

# KAM-SD-2AES-MUX

KAMELEON SERIES MODULES

Instruction Manual

SOFTWARE VERSION 4.0.1

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*the most watched worldwide*

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# *Preface*

## **About This Manual**

This manual describes the features of the Kameleon multi-function modules that are part of the Kameleon Media Processing System. 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 Series Frames Instruction Manual*).



# *KAM-SD-2AES-MUX*

## *Kameleon Series Module*

### **Introduction**

This manual provides installation, operation and configuration information for the KAM-SD-2AES-MUX Kameleon Series module.

The KAM-SD-2AES-MUX modules provides a serial digital video input and output with embedded audio. Two external AES audio channels can be multiplexed into the SDI output video.

This module features:

- Broadcast quality serial digital video processing and frame synchronization,
- Two 48 kHz AES digital audio input streams (balanced or unbalanced) that can be multiplexed into the SDI output stream,
- Audio and video delay, synchronization and processing amplifier,
- Powerful line-by-line VBI processing including user-configuration of active video lines for carrying data,
- Built-in 4x4 audio router for mapping audio channels to specific AES streams,
- Audio and video test generators,
- Hot swappable,
- 5 user-programmable E-MEM registers,
- Save/load module configuration files to a networked PC,
- SNMP monitoring capability,
- Web browser GUI (graphical user interface), and
- Support for Newton Control System and NetConfig Network Configuration application.

**Note** KAM-SD-2AES-MUX operation requires 2000NET Network Interface Module hardware revision 01A1 or greater with software version 3.2.2 or greater. Systems installed in the 2000T3N frame require the 2000FAN fan sled (refer to [Figure 3 on page 11](#)).

# Installation

To install the Kameleon modules, perform the following steps:

1. Place the KAM-AES-R passive rear module in a rear frame slot and tighten the screws on each side of the rear module.
2. Cable the signal ports.

All Kameleon modules can be inserted and removed from a 2000 Series Kameleon Frame with power on.

**Note** Remove the front processing module before removing the rear I/O module.

## System Requirements

For proper operation of the KAM-SD-2AES-MUX modules, the frame must be a 2000T1DNG or 2000T3NG which include the following components:

- 2000NET module (software version 3.2.2 or later recommended for full functionality)
- 2000GEN module
- Dual 130W power supplies in the 2000T1DNG frame
- Single 240W power supply and 2000FAN in the 2000T3NG frame

## Frame Capacity

The 1 RU 2000T1DNG (with dual 130W power supplies, 2000NET and 2000GEN modules) frames have no Kameleon module capacity limitations.

The 3 RU 2000T3NG (single 240W p/s, 2000FAN, 2000NET and 2000GEN modules) frame can be fully populated with Kameleon modules when the 2000FAN fan sled and two power sleds are installed.

Table 1 provides the maximum Kameleon module count for frame types.

Table 1. Power, Cooling, and Module Capacity of 2000 Series Kameleon Frames

Item	2000T3NG Kameleon Frame Capacity	2000T1DNG Kameleon Frame Capacity
KAM-SD-2AES-MUX Module set	12	4



## Module Placement in the 2000T3NG Kameleon Frame

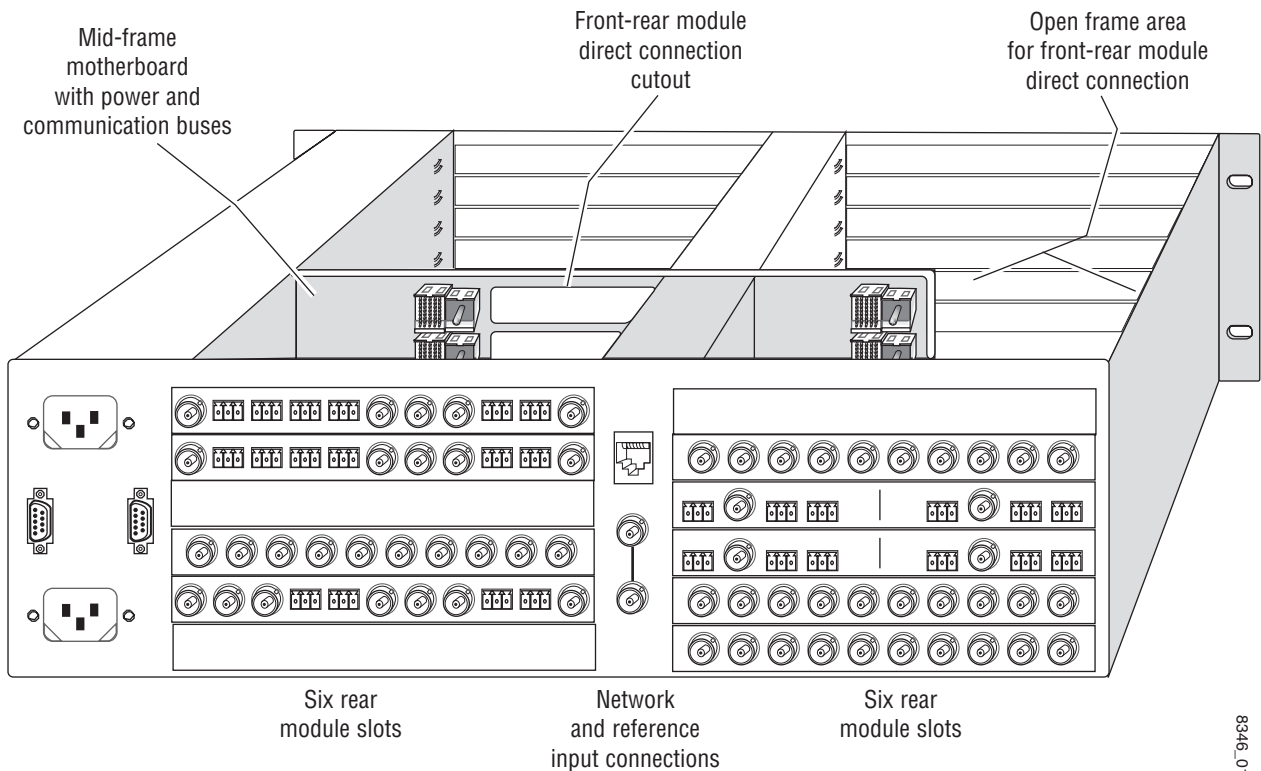
There are twelve slot locations in both the front and rear of a 3 RU frame to accommodate 2000 and Kameleon Series media modules (audio/video signal handling modules). The Kameleon media modules consist of a two-module set with a front processing media module and a passive rear module that can be plugged into any of the 12 frame slot pairs. The rear modules provide the input and output interface connectors.

### Installing the Front and Rear Modules

To install a KAM-SD-2AES-MUX module set in the 2000 Series frame:

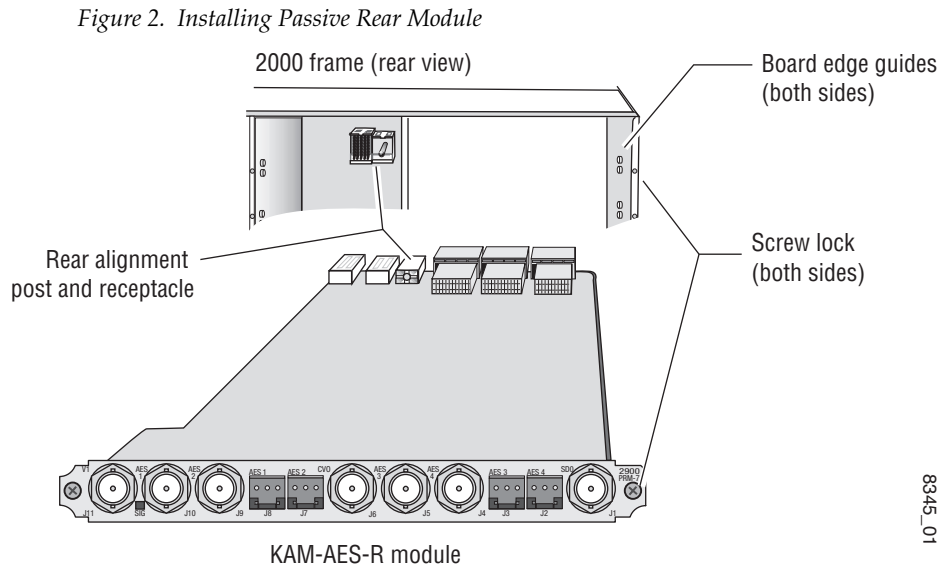
1. Locate a vacant slot in the rear of the 3 RU frame (Figure 1).

Figure 1. 2000T3NG Kameleon Frame, Rear View



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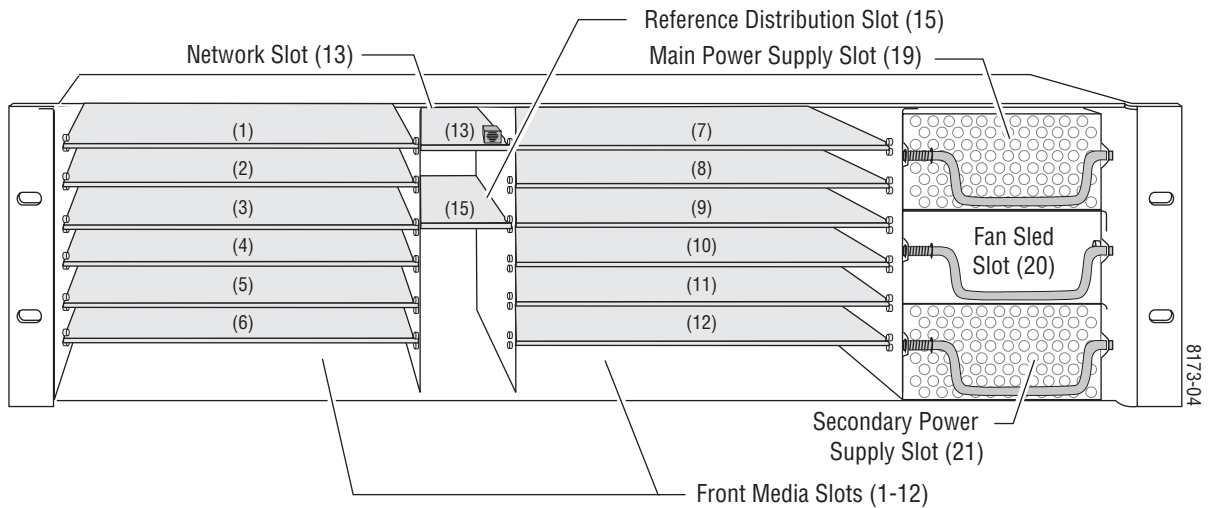
2. Insert the KAM-AES-R passive rear module into the vacant rear slot of the frame as illustrated in Figure 2.



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.

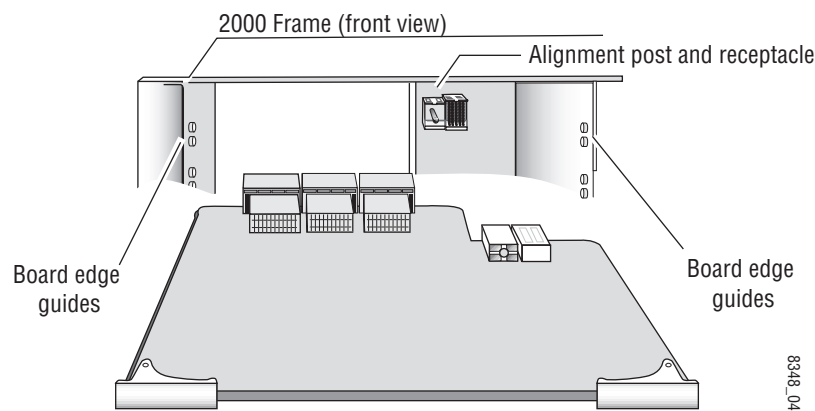
5. Locate the corresponding front media slot (1 -12) in the frame. The 3 RU frame front view is illustrated in [Figure 3](#).

Figure 3. 2000T3NG Kameleon Frame, Front Slots



6. With the component side up, insert the processing module in the corresponding front slot (see [Figure 4](#)).
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 4. Installing Front Media Module



## Cabling

All cabling to the module is done on the KAM-AES-R passive rear module shown in [Figure 5](#).

### SDI Video In

Connect serial digital video to connector J11, labeled **V1**.

