

KAM-AV/SD

KAMELEON MULTI-FUNCTION MODULES

Instruction Manual

SOFTWARE VERSION 6.0.2

071817305
OCTOBER 2008



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KAM-AV/SD

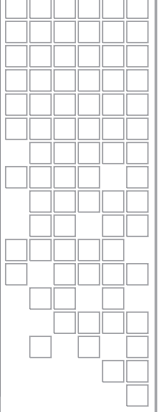
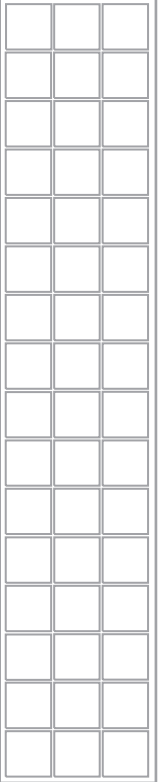
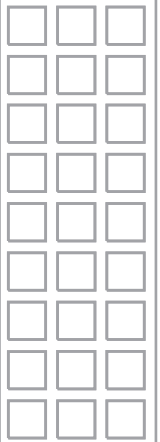
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Preface

About This Manual

This manual describes the features of a specific Kameleon module in the Kameleon Media Processing System. As part of this module family, it is subject to Safety and Regulatory Compliance described in the 2000 Series frame and power supply documentation (see the *Kameleon Frames 2000T1 and 2000T3 Models Instruction Manual*).

This manual and all other Modular documentation can be found on-line in PDF format at this URL:

www.thomsongrassvalley.com/docs/modular

KAM-AV/SD Kameleon Multi-function Modules

Introduction

This manual contains a Quickstart guide supported by references to the complete manual and supporting documents (see [Quickstart Guide on page 14](#)). Detailed installation, power up, and configuration information follows the Quickstart Guide.

The Kameleon KAM-AV and KAM-SD multi-function modules are for use in 2000 Series Kameleon 2000T1 and 2000T3 frames. They are designed for facilities that receive multiple feeds that need considerable audio and video processing. They are particularly well suited for broadcasters and cable facilities that need to manipulate or add audio channels to multiple program streams.

Note Kameleon operation requires 2000NET Network Interface Module hardware revision 01A1 or greater with at least software version 4.0.0. The latest version available is recommended (version 4.0.2).

Kameleon systems installed in the 2000T3N frame require the 2000FAN fan sled (refer to [Figure 7 on page 20](#)).

Kameleon offers processing modules that provide a flexible, compact system of conversion, multiplexing, timing and signal processing functions for standard definition, analog and digital, video and audio.

The Kameleon Modular Series consists of the following:

- Two versions of the front processing module are available:
 - SD – SDI video processor with SDI Video I/O and AES/EBU and/or analog audio I/O (with submodules), and
 - AV – Composite or SDI video I/O and AES/EBU or analog audio I/O (with submodules).

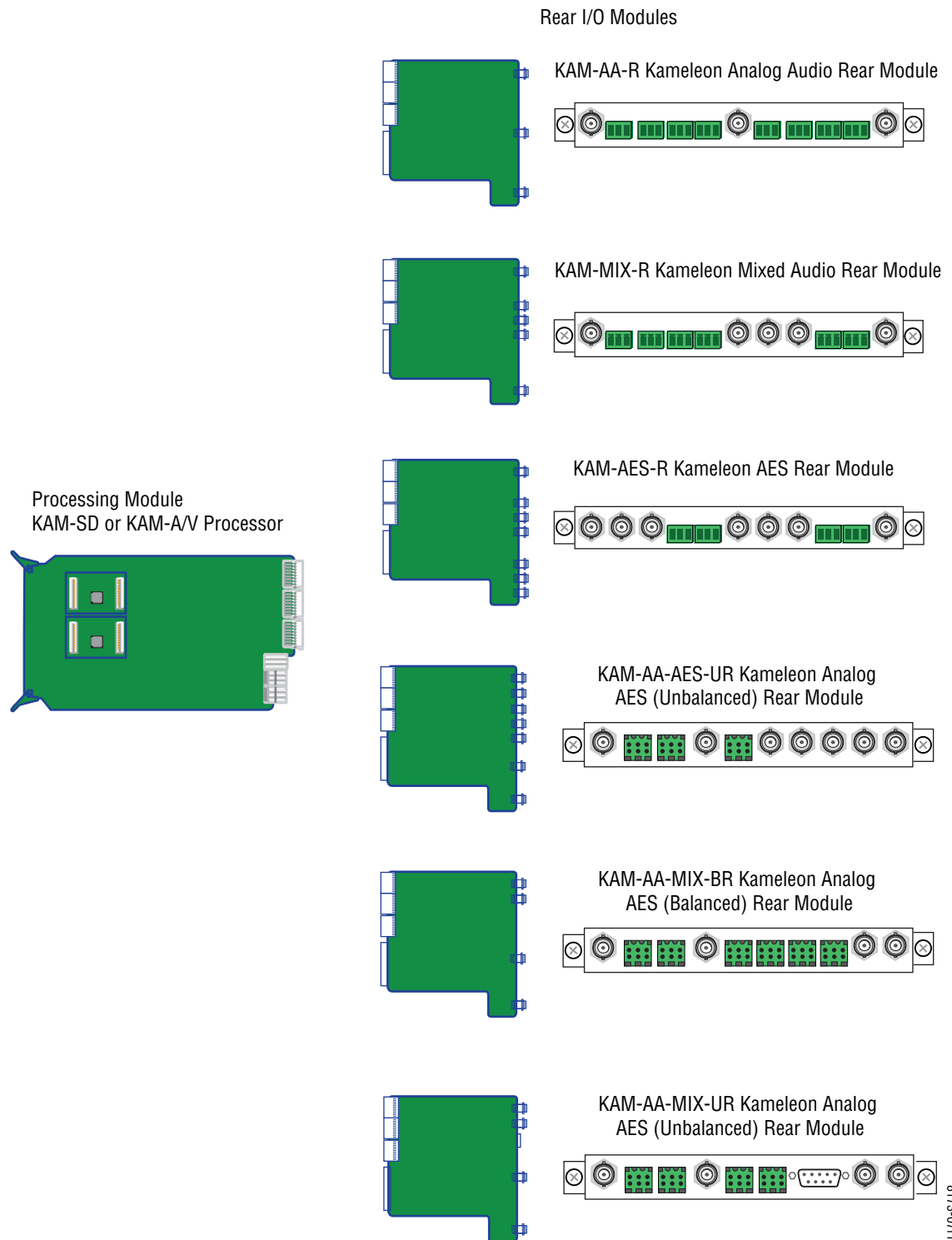
Standard front processing module functions include:

- 3D video decoding (KAM-AV only),
- Up to 8 channels of audio A/D or D/A conversion (with submodules),
- Video and audio synchronization,
- 8 channels of audio embedding/de-embedding,
- Audio remapping to specific I/O,
- AES/EBU sample rate conversion,
- Video and audio processing amplifiers,
- Video and audio test signal generators,
- Individual Analog and Digital video timing controls, and
- Powerful VBI (vertical blanking interval) processing.
- Six types of rear I/O modules are available:
 - KAM-AA-R Analog Audio Rear module,
 - KAM-MIX-R Mixed Audio Rear module,
 - KAM-AES-R AES Audio Rear module,
 - KAM-AA-AES-UR Rear module,
 - KAM-AA-MIX-BR Rear module, and
 - KAM-AA-MIX-UR Rear module.
- Two audio conversion submodules that can be installed on the processing module,
 - Four-channel Analog to Digital Conversion Submodule (ADC), and
 - Four-channel Digital to Analog Conversion Submodule (DAC).

Note Frame synchronization requires a 2000GEN Genlock Reference Module installed in the 2000 Series Kameleon Frame.

A front and rear module pair are required. The front processing modules provide the signal processing power while the rear module determines the specific I/O connections (refer to [Figure 1 on page 13](#)). Separate audio A-to-D and D-to-A converter submodules may be installed in two slots on either version of the processing module.

Figure 1. Kameleon Processing and Rear Modules



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Quickstart Guide

1. Install modules in the frame.

Install the rear I/O Module. Install submodules on the front Processing Module if needed ([page 19](#)) then install the module in the frame.

2. Connect the frame to the network and navigate the web browser to the frame.

See the 2000NET Instruction Manual for information on configuring your frame IP address and connecting to the network.

3. Navigate to the module you would like to configure and click on the appropriate slot to open configuration links.

4. Navigate to I/O Configuration page to configure AES/EBU ports as:

- Inputs or outputs, and
- Balanced or unbalanced (see [page 52](#)).

Click on the **I/O Config** page link on the left side of the page. I/O Configuration also allows you to assign names for all of the module's incoming and outgoing signals. Assigning easily recognized names will help later in the configuration process.

5. Connect signal cables.

Configuration will be easier if all of the input signals are connected at this time.

6. Configure the **Video Input Select** page (see [page 71](#)).

Configure the video source and the output timing source. If you have the 2000GEN reference installed in the frame and want the Kameleon to work as a frame sync, set the output timing source to Frame Reference. If not, set the output timing source to Video In.

7. Configure the **DEMUX** (demultiplex) page (see [page 70](#)).

If you are de-multiplexing audio out of the video signal, **DEMUX** is configured next. The audio Demux page is used to extract digital audio groups from incoming SDI video for processing. These audio groups become inputs to the Audio Input Select page.

8. Configure the remaining audio/video pages.

Navigate to the **Functional View** web page (see [page 60](#) for the KAM-AV or [page 61](#) for the KAM-SD). Starting from the left, use the block diagram links to access and configure the different blocks for the desired operation by clicking on any link in a block.

9. Configure vertical blanking interval (VBI) control.

To support data carried on particular lines, the Kameleon controls certain functions within the vertical blanking interval (VBI) and on some of the active video lines.

We refer to active video lines that are used to carry data as “Data Lines”. Clicking the **Advanced (VBI Config)** radio button at the top of the **Video Input Select** page ([page 71](#)) displays the controls that allow you to specify which active video lines will be carrying data.

After making selections on this page, use the following pages for configuring the VBI/Data Lines:

- **VBI Decode** – for the composite input ([page 66](#)),
- **VBI Encode** – for the composite output ([page 87](#)), and
- **VBI SDI** – for serial digital output ([page 89](#)).

Installation

To install the Kameleon modules:

1. Place the passive rear module in a frame slot and tighten the screws on each side of the rear module,
2. Place the processor module in the corresponding front slot, and
3. 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.

Audio submodules must be installed or removed with the processing module removed from the frame (processor module powered down).

Frame Capacity

Kameleon modules can be installed in any 2000 Series frame with a 2000NET interface.

