

# KAM-SD-2AES-EAP

KAMELEON SERIES MODULES

Instruction Manual

SOFTWARE VERSION 4.0.1

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*the most watched worldwide*

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# Contents

**Preface**..... 5  
    About This Manual..... 5

## **KAM-SD-2AES-EAP Kameleon Series Module**

Introduction..... 7  
Installation..... 8  
    System Requirements..... 8  
    Frame Capacity..... 8  
    Module Placement in the 2000T3NG Kameleon Frame..... 9  
        Installing the Front and Rear Modules..... 9  
    Cabling..... 12  
        SDI Video In..... 12  
        SDI Video Out..... 12  
Power Up..... 13  
    Operation Indicator LEDs..... 14  
Configuration and Adjustments..... 15  
    Configuration Summary..... 15  
    Newton Control Panel Configuration..... 18  
    Web Browser Interface..... 19  
    Web Page Operations and Functional Elements..... 21  
        Status and Identification Header..... 21  
Initial Configuration Process Overview..... 22  
KAM-SD-2AES-EAP Links and Web Pages..... 23  
    Status Web Page..... 24  
        Color-coded Status Indicators and Links..... 24  
        Status/Front Module Properties..... 24  
        Submodule Properties..... 24  
        Warning/Fault Summary..... 26  
    Input/Output Configuration Web Page..... 27  
    Functional View Web Page..... 29  
    SDI In Web Page..... 30  
    DEMUX Web Page..... 32  
        Audio Demultiplexing..... 33  
    Video Input Select Web Page..... 34  
        View Selection..... 34  
        Video Selection Settings..... 34  
        Output Timing Selection..... 35  
        Advanced VBI Configuration..... 36  
    Frame Sync Web Page..... 38  
        Timing Adjustment..... 38  
        Freeze Mode Selection..... 38  
    Video Processing Web Page..... 40  
        Video Processing Controls..... 40

Contents

- Clipping Controls ..... 42
- Reset To Default ..... 42
- MUX Web Page..... 44
  - Group Deletion ..... 45
  - Group Replacement ..... 45
  - Audio Multiplexing ..... 46
- VBI SDI Web Page ..... 49
- Audio Channel Pairing Web Page ..... 51
- Audio Sync Web Page ..... 52
  - Enable Auto Track..... 53
  - Delay Adjustments ..... 53
- Audio Processing Web Page ..... 54
  - Audio Gain..... 55
  - Output Processing ..... 55
- E-MEM Configuration Web Page..... 56
  - File Operations..... 58
- Slot Configuration..... 61
  - Slot Identification ..... 61
  - Locate Module..... 61
  - Slot Memory..... 61
  - Frame Heath Reporting ..... 63
  - Hardware Switch Controls ..... 63
  - Slot SNMP Trap Reports ..... 63
- Software Update Web Page..... 64
- Specifications..... 65
- Service ..... 68
  - Troubleshooting ..... 68
- Index..... 69**

# *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-EAP*

## *Kameleon Series Module*

### **Introduction**

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

The KAM-SD-2AES-EAP modules provides serial digital video synchronization and processing of two embedded digital audio channels.

This module features:

- Broadcast quality serial digital input and output,
- Two 48 kHz AES digital audio input streams can be demultiplexed from the SDI audio stream, processed in the Audio Processor, then multiplexed back 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 signal 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-EAP 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-EAP 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-EAP Module set	12	4



## Module Placement in the 2000T3NG Kameleon Frame

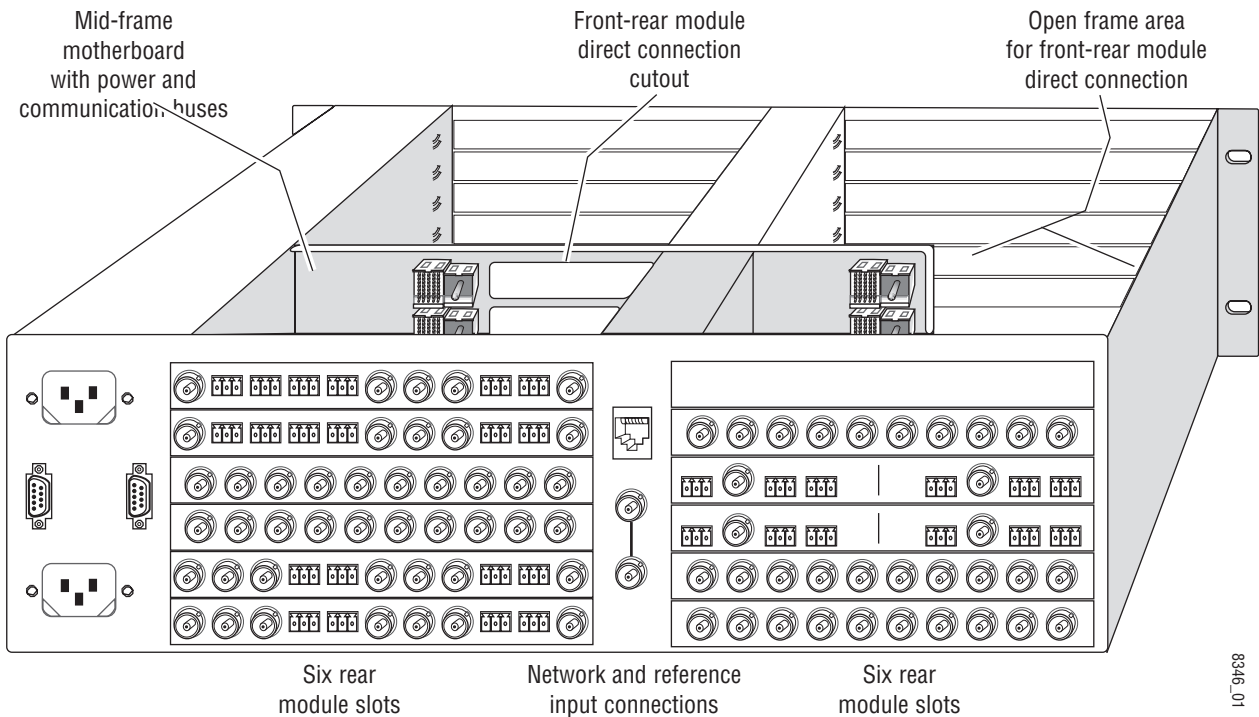
There are twelve slot locations in both the front and rear of a 3 RU frame to accommodate 2000 and Kameleon Series media modules (audio/video signal handling modules). The Kameleon media modules consist of a two-module set with a front processing media module and a passive rear module that can be plugged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

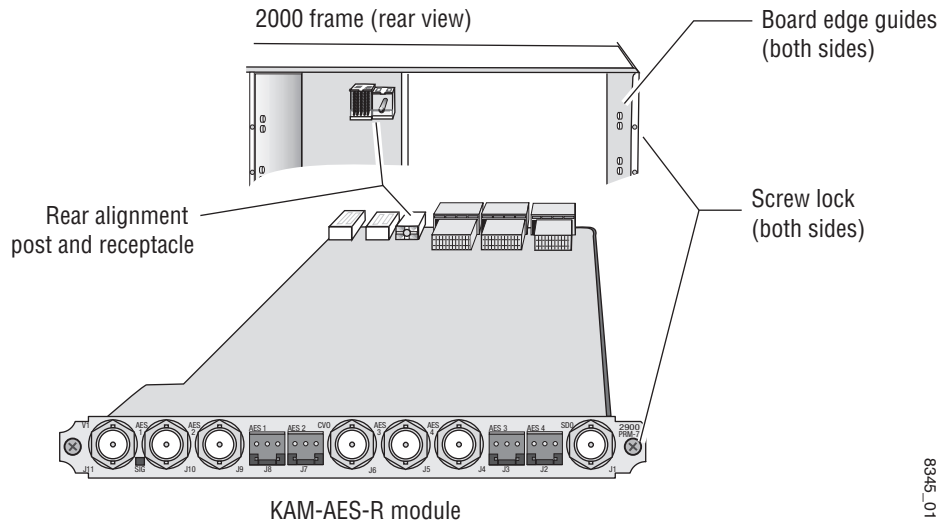
1. Locate a vacant slot in the rear of the 3 RU frame (Figure 1).