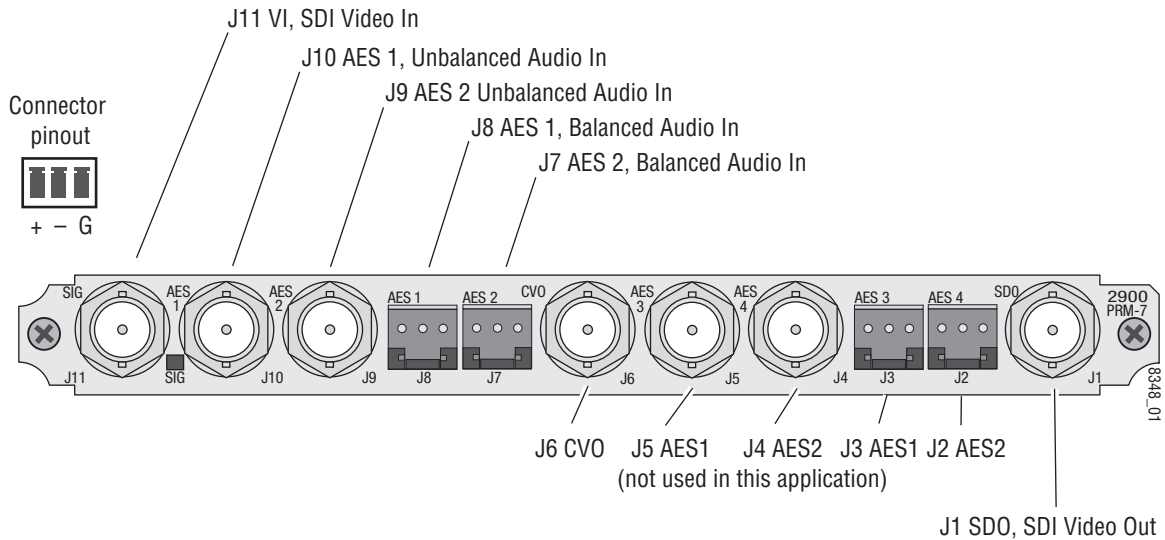
### AES Audio Inputs

Two unbalanced AES audio inputs are available at connectors J9 and J10 or two balanced AES audio inputs are available at connectors J7 and J8. Input type must be configured as explained on the [Input/Output Configuration Web Page on page 28](#). Connect balanced or unbalanced AES audio to the correct type of audio connectors shown in [Figure 5](#).

### SDI Video Out

The SDI video is output at BNC connector J1, labeled **SD0**.

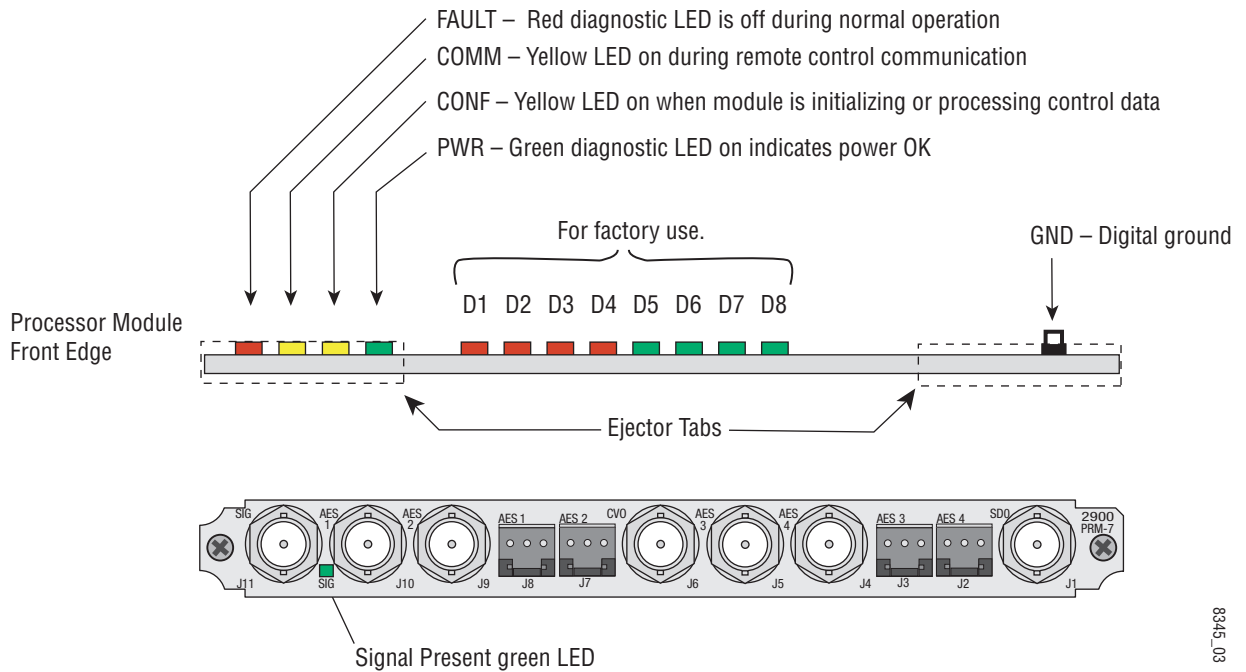
Figure 5. KAM-AES-R Input/Output Connectors



# Power Up

The front LED indicators are illustrated in [Figure 6](#).

Figure 6. Front and Rear Module Indicator LEDs



A green Signal Present LED can be seen on the Passive Rear Module (PRM) when a valid input signal is present.

## Operation Indicator LEDs

Table 2 provides a complete list of possible operating conditions and the resulting indicator status.

A red FAULT LED indicates an error situation. Table 2 describes signal output and LED indications for the various input/reference combinations and user settings.

Table 2. Indicator LEDs and Conditions Indicated

LED	Indication	Condition
<b>Fault (red)</b>	Off	Normal operation
	On continuously	Module has detected internal fault
	Long flash	One of the inputs is missing or is wrong standard
	Short flash	Errors present in SDI and/or AES/EBU input
<b>COMM (yellow)</b>	Off	No activity on frame communication bus
	Three flash/off pattern	Module Location command received from a remote control system
	Short flash	Activity present on the frame communication bus
<b>CONF (yellow)</b>	Off	Module is in normal operating mode
	Three flash/off pattern	Module Location command received from a remote control system
	On continuously	Module is initializing, changing operating modes or updating firmware. (When solid on along with Fault LED on, board has failed to load data.)
<b>PWR (green)</b>	Off	No power to module or module's DC/DC converter failed
	On continuously	Normal operation, module is powered

**Note** The yellow **COMM** and **CONF** LEDs are used for the module location function that is enabled using the 2000NET GUI. The module location function causes these LEDs to repeatedly flash concurrently three times followed by an off state of 900 ms duration (see [Slot Configuration on page 62](#)).

# Configuration and Adjustments

KAM-SD-2AES-MUX 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.

## 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 KAM-SD-2AES-MUX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
Balanced or Unbalanced AES inputs	Unbalanced	Balanced or Unbalanced	I/O Config/ Balanced or Unbalanced radio button	N/A
Input status loss of signal report	Enable	Enable or Disable	Video Input Select/ Input Status Report Loss of Signal checkbox	N/A
Select video line rate	Auto	525, 625, or Auto	Video Input Select/ Video Line Rate radio button	N/A
Frame reference loss of signal report	Enable	Enable or Disable	Video Input Select/ Frame Reference Loss of Signal checkbox	N/A
SDI Input Error status	Warn SDI Errors	Warn SDI Errors or No Warning	Video Input Select/ SDI Input Errors Warn SDI Errors Warn SDI Errors checkbox	N/A
Select output timing source	Video In	Video In or Internal Frame Reference	Video Input Select/ Output Timing Selection radio buttons	N/A
Define VBI data lines	None	525: None, 21/284, 22/285, 23/286 or 24/287 625: None, 24/337, 25/338, 26/339 or 27/340 or 28/341	Video Input Select/ Advanced (VBI Config) radio button VBI/Data Lines Last Data Line radio button	N/A
Main video horizontal timing adjustment	0	525: 0 to 857.5 pixels 625: 0 to 863.5 (0.5 pixel steps)	Frame Sync/ HTiming control (pixels)	HTiming
Main video vertical timing adjustment	0	525: 0 to 524 lines 625: 0 to 624 lines (1 line steps)	Frame Sync/ VTiming control (Lines)	VTiming
Freeze mode selection (Video In timing source)	None	None, Field 1, Field 2, or Frame	Frame Sync/ Freeze Mode Selection radio buttons	N/A
Freeze mode selection (Internal timing source)	None	None, AutoBlack, AutoFreeze, Field 1, Field 2, or Frame	Frame Sync/ Freeze Mode Selection radio buttons	N/A
Enable video processing	Enable	Disable, Enable, or Color Bars	Video Proc/ Video Processing radio buttons	N/A

Table 3. Summary of KAM-SD-2AES-MUX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
Video gain lock	Off	On or Off	Video Proc/ Video Gain Lock radio buttons	N/A
Main video contrast/Y gain	100%	50 to 149.6% (0.4% steps)	Video Proc/Standard View Y Gain control (%)	YGain
Main video chroma gain	100%	50 to 149.6% (0.4% steps)	Video Proc/Standard View Chroma Gain control (%)	ChroGain
Enable Clip controls	Disable	Enable or Disable	Video Proc/Standard View Clip Settings radio buttons	N/A
Apply clips to VBI	Off	On or Off	Video Proc/Standard View Apply Clips to VBI checkbox	N/A
Main video soft/Y black clip	-6.8%	-6.8 to 109% (0.1% steps)	Video Proc/Standard View Soft/Y Black Clip control (%)	YBClip
Main video hard/video black clip	-37.3% (525) -30.0% (625)	-37.3 to -7.3% (525) -30.0 to 0% (625) (0.1% steps)	Video Proc/Standard View Hard/Video Black Clip control (%)	VBClip
Main video soft/Y white clip	109%	-6.8 to 109% (0.1% steps)	Video Proc/Standard View Soft/Y Clip control (%)	YWCclip
Main video hard/video white clip	138.7%	-6.8 to 138.7% (0.1% steps)	Video Proc/Standard View Hard/Video Clip control (%)	VidWClip
Main video brightness/Y offset	0%	-3.55 to 3.44% (0.11% steps)	Video Proc/Advanced View Brightness/Y Offset control (%)	YOffset
Main video hue/chroma phase	0.0	± 89.8 degrees (0.1 degree steps)	Video Proc/Advanced View Hue/Phase control (degrees)	ChroPhs
Main video B-Y gain	100%	50 to 149.6% (0.4% steps)	Video Proc/Advanced View B-Y Gain control (%)	BYGain
Main video B-Y balance/offset	0.0	-3.55 to 3.44% (0.11% steps)	Video Proc/Advanced View B-Y Balance/Offset control (%)	N/A
Main video R-Y gain	100%	50 to 149.6% (0.4% steps)	Video Proc/Advanced View R-Y Gain control (%)	RYGain
Main video R-Y balance/offset	0.0	-3.55 to 3.44% (0.11% steps)	Video Proc/Advanced View R-Y Balance/Offset control (%)	N/A
Embedded audio group deletion	No Delete	Delete Group/No Delete	MUX/ Group Deletion Group 1-4 Delete checkboxes	N/A
Clear all HANC data in SDI video in	Don't Clear	Clear or Don't Clear	MUX/ Clear all HANC data checkbox	N/A
Mux group insert to Stream A and B	No Insert	Insert or No insert	MUX/ Group Insertion Insert checkboxes	N/A
Mux group number for insertion	Group 1	Group 1 to Group 4	MUX/ Group number radio buttons	N/A
Mux Bits/Sample rate	20 Bits	20 or 24 bits	MUX/ 20 or 24 Bit radio buttons	N/A
Blank SDI VBI lines (line-by-line)	Not Blanked	Blank/Not Blanked	VBI SDI/ Field 1/Field 2 Blank VBI line checkboxes	N/A
Apply clips set in video processor to all VBI lines	Not Apply	Apply /Not Apply	VBI SDI/ Apply Clips to VBI checkbox	N/A
AES input sample rate	Disable	Enable or Disable	AES Inputs/ Sample Rate Convert disable radio button	N/A



Table 3. Summary of KAM-SD-2AES-MUX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
AES input loss of signal report	Enable	Enable or Disable	AES Inputs/ Loss of Signal Report checkbox	N/A
AES input AES error warning	Enable	Enable or Disable	AES Inputs/ AES Error Warn checkbox	N/A
Audio Pair 1 and Pair 2 channel swap	–	–	Audio Channel Pairing/ Pair 1 and 2 Ch A and Ch B radio buttons	Pair1Swp Pair2Swp
Define audio Pair 1 and Pair 2 Ch A and Ch B audio streams	Pair1ChA= Str1.Ch1 Pair1ChB= Str1.Ch2 Pair2ChA= Str2.Ch1 Pair2ChB= Str2.Ch2	Str1.Ch1 Str1.Ch2 Str2.Ch1 Str2.Ch2 Silence	Audio Channel Pairing/ Pair 1 and 2 Ch A and Ch B radio buttons	Str1.Ch1 Str1.Ch2 Str2.Ch1 Str2.Ch2 Silence
Enable auto tracking for Pair 1 and 2 Ch A and Ch B	Off	On or Off	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B Enable Auto Track On checkbox	N/A
Lock Pair 1 Ch A and Ch B delay adjustments and Pair 2 Ch A and Ch B delay adjustments	Unlocked	Lock or Unlocked	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B Channel Lock Locked checkbox	N/A
Audio Pair 1 Ch A delay adjust Audio Pair 1 Ch B delay adjust Audio Pair 2 Ch A delay adjust Audio Pair 2 Ch B delay adjust	0	0 to 5180 ms (20 ms steps)	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B Delay controls (ms)	Ch1ADly Ch1BDly Ch2ADly Ch2BDly
Select audio processing option for Pair 1 Ch A' and Ch B' and Pair 2 Ch A' and Ch B'	Pass	Pass Invert, A+B A – B, -(A+B) 1 kHz 400 Hz Silence	Audio Proc/ Pair 1 and Pair 2 Ch A' and Ch B' Processing pulldowns	Ch1AProc Ch1BProc Ch2AProc Ch2BProc
Lock Pair 1 Ch A and Ch B gain adjustments and Pair 2 Ch A and Ch B gain adjustments	Unlocked	Lock or Unlocked	Audio Proc/ Pair 1 and Pair 2 Ch A and Ch B Locked checkbox	N/A
Audio Pair 1 Ch A gain adjust Audio Pair 1 Ch B gain adjust Audio Pair 2 Ch A gain adjust Audio Pair 2 Ch B gain adjust	0 dB	-40 to + 6 dB	Audio Proc/ Pair 1 and Pair 2 Ch A and Ch B Gain controls (dB)	Ch1AGain Ch1BGain Ch2AGain Ch2BGain