Note For optimum functionality, the 2000NET module should be running software version 4.0.2 or later.

The one rack unit 2000T1DN (with dual 130W power supplies and 2000NET module) or 2000T1DNG (with dual 130W power supplies, 2000NET and 2000GEN modules) frames have no Kameleon module capacity limitations.

The three rack unit 2000T3N (single 240W p/s, 2000FAN, and 2000NET module) and 2000T3NG (single 240W p/s, 2000FAN, 2000NET and 2000GEN modules) frames can be fully populated with Kameleon modules when the 2000FAN fan sled and two power sleds are installed.

Note Ifn only one power supply sled is used in a 2000T3N frame, install the power supply sled in the top power supply slot (Slot 18). See [Figure 7 on page 20](#).

[Table 1](#) provides the maximum Kameleon module count for frame types.

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

Item	2000T3N/DNG Kameleon Frame Capacity	2000T1DN/NG Kameleon Frame Capacity
KAM-SD Module set	12	4
KAM-AV Module set	12	4

Module Placement in the Kameleon Frame

There are twelve slot locations in both the front and rear of a 3 RU frame and four slot locations in a 1 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 processing module and a passive rear module that can be plugged into any of the frame slot pairs. The rear modules provide the input and output interface connectors.

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

1. Locate a vacant slot in the rear of the 3 RU frame ([Figure 2](#)) or the 2000T1DNG frame ([Figure 3](#)).

Figure 2. 2000T3NG Frame, Rear View

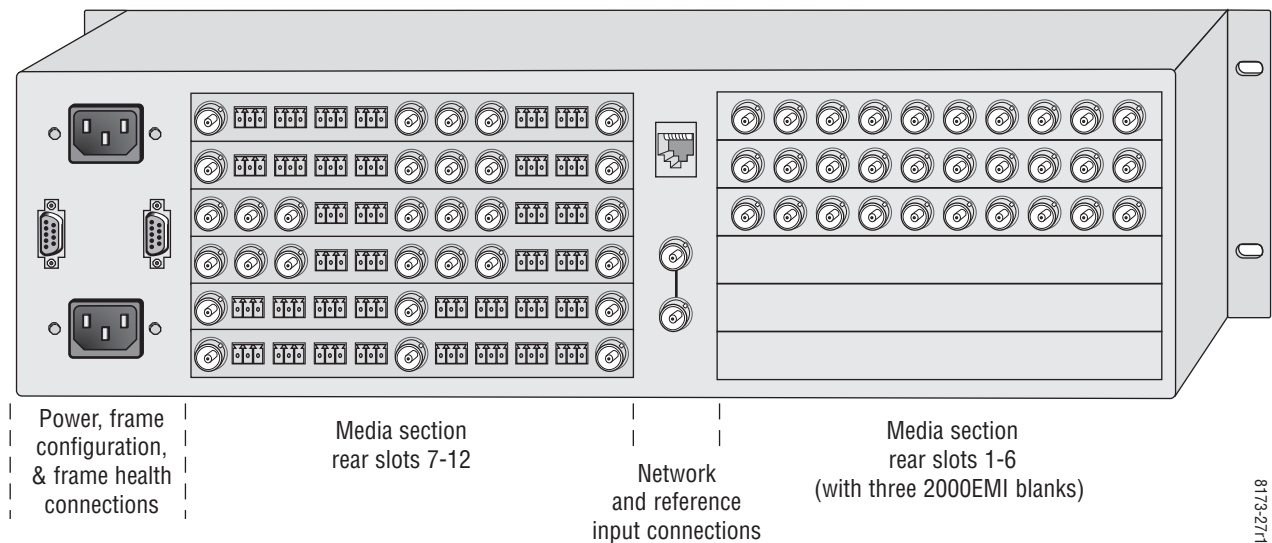
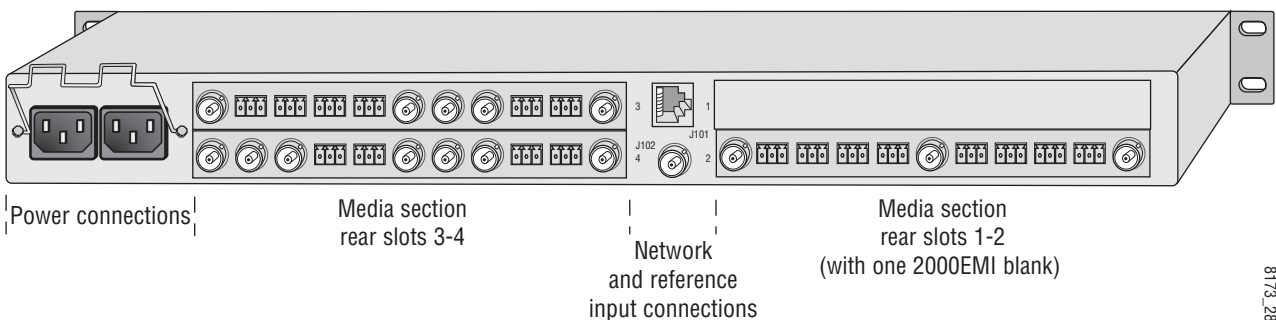
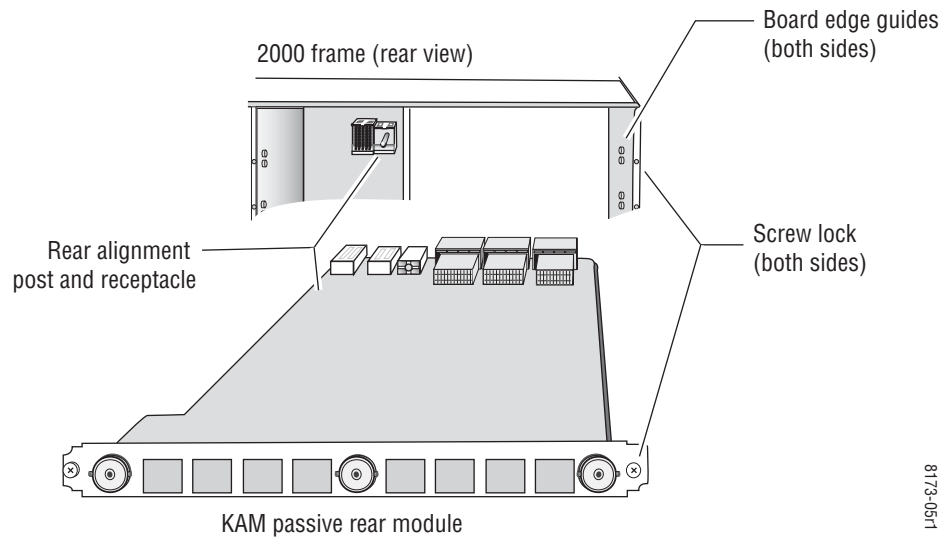


Figure 3. 2000T1DNG Frame, Rear View



2. Insert the passive rear module into the vacant rear slot of the frame as illustrated in [Figure 4 on page 18](#).

Figure 4. Installing Passive Rear Module

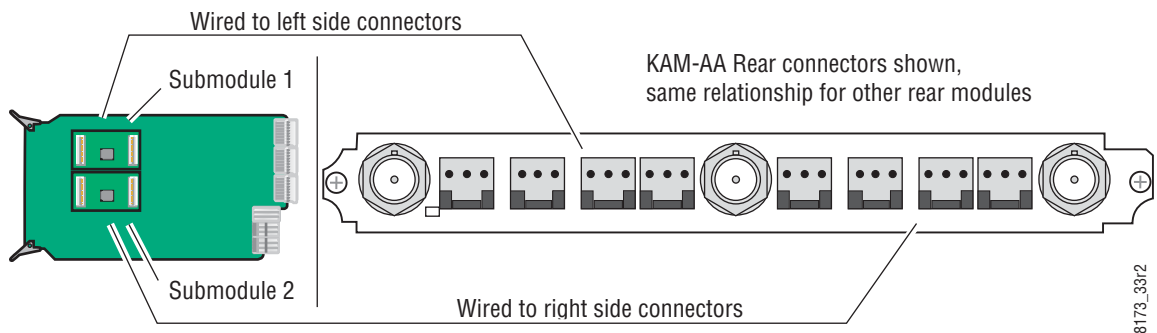


3. Verify that the module connector seats properly against the midplane.
4. Using a crossblade screwdriver, tighten the two screw locks to secure the module in the frame.
5. If an ADC and/or DAC audio submodule option has been ordered, the submodule will be provided with the front processing media module.

Placement of the submodule depends on the desired audio I/O configuration from the rear module type being used. The installation of the submodule will determine the functionality of the input and output audio connectors on each side of the rear module.

As illustrated in Figure 5, Submodule 1 is wired to the connectors on the left side of the rear module. Submodule 2 is wired to the right side connectors.

Figure 5. Submodule/Rear Connector Relationship



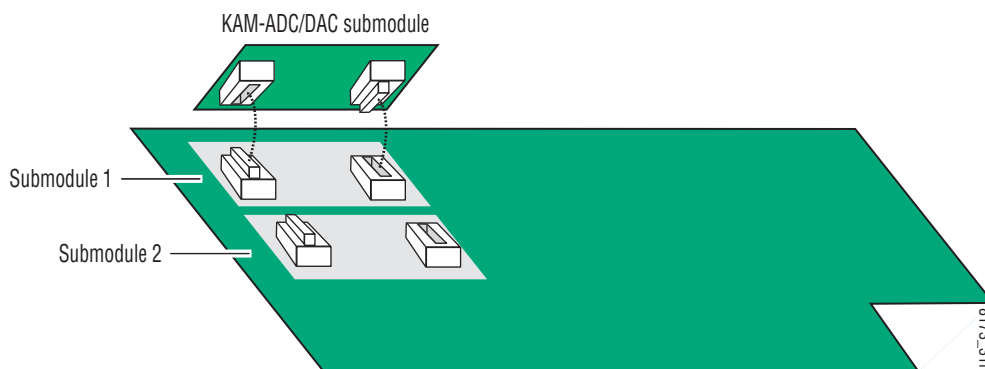
Refer to the rear module cabling information tables for correct placement of the submodules to match your requirements as follows:

- KAM-AA-R – designed for eight-channel analog audio I/O (see [Table 2 on page 23](#)).
- KAM-MIX-R – designed for mixed I/O of two AES/EBU streams (balanced or unbalanced) and four analog audio channels, (see [Table 3 on page 24](#)).
- KAM-AES-R – designed for eight AES/EBU audio, balanced or unbalanced I/O connections (see [Table 4 on page 26](#)). No submodules are used with this application.
- KAM-AA-AES-UR – designed for mixed I/O of three dual balanced analog audio inputs or outputs (six channels) and four BNC audio connections for four streams of AES audio inputs, outputs, or two inputs and two outputs (see [Table 6 on page 28](#)). If the submodule(s) need to be installed, refer to [Figure 5 on page 18](#) for the location of the submodule depending on the application.
- KAM-AA-MIX-BR – designed for mixed I/O of four dual balanced analog audio inputs or outputs (eight channels) and two dual balanced audio connections for four streams of AES audio which can be set independently as inputs or outputs (see [Table 7 on page 30](#)). If the submodule(s) needs to be installed, refer to [Figure 5 on page 18](#) for the location of the submodule depending on the application and [Figure 6](#) for installing it onto the module.
- KAM-AA-MIX-UR – designed for mixed I/O of four dual balanced analog audio inputs or outputs (eight channels) and one Sub-D 9 pin connector for four streams of unbalanced AES audio which can be set independently as inputs or outputs (see [Table 8 on page 32](#)). If the submodule(s) need to be installed, refer to [Figure 5 on page 18](#) for the location of the submodule depending on the application.