Figure 1. 2000T3NG Kameleon Frame, Rear View



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

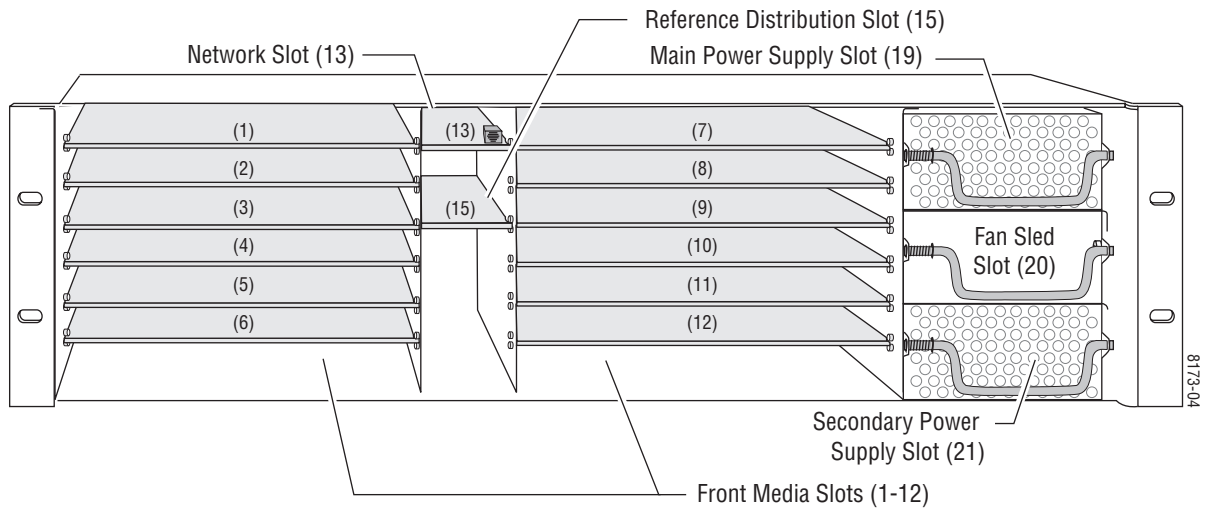
Figure 2. Installing Passive Rear Module



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.

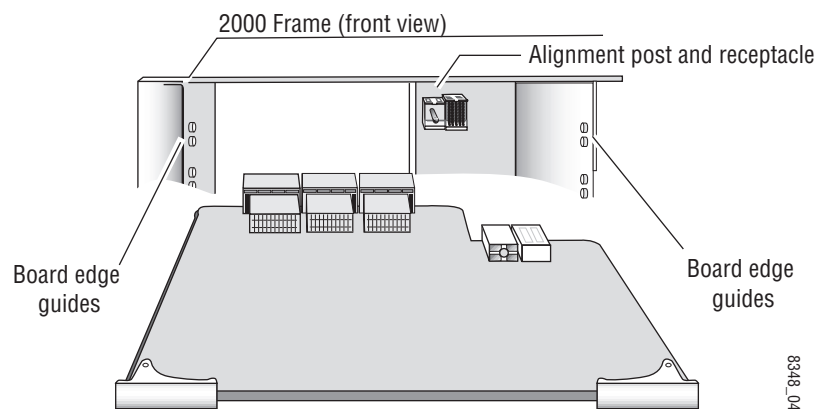
5. Locate the corresponding front media slot (1 -12) in the frame. The 3 RU frame front view is illustrated in [Figure 3](#).

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](#).

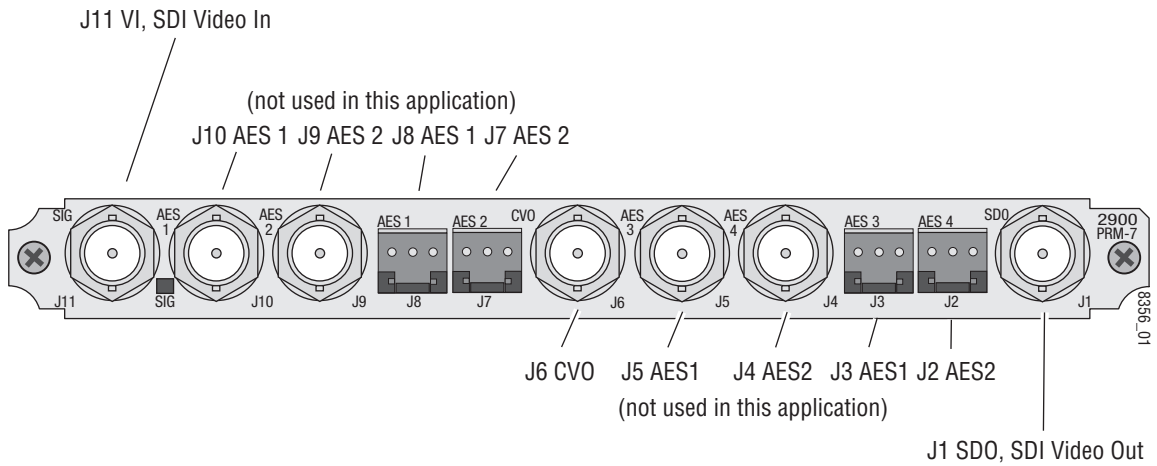
### SDI Video In

Connect SDI video with embedded audio to connector J11, labeled **V1**.

### SDI Video Out

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

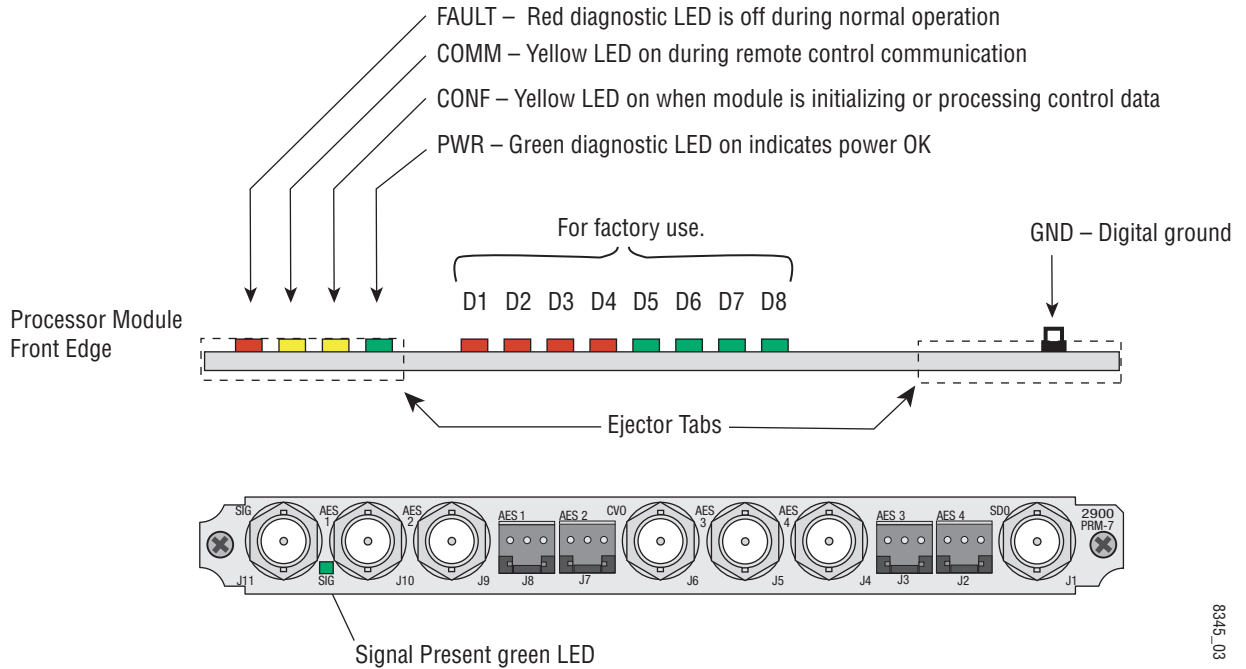
Figure 5. KAM-AES-R Input/Output Connectors