## Newton Control Panel Configuration

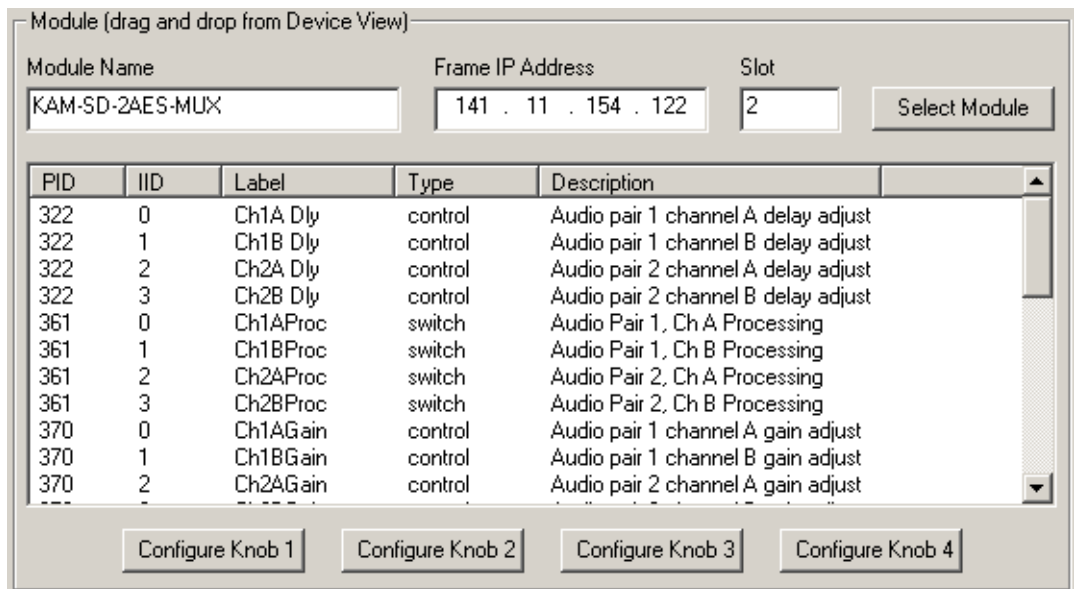
A Newton Control Panel (hard or soft version) can be interfaced to the Kameleon 2000 Series frame over the local network. Control panel access offers the following considerations for module configuration and monitoring:

- 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 15](#).

An example of the Newton Configurator is shown in [Figure 7](#).

Figure 7. 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 8 on page 20](#). 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 3.2.2.

Figure 8. 2000NET GUI

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

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

Refresh button for manual update of page

**Status**

Model: 2000T3N Description: Module Frame  
 Frame Location: Mod Lab - Bay 2  
 Frame Health Alarm ALARM Temperature Status Pass  
 Fan Status PASS

Media Module	Net Card	Empty	Power Sled
Media Module		Empty	
Media Module	Aux Card	Media Module	Empty
Media Module		Empty	
Media Module		Empty	Power Sled
Media Module		Media Module	

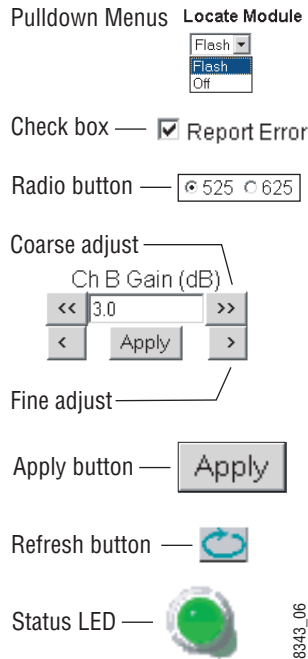
**Properties**  
 Vendor Thomson, Grass Valley Software Version 3.2.2  
 Media Slots 13

**Navigation Links:**  
[Bay 2 QA 2000 Frame](#)  
[Status](#)  
[Configuration](#)  
[1 KAM-ENC-2AES-DMX](#)  
[2 KAM-SD-2AES-MUX](#)  
[3 KAM-SD-2AES-MUX](#)  
[4 KAM-SD-2AES-EAP](#)  
[5 Media Slot 5](#)  
[6 Media Slot 6](#)  
[7 Media Slot 7](#)  
[8 Media Slot 8](#)  
[9 Media Slot 9](#)  
[10 Media Slot 10](#)  
[11 Media Slot 11](#)  
[12 Media Slot 12](#)  
[13 2000NET](#)  
[15 Sync Slot](#)  
[19 Power Sled 19](#)  
[20 Fan Sled 20](#)  
[21 Power Sled 21](#)

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## 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 3.2.2 or later):



- Pull-down menus allow you to choose selections from a list.
- 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.
- Radio buttons are used to make a choice of one parameter in a group.
- Each numerical adjustment control has a **Coarse** adjust button (left and right top double arrows) and a **Fine** adjust button (left and right bottom single arrows).
- To change a value, use the arrow button controls or enter a value into the number field and select the **Apply** button. You may also enter a number into the number field from a keyboard and hit the **Enter** key to apply the value.
- A **Refresh** button (circular arrow) is provided for manual refresh of the web page to view recently changed parameters.
- The Status LED is explained below.

### Status and Identification Header

Each configuration web page has a Status and Identification Header.

Figure 9. Typical Status/ID Header



### **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

### **Variables:**

- Model and Description are read-only generated by the module.
- Frame Location is entered in 2000 Series Kameleon Frame configuration.
- Slot number reports the module's location in the frame.
- Last Recalled E-MEM reports the last E-MEM configuration recalled from the module.

## **Initial Configuration Process Overview**

To configure the Kameleon module proceed as follows:

1. Go to the **I/O Config** web page to setup and name inputs and outputs.
2. If not already connected, connect all input and output signals. Go to the module **Status** web page to verify component and signal presence and condition.
3. Go to the **Video Input Select** web page to configure the video source and output timing source.
4. Go to the **MUX** web page if you are multiplexing audio into the output video signal.
5. Go to the **Functional View** web page to:
  - Verify the module's functional configuration is correct, and
  - Begin with the Input block links to configure each function in turn.

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

6. Use **E-MEM** memory to store or recall configurations as necessary.

## KAM-SD-2AES-MUX Links and Web Pages

The 2000 GUI provides the following links and web pages for the module (Figure 10):

- Status – reports input and reference signal status and module information (page 25),
- I/O Config – shows a graphic representation of inputs and outputs to the module and allows naming of each input (page 28),
- Functional View – shows a block diagram of the module with links to each configuration web page (page 31),
- Module Configuration web pages for setting up the module (beginning on page 32),
- E-MEM – provides a Standard view for Local Recall operations for up to 5 E-MEM registers (page 57) and an Advanced view providing additional **Save to** and **Load from** file operations (page 58),
- Slot Config – provides a Locate Module function, Slot Identification and Memory, and SNMP trap enable/disable controls (page 62), and
- Software Update – allows updating of software from a CD-ROM or the web site (page 65).

Figure 10. KAM-SD-2AES-MUX Web Page Links

### 2 KAM-SD-2AES-MUX

[Status](#)

[I/O Config](#)

[Functional View](#)

- [SDI In](#)

- [Video Input Select](#)

- [Frame Sync](#)

- [Video Proc](#)

- [MUX](#)

- [VBI SDI](#)

- [AES Inputs](#)

- [Audio Channel Pairing](#)

- [Audio Sync](#)

- [Audio Proc](#)

[E-MEM®](#)

[Slot Config](#)

[Software Update](#)



## Status Web Page

Use  
this  
link

[2 KAM-SD-2AES-MUX](#)

[Status](#)

[I/O Config](#)

[Functional View](#)

- [SDI In](#)

- [Video Input Select](#)

- [Frame Sync](#)

- [Video Proc](#)

- [MUX](#)

- [VBI SDI](#)

The Status web page for the KAM-SD-2AES-MUX module ([Figure 11 on page 26](#)) 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 21](#)),
- Color-coded communication status for each component and path,
- Summary of all fault/warning conditions, and
- Textual module status, front module, and submodule properties.

## Color-coded Status Indicators and Links

Each box represents a Kameleon module as indicated in [Figure 11 on page 26](#). 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.
- Grey = Not monitored.
- White = Not present.

## 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 asset tag number for the KAM-SD-2AES-MUX module.

## Submodule Properties

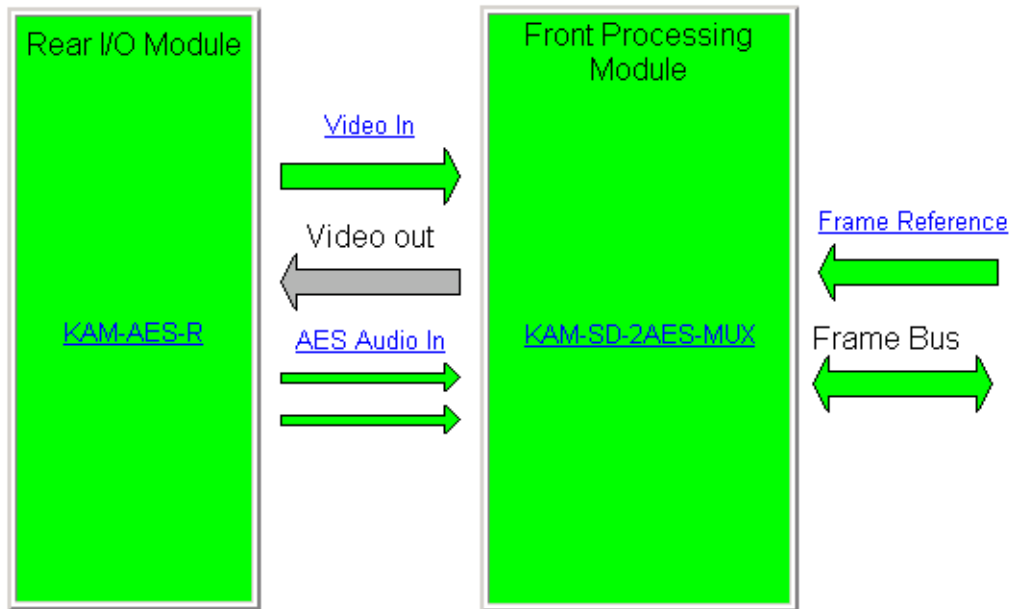
The Submodule properties in the footer provide a textual summary of the color-coded submodule status. Submodules are not supported in this module version.

Figure 11. Module and Signal Status



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
Last Recalled E-MEM: [Factory Defaults](#)

### Kameleon Module Physical Structure



#### Status:

Front Module: [PASS](#)  
Rear Module: [PASS](#)  
Sub Module 1: [NOT SUPPORTED](#)  
Sub Module 2: [NOT SUPPORTED](#)

#### Front Module:

Part Number: [671-6428](#)  
Serial Number: [VR02376374](#)  
Hardware Revision: [34A](#)  
Firmware Version: [X1=2.255, X2=2.3.2](#)  
Software Version: [4.0.1](#)  
Asset Tag:

[Warning and Fault summary section](#)

## Warning/Fault Summary

The warnings and faults shown below are reported in the summary section of the Status web page (Figure 11 on page 26). 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.