To install a submodule, line up the connectors on the bottom of the submodule with the correct submodule position on the top of the media module circuit board ([Figure 6](#)). Press firmly to seat the submodule and [Figure 6](#) for installing it onto the module.

After power-up, installation status of the submodule will be reported on the Status web page as described in [Status Web Page on page 48](#).

Figure 6. Kameleon Submodule Installation



6. Locate the corresponding front media slot (1 -12) in the 3 RU frame frame (Figure 7) or front media (slot 1-4) the 1 RU frame (Figure 8).

Figure 7. 2000T3NG Kameleon Frame, Front Slots

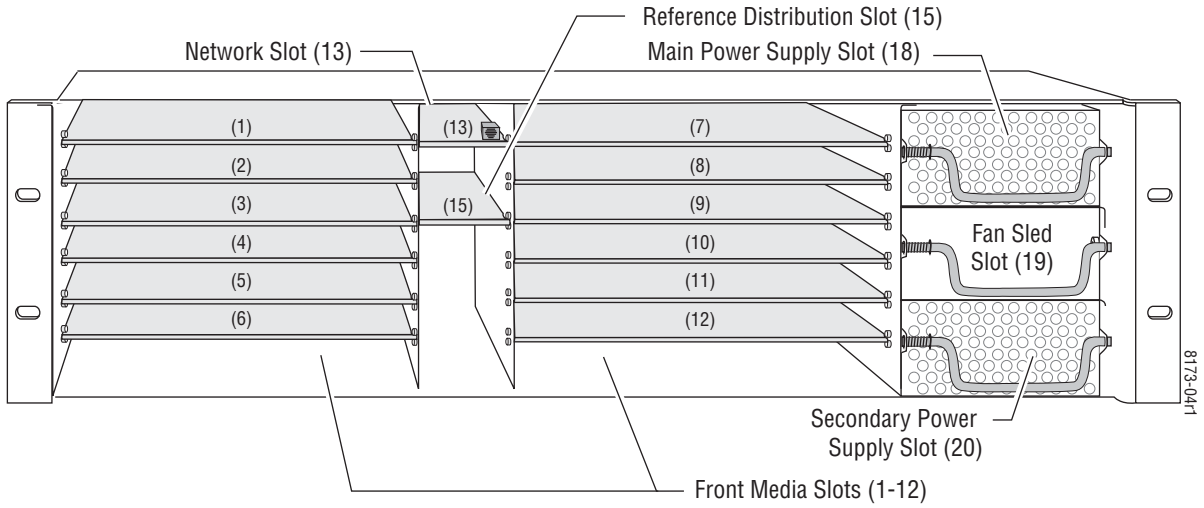
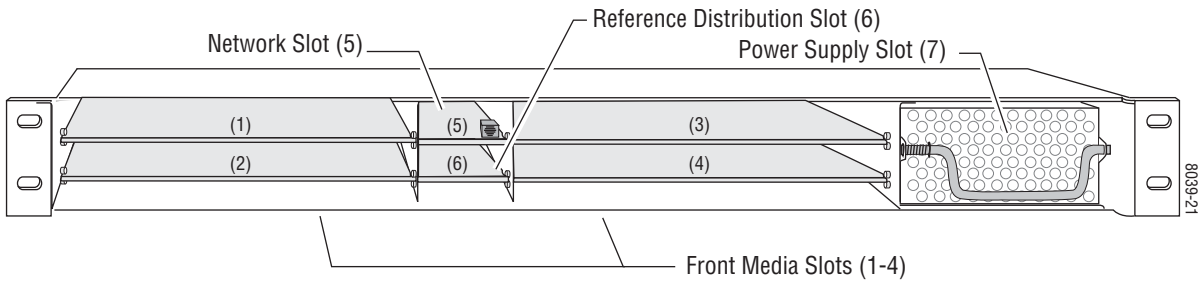
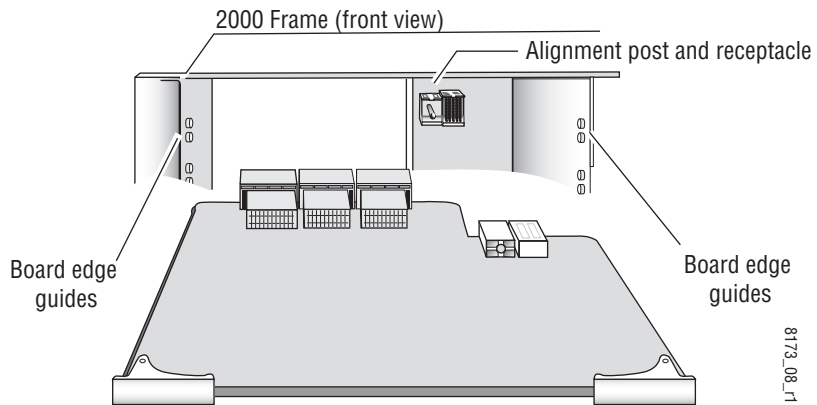


Figure 8. 2000T1DNG Kameleon Frame Front Slots



7. With the component side up, insert the front processing module in the corresponding front slot (see [Figure 9](#)).
8. Verify that the module connector seats properly against the midplane and rear module connector.
9. Press firmly on both ejector tabs to seat the module.

Figure 9. Installing Front Media Module



Cabling

All cabling is done at the corresponding rear module. Six different rear modules are available for various audio and video I/O configurations.

All modules accept SDI video in and provide SDI video out. Composite video inputs and outputs are only available with the KAM-AV front module.

Many audio functions require the use of the audio ADC (analog to digital) and DAC (digital to analog) conversion submodules installed on the front module. Use of the submodules depends on the type of rear module and the audio requirements as described in each rear module cabling section.

Cabling for each type of rear module is illustrated in the figures listed below:

- KAM-AA-R – see [Figure 10 on page 23](#),
- KAM-MIX-R – see [Figure 11 on page 24](#),
- KAM-AES-R – see [Figure 12 on page 25](#),
- KAM-AA-AES-UR – see [Figure 13 on page 27](#),
- KAM-AA-MIX-BR – see [Figure 14 on page 29](#), and
- KAM-AA-MIX-UR – see [Figure 15 on page 31](#).

Specific signal names are assigned for each connector using the 2000 GUI using the **I/O Config** web page (see [Configuration and Adjustments on page 35](#)).

KAM-AA-R Configurations

The KAM-AA-R rear I/O module (Figure 10) accepts either SDI or composite video (KAM-AV only). Three video BNC connectors are provided—one each for video in, composite video out (KAM-AV only), and SDI video out. Eight three-terminal audio connectors are provided for analog audio input or output I/O as determined by placement of the audio conversion submodules.

Figure 10. KAM-AA-R Input/Output Connectors

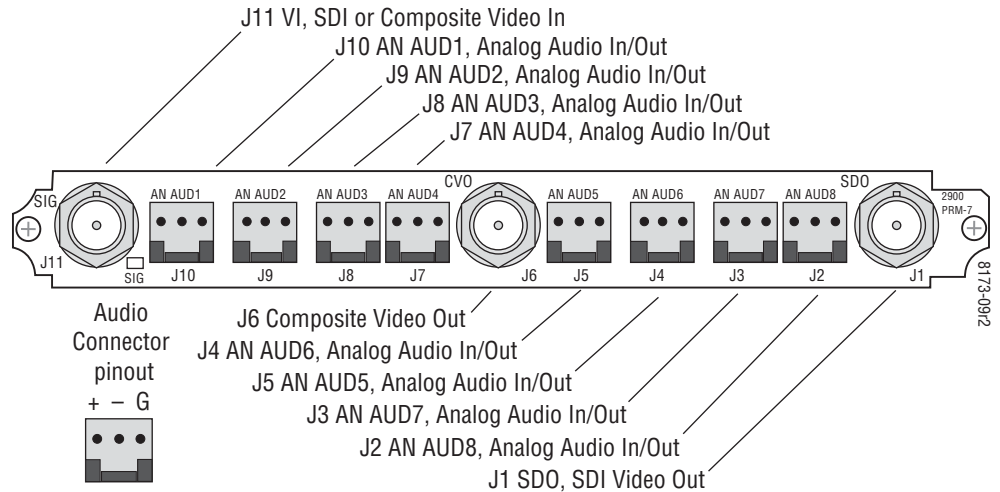


Table 2 provides the various audio input and output I/O configurations based on the positioning of the audio ADC and DAC submodules and the available video outputs. Figure 5 on page 18 illustrates the relationship of submodule to rear connector for KAM rear modules. Submodule installation is shown in Figure 6 on page 19.

Table 2. KAM-AA-R I/O Configurations

Submodule 1	Submodule 2	Video Input	Audio Inputs	Audio Outputs	Video Output
A to D	A to D	1 SDI or Composite ¹ (J11)	8 analog	None	1 SDI (J1) and 1 Composite ¹ (J6)
D to A	D to A		Demux from SDI input	8 analog	
A to D	D to A		4 analog	4 analog	

¹ Only KAM-AV modules support composite video I/O.

KAM-MIX-R Configurations

The KAM-MIX-R rear I/O module (Figure 11) accepts either SDI or composite video (KAM-AV only). Five BNC connectors are provided—three for video and two for unbalanced AES/EBU I/O. Six three-terminal audio connectors are provided—four for analog audio I/O and two for analog or balanced AES/EBU I/O.

