output Timing Source: Frame Reference Split Screen: Disabled
Last Recalled E-MEM: Factory Defaults Down Converter Output Line Rate: 525

View Select ◉ 525 ○ 625

		VBI Lines											Data Lines			
	Field 1	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
All None	Blank	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	N/A	N/A	N/A	N/A
All None	Chroma Kill	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	N/A	N/A	N/A	N/A
	Field 2	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287
All None	Blank	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	N/A	N/A	N/A	N/A
All None	Chroma Kill	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	N/A	N/A	N/A	N/A

Defaults << Previous Functional View Next >>

Figure 64. SD VBI Web Page – 625 Line Rate



SD Video Out Web Page

- HD Video Proc
- HD Video Out
- Down Converter
- SD Video Proc
- SD VBI
- SD Video Out
- Encode VBI
- Composite Out

E-MEM®

Slot Config

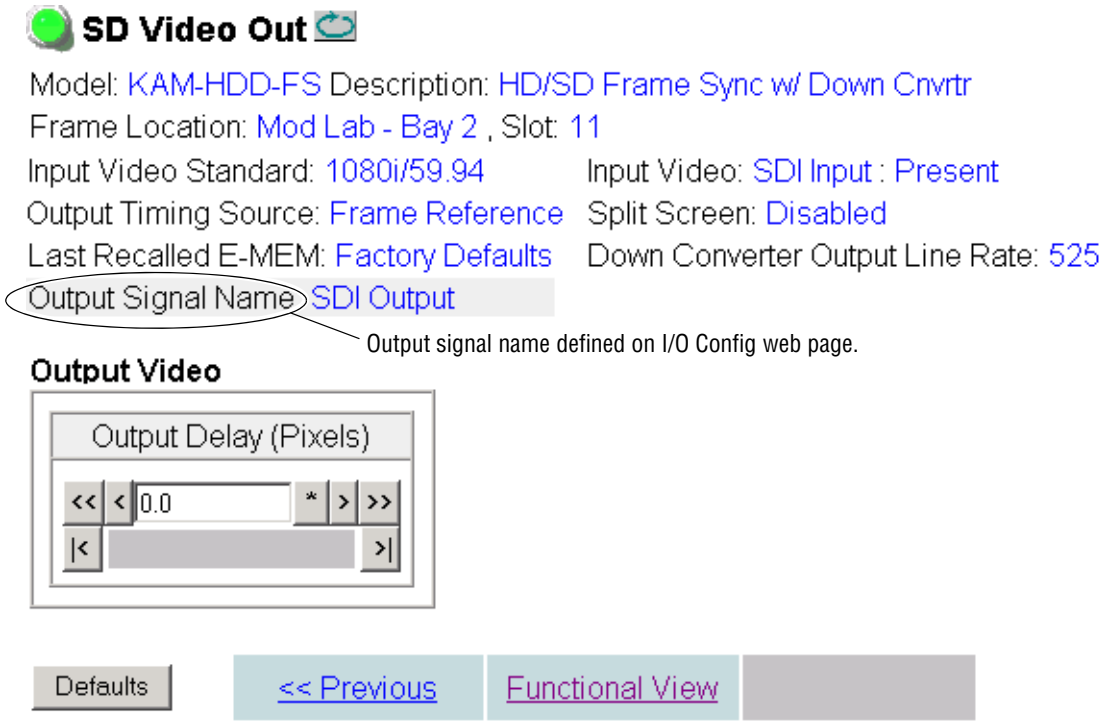
Use this link

The SD Video Out web page (Figure 65) provides the following controls for adjusting the SD SDI video output for modules with an SD input or down converted SD outputs (BNCs J3 and J4 set for SD).

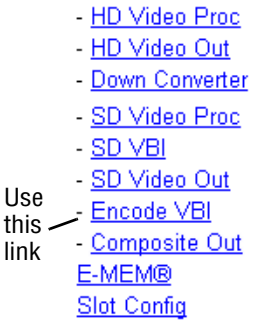
Output Video

- Output Delay (Pixels) Adjust the coarse delay of the video output in half-pixel increments.

Figure 65. SD Video Out Web Page



Encode VBI Web Page



Use the Encode VBI web page (Figure 66 on page 91 for 525, Figure 67 on page 91 for 625 line rate) to configure the VBI and Data Line encoding for the composite output signal on modules with composite outputs. The currently detected line rate will be reported in the **Down Converter Output Line Rate** in the header. Data lines are configured on the System Config web page.

View Select

Select the correct line rate for configuration with the **525** or **625** radio button in the View Select box.

VBI Lines/Data Lines

This web page allows you to configure VBI/Data lines on a line-by-line basis for the composite output when the input an SD signal. Select the following for VBI and data lines in Field 1 and Field 2 or select **All** to apply the control to every line or **None** to remove the control from every line:

- **Setup –** turn setup on or off.
- **Blank** – blank existing VBI and Data Line information.
- **Chroma Kill** – remove all chroma from VBI and Data Lines with the Chroma Kill control.

Figure 66. Encode VBI Web Page – 525 Line Rate

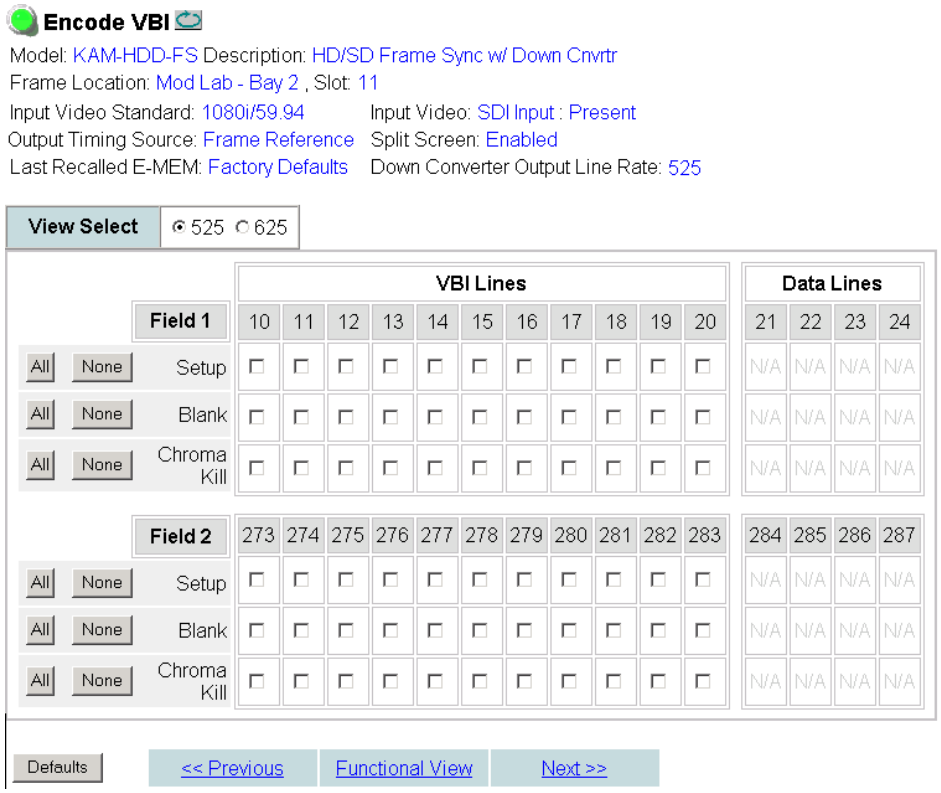
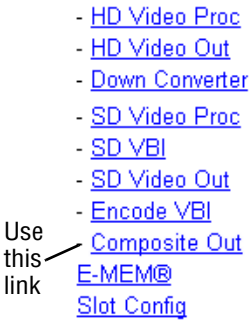