### Warnings

- WARNING - Rear Module is not connected
- WARNING - Wrong Rear Module (incompatible with Kameleon)
- WARNING - Wrong Rear Module (no communication)
- WARNING - Wrong Rear Module (unknown type, incompatible)
- WARNING - Video Input is 625 and reference is 525 lines
- WARNING - Video Input is 525 and reference is 625 lines
- WARNING - Video Input is 625 but configuration is 525 lines
- WARNING - Video Input is 525 but configuration is 625 lines
- WARNING - Video Input Signal not detected
- WARNING - Frame Reference is not present
- WARNING - Frame Reference is not locked to input
- WARNING - Frame Reference is not present
- WARNING - No Video output - GenLock selected but not present
- WARNING - 1 or more Audio Input signals not detected
- WARNING - 1 or more Audio Input signals have had AES stream errors
- Internal Error - Unknown submodule type

### Faults

- FAULT - nnV power supply bad. (nn = variable: 24 V, 12.5 V, 5 V, 3.3 V, 1.5 V, -5 V, or -12.5 V)
- FAULT - A/D failed (A /D system measuring power supplies and bus levels)
- FAULT - Xilinx 1 failure (main video processor)
- FAULT - Xilinx 2 failure (main audio processor)
- FAULT - MFM (Multi-function module) EEPROM checksum fails
- FAULT - DS1803 not responding (digital potentiometer for video in adjustment)
- Internal Error - Unknown front module type

## Input/Output Configuration Web Page

- Use this link
- [2 KAM-SD-2AES-MUX](#)
  - [Status](#)
  - [I/O Config](#)
  - [Functional View](#)
  - [SDI In](#)
  - [Video Input Select](#)
  - [Frame Sync](#)
  - [Video Proc](#)

Use the I/O Config web page to:

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

Figure 12 illustrates the I/O Config web page for the KAM-AES-R passive rear module required for the KAM-SD-2AES-MUX front module with unbalanced audio inputs selected (**Unbalanced** radio button selected).

**Note** Only the selected AES inputs are valid. Unconfigured AES inputs are invalid and should not be used.

Figure 12. KAM-AES-R Rear Module Configuration Web Page (Unbalanced AES In)

**I/O Config**

Model: KAM-SD-2AES-MUX Description: Frame Sync, Proc Amp, SD/2AES to SD/2Embed  
 Frame Location: Bay 1 QA 2000 Frame , Slot: 2  
 Last Recalled E-MEM: Factory Defaults

**KAM-AES-R Rear Module Configuration**

J11 VI Video In	J10 AES 1 Unbalanced Audio	J9 AES 2 Unbalanced Audio	J8 AES 1 Balanced Audio	J7 AES 2 Balanced Audio	J6 CVO	J5 AES 3 Unbalanced Audio	J4 AES 4 Unbalanced Audio	J3 AES 3 Balanced Audio	J2 AES 4 Balanced Audio	J1 SDO Serial Digital
Input	Input	Input								Output
Video In	AES In 1 Unbal	AES In 2 Unbal	AES In 1 Bal	AES In 2 Bal						SD Output
Present	Present	Present	Not Avail	Not Avail	Unused	Unused	Unused	Unused	Unused	Not Monitored
	<input checked="" type="radio"/> Unbalanced <input type="radio"/> Balanced									

Select AES input type

**Legend:**

- Present
- Not Present
- Not Monitored
- Not Available
- Unused

Figure 12 illustrates the I/O Config web page for the KAM-AES-R passive rear module required for the KAM-SD-2AES-MUX front module with balanced audio inputs selected (**Balanced** radio button selected).

Figure 13. KAM-AES-R Rear Module Configuration Web Page (Balanced AES In

**I/O Config**

Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
 Last Recalled E-MEM: [Factory Defaults](#)

**KAM-AES-R Rear Module Configuration**

J11 VI Video In	J10 AES 1 Unbalanced Audio	J9 AES 2 Unbalanced Audio	J8 AES 1 Balanced Audio	J7 AES 2 Balanced Audio	J6 CVO	J5 AES 3 Unbalanced Audio	J4 AES 4 Unbalanced Audio	J3 AES 3 Balanced Audio	J2 AES 4 Balanced Audio	J1 SDO Serial Digital
Input			Input	Input						Output
Video In	AES In 1 Unbal	AES In 2 Unbal	AES In 1 Bal	AES In 2 Bal						SD Output
Present	Not Avail	Not Avail	Present	Present	Unused	Unused	Unused	Unused	Unused	Not Monitored
<input type="radio"/> Unbalanced <input checked="" type="radio"/> Balanced										

Select AES input type

**Legend:**

- Present
- Not Present
- Not Monitored
- Not Available
- Unused

## Web Page Elements

Each element of I/O Config web page is summarized below.

### 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 type of rear module and front processor module installed (refer to the [Functional View Web Page](#) on page 31).

### Connectors

The connector row illustrates connector type provided (BNC or 3-pin terminal) for each port. For this rear module, one serial digital video input, two AES audio inputs, and one serial digital output are supported.

### Input/Output Mode

I/O mode is either static read-only or an operational Input/Output selection (determined by the rear module used).

### Signal Name

Enter a signal name (up to 15 characters) for each operational input/output. The name will be used to identify the signal in other configuration web pages. Factory default names are shown in [Figure 13 on page 29](#).

### Status

[Table 4](#) shows, by color and signal type, the signal status reports that may be displayed in the Status row for this module configuration:

*Table 4. I/O Config Status Report Messages*

<b>Color</b>	<b>Video In</b>	<b>Analog Audio In</b>	<b>Analog Audio Out</b>	<b>Digital Audio In</b>	<b>Digital Audio Out</b>	<b>Video Out</b>
<b>Green</b>	Present	None	None	Present	None	None
<b>Yellow</b>	Not present or 525/625 mismatch	None	None	Not Present	None	None
<b>Light Grey</b>	None	None	None	None	None	Not Monitored
<b>Medium Grey</b>	None	None	None	Not Available	None	None
<b>Dark Grey</b>	None	None	None	None	Unused	None

## Functional View Web Page

- Use this link →
- [2 KAM-SD-2AES-MUX](#)
  - [Status](#)
  - [I/O Config](#)
  - [Functional View](#)
  - [SDI In](#)
  - [Video Input Select](#)
  - [Frame Sync](#)
  - [Video Proc](#)

Use the Functional View web page (Figure 14) to:

- Monitor module functions and signal paths, and
- Navigate to web pages for configuring active functions.

The Functional View web page is a block diagram of the installed Kameleon module that reports the 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. Begin configuring with one of the input function blocks on the left.

Color coding indicates active functions and flow. Greyed components are inactive due to hardware and/or software constraints. Underlined module functions are links to the web page for that function. Return links and logical next step links are provided at the bottom of each configuration web page.

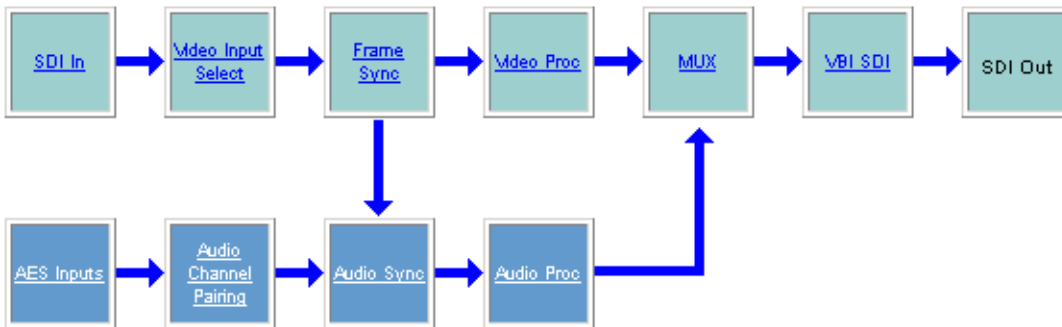
Figure 14. Functional View Web Page

### Functional View

Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2AES to SD/2Embed](#)

Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2

Last Recalled E-MEM: [Factory Defaults](#)



## SDI In Web Page

- Use this link
- [2 KAM-SD-2AES-MUX](#)
  - [Status](#)
  - [I/O Config](#)
  - [Functional View](#)
  - [SDI In](#)
  - [Video Input Select](#)
  - [Frame Sync](#)
  - [Video Proc](#)

Use the SDI In web page to view the status of the SDI input signal in Summary view (Figure 15) or Detail view (Figure 16 on page 33):

- Select the **Summary** radio button to bring up the summary view shown in Figure 15.
- Use the **Clear All Status** button to clear and reset the status reporting.

Figure 15. SDI In Web Page (Summary View)



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection:  Summary  Detail

Input Signal Name	<a href="#">Video In</a>
Input Signal State	<a href="#">Present</a>
Input Signal Standard	<a href="#">525</a>
Current State	<a href="#">No Error</a>
Reported Errors	<a href="#">No Error</a>
<input type="button" value="Clear All Status"/>	

[Functional View](#)   [Next](#)

To view a detailed view of the SDI input status, select the **Detail** radio button to bring up the view shown in Figure 16 on page 33.

This view provides input signal status for both EDH Error and Feed Forward status. Each status report can be disabled by deselecting the corresponding **Reporting** checkbox. Each status report can also be cleared and reset by selecting the corresponding **Clear Status** button.



Figure 16. SDI In Web Page (Detail View)



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection:  Summary  Detail

Input Signal Name	<a href="#">Video In</a>
Input Signal State	<a href="#">Present</a>
Input Signal Standard	<a href="#">525</a>
Current State	<a href="#">No Error</a>
Reported Errors	<a href="#">No Error</a>
<input type="button" value="Clear All Status"/>	

EDH Errors	Error Reporting	Status	
Full Frame EDH Error Detection	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
Active Picture EDH Error Detection	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
Feed Forward Status	Error Reporting	Status	
UES Full Field	<input checked="" type="checkbox"/> Report Unknown	<a href="#">Known</a>	<input type="button" value="Clear Status"/>
EDH Full Field	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
IDH Full Field	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
EDA Full Field	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
IDA Full Field	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
UES Active Picture	<input checked="" type="checkbox"/> Report Unknown	<a href="#">Known</a>	<input type="button" value="Clear Status"/>
EDH Active Picture	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
IDH Active Picture	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
EDA Active Picture	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
IDA Active Picture	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
UES Ancilliary Data	<input checked="" type="checkbox"/> Report Unknown	<a href="#">Known</a>	<input type="button" value="Clear Status"/>
EDH Ancilliary Data	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
IDH Ancilliary Data	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
EDA Ancilliary Data	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>
IDA Ancilliary Data	<input checked="" type="checkbox"/> Report Error	<a href="#">No Error</a>	<input type="button" value="Clear Status"/>

[Functional View](#) [Next](#)

## Video Input Select Web Page

- Use  
this  
link
- [I/O Config](#)
  - [Functional View](#)
  - [SDI In](#)
  - [Video Input Select](#)
  - [Frame Sync](#)
  - [Video Proc](#)
  - [MUX](#)
  - [VBI SDI](#)
  - [AES Inputs](#)

Use the Video Input Select web page (Figure 17 on page 35) to:

- Configure input video line rate,
- Enable or disable Loss of Signal reporting to the Status web page and SNMP monitoring (refer to 2000NET manual for SNMP information),
- Configure Vertical Blanking Interval (in Advanced mode), and
- Select the output timing reference.

### View Selection

In the View Selection display, choose the **Standard** radio button to display the standard settings shown in Figure 17. Use the **Advanced** view for configuring the Vertical Blanking Interval for selecting active video lines to carry data (see *Advanced VBI Configuration* on page 36).

### Video Selection Settings

The following functions are provided in the Video Selection section in both the Standard and Advanced views:

- Input Name – (read-only) signal name is entered on the **I/O Config** web page
- Input Status –
  - Signal presence reported
  - Enable/disable Loss of Signal report to both Kameleon status web pages and SNMP monitoring devices.

**Note** The disabling of video and reference Loss of Signal reports and SDI Input Error warnings allow you to filter reports from higher level Kameleon status displays and SNMP monitoring. They will still be reported on this web page.

- Video Format – current input video format reported.
- Video Line Rate – select 525 or 625 line rate or enable automatic line rate detection
- Frame Reference –
  - 2000GEN frame reference signal presence reported,
  - Enable/disable Loss of Signal report to both Kameleon status web pages and SNMP monitoring devices.
- SDI Input Errors –
  - Input signal errors reported, and
  - Enable/disable SDI error warning report to both Kameleon status web pages and SNMP monitoring devices.

- Frame Sync/Delay – (read-only) Frame Sync mode is reported when Output Timing Selection is **Internal Frame Reference** and timing is provided from the 2000GEN module. Frame Delay mode is reported when the input signal (**Video In**) is used for timing reference.

## Output Timing Selection

The 2000GEN reference module must be installed in the frame and for the Kameleon to work as a frame synchronizer, set the output timing source to **Internal Frame Reference**. Otherwise, set the output timing source to **Video In**.