Figure 11. KAM-MIX-R Input/Output Connectors

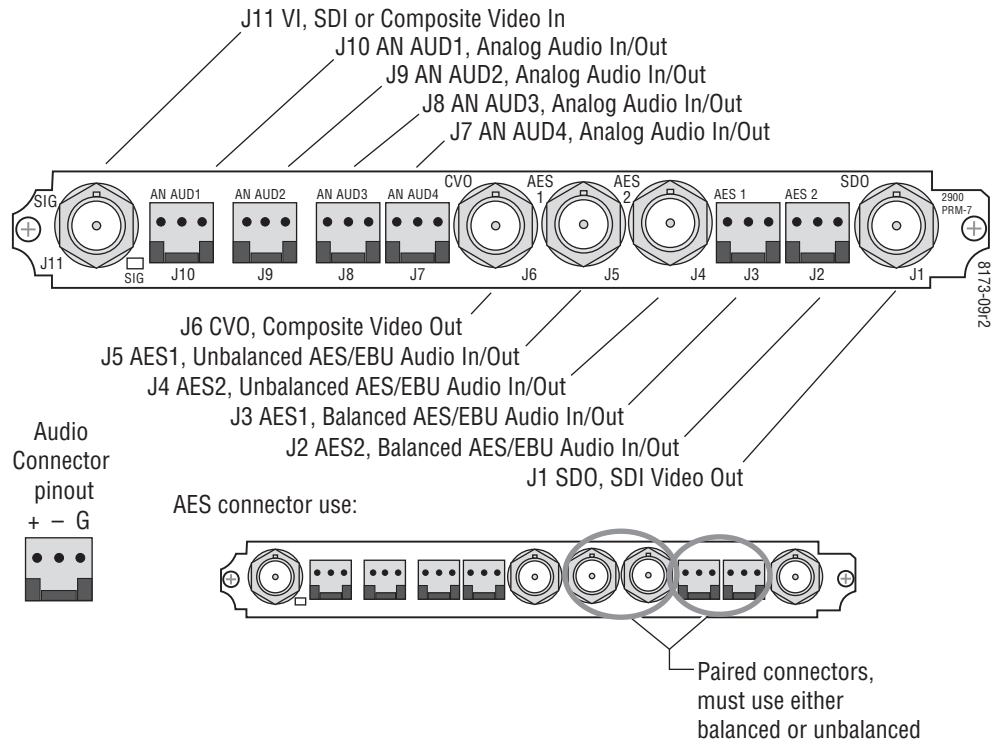


Table 3 provides the various audio input and output I/O configurations based on the positioning of the audio ADC and DAC submodules and the available video outputs. Figure 5 on page 18 illustrates the relationship of submodule to rear connector for KAM rear modules. Submodule installation is shown in Figure 6 on page 19

Table 3. KAM-MIX-R I/O Configurations

Submodule 1	Submodule 2	Video Input	Audio Inputs	Audio Outputs	Video Output
A to D	None	1 SDI or Composite ¹ (J11)	4 analog, 2 AES/EBU balanced or unbalanced	None	1 SDI (J1) and 1 Composite ¹ (J6)
D to A	None		2 AES/EBU balanced or unbalanced	4 analog	
A to D	None		4 analog	2 AES/EBU balanced or unbalanced	
D to A	None		None	4 analog, 2 AES/EBU balanced or unbalanced	

¹ Only KAM-AV modules support composite video I/O.

KAM-AES-R Configurations

The KAM-AES-R rear I/O module accepts either SDI or composite video (KAM-AV only). Seven BNC connectors are provided—three for video and four for unbalanced AES/EBU I/O. Four three-terminal audio connectors are provided for AES/EBU balanced audio I/O. AES/EBU connectors are configured in pairs as shown in [Figure 12](#).

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

Figure 12. KAM-AES-R Input/Output Connectors

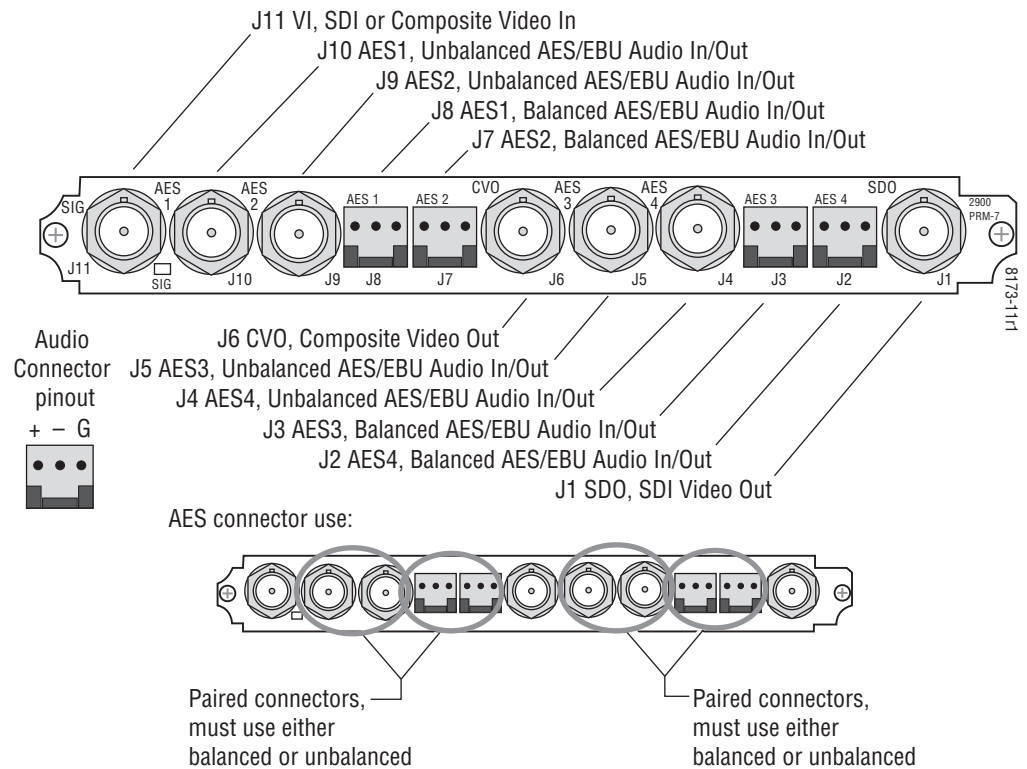


Table 4 provides the various audio input and output I/O configurations and the available video outputs. Submodules are not used in these configurations.

Table 4. KAM-AES-R I/O Configurations

Submodule 1	Submodule 2	Video Input	Audio Inputs	Audio Outputs	Video Output
None	None	1 SDI or Composite ¹ (J11)	4 balanced or unbalanced AES/EBU	None	1 SDI (J1 ¹) and 1 Composite ¹ (J6)
None	None		None	4 balanced or unbalanced AES/EBU	
None	None		2 balanced or unbalanced AES/EBU	2 balanced or unbalanced AES/EBU	

¹ Only KAM-AV modules support composite video I/O.

Table 5 lists the active and inactive connections for the KAM-AES-R module when the Balanced or Unbalanced mode is selected.

Only the selected AES outputs are valid. Unconfigured AES outputs are invalid and should not be used.

Table 5. KAM-AES-R AES/EBU Connector Selections

Channel Pair	Mode	Active Connectors	Inactive Connectors
AES 1 & AES 2	Unbalanced	J10 and J9	J8 and J7
AES 1 & AES 2	Balanced	J8 and J7	J10 and J9
AES 3 & AES 4	Unbalanced	J5 and J4	J3 and J2
AES 3 & AES 4	Balanced	J3 and J2	J5 and J4

KAM-AA-AES-UR Configurations

The KAM-AA-AES-UR rear I/O module (Figure 13) accepts either SDI or composite video (KAM-AV only). Three BNC connectors are provided for video—one video input, one composite output (KAM-AV only), and one SDI video output. Three dual terminal audio connectors are provided for analog audio input or output I/O. Four BNCs are provided for unbalanced input or output AES I/O.

Figure 13. KAM-AA-AES-UR Input/Output Connectors

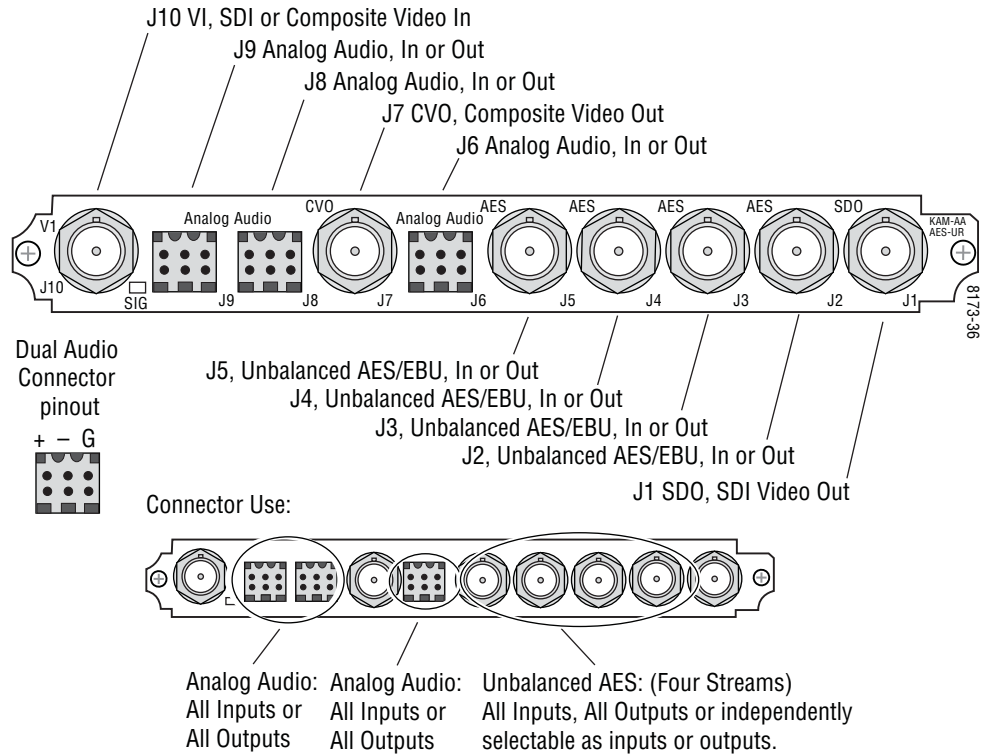


Table 6 provides the various audio input and output I/O configurations and the video outputs for the KAM-AA-AES-UR rear module. Analog audio input or output configuration depends on the positioning of the audio ADC and DAC submodules.

Any number of audio inputs can be configured but there is a limit of four audio output pairs with any configuration.