Figure 67. Encode VBI Web Page – 625 Line Rate

Composite Out Web Page



The Composite Out web page (Figure 68 on page 93 for 525 line rate and Figure 69 on page 94 for 625 line rate) is present when the module has down conversion capability (KAM-HDD-PA and KAM-HDD-FS with HD 59.94 or HD 50 video input or an SD video input).

The Composite Out web page provides the following controls for adjusting the composite video output:

Output Video

Enable the following output components in the composite video output by checking the **Enabled** checkbox:

- **Signal Setup** – (525 line rate only) enable or disable setup on the composite output signal.
- **Burst** – enable or disable burst on the composite output signal.
- **Chrominance Signal** – enable or disable chrominance on the composite output signal.
- **Output Video Adjustment** – select the **Calibrated** radio button to output factory calibrated values or the **User Adjustable** radio button to enable the Luma Gain, Chroma Gain, Black Level, and Hue (525 only) composite output controls on the right side of the web page display inside the dashed lines in Figure 68 on page 93 and described below. For factory default values, refer to Table 3 on page 21.
- **Output Video Gain** – adjust the overall output gain of the composite video.
- **Delay Coarse** – adjust the coarse delay of the video output in half-pixel increments.

Output Video Adjustment - User

When the User Adjustable radio button is selected, the following output video controls become enabled:

- **Luma Gain** – adjust the percentage of luma gain relative to 100% on the composite output signal.
- **Chroma Gain** – adjust the percentage of chroma gain relative to 100% on the composite output signal.
- **Black Level** – adjust the percentage of black relative to 0 (zero) on the composite output signal.
- **Hue** – (525 line rate only) adjust the hue in degrees on the composite output signal as needed.