# 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 61](#)).

# Configuration and Adjustments

KAM-SD-2AES-EAP 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-EAP Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
SDI In web page view selection	Summary	Summary or Detail	SDI In/ Summary or Detail radio button	N/A
Set error reporting for SDI input video	Enabled	Enabled or Disabled	SDI In/Detail View/ Check or uncheck error checkboxes	N/A
Demultiplex embedded audio from SDI in	No Extraction	No Extraction, Video In.G1 to G4	DEMUX/ Str1 & Str2 column radio button	N/A
Sample rate convert demultiplexed group	Disable	Enable or Disable	DEMUX/ Disable checkbox	N/A
Report loss of audio stream	Report	Report or No Report	DEMUX/ Reporting checkbox	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
Warning on SDI input errors	Warn	Warn or No Warning	Video Input Select/ SDI Input 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

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

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
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
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 (%)	YWClip
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
Audio group deletion	No Deletion	Delete Group 1 to 4	MUX/ Group Deletion (1-4) 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



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

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
Blank VBI SDI 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
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

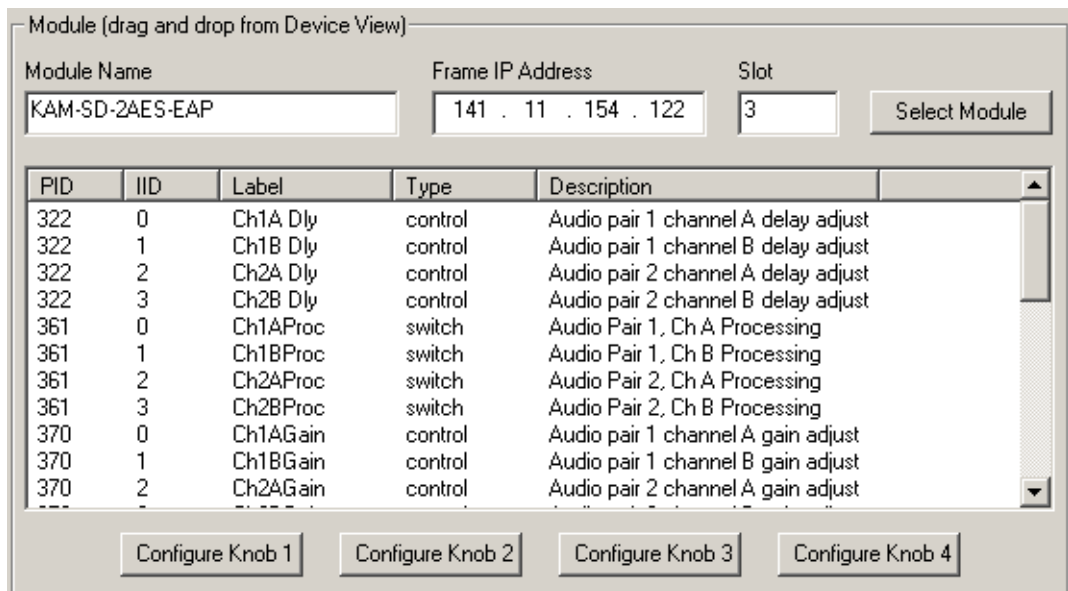
A Newton Control Panel (hard or soft version) can be interfaced to the Kameleon 2000 Series frame over the local network. Control panel access offers the following considerations for module configuration and monitoring:

- 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

**Bay 2 QA 2000 Frame**  
[Status](#)  
[Configuration](#)  
[1 KAM-ENC-2AES-DMX](#)  
[2 KAM-SD-2AES-DMX](#)  
[3 KAM-SD-2AES-EAP](#)  
[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](#)

**Status**

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

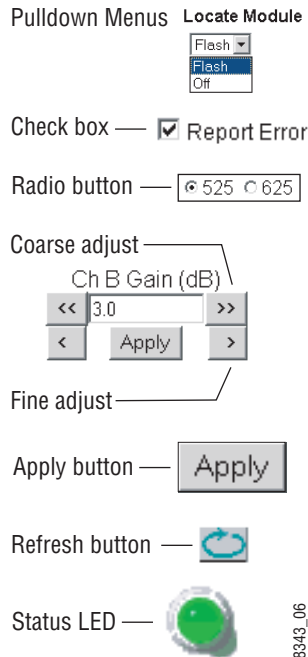
Media Module	Net Card	Empty	Power Sled
Media Module		Empty	
Media Module	Aux Card	Media Module	Empty
Media Module		Empty	
Media Module		Empty	Power Sled
Media Module		Media Module	

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

8850\_03

## 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 **DEMUX** web page if you are demultiplexing audio from the input signal for audio processing.
  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 the **MUX** web page to multiplex the processed audio back into the SDI output stream.
  7. Use **E-MEM** memory to store or recall configurations as necessary.

## KAM-SD-2AES-EAP 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 24),
- I/O Config – shows a graphic representation of inputs and outputs to the module and allows naming of each input (page 27),
- Functional View – shows a block diagram of the module with links to each configuration web page (page 29),
- Module Configuration web pages for setting up the module (beginning on page 30),
- E-MEM – provides a Standard view for Local Recall operations for up to 5 E-MEM registers (page 56) and an Advanced view providing additional **Save to** and **Load from** file operations (page 57),
- Slot Config – provides a Locate Module function and Slot Memory (page 61), and
- Software Update – allows updating of software from a CD-ROM or the web site (page 64).

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

### 3 KAM-SD-2AES-EAP

Status

I/O Config

Functional View

- SDI In

- DEMUX

- Video Input Select

- Frame Sync

- Video Proc

- MUX

- VBI SDI

- Audio Channel Pairing

- Audio Sync

- Audio Proc

E-MEM@

Slot Config

Software Update

## Status Web Page

Use  
this  
link

[3 KAM-SD-2AES-EAP](#)

[Status](#)

[I/O Config](#)

[Functional View](#)

- [SDI In](#)

- [DEMUX](#)

- [Video Input Select](#)

- [Frame Sync](#)

- [Video Proc](#)

The Status web page for the KAM-SD-2AES-EAP module (Figure 11 on page 25) 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 25. 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-EAP 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.