Table 6. KAM-AA-AES -UR I/O Configurations

Submodule 1	Submodule 2	Video Input	Analog Audio Inputs/Outputs ¹	AES Audio Inputs/Outputs ¹	Video Output
A to D	A to D	1 SDI or Composite ² (J10)	3 dual analog inputs (J6 ³ , J8, and J9)	4 AES/EBU unbalanced BNCs J2-J5 selectable as all inputs, all outputs, or independently selectable as inputs or outputs on the I/O Config web page	1 SDI (J1) and 1 Composite ² (J7)
A to D	D to A		2 dual analog inputs (J8 and J9) and 1 dual analog output (J6 ³)		
A to D	None		2 dual analog inputs (J8 and J9)		
None	A to D		1 dual analog input (J6 ³)		
D to A	D to A		3 dual analog outputs (J6 ³ , J8, and J9)		
D to A	A to D		2 dual analog outputs (J8 and J9) and 1 dual analog input (J6 ³)		
D to A	None		2 dual analog outputs (J8 and J9)		
None	D to A		1 dual analog output (J6 ³)		
None	None		None		

¹ There may be any number of audio inputs but there is a limit of four output audio pairs with any configuration.

² Only KAM-AV modules support composite video I/O.

³ Analog Audio connector J6 supports only Analog Audio Channels 1 and 2.

KAM-AA-MIX-BR Configurations

The KAM-AA-MIX-BR rear I/O module (Figure 14) accepts either SDI or composite video (KAM-AV only). Four BNC connectors are provided for video—one video input, one composite output (KAM-AV only), and two SDI video outputs. Four dual terminal audio connectors are provided for analog audio input or output I/O. Two dual terminal audio connectors are provided for balanced input or output AES/EBU I/O.

Figure 14. KAM-AA-MIX-BR Input/Output Connectors

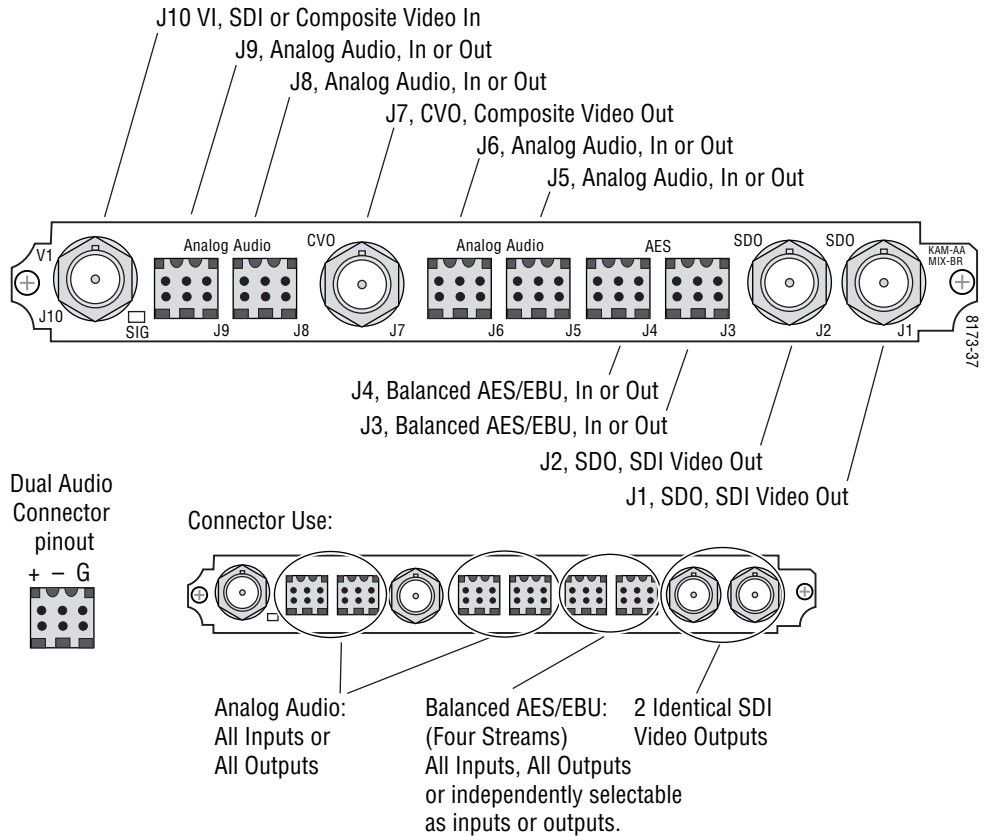


Table 7 provides the various audio input and output I/O configurations and the video outputs for the KAM-AA-MIX-BR rear module. Analog audio input or output configuration depends on the positioning of the audio ADC and DAC submodules. Figure 5 on page 18 illustrates the relationship of submodule to rear connector for KAM rear modules.

AES/EBU audio input or output configuration is set by configuring the connector as an input or output on the I/O Config web page (Figure 28 on page 56).

Any number of audio inputs can be configured but there is a limit of four audio output pairs with any configuration.

Table 7. KAM-AA-MIX-BR I/O Configurations

Submodule 1	Submodule 2	Video Input	Analog Audio Inputs/Outputs ¹	AES Audio Inputs/Outputs	Video Output
A to D	A to D	1 SDI or Composite ² (J10)	4 dual Analog inputs (J5, J6, J8, and J9)	4 AES/EBU (J3 and J4) balanced I/O independently selectable as inputs or outputs on the I/O Config web page.	2 SDI (J1 and J2), 1 Composite (J7) ²
A to D	D to A		2 dual Analog inputs (J8 and J9) and 2 dual Analog outputs (J5 and J6)		
D to A	D to A		4 dual Analog outputs (J5, J6, J8, and J9)		
D to A	A to D		2 dual Analog outputs (J8 and J9) and 2 dual Analog inputs (J5 and J6)		
A to D	None		2 dual Analog inputs (J8 and J9)		
None	A to D		2 dual Analog inputs (J5 and J6)		
D to A	None		2 dual Analog outputs (J8 and J9)		
None	D to A		2 dual Analog outputs (J5 and J6)		
None	None		None		

¹ There may be any number of audio inputs but there is a limit of four output audio pairs with any configuration.

² Only KAM-AV modules support composite video I/O.

KAM-AA-MIX-UR Configurations

The KAM-AA-MIX-UR rear I/O module (Figure 15) accepts either SDI or composite video (KAM-AV only). Four BNC connectors are provided for video—one video input, one composite output (KAM-AV only), and two SDI video outputs. Four dual terminal audio connectors are provided for analog audio I/O. A 9-pin Sub D connector is provided for unbalanced input or output AES I/O from a breakout cable that is included with the module.

Figure 15. KAM-AA-MIX-UR Input/Output Connectors

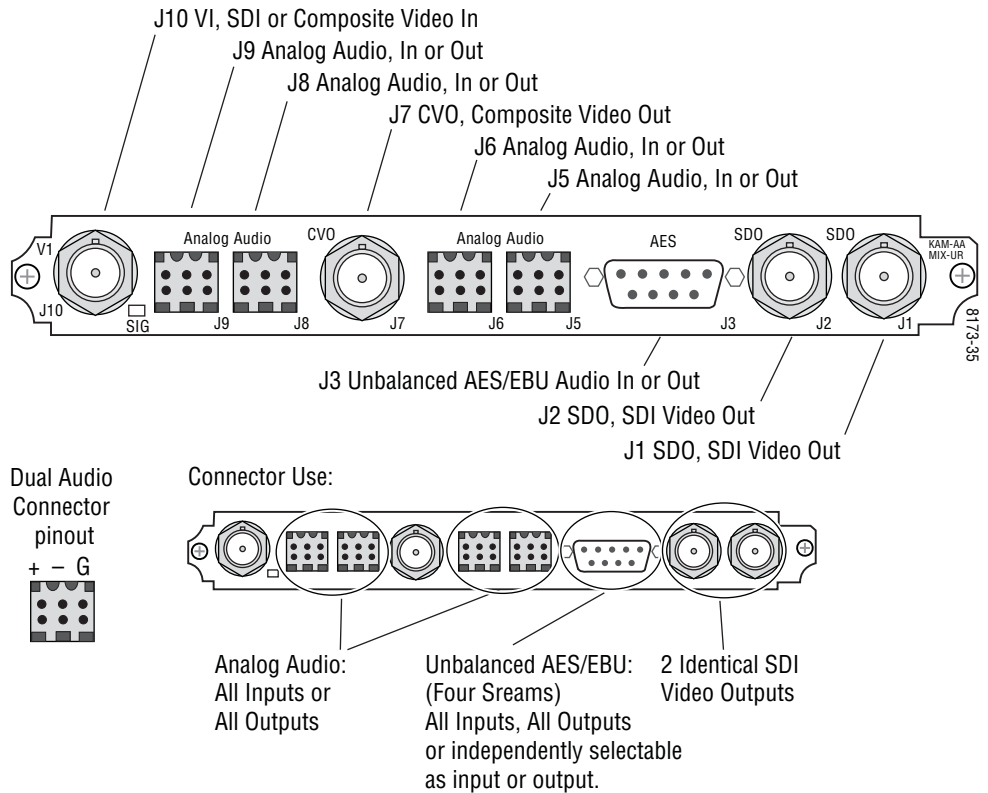


Table 8 provides the various audio input and output I/O configurations and the video outputs for the KAM-AA-MIX-UR rear module. Analog audio input or output configuration depends on the positioning of the audio ADC and DAC submodules. Figure 5 on page 18 illustrates the relationship of submodule to rear connector for KAM rear modules.

AES/EBU audio input or output configuration is set by configuring the connector as an input or output on the I/O Config web page (Figure 29 on page 57).

Any number of audio inputs can be configured but there is a limit of four audio output pairs with any configuration.