Figure 68. Composite Out Web Page – 525 Line Rate

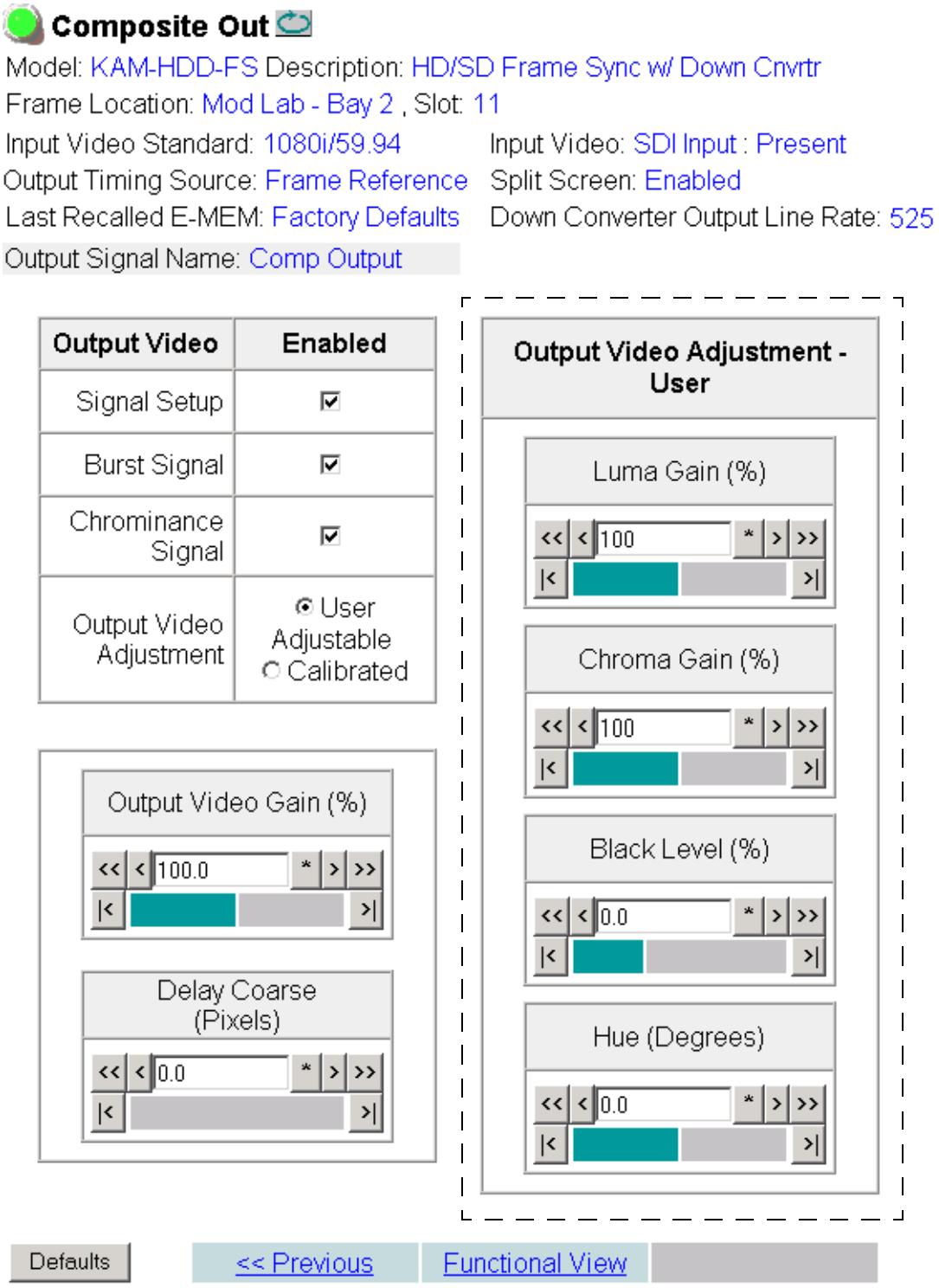
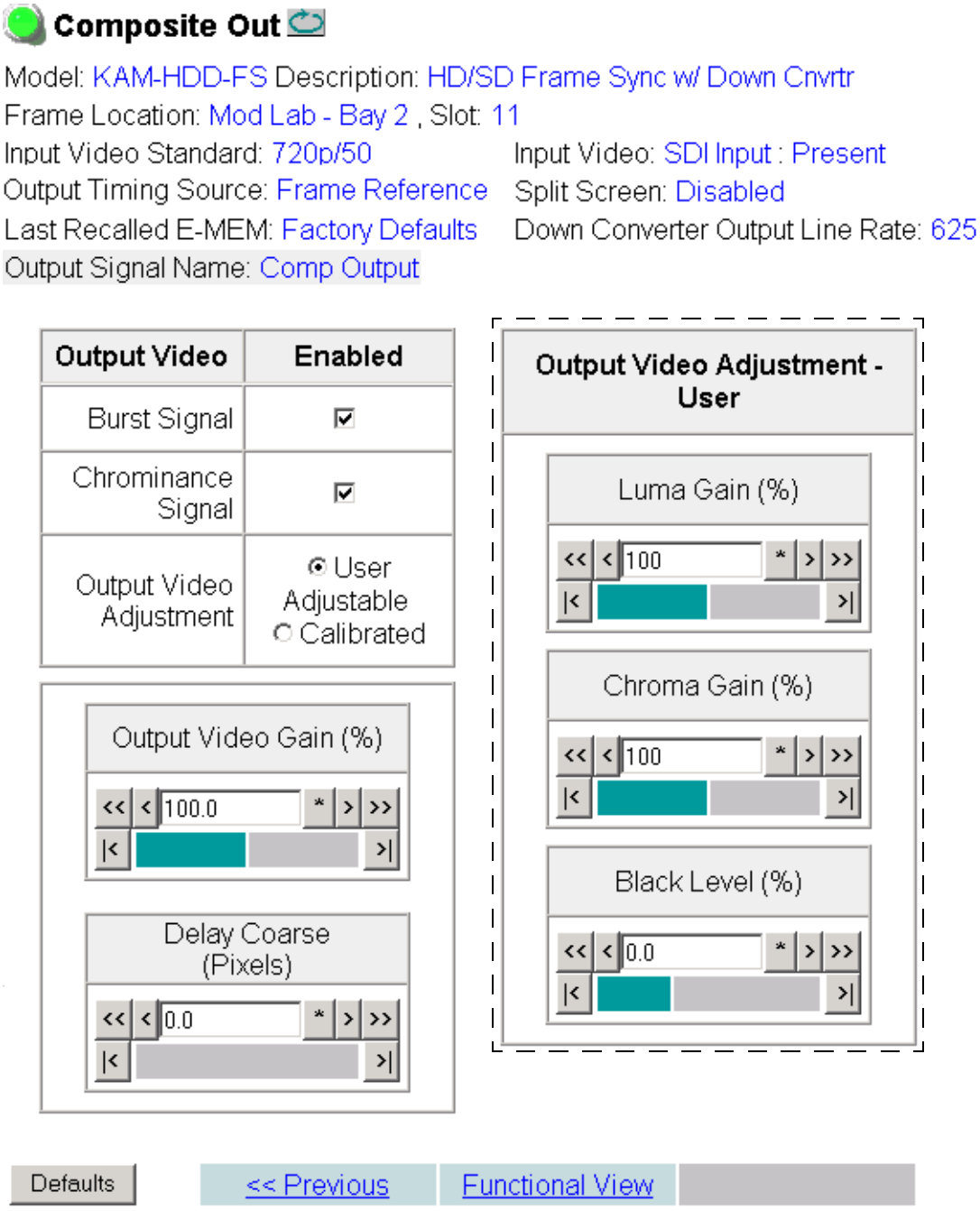
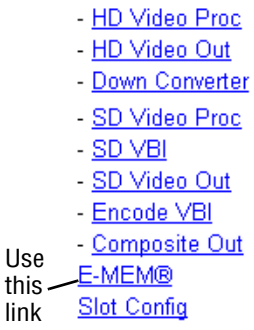


Figure 69. Composite Out Web Page – 625 Line Rate



E-MEM Web Page



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.

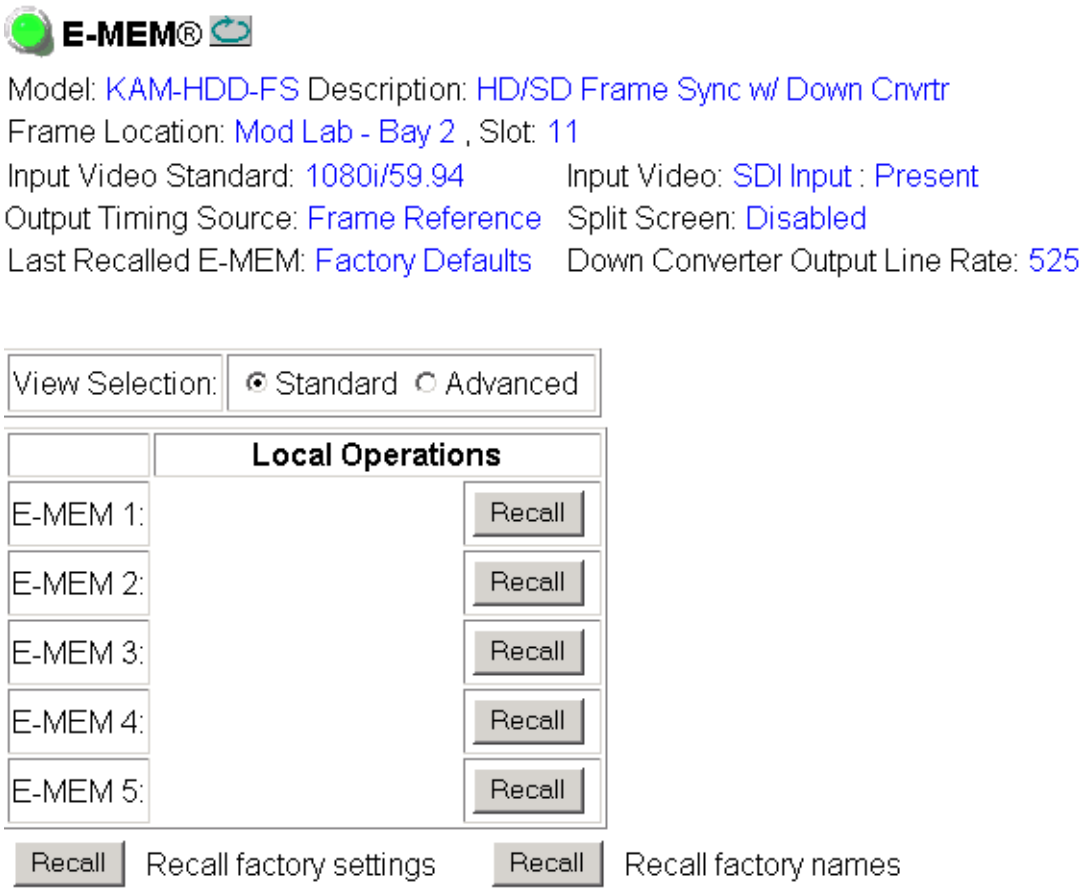
Factory default settings for all channels can be recalled by selecting the **Recall factory settings** button. To return the module to the factory signal names (such as the signal inputs), select the **Recall factory names** button.