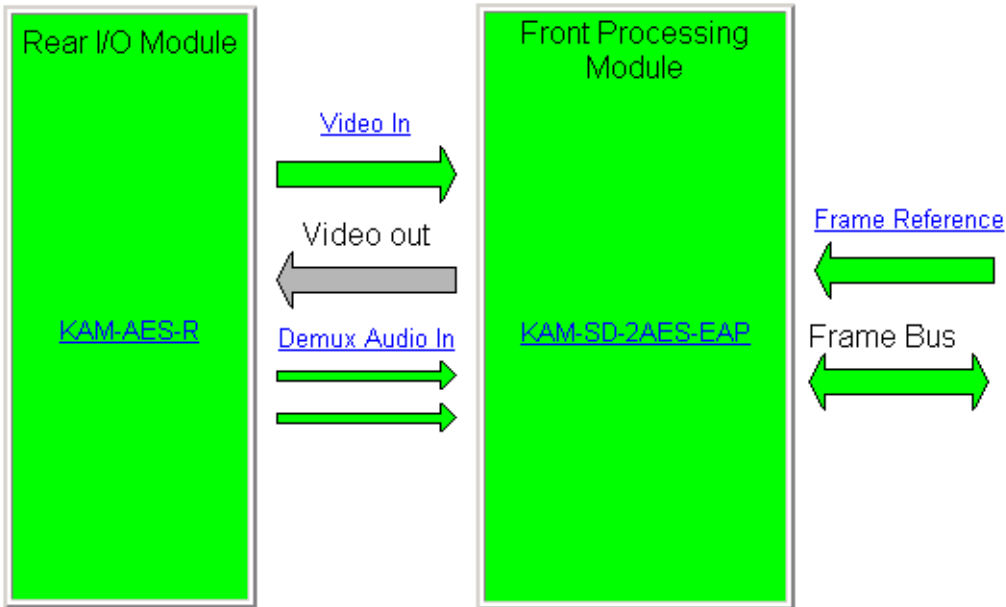


Figure 11. Module and Signal Status



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 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: [VR02493840](#)  
 Hardware Revision: [32A](#)  
 Firmware Version: [X1=2.2.55, 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 25). 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 → [3 KAM-SD-2AES-EAP](#)  
[Status](#)  
[I/O Config](#)  
[Functional View](#)  
 - [SDI In](#)  
 - [DEMUX](#)  
 - [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-EAP front module.

Figure 12. KAM-AES-R Rear Module Configuration Web Page

### I/O Config

Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#), Slot: [3](#)  
 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										Output
<input type="text" value="Video In"/>										<input type="text" value="SD Output"/>
Present	Unused	Unused	Unused	Unused	Unused	Unused	Unused	Unused	Unused	Not Monitored

#### Legend:

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

### 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 29](#)).

### 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 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 12 on page 27](#).

### 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

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

## Functional View Web Page

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

Use the Functional View web page (Figure 13) to:

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

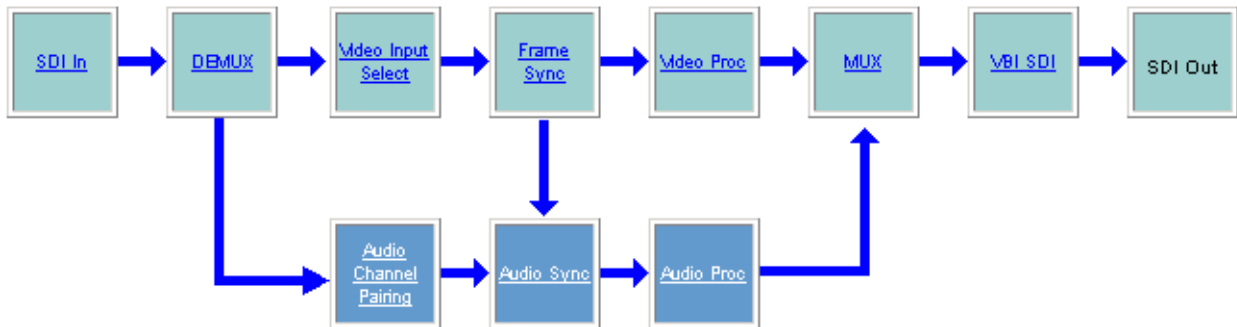
The Functional View web page is a block diagram of the installed Kameleon module that reports the module functions and signal paths that are active or inactive in the current configuration. It can be used as a link map for configuring module functions. Begin configuring with one of the input function blocks on the left.

Color coding indicates active functions and flow. Grayed 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 13. Functional View Web Page

### Functional View

Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 3  
 Last Recalled E-MEM: [Factory Defaults](#)



## SDI In Web Page

- Use this link
- 3 [KAM-SD-2AES-EAP](#)
  - [Status](#)
  - [I/O Config](#)
  - [Functional View](#)
  - [SDI In](#)
  - [DEMUX](#)
  - [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 14) or Detail view (Figure 15 on page 31):

- Select the **Summary** radio button to bring up the summary view shown in Figure 14.
- Use the **Clear All Status** button to clear and reset the status reporting.

Figure 14. SDI In Web Page (Summary View)



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 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 15 on page 31.

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 15. SDI In Web Page (Detail View)



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 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](#)

## DEMUX Web Page

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

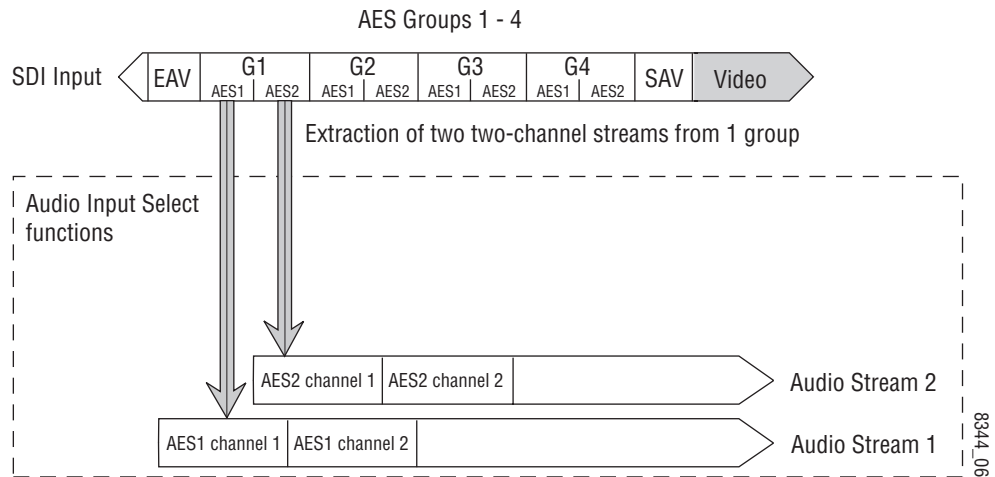
Use the DEMUX (demultiplex) web page (Figure 17 on page 33) to:

- Select which AES/EBU audio groups to extract from the incoming SDI video signal, configure in the audio processor then multiplex back into the SDI output stream.

An illustration of the possible embedded audio groups in the incoming SDI video is shown in Figure 16. There are four possible groups of audio carried in an SDI video signal. Each group contains two streams of audio, AES 1 Ch 1 and Ch 2 and AES 2 Ch 1 and Ch 2. The module can demultiplex one group of audio to be processed and multiplexed back into the SDI output audio stream. The group is selected on the [Multiplex Web Page on page 47](#).

Embedded audio must be present and reported to be extracted. You may also choose to not extract audio.

Figure 16. Demultiplexing Audio Illustration



NOTE: One audio group = two streams (AES1 & 2)  
One stream = two channels



## Audio Demultiplexing

The presence, status, and sample rate of embedded audio in each of the four groups in the input SDI video is indicated in the table on the DEMUX web page (Figure 17).