Table 8. KAM-AA-MIX-UR I/O Configurations

Submodule 1	Submodule 2	Video Input	Analog Audio Inputs/Outputs ¹	AES Audio Inputs/Outputs	Video Output
A to D	A to D	1 SDI or Composite ² (J10)	4 dual Analog inputs (J5, J6, J8, and J9)	4 AES/EBU (J3) unbalanced streams from breakout cable independently selectable as inputs or outputs on I/O Config web page.	2 SDI (J1 and J2), 1 Composite (J7) ²
A to D	D to A		2 dual Analog inputs (J8 and J9) and 2 dual Analog outputs (J5 and J6)		
D to A	D to A		4 dual Analog outputs (J5, J6, J8, and J9)		
D to A	A to D		2 dual Analog outputs (J8 and J9) and 2 dual Analog inputs (J5 and J6)		
A to D	None		2 dual Analog inputs (J8 and J9)		
None	A to D		2 dual Analog inputs (J5 and J6)		
D to A	None		2 dual Analog outputs (J8 and J9)		
None	D to A		2 dual Analog outputs (J5 and J6)		
None	None		None		

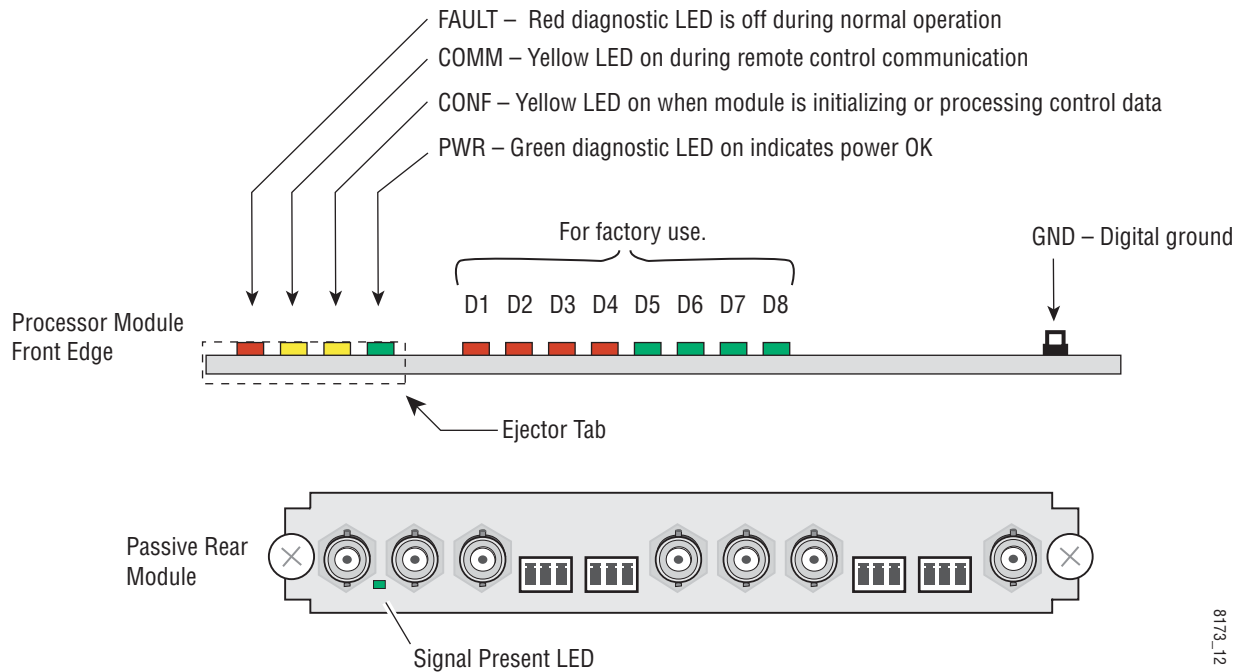
¹ There may be any number of audio inputs but there is a limit of four output audio pairs with any configuration.

² Only KAM-AV modules support composite video I/O.

Power Up

The front LED indicators are illustrated in [Figure 16](#).

Figure 16. Front and Rear Module Indicator LEDs



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

8173-12

Operation Indicator LEDs

[Table 9](#) provides a complete list of possible operating conditions and the resulting indicator status.

A red FAULT LED indicates an error situation. [Table 9](#) describes signal output and LED indications for the various input/reference combinations and user settings.

Table 9. Indicator LEDs and Conditions Indicated

LED	Indication	Condition
Fault (red)	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
COMM (yellow)	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
CONF (yellow)	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.)
PWR (green)	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 Web Page on page 114](#)).

Configuration and Adjustments

KAM-AV/SD 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 10](#). The parameter defaults, choices, ranges, and resolution are provided for each function

Table 10. Summary of KAM-AV/SD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Module/ Submodule
Composite video in	100%	44 to 219.5% (0.5% steps)	Composite In/ Input Video Gain%	IVidGain	KAM-AV only
Composite In Black level	0%	-21.6 to 22.4% (0.1% steps)	Composite In/ Black Level%	BlackLVL	
Input signal setup (525 only)	Setup	No Setup or Setup	Composite In/ Input Signal Setup No Setup or Setup radio button	N/A	
3D motion type (Flywheel Video Decoder control on Video Input Select web page must be off)	Mixed Motion	Low Motion Mixed Motion High Motion	Composite In/ 3D Decoder Control Low Motion, Mixed Motion or High Motion radio button	N/A	
3D motion threshold	Low – 60 Mixed – 25 High – 5	0 to 127 (1 unit steps)	Composite In/ 3D Decoder Control 3D Motion Threshold	MotThrd	
3D Comb filter	Luma + Chroma	Luma + Chroma Luma Chroma	Composite In/ 3D Decoder Control Comb Filter pulldown	decmodel	
3D Luma bandwidth	Low – Wide Mixed – Wide High – Narrow	Narrow or Wide	Composite In/ 3D Decoder Control Luma Bandwidth Narrow or Wide radio button	LumaBw	
3D Luma level	56	0 to 255 (1 unit steps)	Composite In/ 3D Decoder Control Luma Level control	YLevel	
3D Chroma level	56	0 to 255 (1 unit steps)	Composite In/ 3D Decoder Control Chroma Level control	CLevel	
3D Decoder reset to default	Mixed Motion Defaults	–	Composite In/ 3D Decoder Control Reset 3D Decoder to Default button	N/A	
Blank VBI lines (Field 1 and Field 2)	Pass Through	Blanking, Notch Decode, Pass Through, and Remove setup (525 mode)	VBI Decode/ VBI Line radio buttons	N/A	KAM-AV/SD

Table 10. Summary of KAM-AV/SD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Module/ Submodule
SDI In web page view selection	Summary	Summary or Detail	SDI In/ Summary or Detail radio button	N/A	KAM-AV/SD
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	
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	
Turn on Flywheel Video Decoder (When on, 3D Decoder controls on Composite In web page are disabled)	Off	Off or On	Video Input Select/ Flywheel Video Decoder On checkbox		
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	
Freeze mode selection (Video In timing source)	None	None, Field 1, Field 2, Frame, or Dis- abled Output	Frame Sync/ Freeze Mode Selection radio buttons	N/A	
Freeze mode selection (Internal timing source)	None	None, AutoBlack, AutoFreeze, Field 1, Field 2, Frame or Disabled Output	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 button	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 button	N/A	

Table 10. Summary of KAM-AV/SD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Module/ Submodule
Apply clips to VBI/Data Lines	Off	On or Off	Video Proc/Standard View Apply Clips to VBI/Data Lines checkbox	N/A	KAM-AV/SD
Main video soft/Y black clip	-6.8%	-6.8 to 109% (0.1% steps)	Video Proc/Standard View Soft/Y Black Clip control (%)	YBClip	
Main video hard/ video black clip	-37.3% (525) -30.0% (625)	-37.3 to -7.3% (525) -30.0 to 0% (625) (0.1% steps)	Video Proc/Standard View Hard/Video Black Clip control (%)	VBClip	
Main video soft/Y white clip	109%	-6.8 to 109% (0.1% steps)	Video Proc/Standard View Soft/Y Clip control (%)	YWCclip	
Main video hard/ video white clip	138.7%	-6.8 to 138.7% (0.1% steps)	Video Proc/Standard View Hard/Video Clip control (%)	VWCclip	
Main video brightness/ Y offset	0%	-10.21 to 10.10% (0.11% steps)	Video Proc/Standard View Brightness/Y Offset control (%)	YOffset	
Main video hue/chroma phase (525 only)	0.0 degrees	± 89.8 degrees (0.1 degree steps)	Video Proc/Standard View Hue/Phase control (degrees)	ChroPhs ¹	
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 A/B insert to Stream A and B	No Insert	Insert or No insert	MUX/ Mux Group A and Mux Group B Group Replacement 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	
VBI encoding blank lines	Pass	Pass or Blank	VBI Encode/ Check corresponding line Blank checkbox	N/A	
VBI encoding add setup (525 only)	No Setup on VBI lines, Setup on Data lines	Setup or No Setup	VBI Encode/ Check corresponding line Setup checkbox	N/A	
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/Data lines	Not Apply	Apply /Not Apply	VBI SDI/ Apply Clips to VBI/Data Lines checkbox	N/A	

Table 10. Summary of KAM-AV/SD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Module/ Submodule
Add setup to composite output	Setup	Setup or No Setup	Composite Out/ Setup or No Setup radio button	N/A	KAM-AV only
Cross Color Removal (composite out)	Disable	Enable or Disable	Composite Out/ Cross Color Removal Disable or Enable radio button	N/A	
Chrominance Signal (composite out)	Enable	Enable or Disable	Composite Out/ Chrominance Signal Disable or Enable radio button	N/A	
Burst Signal (composite out)	Enable	Enable or Disable	Composite Out/ Burst Signal Disable or Enable radio button	N/A	
Adjust Coarse Video Delay (composite out)	0 pixels	0 to 4095.5 pixels (0.5 pixel steps)	Composite Out/ Delay Coarse (pixels)	Coarse Dly	
Adjust Fine Video Delay (composite out)	0 pixels	0 to 100% (1% steps)	Composite Out/ Delay Fine (%)	Fine Dly	
Composite Out video gain	100%	61 to 138.5% (0.5% steps)	Composite Out/ Output Video Gain (%)	OVIDGain	
Output Video Adjustment	Calibrated	Calibrated or User adjustable	Composite Out/ Calibrated or User Adjustable radio button	N/A	
Adjust Composite Out luma gain	100%	50 to 150% (1% steps)	Composite Out/User Adjustable view Luma Gain (%)	N/A	
Adjust Composite Out black level	0.0%	-7.5 to + 15% (0.1% steps)	Composite Out/User Adjustable view Black Level (%)	N/A	
Adjust Composite Out chroma gain	0.0%	50 to 150% (1% steps)	Composite Out/User Adjustable view Chroma Gain (%)	N/A	
Adjust Composite Out hue (525 only)	0.0%	± 22.5 degrees (0.5 degree steps)	Composite Out/User Adjustable view Hue (deg)	N/A	
SDI output delay adjustment	0 pixels	0.0 to 4095.5 pixels (0.5 pixels)	SDI Out Output Delay Coarse (pixels)	N/A	KAM-AV/SD
Set analog audio input levels (Ch 1–Ch 4)	24.0 dBu	-2 to 28 dBu (0.1 dBu steps)	Analog Audio Inputs Max Input Level (dBu) Ch1-4	N/A	KAM-AV/SD with KAM-ADC
Audio input select	Silence	Silence, AES In 1 Unbal Ch1&2 AES In 2 Unbal Ch1&2 AES In 1 Bal Ch1&2 AES In 2 Bal Ch1&2 G1.S1.Ch1&Ch2 G1.S2.Ch1&Ch2 G2.S1.Ch1&Ch2 G2.S2.Ch1&Ch2 G3.S1.Ch1&Ch2 G3.S2.Ch1&Ch2 G4.S1.Ch1&Ch2 G4.S2.Ch1&Ch2 AA In Ch1&Ch2 AA In Ch3&Ch4	Audio Input Select/ Input Stream Select Input Stream1-4 radio button	N/A	Available audio inputs depend on rear module types and embedded audio present in SDI input