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

In Standard view (Figure 70), 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 learned into that E-MEM into the module. An E-MEM Wait page will appear when a recall is performed.

To learn an E-MEM, select the **Advanced** button in the View Selection section. This will open the Advanced view (Figure 71 on page 96).

Figure 70. E-MEM Web Page (Standard View)

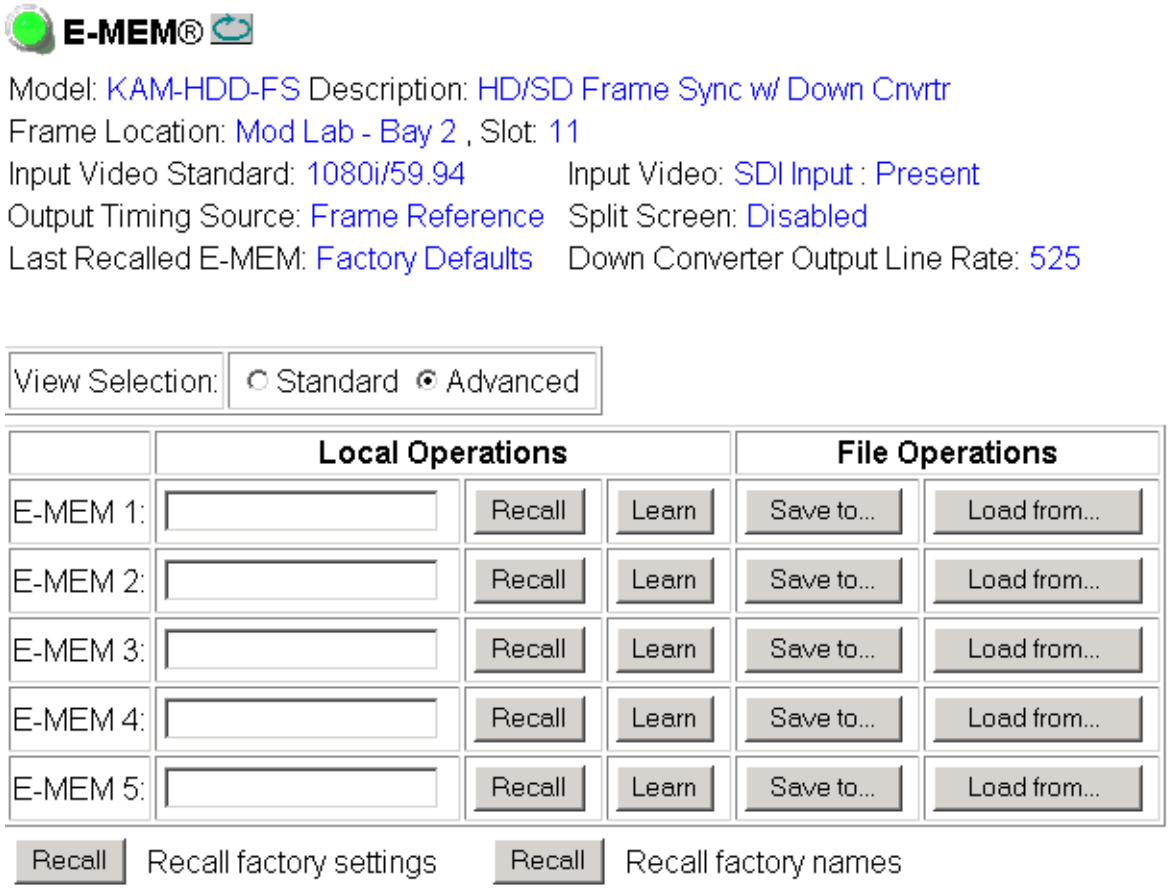


The Advanced View (Figure 71) includes a Local Operations section to Learn and Recall a configurations and a File Operations section to provide a **Save to…** or **Load from…** function for saving or loading E-MEM files to and from an external storage location.

To learn an E-MEM:

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

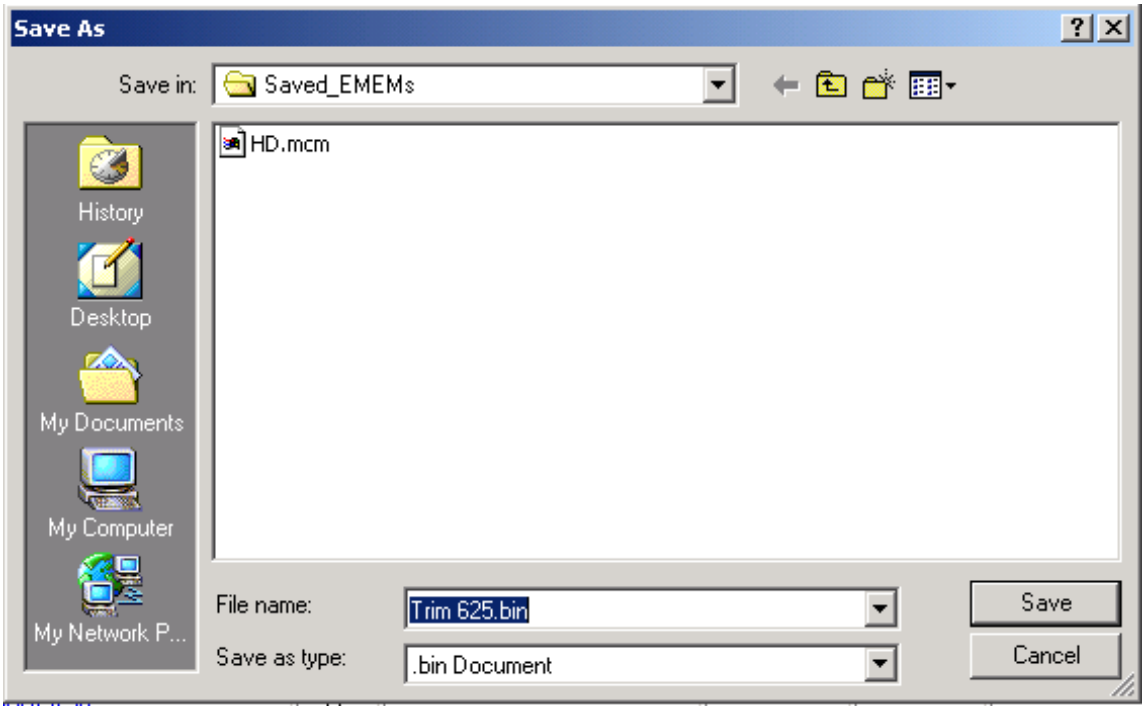
Figure 71. E-MEM Web Page (Advanced View)



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

1. Select the corresponding **Save to...** button in the File Operations section.
2. This will bring up a File Download screen (not shown), select **Save** to bring up the Save As screen shown in Figure 72.

Figure 72. E-MEM Save to Operation



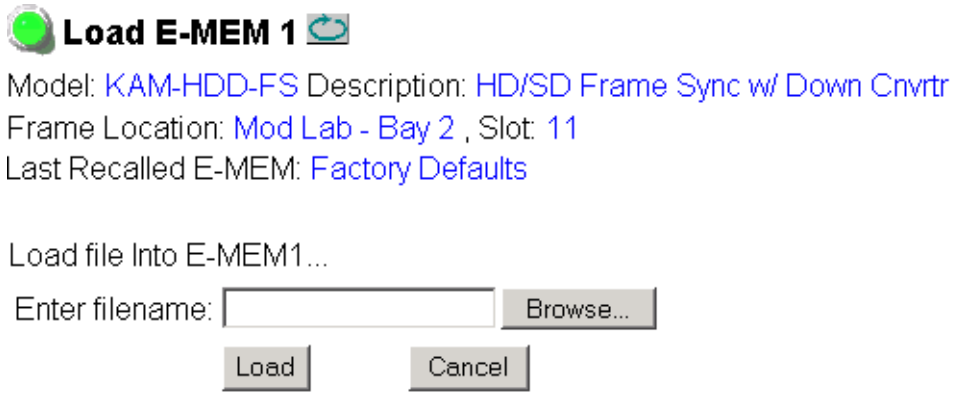
3. In the Save As dialog box, the file name will default to the E-MEM name. Browse to the folder where you want to save the configuration and select **Save**. The file saves as a .bin file type.

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:

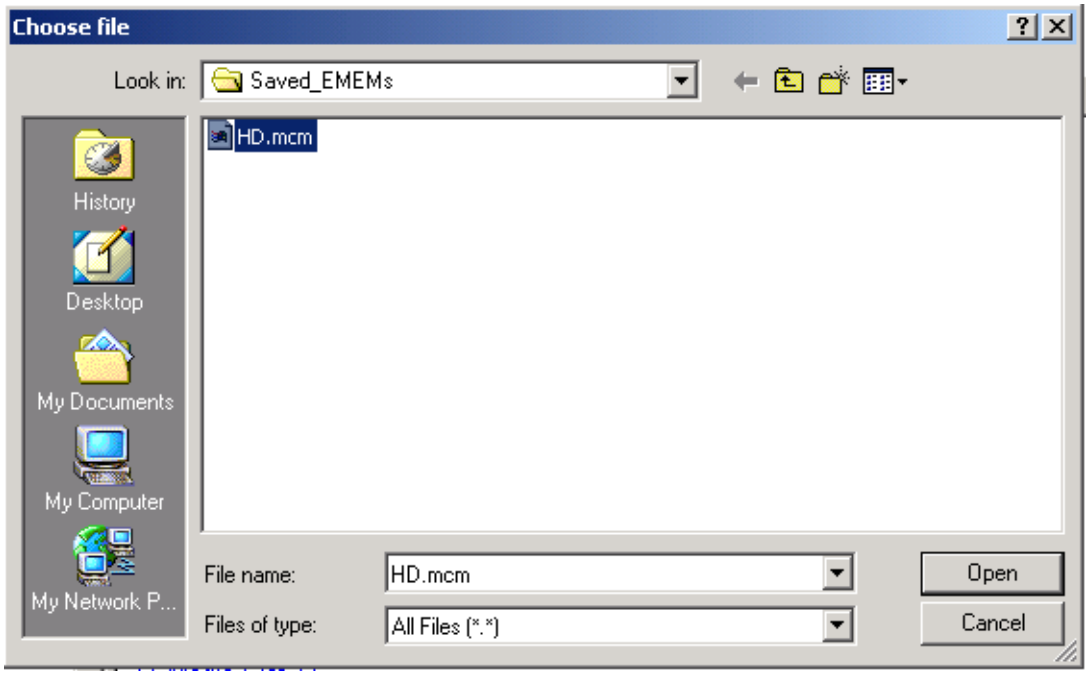
1. Select the **Load from ...** button in the File Operations section.
2. This will bring up the Load E-MEM page (Figure 73).

Figure 73. Load E-MEM Page



3. Select **Browse** to open the Choose File window (Figure 74). 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.

Figure 74. Choose File Window



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.