Figure 17. Video Input Select – Standard View

### Video Input Select

Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection:  Standard  Advanced (VBI Config)

#### Video Selection

	Current	Selection
Input Name	<a href="#">Video In</a>	
Input Status	<a href="#">Present</a>	<input checked="" type="checkbox"/> Report Loss of Signal
Video Format	<a href="#">SDI</a>	<a href="#">SDI</a>
Video Line Rate	<a href="#">525</a>	<input type="radio"/> 525 <input type="radio"/> 625 <input checked="" type="radio"/> Auto
Frame Reference	<a href="#">Present</a>	<input checked="" type="checkbox"/> Report Loss of Signal
<a href="#">SDI Input Errors</a>	<a href="#">Clear</a>	<input checked="" type="checkbox"/> Warn SDI Errors
Frame Sync / Delay	<a href="#">Frame Sync</a>	

#### Output Timing Selection

	Source	Status	Mode	GenLock	Audio Framing
Internal Frame Reference	<input checked="" type="radio"/>	<a href="#">Present</a>	<a href="#">525</a>	<a href="#">Locked</a>	<a href="#">Free Run</a>
Video In	<input type="radio"/>	<a href="#">Present</a>	<a href="#">525</a>	-	-

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## Advanced VBI Configuration

Advanced VBI configuration allows you 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.

To add Data Lines to VBI:

1. Choose **Advanced (VBI Config)** on the Video Input Select web page (Figure 18).

Figure 18. Standard and Advanced View Selection

### Video Input Select

Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
Last Recalled E-MEM: [Factory Defaults](#)

View Selection:	<input type="radio"/> Standard	<input checked="" type="radio"/> Advanced (VBI Config)
-----------------	--------------------------------	--

The **VBI/Data Lines** panel will appear at the bottom of the web page (see [Figure 19 on page 37](#) for 525 line rate and [Figure 20 on page 37](#) for 625 line rate).

2. 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 for lines 21/284 and 22/285 in [Figure 19](#) and lines 24/337 and 25/338 in [Figure 20](#).

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

Figure 19. Advanced VBI Configuration – 525 Line Rate

Current Line Rate	525					
View Selection:	<input checked="" type="radio"/> 525 <input type="radio"/> 625					

**VBI / Data Lines**

<b>Field 1 Lines</b>	1-20	21	22	23	24	25-263
VBI Lines	[Blue Bar]					
Reserved for Data		[Blue Bar]	[Blue Bar]			
Picture Lines				[Blue Bar]	[Blue Bar]	[Blue Bar]
<b>Field 2 Lines</b>	264-283	284	285	286	287	288-525
VBI Lines	[Blue Bar]					
Reserved for Data		[Blue Bar]	[Blue Bar]			
Picture Lines				[Blue Bar]	[Blue Bar]	[Blue Bar]
<b>Last Data Line</b>	<input type="radio"/> none <input type="radio"/> 21/284 <input checked="" type="radio"/> 22/285 <input type="radio"/> 23/286 <input type="radio"/> 24/287					

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Figure 20. Advanced VBI Configuration – 625 Line Rate

Current Line Rate	625						
View Selection:	<input type="radio"/> 525 <input checked="" type="radio"/> 625						

**VBI / Data Lines**

<b>Field 1 Lines</b>	624-23	24	25	26	27	28	29-310
VBI Lines	[Blue Bar]						
Reserved for Data		[Blue Bar]	[Blue Bar]				
Picture Lines				[Blue Bar]	[Blue Bar]	[Blue Bar]	[Blue Bar]
<b>Field 2 Lines</b>	311-336	337	338	339	340	341	342-623
VBI Lines	[Blue Bar]						
Reserved for Data		[Blue Bar]	[Blue Bar]				
Picture Lines				[Blue Bar]	[Blue Bar]	[Blue Bar]	[Blue Bar]
<b>Last Data Line</b>	<input type="radio"/> none <input type="radio"/> 24/337 <input checked="" type="radio"/> 25/338 <input type="radio"/> 26/339 <input type="radio"/> 27/340 <input type="radio"/> 28/341						

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## Frame Sync Web Page

- Use this link
- [I/O Config](#)
  - [Functional View](#)
  - [SDI In](#)
  - [Video Input Select](#)
  - [Frame Sync](#)
  - [Video Proc](#)
  - [MUX](#)
  - [VBI SDI](#)

Use the Frame Sync web page (Figure 21 on page 39 and Figure 22 on page 39) to:

- Adjust horizontal and vertical timing, and
- Freeze the current output or, if using a 2000GEN reference signal, select an automatic freeze mode for output when the signal is lost.

## Timing Adjustment

Table 5 shows the ranges of timing adjustment for 525 and 625 signal formats.

Table 5. Timing Adjustment Ranges

Line Rate	Max Horizontal Adjustment	Max Vertical Adjustment
525/NTSC	857.5 pixels	524 lines
625/PAL	863.5 pixels	624 lines

## Freeze Mode Selection

The Freeze mode controls available depend on the output timing reference selected on the [Video Input Select Web Page](#) on page 34.

When set to Frame Delay mode (using the **Video In** output timing reference), Freeze Mode allows you to manually freeze the output using **Field 1**, **Field 2**, or one **Frame** (Figure 21 on page 39). A field freeze provides less resolution and no motion artifacts in the output. In Frame mode the resolution is higher since both fields are present, but the presentation of two fields can cause motion artifacts.

**Frame Sync** mode (using the 2000GEN **Internal Frame Reference** as the output timing reference) provides the manual activation selections plus **AutoBlack** and **AutoFreeze** modes to be used when the video signal is lost (Figure 22 on page 39). AutoBlack outputs a black signal while AutoFreeze outputs the last complete video field.

Figure 21. Frame Synchronizer Web Page – Video In Reference



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
 Last Recalled E-MEM: [Factory Defaults](#)

**Timing Adjustment**

H Timing (pixels)		V Timing (lines)	
<<	0.0	>>	
<	Apply	>	

**Freeze Mode Selection**

Freeze Mode  None  Field 1  Field 2  Frame

[Back](#)   [Functional View](#)   [Next \(Video\)](#)  
[Next \(Audio\)](#)

Figure 22. Frame Synchronizer Web Page – Internal Frame Reference



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
 Last Recalled E-MEM: [Factory Defaults](#)

**Timing Adjustment**

H Timing (pixels)		V Timing (lines)	
<<	0.0	>>	
<	Apply	>	

**Freeze Mode Selection**

Freeze Mode  None  AutoBlack  AutoFreeze  Field 1  Field 2  Frame

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[Next \(Audio\)](#)

## Video Processing Web Page

- Use  
this  
link
- [I/O Config](#)
  - [Functional View](#)
  - [SDI In](#)
  - [Video Input Select](#)
  - [Frame Sync](#)
  - [Video Proc](#)
  - [MUX](#)
  - [VBI SDI](#)
  - [AES Inputs](#)
  - [Audio Channel Pairing](#)

Use the Video Proc web page to:

- Enable/disable Standard or Advanced video processing,
- Turn on Color Bars test signal,
- Enable/disable video gain lock,
- Adjust component video gain (Y, B-Y, R-Y),
- Adjust component video DC Offset (Y, B-Y, R-Y),
- Enable/disable soft and hard clipping controls, and
- Apply selected clip settings to VBI.

## Video Processing Controls

### Video Processing Enable

To bypass Video Processing on the SDI signal select **Disable** (Figure 23 on page 41). To make video processing adjustments to the SDI signal select **Enable** or select **Color Bars** to use the internally generated 100% vertical color bars test signal.

Two modes of video processing are available, Standard or Advanced. With **Standard** selected, only the Y Channel Video Processing controls on the left will be visible along with the clipping controls.

When **Advanced** is selected, the B-Y and R-Y Gain and Balance/Offset controls will also be displayed as shown in Figure 24 on page 43.

### Standard View

In Standard View (Figure 23 on page 41), adjust the following for the Y Channel:

- Contrast/Y Gain – adjust the percentage of luminance relative to white (50 to 149.6%).
- Saturation/Chroma Gain – adjust the percentage of saturation and chroma gain relative to 100% saturation (50 to 149.6%).
- Brightness/Y Offset – adjust the amount of brightness/Y offset in mV (-3.55 to 3.44%)
- Hue/Chroma Phase – adjust the hue/chroma phase in degrees (-89.8 to 89.8 degrees).



Figure 23. Video Processing Web Page – Standard View

 **Video Proc** 

Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)

Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2

Last Recalled E-MEM: [Factory Defaults](#)

View Selection:  Standard  Advanced

**Video Processing Controls**

Video Processing: <input type="radio"/> Disable <input checked="" type="radio"/> Enable <input type="radio"/> Color Bars	
Video Gain Lock: <input type="radio"/> On <input checked="" type="radio"/> Off	
Contrast/Y Gain (%) <input type="text" value="100.0"/> <input type="button" value="Apply"/>	Saturation/Chroma Gain (%) <input type="text" value="100.0"/> <input type="button" value="Apply"/>
Brightness/Y Offset (%) <input type="text" value="0.00"/> <input type="button" value="Apply"/>	Hue/Chroma Phase (Deg) <input type="text" value="0.0"/> <input type="button" value="Apply"/>

**Clipping Controls**

Clip Settings: <input checked="" type="radio"/> Disable <input type="radio"/> Enable	
<input type="checkbox"/> Apply clips to VBI	
Soft/Y White Clip (%) <input type="text" value="109.0"/> <input type="button" value="Apply"/>	Hard/Video White Clip (%) <input type="text" value="138.7"/> <input type="button" value="Apply"/>
Soft/Y Black Clip (%) <input type="text" value="-6.8"/> <input type="button" value="Apply"/>	Hard/Video Black Clip (%) <input type="text" value="-37.3"/> <input type="button" value="Apply"/>

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## Advanced View

In Advanced View ([Figure 24 on page 43](#)), adjust the following for the B-Y and R-Y Channels:

**Note** To adjust gain for all channels simultaneously, set **Video Gain Lock** to **On**. This locks Y, B-Y, and R-Y adjustments together. Adjustment of one gain setting changes all gain values (Y, B-Y, R-Y) the same amount.

- B-Y/R-Y Gain – adjust the percentage of B-Y and R-Y gain relative to 100% (50 to 149.6%).
- B-Y/R-Y Balance/Offset – adjust the amount of B-Y and R-Y DC offset in mV (-3.55 to 3.44%)

## Clipping Controls

Clipping controls are provided that affect the luminance (soft/Y) and overall saturation (hard/video) levels of the output signal.

Refer to [Figure 24 on page 43](#). To enable the clip controls select the **Enable** radio button. You may also apply the clip levels to the vertical blanking interval by checking the **Apply clips to VBI** box. This control is also available on the VBI SDI web page ([page 49](#)).

Use the following clipping controls to adjust levels on the video output:

- Use the **Soft/Y White Clip** control to set the clipping level for the top end (white) of the luminance signal (positive excursions).
- Use the **Soft/Y Black Clip** control to set the clipping level for the bottom end (black) of the luminance signal (negative spikes and Super Black).
- Use the **Hard/Video White Clip** control to set the clipping level for the top end (white) of the overall video signal (clips white and reduces overall saturation level to fit within clip).
- Use the **Hard/Video Black Clip** control to set the clipping level for the bottom end (black) of the overall video signal (clips black and reduces overall saturation level to fit within clip).

## Reset To Default

Select the **Reset To Default** button on the bottom of the screen to return all values to the factory defaults.

Figure 24. Video Processing Web Page – Advanced View



Model: KAM-SD-2AES-MUX Description: Frame Sync, Proc Amp, SD/2AES to SD/2Embed  
 Frame Location: Bay 1 QA 2000 Frame , Slot: 2  
 Last Recalled E-MEM: Factory Defaults

View Selection:  Standard  Advanced

**Video Processing Controls**

Video Processing: <input type="radio"/> Disable <input checked="" type="radio"/> Enable <input type="radio"/> Color Bars			
Video Gain Lock: <input type="radio"/> On <input checked="" type="radio"/> Off			
Contrast/Y Gain (%) << 100.0 >> < Apply >	Saturation/Chroma Gain (%) << 100.0 >> < Apply >	B-Y Gain (%) << 100.0 >> < Apply >	R-Y Gain (%) << 100.0 >> < Apply >
Brightness/Y Offset (%) << 0.00 >> < Apply >	Hue/Chroma Phase (Deg) << 0.0 >> < Apply >	B-Y Balance/Offset (%) << 0.00 >> < Apply >	R-Y Balance/Offset (%) << 0.00 >> < Apply >

**Clipping Controls**

Clip Settings: <input checked="" type="radio"/> Disable <input type="radio"/> Enable	
<input type="checkbox"/> Apply clips to VBI	
Soft/Y White Clip (%) << 109.0 >> < Apply >	Hard/Video White Clip (%) << 138.7 >> < Apply >
Soft/Y Black Clip (%) << -6.8 >> < Apply >	Hard/Video Black Clip (%) << -37.3 >> < Apply >

Reset to Default

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## MUX Web Page

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Use this link

Use the MUX (multiplex) web page (Figure 28 on page 47) to:

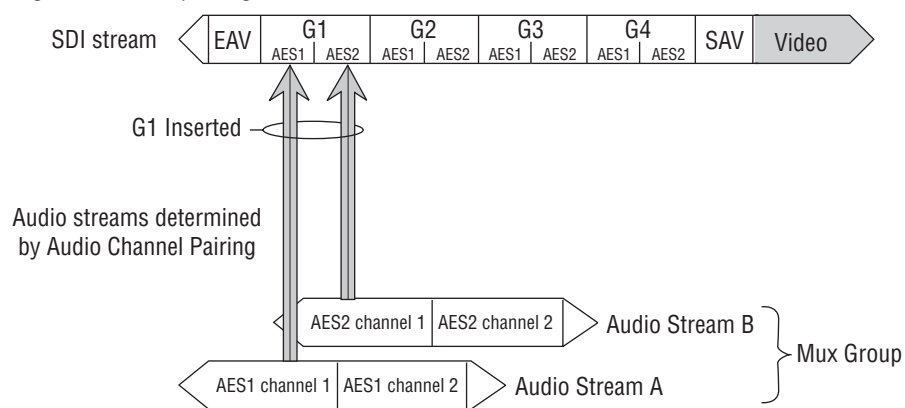
- Delete unwanted embedded audio groups from the SDI input signal or delete all horizontal ancillary data (HANC) in all audio groups, and
- Insert or replace audio groups in the SDI video output with external AES inputs that have been configured in the Audio Processor.