For demultiplexing a group, do the following:

- Select **No Extraction** or the group (**G1 – G4**) to be extracted from the **Str 1 & Str 2** list with the corresponding radio button.

Use the Audio Stream Input reporting table to do the following:

- Disable the sample rate conversion if desired by checking the corresponding **Disable** checkbox.
- Turn off loss of signal reporting by unchecking the corresponding **Report** checkbox.

Figure 17. Audio Demultiplex Web Page



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

Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)

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

SD Input Signal State: [Present](#)

Inputs	Str1 & Str2	Status	AES 1	AES 2	Bits / Sample
<a href="#">No Extraction</a>	<input type="radio"/>	-----	<a href="#">Silence</a>	<a href="#">Silence</a>	-----
<a href="#">Video In.G1</a>	<input checked="" type="radio"/>	<a href="#">Present</a>	<a href="#">Present</a>	<a href="#">Present</a>	<a href="#">20</a>
<a href="#">Video In.G2</a>	<input type="radio"/>	<a href="#">Present</a>	-----	-----	<a href="#">20</a>
<a href="#">Video In.G3</a>	<input type="radio"/>	<a href="#">Present</a>	-----	-----	<a href="#">20</a>
<a href="#">Video In.G4</a>	<input type="radio"/>	<a href="#">Present</a>	-----	-----	<a href="#">20</a>

### Audio Stream Input reporting

Name	Signal State	Sample Rate Convert	Loss of Signal	Reporting
<a href="#">Video In.G1.S1</a>	<a href="#">Present</a>	<input type="checkbox"/> <a href="#">Disable</a>	<input checked="" type="checkbox"/> <a href="#">Report</a>	<a href="#">Present</a>
<a href="#">Video In.G1.S2</a>	<a href="#">Present</a>	<input type="checkbox"/> <a href="#">Disable</a>	<input checked="" type="checkbox"/> <a href="#">Report</a>	<a href="#">Present</a>

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

## Video Input Select Web Page

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

Use the Video Input Select web page (Figure 18 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 18. 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 18. Video Input Select – Standard View

### Video Input Select

Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 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>	-	-

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

## 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 19).

Figure 19. Standard and Advanced View Selection

### Video Input Select

Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
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 20 on page 37](#) for 525 line rate and [Figure 21 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 20 on page 37](#) and lines 24/337 and 25/338 in [Figure 21 on page 37](#). Lines not reserved for data will be grayed out on the VBI SDI web page ([Figure 31 on page 49](#) for 525 and [Figure 32 on page 50](#) for 625).

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 20. Advanced VBI Configuration – 525 Line Rate

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

**VBI / Data Lines**

Field 1 Lines	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]
Field 2 Lines	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					

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

Figure 21. Advanced VBI Configuration – 625 Line Rate

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

**VBI / Data Lines**

Field 1 Lines	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]
Field 2 Lines	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						

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

## Frame Sync Web Page

- Use this link
- [Functional View](#)
  - [SDI In](#)
  - [DEMUX](#)
  - [Video Input Select](#)
  - [Frame Sync](#)
  - [Video Proc](#)
  - [MUX](#)

Use the Frame Sync web page (Figure 22 on page 39 and Figure 23 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 22 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 23 on page 39). AutoBlack outputs a black signal while AutoFreeze outputs the last complete video field.

Figure 22. Frame Synchronizer Web Page – Video In Reference

 **Frame Sync** 

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

Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 3

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

**Timing Adjustment**

H Timing (pixels)		V Timing (lines)	
<< 0.0 >>	<< 0 >>	<< 0 >>	<< 0 >>
< Apply >	< Apply >	< Apply >	< Apply >

**Freeze Mode Selection**

Freeze Mode  None  Field 1  Field 2  Frame

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

Figure 23. Frame Synchronizer Web Page – Internal Frame Reference

 **Frame Sync** 

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

Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 3

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

**Timing Adjustment**

H Timing (pixels)		V Timing (lines)	
<< 0.0 >>	<< 0 >>	<< 0 >>	<< 0 >>
< Apply >	< Apply >	< Apply >	< Apply >

**Freeze Mode Selection**

Freeze Mode  None  AutoBlack  AutoFreeze  Field 1  Field 2  Frame

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

## Video Processing Web Page

- Use this link
- [Functional View](#)
  - [SDI In](#)
  - [DEMUX](#)
  - [Video Input Select](#)
  - [Frame Sync](#)
  - [Video Proc](#)
  - [MUX](#)
  - [VBI SDI](#)
  - [Audio Channel Pairing](#)
  - [Audio Sync](#)
  - [Audio Proc](#)

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 24 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 25 on page 43.

### Standard View

In Standard View (Figure 24 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 24. Video Processing Web Page – Standard View



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 3  
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection:  Standard  Advanced

### Video Processing Controls

Video Processing:  Disable  Enable  Color Bars

Video Gain Lock:  On  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:  Disable  Enable

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"/>

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

## Advanced View

In Advanced View (Figure 25 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 25 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 25. Video Processing Web Page – Advanced View



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 3  
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection:  Standard  Advanced

**Video Processing Controls**

Video Processing:  Disable  Enable  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:  Disable  Enable

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

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

## MUX Web Page

Use this link

- [SDI In](#)
- [DEMUX](#)
- [Video Input Select](#)
- [Frame Sync](#)
- [Video Proc](#)
- [MUX](#)
- [VBI SDI](#)
- [Audio Channel Pairing](#)
- [Audio Sync](#)
- [Audio Proc](#)

Use the MUX (multiplex) web page to:

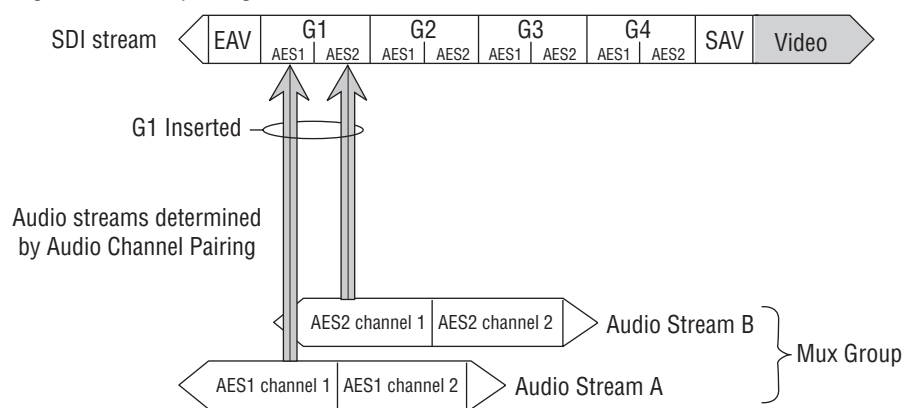
- Delete unwanted audio groups from the SDI input video signal or clear all horizontal ancillary data (HANC), and
- Insert demultiplexed audio groups that have been configured in the Audio Processor back into the SDI video stream.

**Note** The audio channel pairs available to each Mux Group below are determined by the Audio Channel Pairing web page (see [page 51](#)).

**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 26](#) depicts the multiplexing of the processed audio streams back into the SDI video stream based on the selections made on the Mux web page in [Figure 29 on page 47](#).

Figure 26. 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 stream and the selections made on the DEMUX web page ([DEMUX Web Page on page 32](#)).

## Group Deletion

The Group Deletion area of the Mux web page reports if an embedded audio signal is present in any of the four audio groups in the incoming SDI signal and the output status of each group. It is the same as the Group Status reporting on the [DEMUX Web Page on page 32](#). It can be used to delete unwanted embedded audio groups and HANC (horizontal ancillary data) in the SDI video input signal 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 29 on page 47](#).