6. Select the corresponding **Recall** button to invoke this configuration.

Slot Config Web Page

- HD Video Out
- Down Converter
- SD Video Proc
- SD VBI
- SD Video Out
- Encode VBI
- Composite Out

Use this link → E-MEM®

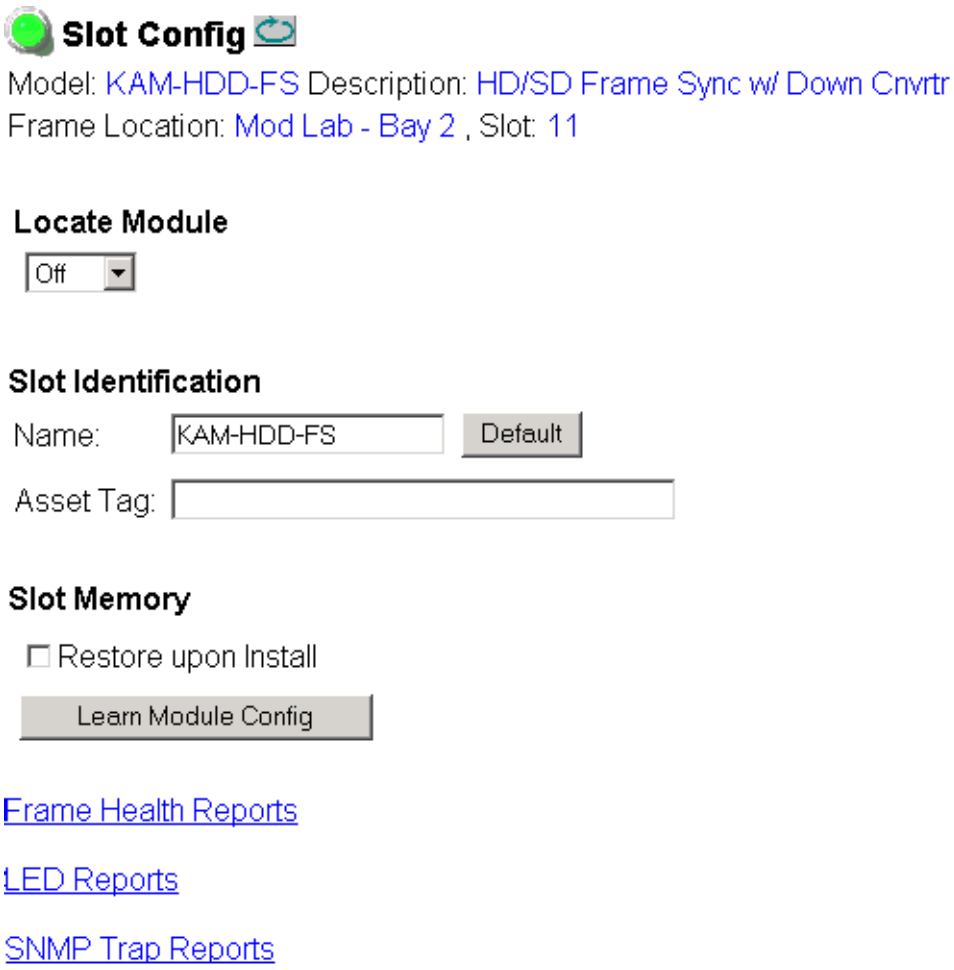
Slot Config

Use Slot Config web page shown in Figure 75 to perform the following functions on the module:

- Locate Module
- Slot Identification
- Slot Memory
- Link to Frame Health Reports 2000NET web page (2000T3 Frames)
- Link to LED Reporting 2000NET web page
- Link to SNMP Trap Reports 2000NET web page

Each of these functions is described on the following pages.

Figure 75. 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 2000NET module and travels with the 2000NET 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 saved periodically (once an hour) to the 2000NET 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 2000NET module. If the 2000NET 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 and software version is installed, the configuration saved to the 2000NET module will be downloaded to the new module. The box must be checked before the current module with the saved configuration is removed.

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.

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

Frame Health Reports Link

Select the Frame Health Reports link to open the 2000NET module Frame Alarm Reporting web page. 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 2000T3 frame (not present on the 2000T1 frame).

LED Reports Link

Select the LED Reports link to open the 2000NET LED Reporting web page. Normally, every module in the frame will report to the 2000NET module any Fault, Signal Loss, Reference Loss, or Config Error conditions. These conditions will be reflected by the status LEDs on the 2000NET module. Using this web page, any of these conditions can be disabled from being reported to the 2000NET module for each individual module in the frame.

SNMP Trap Reports Link

Select the SNMP Trap Reports link to open the 2000NET SNMP Reporting web page. This link will only be present when SNMP Agent software has been installed on the 2000NET module. This web page allows configuration of what alarms and warnings that are reported to the SNMP management software.

Refer to the *2000NET Instruction Manual* for complete details on using the 2000NET web pages.

Specifications

Table 4. Kameleon HD Series Specifications

Parameter		Value
SDI Video Input (All Models)		
Number of inputs		One
Signal type		1080i @ 59.94, 50 1080sF @ 24 1080p @ 24 720p @ 59.94, 50 480i @ 59.94 576i @ 50
Connector type		75 ¾ BNC terminating
Return loss		> 15 dB, from 5 MHz to 1.5 GHz
Auto equalization cable length		300 m (Belden 1694A cable or similar for 270 Mb/s) 100 m (Belden 1694A cable or similar for 1.5 Gb/s)
SDI Video Outputs (All Models)		
Number of Outputs		4 (BNCs J2 and J3 are configurable as HD or SD with an HD input)
Signal type		1080i @ 59.94, 50 1080sF @ 24 1080p @ 24 720p @ 59.94, 50 480i @ 59.94 576i @ 50 (± 30 ppm tolerance on all supported data rates)
Connector type		75 ¾ BNC terminating
Return loss		> 15 dB, from 5 MHz to 270 MHz > 10 dB, from 270 MHz to 1.5 GHz
Signal level		SDI 800 mV p-p + 10% Maximum
Rise and fall time (20-80%)		< 270 ps for reclocked HD 400 to 800 ps for SD and bypass mode
Output polarity		Non-inverted. all outputs
Output jitter		< 0.2 ui (in Frame Sync mode)
Output delay		
Composite Video Outputs (Present on Models with SD Inputs or Down Conversion)		
Number of Outputs		Two
Signal Types		525 or 625
Connector Type		BNC Terminating
SDI Video Performance		
Auto equalization cable length		300 m (Belden 1694A cable or similar for 270 Mb/s) 100 m (Belden 1694A cable or similar for 1.5 Gb/s)
Input to output, minimum electrical length (Delay mode)		480i: 33 ms 1080i: 33 ms 720p: 16.6 ms
Power Consumption		
	KAM-HD-FS	16 W
	KAM-HDD	17.9 W
	KAM-HDD-PA	22W
	KAM-HDD-FS	22 W