**Note** The audio channel pairs available to each Mux Group below are determined by the Audio Channel Pairing web page (see page 52).

**Note** The Kameleon multiplexing circuit assumes there are no gaps between Groups in the input SDI video signal. If there are gaps, and one or more groups are inserted or replaced, all input Groups after the gap will be removed.

Figure 25 depicts the multiplexing of the processed audio streams into the SDI video output stream based on the selections made on the Mux web page in Figure 28 on page 47.

Figure 25. Multiplexing into the SDI Stream



One audio Group = two streams (A & B) max.  
 One stream = two channels (1 & 2) max.

8343\_05

The Mux web page provides two functions: Group Deletion and Group Replacement. Each of these functions depends on the presence of embedded audio groups in the incoming SDI video stream and the external AES audio inputs.

## Group Deletion

The Group Deletion area of the Mux web page reports if audio is present in any of the four audio groups in the incoming SDI video signal and the output status of each group. It can be used to delete unwanted embedded audio groups and clear all HANC (horizontal ancillary data) with the following controls:

- **Delete** – check the box to delete all embedded audio in the corresponding audio group.
- **Clear all input HANC data** – check the box to delete all horizontal ancillary data in all audio groups.

The warning “24 Bit Audio in all four groups may exceed data space capabilities” may appear under the Group Deletion section when any of the following conditions occur:

- SDI Video In,
- 525 line video format,
- 24 bit audio format for Mux Group A, or
- 24 bit audio format for Mux Group B.

An example of this may be seen in [Figure 28 on page 47](#).

## Group Replacement

The Group Replacement function allows the insertion of two processed AES audio streams from the external AES audio inputs (determined on the [Audio Channel Pairing Web Page on page 52](#)) into any Group (1-4) in the SDI output stream with the following controls:

- Use the **Stream A** and/or **Stream B** checkboxes in the Insert column to insert Pair 1 and/or Pair 2 into the SDI output stream.
- Select the audio Group number in the SDI stream into which to insert (embed) the streams.
- Select the output sample rate for the inserted audio as **20 bits** or **24 bits**.

An example of this may be seen in [Figure 28 on page 47](#).

## Audio Multiplexing

There are four possible conditions for multiplexing as described next.

### No Embedded Audio

If no audio groups are present in the incoming SDI video signal, the Group Deletion input status section will appear as shown in Figure 26. Input Status is **Not Present** and Output Status is **Empty** for each audio group. No deletion is possible with this status.

Figure 26. No Embedded Audio Present

#### Group Deletion

	Group 1	Group 2	Group 3	Group 4
Input Status	Not Present	Not Present	Not Present	Not Present
Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete
Output Status	Empty	Empty	Empty	Empty

### Pass Embedded Audio

If an embedded audio group is present in the incoming SDI signal and no replacement is selected, the audio group will be passed to the output as shown in Figure 27. Input Status is **Present** and Output Status is **Passed**.

Check the corresponding **Delete** checkbox to remove an audio group completely that is reported as **Present** from the SDI stream if desired.

Figure 27. Pass Embedded Audio

#### Group Deletion

	Group 1	Group 2	Group 3	Group 4
Input Status	Present	Not Present	Not Present	Not Present
Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete
Output Status	Passed	Empty	Empty	Empty

### Replace Embedded Audio

An external AES audio group can be selected to replace an existing audio group in the incoming SDI stream with the Group replacement function as shown in Figure 28. In this case, the present audio, Group 1, has been replaced with Group 1 from the external AES audio input.

When Stream A and/or Stream B is selected in the Replace column, the Input Status will report **Present** and the Output Status will report **Replaced**. Deletion is not possible with this status (N/A).

Figure 28. Multiplex Web Page



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)  
 Last Recalled E-MEM: [Factory Defaults](#)

#### Group Deletion

	Group 1	Group 2	Group 3	Group 4
Input Status	Present	Not Present	Not Present	Not Present
Delete	N/A	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete
Output Status	Replaced	Empty	Empty	Empty
<input type="checkbox"/> Clear all input HANC data				
<b>Warning!</b> 24 Bit Audio in all four groups may exceed data space capabilities				

#### Group Replacement

Mux Group	Replace	Group	Bits/Sample
<b>Pair 1:</b>			
<a href="#">AES In 1 Unbal.Ch1 &amp; AES In 1 Unbal.Ch2</a>	<input checked="" type="checkbox"/> Stream A	<input checked="" type="radio"/> Group 1 <input type="radio"/> Group 2 <input type="radio"/> Group 3 <input type="radio"/> Group 4	<input type="radio"/> 20 bits <input checked="" type="radio"/> 24 bits
<b>Pair 2:</b>			
<a href="#">AES In 2 Unbal.Ch1 &amp; AES In 2 Unbal.Ch2</a>	<input checked="" type="checkbox"/> Stream B	<input type="radio"/> Group 1 <input type="radio"/> Group 2 <input type="radio"/> Group 3 <input type="radio"/> Group 4	<input type="radio"/> 20 bits <input checked="" type="radio"/> 24 bits

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### Insert Embedded Audio

An external audio group can be selected to replace an empty audio group in the SDI input stream with the Group replacement function as shown in Figure 29. In this case, an external AES audio has been processed in the Audio processor, and selected to replace an empty audio Group.

When Stream A and/or Stream B is selected in the Replace column, the Output Status will report **Inserted** in an empty Group selected in Group Replacement.

Figure 29. Insert Embedded Audio



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
 Last Recalled E-MEM: [Factory Defaults](#)

#### Group Deletion

	Group 1	Group 2	Group 3	Group 4
Input Status	<a href="#">Present</a>	<a href="#">Not Present</a>	<a href="#">Not Present</a>	<a href="#">Not Present</a>
Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete
Output Status	<a href="#">Passed</a>	<a href="#">Inserted</a>	<a href="#">Empty</a>	<a href="#">Empty</a>
<input type="checkbox"/> Clear all input HANC data				

#### Group Replacement

Mux Group	Replace	Group	Bits/Sample
<b>Pair 1:</b>	<input checked="" type="checkbox"/> Stream A	<input type="radio"/> Group 1 <input checked="" type="radio"/> Group 2 <input type="radio"/> Group 3 <input type="radio"/> Group 4	<input checked="" type="radio"/> 20 bits <input type="radio"/> 24 bits
<a href="#">AES In 1 Unbal.Ch1 &amp; AES In 1 Unbal.Ch2</a>			
<b>Pair 2:</b>	<input checked="" type="checkbox"/> Stream B	<input type="radio"/> Group 1 <input checked="" type="radio"/> Group 2 <input type="radio"/> Group 3 <input type="radio"/> Group 4	<input checked="" type="radio"/> 20 bits <input type="radio"/> 24 bits
<a href="#">AES In 2 Unbal.Ch1 &amp; AES In 2 Unbal.Ch2</a>			

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## VBI SDI Web Page

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Use the VBI SDI web page (Figure 30 for 525, Figure 31 on page 50 for 625 line rate) to configure blanking for the VBI and Data Lines.

- The currently detected line rate will be reported. Use the View Selection to view the web page at the correct line rate with the **525** or **625** radio button.
- On a line-by-line basis you can blank existing VBI and Data Line information by selecting the corresponding checkbox.
- Check the **Apply Clips to VBI** checkbox to apply the clip values made with the Video Processor to all of the VBI lines. This control is also available on the Video Processing web page (page 40).

**Note** The data lines not reserved for carrying data on the Video Input Select web page will appear greyed out. See *Advanced VBI Configuration* on page 36.

Figure 30. VBI SDI Web Page – 525 Line Rate



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)  
 Last Recalled E-MEM: [Factory Defaults](#)

Current Line Rate	<a href="#">525</a>
View Selection:	<input checked="" type="radio"/> 525 <input type="radio"/> 625

### Field 1 Line Blanking

	VBI Lines										Data Lines				
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Blank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Field 2 Line Blanking

	VBI Lines										Data Lines				
	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287
Blank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Apply clips to VBI

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Figure 31. VBI SDI Web Page – 625 Line Rate



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
 Last Recalled E-MEM: [Factory Defaults](#)

Current Line Rate	625
View Selection:	<input type="radio"/> 525 <input checked="" type="radio"/> 625

**Field 1 Line Blanking**

	VBI Lines																		Data Lines				
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Blank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Field 2 Line Blanking**

	VBI Lines																		Data Lines				
	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341
Blank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Apply clips to VBI

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## AES Inputs Web Page

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Use this link

Use the AES Inputs web page (Figure 32) to check the status of the AES audio inputs. The following information is reported for each input:

- **AES Input characteristics** – reports the audio characteristics for input J9 and J10 as shown in the table. Use the **Clear** button to reset the error detection.
- **Audio Stream Input reporting** – allows the user to enable or disable the following reporting items with the corresponding checkbox:
  - Sample Rate Conversion
  - Loss of Signal (to both Kameleon Status web page and SNMP monitoring devices)
  - AES Errors

Figure 32. AES Inputs Web Page

### AES Inputs

Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2  
 Last Recalled E-MEM: [Factory Defaults](#)

#### AES Input characteristics

Input	Name	Signal State	Sample Rate	Mode	Ch1 Emphasis	Ch2 Emphasis	Ch1 Data	Ch2 Data	AES Errors Detected	
J10	<a href="#">AES In 1 Unbal</a>	Present	48 kHz	---	Off	Off	Audio	Audio	<a href="#">Errors Detected</a>	<input type="button" value="Clear"/>
J9	<a href="#">AES In 2 Unbal</a>	Present	48 kHz	---	Off	Off	Audio	Audio	<a href="#">Errors Detected</a>	<input type="button" value="Clear"/>

#### Audio Stream Input reporting

Name	Signal State	Sample Rate Convert	Loss of Signal	Reporting	AES Errors
<a href="#">AES In 1 Unbal</a>	Present	<input type="checkbox"/> Disable	<input checked="" type="checkbox"/> Report	Present	<input checked="" type="checkbox"/> Warn
<a href="#">AES In 2 Unbal</a>	Present	<input type="checkbox"/> Disable	<input checked="" type="checkbox"/> Report	Present	<input checked="" type="checkbox"/> Warn

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## Audio Channel Pairing Web Page

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The Audio Channel Pairing web page (Figure 33) allows the input audio channels to be arbitrarily recombined into new pairs and swapped or set to **Silence**. The rows represent the audio input channels and the columns represent the audio output channels. The columns are grouped together into two different pairs (Pair 1 Ch A and Ch B and Pair 2 Ch A and Ch B).

The streams in each pair are grouped together into a Mux group on the Mux web page. Then Stream A or Stream B or both can be inserted into the SDI output video (see *MUX Web Page on page 44*).

**Note** Audio input names are assigned using the **I/O Config** web page.

Figure 33. Audio Channel Pairing Web Page



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)  
 Last Recalled E-MEM: [Factory Defaults](#)

### Pair Input Audio Channels

Names	Pair 1 ChA	Pair 1 ChB	Pair 2 ChA	Pair 2 ChB	Streams
<a href="#">AES In 1 Unbal.Ch1</a>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str1.Ch1
<a href="#">AES In 1 Unbal.Ch2</a>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str1.Ch2
<a href="#">AES In 2 Unbal.Ch1</a>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Str2.Ch1
<a href="#">AES In 2 Unbal.Ch2</a>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Str2.Ch2
<a href="#">Silence</a>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Silence

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## Audio Sync Web Page

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Use the Audio Sync web page ([Figure 34 on page 54](#)) to:

- Synchronize the two audio channel pairs to video Frame Sync, and/or
- Add audio delay using the delay adjust controls to add delay to each channel or lock the channels together as a pair and adjust delay.

### Enable Auto Track

Select the **On** checkbox to enable auto tracking to synchronize the audio pair to the video frame sync. The amount of auto tracking applied is shown in the Auto Tracking Delay read-only display.

The total amount of delay is reported in the Total Delay read-only display for each channel.