## Group Replacement

The Group Replacement function allows the re-insertion of two processed streams (determined on the [Audio Channel Pairing Web Page on page 51](#)) 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 29 on page 47](#).

## Audio Multiplexing

There are four possible conditions for multiplexing as described next.

### No Embedded Audio

If no embedded audio groups are present in the incoming SDI signal, the Group Deletion input status section will appear as shown in [Figure 27](#). Input Status is **Not Present** and Output Status is **Empty** for each audio group. No deletion or Group Replacement is possible with this status.

Figure 27. 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 has been selected for **No Extraction** on the DEMUX web page, the audio group will be passed to the output as shown in [Figure 28](#). 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. Group Replacement is not possible with this status.

Figure 28. 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 extracted audio group can be selected to replace an existing audio group with the Group replacement function as shown in [Figure 29 on page 47](#). In this case, the present audio, Group 1, has been extracted, processed in the Audio processor, and selected to replace the original audio group.

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.

Figure 29. Multiplex Web Page



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 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	<a href="#">N/A</a>	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete
Output Status	<a href="#">Replaced</a>	<a href="#">Empty</a>	<a href="#">Empty</a>	<a href="#">Empty</a>
<input type="checkbox"/> Clear all input HANC data				
<b>Warning!</b> <a href="#">24 Bit Audio in all four groups may exceed data space capabilities</a>				

#### Group Replacement

Mux Group	Replace	Group	Bits/Sample
<b>Pair 1:</b>	<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
<a href="#">Video In.G1.S1.Ch1 &amp; Video In.G1.S1.Ch2</a>			
<b>Pair 2:</b>	<input checked="" type="checkbox"/> Stream B	<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
<a href="#">Video In.G1.S2.Ch1 &amp; Video In.G1.S2.Ch2</a>			

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

### Insert Embedded Audio

An extracted audio group can be selected to replace an empty audio group with the Group replacement function as shown in [Figure 30](#). In this case, the original audio, Group 1, has been extracted on the [DEMUX Web Page on page 32](#), 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 30. Insert Embedded Audio



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 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="#">Video In.G1.S1.Ch1 &amp; Video In.G1.S1.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 type="radio"/> 20 bits <input type="radio"/> 24 bits
<a href="#">Video In.G1.S2.Ch1 &amp; Video In.G1.S2.Ch2</a>			

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



## VBI SDI Web Page

- Use this link
- [Frame Sync](#)
  - [Video Proc](#)
  - [MUX](#)
  - [VBI SDI](#)
  - [Audio Channel Pairing](#)
  - [Audio Sync](#)
  - [Audio Proc](#)
  - [E-MEM@](#)

Use the VBI SDI web page (Figure 31 for 525, Figure 32 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 grayed out. See *Advanced VBI Configuration* on page 36.

Figure 31. VBI SDI Web Page – 525 Line Rate



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 3  
 Last Recalled E-MEM: [Factory Defaults](#)

Current Line Rate	525
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

[Back](#)   [Functional View](#)

Figure 32. VBI SDI Web Page – 625 Line Rate



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 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

[Back](#)   [Functional View](#)

## Audio Channel Pairing Web Page

- Use  
this  
link
- [Video Input Select](#)
  - [Frame Sync](#)
  - [Video Proc](#)
  - [MUX](#)
  - [VBI SDI](#)
  - [Audio Channel Pairing](#)
  - [Audio Sync](#)
  - [Audio Proc](#)

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

### Audio Channel Pairing

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

Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)

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="#">Video In.G1.S1.Ch1</a>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str1.Ch1
<a href="#">Video In.G1.S1.Ch2</a>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str1.Ch2
<a href="#">Video In.G1.S2.Ch1</a>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Str2.Ch1
<a href="#">Video In.G1.S2.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

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

## Audio Sync Web Page

- Use this link
- [Video Proc](#)
  - [MUX](#)
  - [VBI SDI](#)
  - [Audio Channel Pairing](#)
  - [Audio Sync](#)
  - [Audio Proc](#)
  - [E-MEM@](#)

Use the Audio Sync web page (Figure 34) to:

- Synchronize the two audio channel pairs to video Frame Sync (auto-track), 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.

Figure 34. Audio Synchronizer Web Page

### Audio Sync

Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 Last Recalled E-MEM: [Factory Defaults](#)

Pair 1		Pair 2	
Ch A	<a href="#">Video In.G1.S1.Ch1</a>	Ch A	<a href="#">Video In.G1.S2.Ch1</a>
Ch B	<a href="#">Video In.G1.S1.Ch2</a>	Ch B	<a href="#">Video In.G1.S2.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="text" value="0"/> <input type="button" value="Apply"/> Ch B Delay Adjust (mS) <input type="text" value="0"/> <input type="button" value="Apply"/>		Ch A Delay Adjust (mS) <input type="text" value="0"/> <input type="button" value="Apply"/> Ch B Delay Adjust (mS) <input type="text" value="0"/> <input type="button" value="Apply"/>	

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

## 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.

## Audio Processing Web Page

Use this link

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

Use the Audio processing web page (Figure 35) 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.

Figure 35. Audio Processing Web Page



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 Last Recalled E-MEM: [Factory Defaults](#)

Pair 1		Pair 2	
Ch A	<a href="#">Video In.G1.S1.Ch1</a>	Ch A	<a href="#">Video In.G1.S2.Ch1</a>
Ch B	<a href="#">Video In.G1.S1.Ch2</a>	Ch B	<a href="#">Video In.G1.S2.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	<a href="#">Pass</a>	<a href="#">Pass</a>	
AES output resolution	<input type="radio"/> 20 bit <input checked="" type="radio"/> 24 bit		AES output resolution
	<input type="radio"/> 20 bit <input checked="" type="radio"/> 24 bit		

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

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

## 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 54](#).

## E-MEM Configuration Web Page

- [MUX](#)
  - [VBI SDI](#)
  - [Audio Channel Pairing](#)
  - [Audio Sync](#)
  - [Audio Proc](#)
  - [E-MEM®](#)
  - [Slot Config](#)
  - [Software Update](#)
- 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-EAP. 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 57).

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



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 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-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
 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

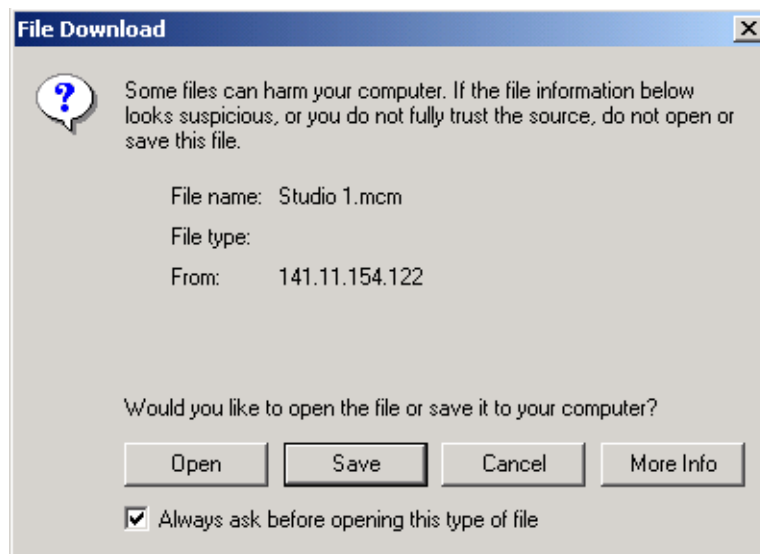
### Save File

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.