Table 10. Summary of KAM-AV/SD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Module/ Submodule
AES input sample rate	Disable	Enable or Disable	Audio Input Select/ Sample Rate Convert disable checkbox	N/A	KAM-AV/SD
AES input loss of signal report	Enable	Enable or Disable	Audio Input Select/ Loss of Signal Report checkbox	N/A	
AES input AES error warning	Enable	Enable or Disable	Audio Input Select/ AES Error Warn checkbox	N/A	
Audio channel pair swap	–	–	Audio Channel Pairing/ Pair 1 and 2 Ch A and Ch B and Pair 3 and 4 Ch A and Ch B radio buttons	Pair1Swp Pair2Swp Pair3Swp Pair4Swp	
Define audio Pair 1-4 Ch A and Ch B audio streams	Pair1ChA = Str1.Ch1 Pair1ChB = Str1.Ch2 Pair2ChA = Str2.Ch1 Pair2ChB = Str2.Ch2 Pair3ChA = Str3.Ch1 Pair3ChB = Str3.Ch2 Pair4ChA = Str4.Ch1 Pair4ChB = Str4.Ch2	Str1.Ch1 Str1.Ch2 Str2.Ch1 Str2.Ch2 Str3.Ch1 Str3.Ch2 Str4.Ch1 Str4.Ch2	Audio Channel Pairing/ Pair 1 and 2 Ch A and Ch B radio buttons	Pair1ChA Pair1ChB Pair2ChA Pair2ChB Pair3ChA Pair3ChB Pair4ChA Pair4ChB	
Enable auto tracking for Pair 1-4 Ch A and Ch B (defaults to Off when Output Timing source on Video Input Select web page is set for Video In)	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 1-4 Ch A and Ch B delay adjustments	Unlocked	Lock or Unlocked	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B and Pair 3 and 4 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 Audio Pair 3 Ch A delay adjust Audio Pair 3 Ch B delay adjust Audio Pair 4 Ch A delay adjust Audio Pair 4 Ch B delay adjust	0 ms	0 to 5180 ms (2 ms steps)	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B and Pair 3 and 4 Ch A and Ch B Delay controls (ms)	Ch1ADly Ch1BDly Ch2ADly Ch2BDly Ch3ADly Ch3BDly Ch4ADly Ch4BDly	
Lock Pair 1-4 Ch A and Ch B gain adjustments	Unlocked	Lock or Unlocked	Audio Proc/ Pair 1 and Pair 2 Ch A and Ch B and Pair 3 and 4 Ch A and Ch B Locked checkbox	N/A	
Audio Pair 1-4 Ch A gain and Ch B gain adjust	0 dB	- 40 to + 6 dB (0.1 dB steps)	Audio Proc/ Pair 1 and Pair 2 Ch A and Ch B and Pair 3 and 4 Ch A and Ch B Gain (dB)	Ch1AGain Ch1BGain Ch2AGain Ch2BGain Ch3AGain Ch3BGain Ch4AGain Ch4BGain	
Select audio processing option for Pair 1-4 Ch A' and Ch B'	Pass	Pass Invert A+B A – B, – (A+B) 1 kHz 400 Hz Silence A+B (Pair 1-4)	Audio Proc/ Pair 1 and Pair 2 Ch A' and Ch B' and Pair 3 and Pair 4 Ch A' and Ch B' Processing pulldowns	Ch1AProc Ch1BProc Ch2AProc Ch2BProc Ch3AProc Ch3BProc Ch4AProc Ch4BProc	

Table 10. Summary of KAM-AV/SD Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel	Module/ Submodule
Set AES output resolution	20 bit	20 or 24 bit	Audio Proc/ Pair 1 and Pair 2 Ch A' and Ch B' and Pair 3 and Pair 4 Ch A' and Ch B' AES Output Resolution 20 bit or 24 bit radio button	N/A	KAM-AV/SD
Set audio mode	Audio	Audio or Non-Audio	Audio Proc/ Pair 1 and Pair 2 Ch A' and Ch B' and Pair 3 and Pair 4 Ch A' and Ch B' Audio Mode Audio or Non-Audio radio button	N/A	
Assign analog audio pairs to output connectors	–	Audio Pairs	Analog Audio Outputs/ J10 & J9 and J8 & J7 radio buttons	N/A	KAM-AV/SD with KAM-DAC
Set maximum analog audio output audio level	+24 dBu	-2 to +24 dBu (0.1 dB steps)	Analog Audio Outputs/ AA Out Ch 1–Ch 4 (dBu)	N/A	
Assign AES pairs to output connectors	–	Audio Pairs	AES Outputs/ J4 & J5 (Unbalanced) or J2 & J3 (Balanced) radio buttons	N/A	KAM-AV/SD
Select saved E-MEM to recall	Defaults	Defaults (recall factory defaults), E-MEM 1, E-MEM-2, E-MEM-3, E-MEM 4, or E-MEM-5	E-MEM Local Operations Recall E-MEM	EMEMSelect	
Perform recall of EMEM selected.	Recall	Recall or Recalled	E-MEM Local Operations Recall E-MEM	EMEMRecall	

¹ This control is valid only for a 525 line rate signal but will still appear in the Newton controls when a 625 line rate is selected. This control is not valid for 625 and should not be used.

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 10 on page 35](#).

An example of the Newton Configurator is shown in [Figure 17](#).

Figure 17. Newton Configurator Example

Label	Description	Type	PID	IID
Ch1A Dly	Audio pair 1 channel A delay adjust	control	322	0
Ch1B Dly	Audio pair 1 channel B delay adjust	control	322	1
Ch2A Dly	Audio pair 2 channel A delay adjust	control	322	2
Ch2B Dly	Audio pair 2 channel B delay adjust	control	322	3
Ch3A Dly	Audio pair 3 channel A delay adjust	control	322	4
Ch3B Dly	Audio pair 3 channel B delay adjust	control	322	5
Ch4A Dly	Audio pair 4 channel A delay adjust	control	322	6
Ch4B Dly	Audio pair 4 channel B delay adjust	control	322	7
Ch1AProc	Audio Pair 1, Ch A Processing	switch	361	0
Ch1BProc	Audio Pair 1, Ch B Processing	switch	361	1
Ch2AProc	Audio Pair 2, Ch A Processing	switch	361	2

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 pages shown in [Figure 18](#) (1 RU 2000 Frame) [Figure 19 on page 43](#) (3 RU 2000 Frame). 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 the use of Windows XP with a version 4.0.2 2000NET module.

Figure 18. 1 RU 2000 Frame Status Web Page

grass valley

Frame

- [Status](#)
- [Configuration](#)
- [Connections](#)
- [LED Reporting](#)
- [SNMP Reporting](#)
- [Power Supply/Demand](#)
- [1 Media Slot 1](#)
- [2 KAM-AV](#)
- [3 Media Slot 3](#)
- [4 Media Slot 4](#)
- [5 2000NET](#)
- [6 Sync Slot](#)
- [7 Power Sled 7](#)

Status

Model: 2000T1N Description: Module Frame
 Frame Location: not assigned
 Temperature Status PASS Power Status PASS
 Fan Status PASS

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

Properties

Vendor Thomson, Grass Valley Software Version 4.0.2
 Media Slots 5

Figure 19. 3 RU 2000 Frame Status Web Page

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

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

Refresh button for manual update of page

2000 Frame

- [Status](#)
- [Configuration](#)
- [Connections](#)
- [Frame Alarm Reporting](#)
- [LED Reporting](#)
- [SNMP Reporting](#)
- [Power Supply/Demand](#)
- [1 KAM-SD](#)
- [2 KAM-SD-2AES](#)
- [3 KAM-SD-2AES](#)
- [4 KAM-SD](#)
- [5 KAM-SD](#)
- [6 KAM-AV](#)
- [7 KAM-DEC-2AES-MUX](#)
- [8 KAM-AV](#)
- [9 KAM-AV](#)
- [10 KAM-AV](#)
- [11 KAM-AV](#)
- [12 KAM-AV](#)
- [13 2000NET](#)
- [15 2000GEN](#)
- [18 Power Sled 18](#)
- [19 Fan Sled 19](#)
- [20 Power Sled 20](#)

Status

Model: 2000T3N Description: Module Frame
 Frame Location: not assigned
 Frame Health Alarm ALARM Temperature Status PASS
 Power Status PASS Fan Status PASS

Media Module	Net Card	Media Module	Power Sled
Media Module		Media Module	
Media Module	Aux Card	Media Module	Fan Sled
Media Module		Media Module	
Media Module		Media Module	Power Sled
Media Module		Media Module	

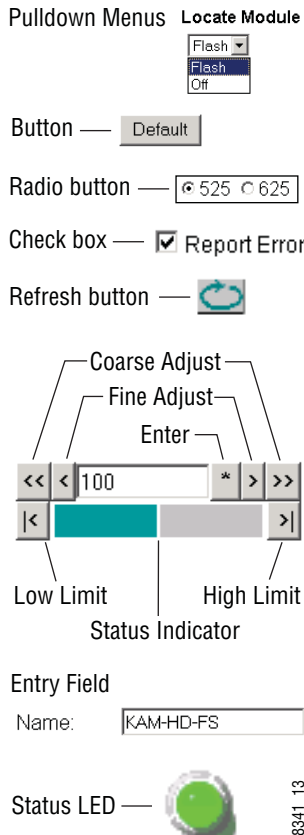
Properties

Vendor Thomson, Grass Valley Software Version 4.0.2
 Media Slots 13

8173_3213

Web Page Operations and Functional Elements

The following conventions and functional elements (shown at left) are used in Kameleon web page operations. (The examples shown throughout this manual represent 2000NET software version 4.0.2):



- Pulldown menus allow you to choose selections from a list.
 - Clicking on a button performs an immediate action such as recall of defaults, clearing of states, learning configurations, and selecting all or none of a selection.
 - Radio buttons are used to make a choice of one parameter in a group.
 - Check boxes are used when a selection can be enabled or included in a group. Multiple check box selections or enables can be made for some parameters.
 - A **Refresh** button (circular arrow) is provided at the top of each web page for manual refresh to view recently changed parameters.
 - Each numerical adjustment control has a **Coarse** adjust button (left and right top double arrows) which increases or decreases the step value by a factor of 10. The **Fine** adjust button (left and right inside single arrows) increases or decreases the step value by 1.
- To change a value, use the arrow button controls or enter a value into the number field and select the **Enter** button (*) or use the **Enter** key on your keyboard. The Status Indicator bar will follow the value selected.
- Use the **Low** and **High Limit** buttons to go directly to the lowest and highest limits for the parameter.
- An entry field allows naming of various module functions such as input or output signals, asset tag, and slot identification.
 - The Status LED is explained in [Status LED icon on page 45](#).