### Delay Adjustments

Each audio channel can be adjusted for delay separately or in pairs. Use the following adjustments for audio delay:

- To lock the two channels in a pair together, select the **Channel Lock** checkbox for Pair 1 or Pair 2.
- Adjust the delay for each channel with the Ch A Delay Adjust and Ch B Delay adjust controls for each pair. If the pair is locked, adjusting either control will set the delay to the same value for each channel in the pair.

Figure 34. Audio Synchronizer Web Page



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)  
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Pair 1		Pair 2			
Ch A	<a href="#">AES In 1 Unbal.Ch1</a>	Ch A	<a href="#">AES In 2 Unbal.Ch1</a>		
Ch B	<a href="#">AES In 1 Unbal.Ch2</a>	Ch B	<a href="#">AES In 2 Unbal.Ch2</a>		
	Ch A	Ch B	Ch A	Ch B	
Enable Auto Track	<input checked="" type="checkbox"/> On		Enable Auto Track	<input checked="" type="checkbox"/> On	
Auto Tracking Delay	33 mS		Auto Tracking Delay	33 mS	
Total Delay	33 mS	33 mS	Total Delay	33 mS	33 mS
Channel Lock	<input checked="" type="checkbox"/> Locked		Channel Lock	<input checked="" type="checkbox"/> Locked	
Ch A Delay Adjust (mS) <input type="button" value="&lt;&lt;"/> <input type="text" value="0"/> <input type="button" value="&gt;&gt;"/> <input type="button" value="&lt;"/> <input type="button" value="Apply"/> <input type="button" value="&gt;"/>			Ch A Delay Adjust (mS) <input type="button" value="&lt;&lt;"/> <input type="text" value="0"/> <input type="button" value="&gt;&gt;"/> <input type="button" value="&lt;"/> <input type="button" value="Apply"/> <input type="button" value="&gt;"/>		
Ch B Delay Adjust (mS) <input type="button" value="&lt;&lt;"/> <input type="text" value="0"/> <input type="button" value="&gt;&gt;"/> <input type="button" value="&lt;"/> <input type="button" value="Apply"/> <input type="button" value="&gt;"/>			Ch B Delay Adjust (mS) <input type="button" value="&lt;&lt;"/> <input type="text" value="0"/> <input type="button" value="&gt;&gt;"/> <input type="button" value="&lt;"/> <input type="button" value="Apply"/> <input type="button" value="&gt;"/>		

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## Audio Processing Web Page

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Use the Audio Processing web page (Figure 35 on page 56) to adjust the following for each audio pair:

- Adjust audio signal gain for each individual channel or the two audio pairs,
- Lock gain settings for simultaneous channel A/channel B adjustment, and
- Select a processing option for each channel.

### Audio Gain

Each audio channel can be adjusted for gain separately or in pairs. Use the following adjustments for audio gain:

- To lock the two channels in a pair together, select the Gain Settings **Locked** checkbox for Pair 1 and/or Pair 2.
- Adjust the gain (-40 to +6 dB) for each channel with the Ch A Gain Adjust and Ch B Gain adjust controls for each pair. If the pair is locked, adjusting either control will set the gain to the same value for each channel in the pair.

**Note** After gain has been adjusted, a straight quote mark (') will be added to Ch A' and Ch B' to indicate the status of the channels after gain.

### Output Processing

Set the output processing for each channel with the Processing pulldown to one of the following:

- Pass
- Invert
- A+B
- A-B
- -(A+B)
- 1 kHz (test tone)
- 400 Hz (test tone)
- Silence

The Presence and Clipping status of each audio channel is reported as **True** or **False** in the read-only displays. If the audio is > -40 dBFS, it will be reported as **True**. If clipping is < 0.5 dBFS, it will be reported as **False** as shown in Figure 35 on page 56.

Figure 35. Audio Processing Web Page



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)  
 Last Recalled E-MEM: [Factory Defaults](#)

Pair 1		Pair 2	
Ch A	<a href="#">AES In 1 Unbal.Ch1</a>	Ch A	<a href="#">AES In 2 Unbal.Ch1</a>
Ch B	<a href="#">AES In 1 Unbal.Ch2</a>	Ch B	<a href="#">AES In 2 Unbal.Ch2</a>
Gain Settings	<input type="checkbox"/> Locked	Gain Settings	<input type="checkbox"/> Locked
Ch A Gain (dB) << 0.0 >> < Apply >		Ch A Gain (dB) << 0.0 >> < Apply >	
Ch B Gain (dB) << 0.0 >> < Apply >		Ch B Gain (dB) << 0.0 >> < Apply >	
	Ch A'	Ch B'	
Presence	<a href="#">True</a>	<a href="#">True</a>	
Clip	<a href="#">False</a>	<a href="#">False</a>	
Processing	Pass ▾	Pass ▾	

Note: Presence = > -40 dBFS, Clip = > -0.5 dBFS

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## E-MEM Configuration Web Page

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Use this link

The E-MEM page provides local operations for learning and recalling configurations into five 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 36), any one of five learned E-MEMs can be recalled by selecting the corresponding **Recall** button in the Local Operations window. This will place the configuration for the entire module into that E-MEM into the KAM-SD-2AES-MUX. This change will occur immediately upon recall. The name of the last recalled E-MEM will appear in the top header of each web page for the module.

To learn an E-MEM select the **Advanced** button in the View Selection section. This will open the Advanced view (Figure 37 on page 58).

Figure 36. E-MEM Web Page (Standard View)



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)  
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection:  Standard  Advanced

### E-MEM®

Local Operations		
<input type="button" value="Recall"/>	E-MEM 1:	<input type="text" value="Studio 1"/>
<input type="button" value="Recall"/>	E-MEM 2:	<input type="text"/>
<input type="button" value="Recall"/>	E-MEM 3:	<input type="text"/>
<input type="button" value="Recall"/>	E-MEM 4:	<input type="text"/>
<input type="button" value="Recall"/>	E-MEM 5:	<input type="text"/>

Restore factory settings

Restore factory names

The Advanced View (Figure 37) includes a File Operations section to learn a configuration into E-MEM (**Learn**), save a file to a disk location (**Save to...**) or load a file from a disk location (**Load from...**).

To learn an E-MEM:

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

Figure 37. E-MEM Web Page (Advanced View)



Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)  
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection:  Standard  Advanced

**E-MEM®**

Local Operations				File Operations	
<input type="button" value="Recall"/>	E-MEM 1:	<input type="text" value="Studio 1"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/>	<input type="button" value="Load from..."/>
<input type="button" value="Recall"/>	E-MEM 2:	<input type="text"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/>	<input type="button" value="Load from..."/>
<input type="button" value="Recall"/>	E-MEM 3:	<input type="text"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/>	<input type="button" value="Load from..."/>
<input type="button" value="Recall"/>	E-MEM 4:	<input type="text"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/>	<input type="button" value="Load from..."/>
<input type="button" value="Recall"/>	E-MEM 5:	<input type="text"/>	<input type="button" value="Learn"/>	<input type="button" value="Save to..."/>	<input type="button" value="Load from..."/>

Restore factory settings

Restore factory names

## File Operations

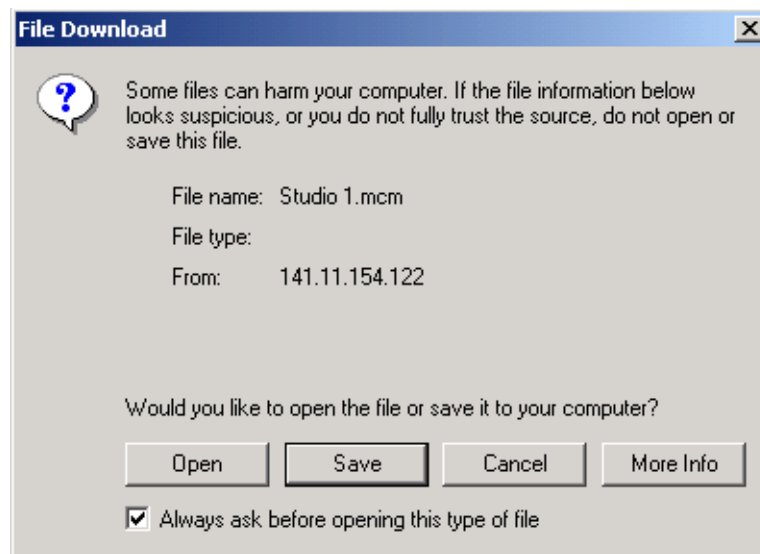
### Save File

File operations allow you to save learned configurations to a computer hard drive or other accessible media for later recall to the onboard E-MEM registers of any Kameleon module in your system.

To save to a file, first make sure you have learned the configuration, then press the **Save To...** button.

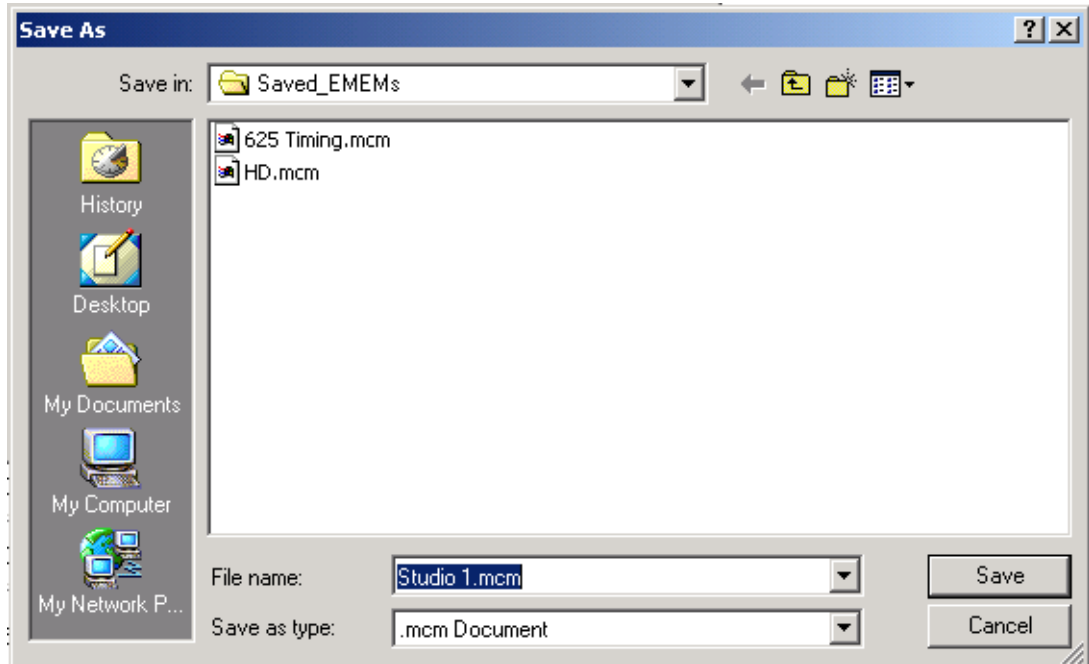
This will bring up a File Download screen similar to [Figure 38](#). Select **Save**.

Figure 38. File Download Screen



This will bring up the Save As screen as shown in Figure 39. Locate or create a directory for storing the E-MEMs and select **Save**. This E-MEM register is now saved to the selected location and may be recalled as described below.

Figure 39. Save As Screen



### Load File

A file may be loaded from a saved directory to a register on the E-MEM web page by selecting the **Load From...** button in the associated E-MEM register in the Advanced view. This will bring up the Load E-MEM web page (Figure 40).

Figure 40. Load E-MEM Web Page

### Load E-MEM 1

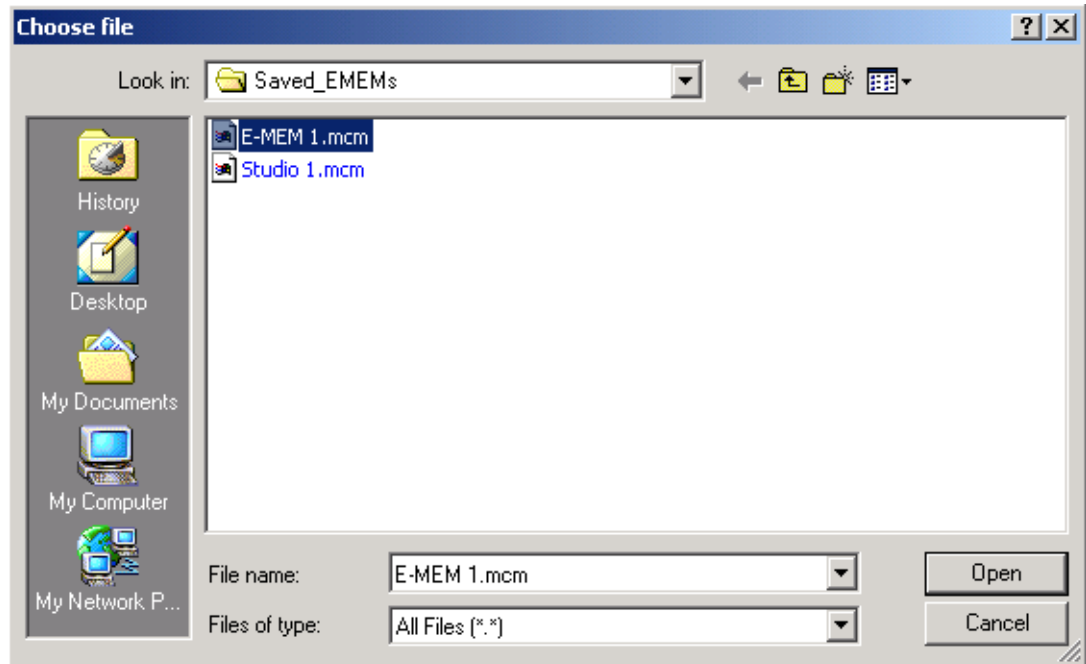
Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2

Load file into E-MEM 1...