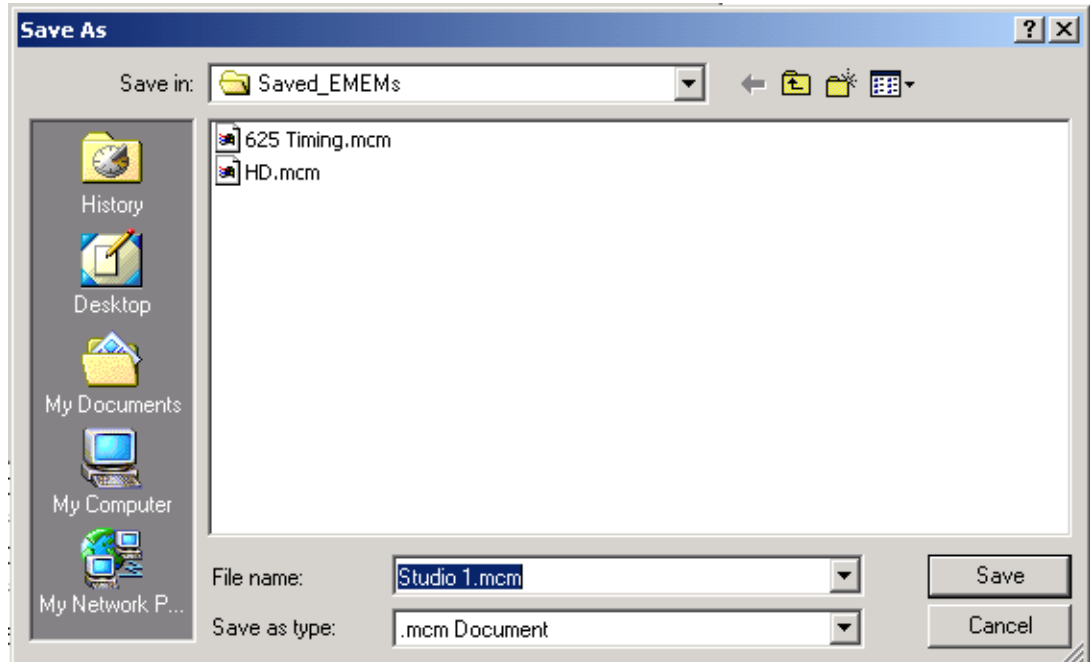
This will bring up a File Download screen similar to [Figure 38](#). Select **Save**.

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

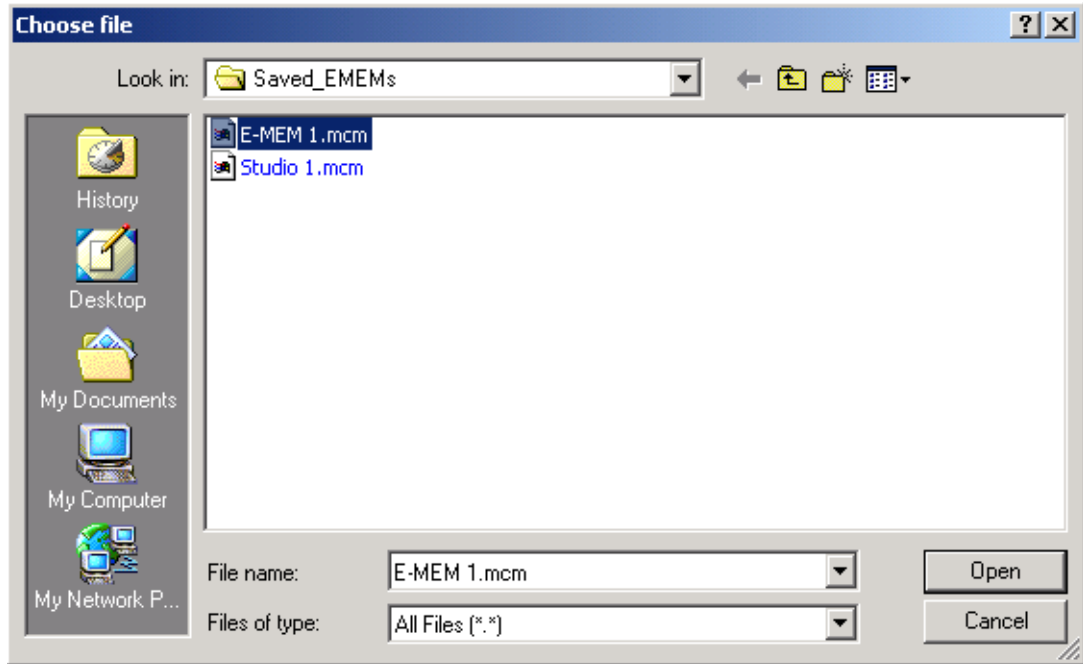
Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)

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 59). 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 →

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

Use the Slot Config web page (Figure 42 on page 62) 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.

**Note** Uncheck this box before installing new software. After reconfiguring the module with the new software, select the **Learn Module Config** button.

Figure 42. Slot Configuration Web Page

**Slot Config**

Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)

**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

- [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



Model: [KAM-SD-2AES-EAP](#) Description: [Frame Sync, Proc Amp, SD/2Embed to SD/2Embed](#)  
Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [3](#)  
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"/>	<a href="#">192.158.211.31</a>
File Path:	<input type="text" value="Enter Filename Here"/>	<a href="#">Enter Filename Here</a>
FTP UserName:	<input type="text"/>	
FTP Password:	<input type="password"/>	
	<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. Multiplexing/Demultiplexing Specifications

Parameter	Value
<b>MUX/DEMUX 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)
Extract, retime, insert	Up to 2 groups
Delete	Up to 4 groups
Insert	Up to 2 groups
Bits/sample on inserted audio	20/24 bits, selectable
Buffer size	170 samples
DEMUX delay	1.77 ms
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 10. 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 11. 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 12. 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

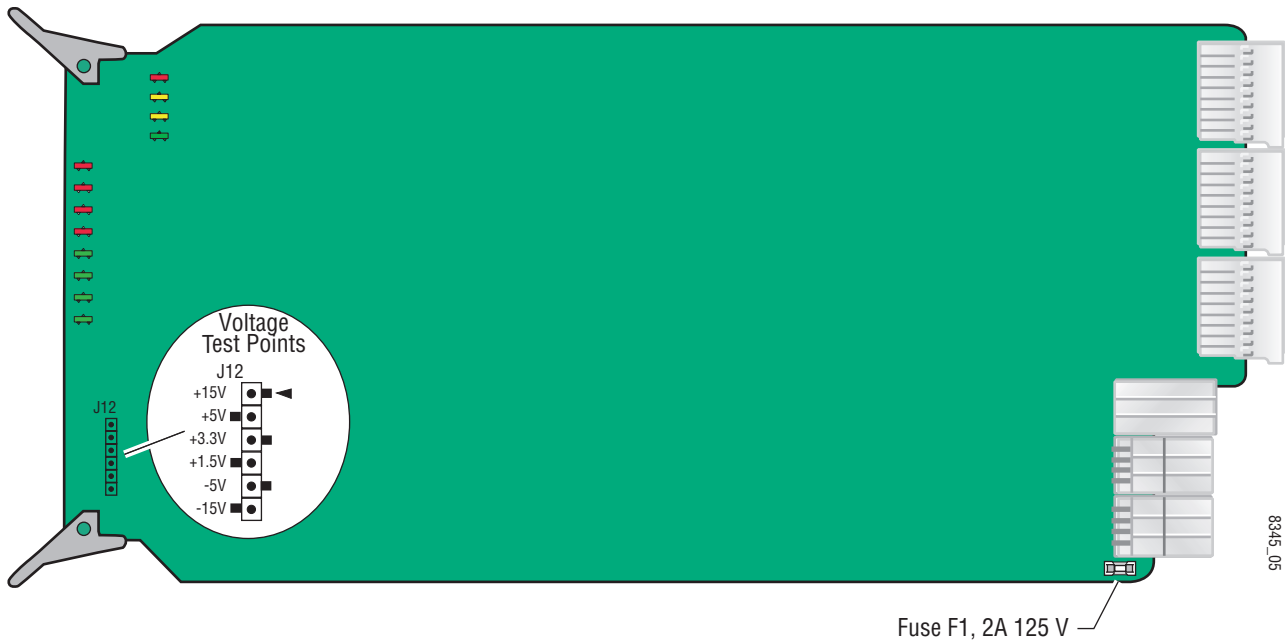
The Kameleon modules make extensive use of surface-mount technology and programmed parts to achieve compact size and adherence to demanding technical specifications. Circuit modules should not be serviced in the field except to check and replace fuses.