Table 4. Kameleon HD Series Specifications

Parameter	Value
Electrical Length	
Input to output delay: Default with zero user input delay	
In delay mode or in genlock mode with zero input video delay with respect to genlock frame position:	
Full-frame mode	1 frame period in all formats
Minimum delay mode	~ 300 pixel periods in all formats
Input to output delay: User input delay in pixel steps ranging from 1 to 2 frames[1]	
In delay mode or in genlock mode with any input video delay with respect to genlock frame position:	
Full-frame mode	1 frame minus 5 lines to 2 frames minus 5 lines[2]
Minimum delay mode	~ 300 pixels to 1 frame
Mechanical	
Frame type	2000T1DNG or 2000T3NG Kameleon Frame
Environmental	
Operating temperature	Refer to Kameleon 2000 Frame specifications
Operating humidity	0 to 90%, non-condensing

[1] The User input delay is specified as 1 full frame. plus one frame in pixels and lines. The Delay Wrap Position on the Frame Sync web page roughly indicates what fraction of that last frame of adjustable delay is being used. Because the input video delay with respect to genlock frame position can vary, the Delay Wrap Position with respect to User Input Delay will vary.

[2] Full Frame Mode always has at least 1 frame minus 5 lines of electrical length.

The frame phase relationship between the SDI video stream and the analog reference signal is established according to SMPTE RP 168-2002. This defines the SDI video frame start occurring *N* pixel periods before the frame start of the analog video reference signal. *N* is defined for each video format in Table 5.

Table 5. Frame Phase Relationship

Format	Standard	*N*
408i59.94	SMPTE 125M-1995	16
576i50	Rec. ITU-R BT.656-4	12
1080i59.94	SMPTE 274M-1998	88
720p59.94	SMPTE 296M-2001	110
1080i50	SMPTE 274M-1998	528
720p50	SMPTE 296M-2001	440
1080sF24	SMPTE 274-1998	638
1080p24	SMPTE 274-1998	638

Software Updating

Software updating is only done using the NetConfig PC application option available from Grass Valley. If you do not have this application, you may download if from the Grass Valley web site as described in *Acquiring NetConfig* below.

Software updating also requires that a 2000NET Network Interface module running software version 4.0.0 and later is installed in the modular frame for remote access.

Note Not all modular modules can be updated remotely using NetConfig. Refer to the Thomson Grass Valley FAQ for complete software update information.

Acquiring the Latest Software

The latest software for the NetConfig application and modular modules is available from the Thomson Grass Valley FAQ web site or the public FTP site.

To find the latest available software downloads, go to the FAQ site at the following URL:

http://gvg.custhelp.com

This will take you to the Grass Valley Customer Service FAQ data base. The information provided here is the most up-to-date. You may also subscribe to software updates through the FAQ site. This is recommended so that when new versions of software are released, you are notified by email.

If you cannot find the software you need, check the public FTP site at this location:

ftp://ftp.thomsongrassvalley.com/pub/

Acquiring NetConfig

To download the currently posted NetConfig application software, do the following:

1. Navigate to the FAQ site URL given above and click on the first FAQ, DOWNLOAD THE LATEST SOFTWARE?
2. Under the **Software Utilities** category, select the **NetConfig, RCL GUI** link.
3. Select the link to the latest posted version of the Network Configuration Tool (NetConfig) software.

Note If you have a later version of NetConfig than the currently posted version you do not need to update.

4. Right click on the NetConfig link to download the zipped file to your PC.

5. Unzip the NetConfig file and run the **NetConfigSetup.exe** file to install NetConfig on your PC. Installing the application in the Grass Valley Program directory is the recommended practice.

   This PC must be on the same subnet as the modular modules you wish to update.

Acquiring Modular Software

Modular module software updates are available on the Grass Valley FAQ web site or public FTP site as described in *Acquiring the Latest Software* on page 105.

To download available modular software, do the following:

1. Navigate to the FAQ site and click on the first FAQ, DOWNLOAD THE LATEST SOFTWARE?

2. Under the **Modular Products** category, select the **Download** link to the 8900, 2000, or Kameleon software you need.

3. In the Modular pulldown list, find the module name and select the **GO** button.

4. Follow instructions for downloading as given on the web page.

You may also connect directly to the Thomson Grass Valley public FTP site to locate software.

1. Navigate to the public FTP site and click on the **modular** directory.

2. Inside the **modular** directory click on the link to the software series for your module (8900, 2000, or Kameleon for example).

3. Find the module you need in the list and click on the link to the software download.

Note Read any pertinent README and other text files associated with this software update before downloading.

4. Download the files to a temporary directory on your PC.

Software Updating Procedure

To use this method, your 2000NET module must be running version 4.0.0 or later and you must have the NetConfig Networking Application option running on a networked PC on the same subnet as the frame with the 2000NET module. For acquiring software, refer to *Acquiring the Latest Software* on page 105.

Two files types are required for updating software, an .fld and an .sw2 for the module being updated.

To use NetConfig for software updating, follow the steps below:

1. Locate the PC directory in which the NetConfig application has been installed. The default location is C:\Program Files\Grass Valley Group\NetConfig.

   If this is not where NetConfig was installed, right-click on the NetConfig desktop shortcut and select **Properties**, click on the **Shortcut** tab and note the location of the installation in the **Start In** field.

2. Copy the .sw2 file you downloaded into your temporary directory into the main NetConfig directory. Make sure this file has a .sw2 extension and not a .txt extension.

3. Create a subdirectory named **modular** (if one does not already exist) in the main NetConfig directory.

4. Copy the .fld file(s) you downloaded into your temporary directory into this **modular** subdirectory.

5. Open NetConfig by double-clicking on the NetConfig desktop icon shown at left.

Note If you have not used NetConfig before, refer to the *NetConfig Instruction Manual* included during installation in the main NetConfig directory in .PDFpdf format (NetConfig.pdf).

6. Click on the **Load SW** icon on the top of the NetConfig toolbar (shown at left).

Note Different versions of NetConfig may differ in the software update directory structure used for accessing software. Refer to the NetConfig manual for the version you are using.

7. The NetConfig Load Software window will open showing the software files available (Figure 76).

   These device types and versions represent the .sw2 and .fld files loaded in the NetConfig main directory and the modular subdirectory. These files must be present on the PC running NetConfig for them to appear in the Device Type list.