Enter filename:

Enter a path and filename or use the **Browse** button to locate your saved E-MEM files. Browse to the Choose File screen (Figure 41), select the E-MEM file to download and select **Open**.

Figure 41. Choose File Screen



This will place the path and filename in the Load E-MEM screen (Figure 40 on page 60). If this is the correct file, select **Load**. Continue to load files or select **Cancel** to return to the main E-MEM web page. Loaded files will now be entered in the associated E-MEM registers.

Select the associated **Recall** button for each E-MEM register to load the configuration to the module.

## Slot Configuration

Use  
this  
link

- [VBI SDI](#)
- [AES Inputs](#)
- [Audio Channel Pairing](#)
- [Audio Sync](#)
- [Audio Proc](#)
- [E-MEM@](#)
- [Slot Config](#)
- [Software Update](#)

Use the Slot Config web page (Figure 42 on page 63) to:

- Assign an appropriate name to the module slot,
- Assign an Asset Tag identification,
- Enable/disable the **Locate Module** function,
- Save module configuration and enable slot memory,
- Check SNMP related 2000NET module switch settings, and
- Enable/disable SNMP reporting for the specific Kameleon slot.

## 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.

## Locate Module

When enabled by selecting the **Flash** pulldown, the **Locate Module** function flashes the yellow COMM and CONF LEDs on the front of the module to make it easy to locate in the frame (see *Operation Indicator LEDs* on page 14).

## Slot Memory

The slot configuration for each media module is automatically saved periodically 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 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.

Figure 42. Slot Configuration Web Page

 **Slot Config** 

Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)

**Slot Identification**

Name:    
 Asset Tag:

**Locate Module**

▾

**Slot Memory**

Restore upon Install

**Frame Health Reporting**

	Slot Fault	Signal Loss	Reference Loss
Enabled	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hardware Switch Controls**

Module Status Reporting: [Enabled](#) Asynchronous Status Reporting: [Enabled](#)

**Slot SNMP Trap Reports**

	Slot Fault	Module Removed	Signal Loss	Reference Loss
Enabled	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Trap Severity	<a href="#">Alarm</a>	<a href="#">Warning</a>	<a href="#">Warning</a>	<a href="#">Warning</a>

## Frame Health Reporting

The reporting of Slot Fault, Signal Loss, and Reference Loss can be enabled or disabled to the Frame Health connector on the rear of the Kameleon frame by selecting or deselecting the corresponding checkbox.

## Hardware Switch Controls

This section is a read-only status report of 2000NET module switch settings for Module Status Reporting and Asynchronous Status Reporting. These functions must be enabled for the following Slot SNMP Trap Reports to function.

## Slot SNMP Trap Reports

This section is displayed only when the SNMP Agent software has been installed on the 2000NET module (refer to the *2000NET Instruction Manual* for installation instructions). Slot SNMP traps can be enabled only when the hardware switches for Module Fault reporting and Asynchronous Status reporting are enabled on the 2000NET module (dipswitch S1 segment 7 and dipswitch S2 segment 1).

The enabled SNMP traps will be reported to any SNMP manager that is identified as an SNMP Report Destination in 2000NET configuration. Trap severity is read-only hard-coded information that is interpreted and responded to by the SNMP Manager software configuration.



## Software Update Web Page

- [MUX](#)
- [VBI SDI](#)
- [AES Inputs](#)
- [Audio Channel Pairing](#)
- [Audio Sync](#)
- [Audio Proc](#)
- [E-MEM®](#)
- [Slot Config](#)
- [Software Update](#)

Use  
this  
link

The Software Update web page (Figure 43) allows you to download new software versions for the module using the FTP server method described in the 2000NET Instruction Manual available on-line.

Software may also be updated using the NetConfig Networking Application PC option available with Modular and other Grass Valley products as described in the documentation that accompanies the option.

Refer to the latest module Release Notes for complete details on how to obtain and install the latest software for this module.

Figure 43. Software Update Web Page

### Software Update

Model: [KAM-SD-2AES-MUX](#) Description: [Frame Sync, Proc Amp, SD/2AES to SD/2Embed](#)

Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)

Software Version: [4.0.1](#) Firmware Version: [X1=2.2.55, X2=2.3.2](#)

[Enter Username, Password and File to Initiate Update](#)

	selection	current setting
FTP Server Address:	<input type="text" value="192.158.211.31"/>	192.158.211.31
File Path:	<input type="text" value="Enter Filename Here"/>	<a href="#">Enter Filename Here</a>
FTP UserName:	<input type="text"/>	
FTP Password:	<input type="text"/>	
	<input type="button" value="Apply"/>	

# Specifications

**Note** Specifications are subject to change without notice

Table 6. SDI Input/Output Specifications

Parameter	Value
<b>SDI Input</b>	
Signal type	Serial digital video conforming to SMPTE259M 10-bit 4:2:2 component digital signal
Input impedance	75 $\Omega$
Connector type	75 $\Omega$ BNC on rear module
Input return loss	>15 dB to 270 MHz
Common mode rejection ratio	2 V p-p to 60 Hz
Equalization	Up to 250 meters of Belden 1694A
<b>SDI Output</b>	
Number of outputs	1
Signal type	Serial digital video conforming to SMPTE259M 10-bit 4:2:2 component digital signal
Signal level	800 mV $\pm$ 10%
Output impedance	75 $\Omega$
Connector type	75 $\Omega$ BNC on rear module
DC offset	< 0.5 V when terminated into 75 $\Omega$
Output return loss	>15 dB up to 270 MHz
Jitter	Conforms to SMPTE17.12/002 <400 ps above 1 KHz
Rise/fall time	700 – 900 ps (20 – 80% amplitude)
<b>SDI I/O Control Parameters</b>	
Vertical blanking processing	Line by line blank

Table 7. Frame Sync/Timing Specifications

Parameter	Value
<b>Video Frame Sync Timing Control Parameters</b>	
Delay adjustment (main)	0 to 1 frame in 37 ns steps
Additional delay, SDI out	0 to 151 $\mu$ s in 37 ns steps

Table 8. Main Video Processing Specifications

Parameter	Value
<b>Main Video Frame Processing Control Parameters</b>	
Y gain	±50% in 0.4% steps, 100% default
Y offset	±3.5% of 100% white in 0.11% steps, 0% default
B-Y gain	±50% in 0.4% steps, 100% default
B-Y offset	±3.5% of 100% white in 0.11% steps, 0% default
R-Y gain	±50% in 0.4% steps, 100% default
R-Y offset	±3.5% of 100% white in 0.11% steps, 0% default
Color bars	on/off

Table 9. AES/EBU Input Specifications

Parameter	Value	
AES/EBU Input	Balanced (AES3-1992)	Unbalanced (AES3id 2001)
Common mode range	+10/-10 V, 50 Hz to 20 kHz	NA
Differential voltage range	200 mV p-p to 12 V p-p	200 mV p-p to 2 V p-p
Input return loss	>25 dB (100 kHz to 6 MHz)	>15 dB (100 kHz to 6 MHz)
Sample rate	32 – 96 kHz	32 – 96 kHz
<b>Performance</b>		
Static withstand	5 kV (330 Ω, 150 pF)	

Table 10. Multiplexing Specifications

Parameter	Value
<b>MUX Performance</b>	
Standard	SMPTE 272M A, C: Synchronous audio, 48K, 20/24 bits/sample Compatible with buffer sizes down to 48 samples
Pass through	Up to 4 groups (frame sync must be in delay mode)
Insert	1 group
Bits/sample on inserted audio	20/24 bits, selectable
Buffer size	170 samples
MUX delay	1.77 ms
Distribution	Evenly distributed, minimum of 3 samples per line, maximum of 4 samples per line except near switching lines Switch line and nearby lines (lines 4, 5, 6, 317, 318, 319 for 625; 8, 9, 10, 270, 271, 272 for 525) have 0 samples

Table 11. Audio Processing Specifications

Parameter	Value
<b>Audio Processing</b>	
Number of channels supported	4
Fixed Delay	0 – 5.2 sec in 20 ms steps, individual setting for each channel
Delay Tracking	Delay can be set to automatically track delay through video frame sync with fixed offset
Gain	+6 to -40dB in 0.1dB steps, individual setting for each channel.
Other processing	Selectable: Invert; L + R; L-R; -(L-R); 1 kHz; 400 Hz; Silence Individual setting for each channel.
Re-pairing	Complete flexibility to swap or recombine any input channel with any other

Table 12. Electrical Length Specifications

Parameter	Value
<b>Electrical Length</b>	
SDI In to SDI Out	1 line + 10 $\mu$ s
AES/EBU to SDI Out (MUX)	3.8 ms @ 48 kHz

Table 13. Environmental/Power Specifications

Parameter	Value
<b>Environmental</b>	
Frame temperature range	0 to 40 degrees C ambient
Operating humidity range	0 to 90% non-condensing
Non-operating temperature	-10 to +70 degrees C
<b>Mechanical</b>	
Frame type	2000T1DNG Kameleon Frame or 2000T3NG Kameleon Frame
<b>Power</b>	
Consumption	11 Watts typical

# Service

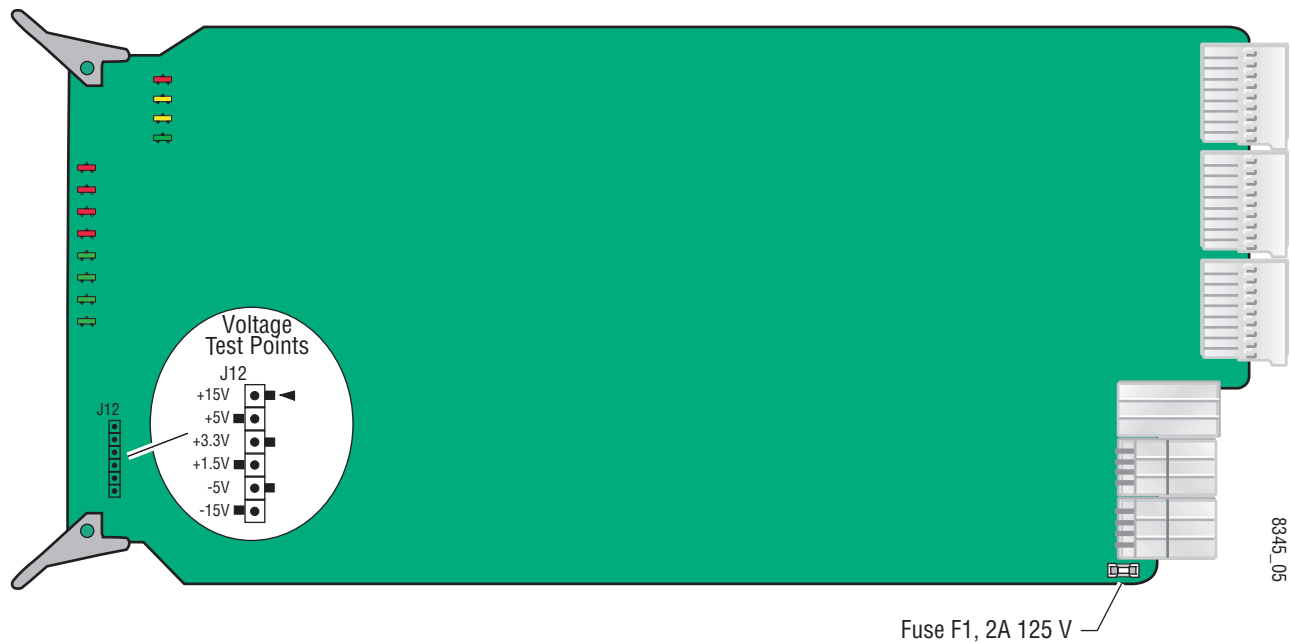
The Kameleon modules make extensive use of surface-mount technology and programmed parts to achieve compact size and adherence to demanding technical specifications. Circuit modules should not be serviced in the field except to check and replace fuses.

## Troubleshooting

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

- Check frame and module power at the front edge testpoints (Figure 44).
- If power is not present, check the fuse on the +24 V input (Figure 44).
- Check for presence and quality of input signals.
- Verify that source equipment is operating correctly.
- Check cable connections.

Figure 44. Location of Module Fuse and Voltage Testpoints



Refer to [Figure 6 on page 13](#) for the location of PWR LED and [Table 2 on page 14](#) 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 Support Information number.



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