## 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.

# Index

## Numerics

- 2000GEN module
  - for output timing 35
  - requirement 8
- 2000NET module
  - hardware requirements 7
  - hardware switches 61
  - software requirement 8

## A

- Apply button 21
- Asset Tag
  - assigning 61
  - Status web page 24
- audio
  - channel lock 53
    - summary table 17
    - web page control 52
  - channel pairing
    - summary table 17
    - web page control 51
  - channel swap
    - summary table 17
    - web page control 51
  - delay
    - channel lock 17
    - summary table 17
    - web page controls 53
  - demultiplexing 15, 32
  - gain
    - summary table 17
    - web page controls 55
  - group deletion
    - summary table 16
    - web page control 44
  - group replacement 44
    - summary table 16
    - web page control 45
  - loss of signal reporting 33
  - multiplexing 44
  - multipliplexing
    - conditions 46

- processing
  - summary table 17
  - web page control 55
- silence 51
- synchronizing 52
- test signals 54

- Audio Channel Pairing web page 51
- Audio Proc web page 54
- Audio Sync web page 52
- auto tracking (audio)
  - summary table 17
  - web page control 52, 53

## B

- B-Y gain
  - summary table 16
  - web page control 42
- B-Y offset
  - summary table 16
  - web page control 42

## C

- chroma gain (saturation)
  - summary table 16
  - web page control 40
- clipping controls
  - summary table 16
  - video 42
- clipping status
  - audio 54
- Coarse adjust button
  - overview 21
- color bars test signal 40
- color code
  - functional view page 29
- COMM LED 14
- compatible network software 7
- CONF LED 14
- configuration

- control panel 15
  - overview 22
- Remote, GUI 15
- control panel 18
- cooling 8

## D

- data lines 34
- delay
  - audio 53
- demultiplexing audio
  - overview 32
  - web page controls 33
- digital audio groups 44
- documentation online 2

## E

- EDH/Feed Forward error reporting 30
- E-MEM
  - Advanced view 57
  - description 56
  - load file 59
  - save file 58
  - standard view 56
  - web page 56
- error reporting
  - SDI input video 15

## F

- factory defaults
  - recall factory defaults 56
  - summary table 15
  - video processor 42
- Factory names
  - recall 56
- fan 8
- FAQ database 2
- FAULT LED 14
- fault messages 26
- Fine adjust button
  - overview 21
- frame capacity 8
- Frame Health Reporting

- enabling and disabling 63
- frame reference
  - loss of signal reporting 15
  - summary table 15
  - web page control 34
- frame sync
  - summary table 15
  - web page controls 35
- Frame Sync web page 38
- freeze modes
  - summary table 16
  - web page controls 38
- frequently asked questions 2
- front media module
  - installation 11
- Functional View
  - overview 22
  - web page 29
- fuse 68

## G

- graphical user interface (GUI) 23
- Grass Valley web site 2
- group replacement 44

## H

- HANC (horizontal ancillary data)
  - clearing 45
  - summary table 16
- Hard/Video Black Clip
  - summary table 16
  - web page control 42
- Hard/Video White Clip
  - summary table 16
  - web page control 42
- hardware requirement 7
- horizontal timing
  - summary table 15
  - web page control 38
- hue (chroma phase)
  - summary table 16
  - web page control 40

**I**

I/O Config web page 27  
 inserting modules 8

**K**

KAM-AES-R rear module  
   cabling 12  
   installation 10  
 KAM-SD-2AES-EAP module  
   features 7

**L**

LEDs  
   front edge 14  
   operational modes 14  
 locate module 14, 61  
 loss of signal reporting  
   audio in 15, 33  
   frame reference 34  
   SDI video in 34  
   SNMP traps 63

**M**

midplane 11  
 module location function 14, 61  
 module slot identification 61  
 multiplexing  
   conditions 46  
   group deletion 45  
   group replacement 45  
 MUX web page 44

**N**

naming module slots 61  
 NetConfig  
   updating software 64  
 Network Interface Module  
   version 7  
 Newton Control Panel  
   control summary table 15  
   overview 18

**O**

online documentation 2  
 output timing source  
   summary table 15  
   web page control 35

**P**

power requirements 67  
 PWR LED 14

**R**

Refresh button 21  
 removing modules 8  
 repair depot 68  
 R-Y gain  
   summary table 16  
   web page control 42  
 R-Y offset  
   summary table 16  
   web page control 42

**S**

sample rate (output)  
   summary table 16  
   web page control 45  
 sample rate conversion  
   disabling 33  
   summary table 15  
 SDI In web page 30  
   view selection 15  
 SDI input errors  
   summary table 15  
   web page control 34  
 SDI video in  
   cabling 12  
   EDH/Feed Forward error reporting 30  
   loss of signal reporting 15  
   specifications 65  
 SDI video out  
   cabling 12  
   freeze mode 38  
   specifications 65  
 service 68

- signal status
  - rear module LED 13
  - web page view 27
- Slot Config web page 61
- slot configuration
  - saving 61
- slot memory 61
- slot names 61
- SNMP trap reports
  - enabling and disabling 63
- Soft/Y Black Clip
  - summary table 16
  - web page control 42
- Soft/Y White Clip
  - summary table 16
  - web page control 42
- software
  - requirement 7
  - update 64
- software download from web 2
- specifications 65
- status indicators
  - color codes 24
  - meanings 24
  - Status LEDs 21
- Status web page 24
- synchronizing audio 52
- system requirements 8

## T

- test signals
  - audio (1 kHz, 400 Hz) 55
  - video (color bars) 40
- troubleshooting 68

## V

- VBI configuration
  - advanced view 34, 36
  - applying clips
    - summary table 17
  - applying clips to VBI 42, 49
  - blank VBI lines
    - summary table 17
  - blanking 49
  - clipping, summary table 16
  - reserving data lines 36
  - summary table 15
- VBI SDI web page 49
- vertical blanking interval (VBI) 34
- vertical timing
  - summary table 15
  - web page control 38
- Video Gain Lock
  - summary table 16
  - web page control 42
- Video Input Select web page 34
- video line rate
  - summary table 15
  - web page control 34
- Video Proc web page 40
- video processing
  - clipping controls 42
  - overview 40
  - summary table 16
  - web page controls 40

## W

- warning messages 26
- web browser
  - overview 19
- web site
  - documentation 2
  - FAQ database 2
  - Grass Valley 2
  - software download 2

## Y

- Y Gain (contrast)
  - summary table 16
  - web page control 40
- Y Offset (brightness)
  - summary table 16
  - web page control 40