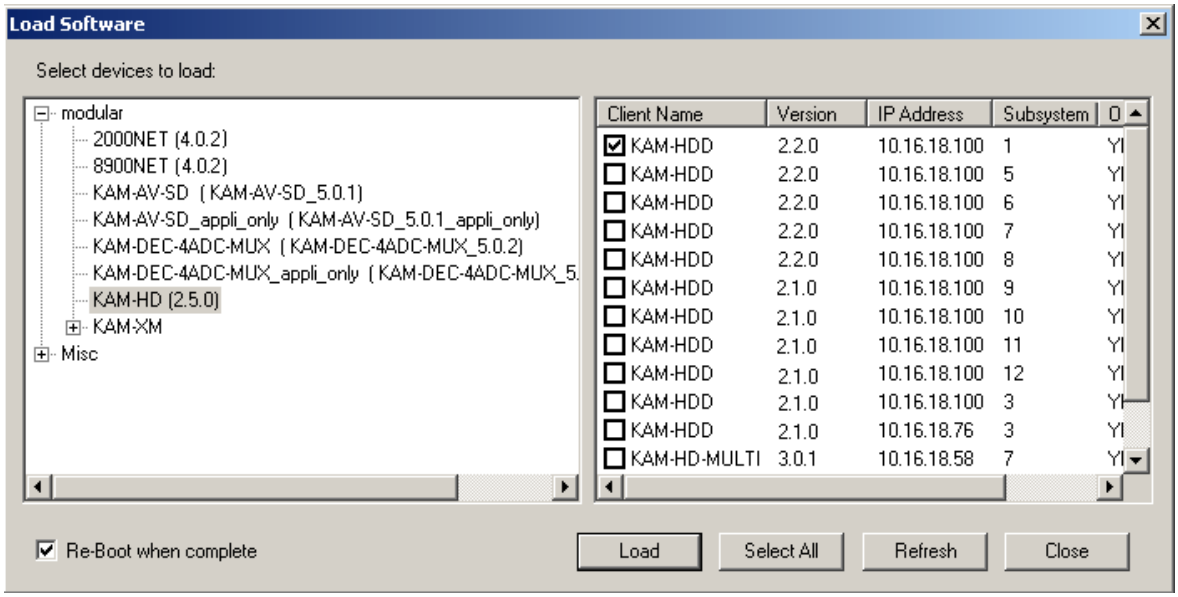
8. Select the Device Type you wish to update. In the example in Figure 76, the KAM-HD module Device Type has been selected and will be highlighted. All of the modules of this type accessible on the network will appear in the window on the right under the **Client Name** heading.

   The current software loaded on each module will be listed as well as the IP address and other information for the module client.

9. Check the corresponding **Client Name** boxes to upgrade the modules or use the **Select All** button to update all modules of this type present on the network.

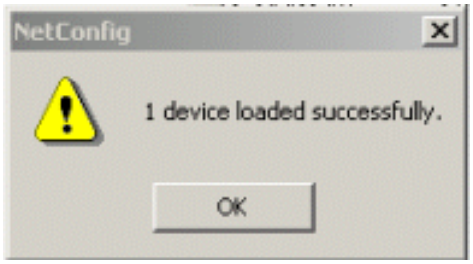
10. Press the **Load** button at the bottom of the Load Software screen to perform the update to all the selected modules.

Figure 76. NetConfig Load Software Window



11. If the load has been successful, a popup will appear as shown in Figure 77. Click the **OK** button.

Figure 77. Load Successful Popup



12. Allow the reboot to complete.

13. Once the loading is complete, select the **Refresh** button to make sure all selected modules have updated to the correct software version which will be reported in the window and on the Status web page.

For more information on using NetConfig, refer to the *NetConfig Networking Application Instruction Manual* which is included with the NetConfig option, available on the Thomson Grass Valley web site, and may also be present in the NetConfig directory from other NetConfig installations (Newton Control Panel installation is one example).

Service

The Kameleon HD 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:

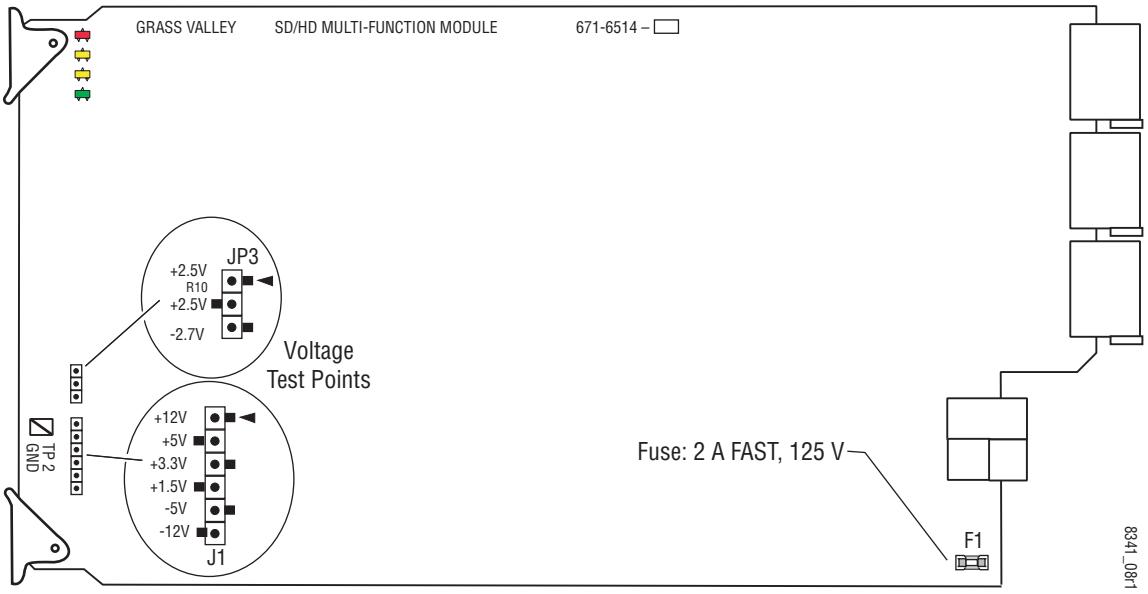
- Check frame and module power and signal present LEDs.
- Verify power at the voltage testpoints at the front of the module and check Fuse F1 if no voltage is detected (Figure 78).
- Check for presence and quality of input signals.
- Verify that source equipment is operating correctly.
- Check cable connections.

Refer to Figure 9 on page 18 for the location of PWR LED and Table 2 on page 18 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 78. Test Point and Fuse Locations



Index

Numerics

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

R

S

T

V

W

Y