Status and Identification Header

Each Kameleon configuration page has a Status and Identification Header as shown in [Figure 20](#).

Figure 20. 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 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.

Initial Configuration Process Overview

To configure the Kameleon module proceed as follows:

1. Go to the **I/O Config** page to setup and name inputs and outputs.
2. If not already connected, connect all input and output signals. Go to the module **Status** page to verify component and signal presence and condition.
3. Go to the **Video Input Select** page to configure the video source (not required for KAM-SD) and output timing source.
4. Go to **DEMUX** if you are demultiplexing audio from the video signal.
5. Go to the **Functional Views** 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** links are provided to help you navigate through a logical configuration sequence.

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

KAM-AV and KAM-SD Links and Web Pages

The 2000 GUI provides the following links and web pages for the KAM-SD and the KAM-AV modules ([Figure 21 on page 47](#)):

- Status, I/O Config, and Functional View web pages showing
 - Module operation status,
 - Rear module I/O configuration.
 - Functional block diagram showing active/inactive functional blocks and providing links to the related web pages,
- Module Configuration web pages for setting up the module,
- E-MEM configuration storage and recall web page, and
- Slot Config web page provides a Locate Module function, slot configuration, and Slot Memory, along with links to Frame Health Reporting (2000T3 Frame only), LED Report, and SNMP Trap Reporting web pages.

Logical subject links are also available on each configuration web page.

Note Some listed links may not appear when the Kameleon hardware configuration does not support that function. (For example, when no DAC submodule is installed, Analog Audio Output links will not appear.) When this occurs, the Functional View web page will indicate the related block is inactive (see [Figure 31 on page 60](#) for the KAM-AV module and [Figure 32 on page 61](#) for the KAM-SD module).

Figure 21. KAM-SD and KAM-AV Web Page Links

<u>1 KAM-SD</u>	<u>2 KAM-AV</u>
Status	Status
I/O Config	I/O Config
Functional View	Functional View
- SDI In	- Composite In
- DEMUX	- VBI Decode
- Video Input Select	- SDI In
- Frame Sync	- DEMUX
- Video Proc	- Video Input Select
- MUX	- Frame Sync
- VBI SDI	- Video Proc
- SDI Out	- MUX
- Analog Audio Inputs	- VBI Encode
- AES Inputs	- VBI SDI
- Audio Input Select	- Composite Out
- Audio Channel Pairing	- SDI Out
- Audio Sync	- Analog Audio Inputs
- Audio Proc	- AES Inputs
- Analog Audio Outputs	- Audio Input Select
- AES Outputs	- Audio Channel Pairing
E-MEM	- Audio Sync
Slot Config	- Audio Proc
	- Analog Audio Outputs
	- AES Outputs
	E-MEM
	Slot Config

Status Web Page

Use
this
link

[2 KAM-AV](#)
[Status](#)
[I/O Config](#)
[Functional View](#)
- [Composite In](#)
- [VBI Decode](#)
- [SDI In](#)
- [DEMUX](#)
- [Video Input Select](#)

The Status web page for the KAM-AV (Figure 22 on page 49) or KAM-SD module (Figure 23 on page 50) 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 44),
- 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 or submodule as indicated in Figure 22 on page 49 and Figure 23 on page 50. 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 (different between the KAM-AV and KAM-SD), software identification, and asset tag number for the KAM-SD or KAM-AV front processing module. ADC or DAC submodule properties are also reported if they are installed on the processing module.

Submodule Properties

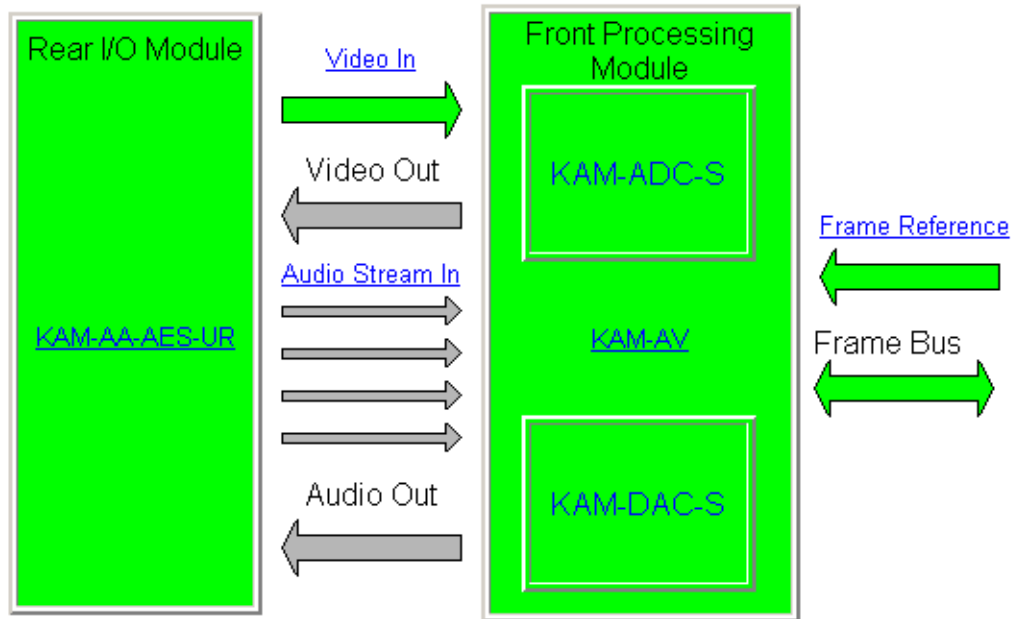
The Submodule properties in the footer provide a textual summary of the color-coded submodule status. If the front module has the ADC or DAC submodule installed, the bottom of the Status web page will display part number, serial number, and hardware revision for each submodule.

Figure 22. KAM-AV Status Web Page



Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [not assigned](#) , Slot: [7](#)
 Last Recalled E-MEM: [Factory Defaults](#)

Kameleon Module Physical Structure



Status:
 Front Module: [PASS](#)
 Rear Module: [PASS](#)
 Sub Module 1: [PASS](#)
 Sub Module 2: [PASS](#)

Front Module:
 Part Number: [671-6428](#)
 Serial Number: [TT03400052](#)
 Hardware Revision: [20U](#)
 Firmware Version: [X1=2.5.3, X2=3.2.0](#)
 Software Version: [6.0.1](#)
 Asset Tag:

Warning and Fault summary section

Sub Module 1:
 Part Number: [671-6419](#) Serial Number: [BT05120244](#) Hardware Revision: [00D](#)

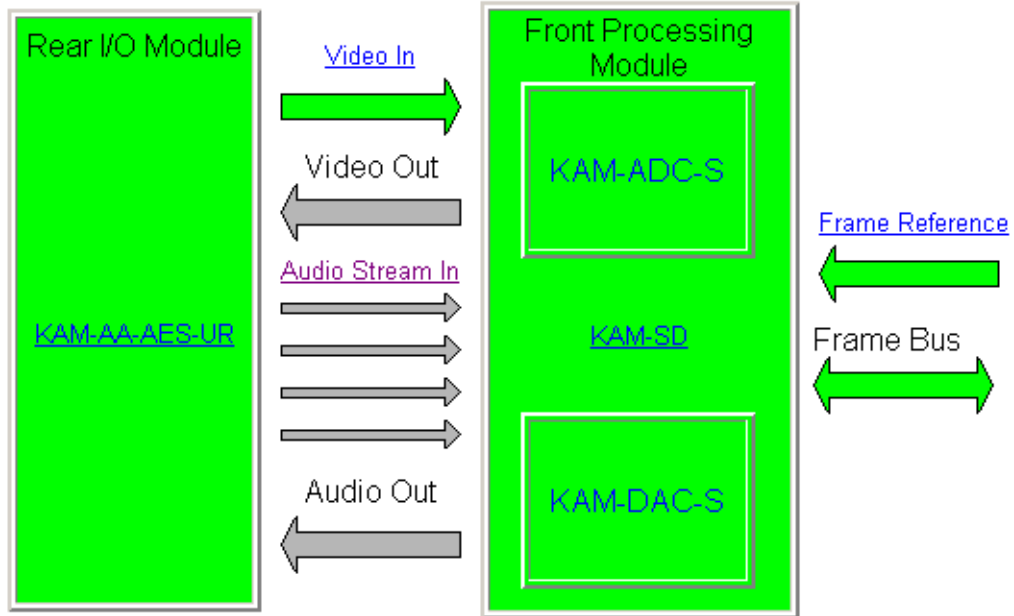
Sub Module 2:
 Part Number: [671-6420](#) Serial Number: [BT05101013](#) Hardware Revision: [00D](#)

Figure 23. KAM-SD Status Web Page



Model: [KAM-SD](#) Description: [Kameleon Module](#)
 Frame Location: [not assigned](#) , Slot: 1
 Last Recalled E-MEM: [Factory Defaults](#)

Kameleon Module Physical Structure



Status:

Front Module: [PASS](#)
 Rear Module: [PASS](#)
 Sub Module 1: [PASS](#)
 Sub Module 2: [PASS](#)

Front Module:

Part Number: [671-6428](#)
 Serial Number: [TT03390069](#)
 Hardware Revision: [00R](#)
 Firmware Version: [X1=2.2.112, X2=3.2.0](#)
 Software Version: [6.0.2](#)
 Asset Tag:

Warning and Fault summary section

Sub Module 1:

Part Number: [671-6419](#) Serial Number: [12345678](#) Hardware Revision: [01A](#)

Sub Module 2:

Part Number: [671-6420](#) Serial Number: [VR03269881](#) Hardware Revision: [00C](#)

Warning/Fault Summary

The warnings and faults are reported in the summary section of the Status web page ([Figure 22 on page 49](#)). A **Fault** indicates a serious condition prohibiting 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 changes in 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 - Internal Reference is free running
- 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 measures power supply/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 video in adjustment)
- Internal Error - Unknown front module type

Input/Output Configuration Web Page

Use this link

- [2 KAM-AV](#)
- [Status](#)
- [I/O Config](#)
- [Functional View](#)
- [Composite In](#)
- [VBI Decode](#)
- [SDI In](#)
- [DEMUX](#)
- [Video Input Select](#)
- [Frame Sync](#)
- [Video Proc](#)

Use the I/O Config web page to:

- Assign easily recognized signal names that will help later in the configuration process, and
- Configure AES audio ports as inputs or outputs, balanced or unbalanced.

Figure 24 illustrates the KAM-AA-R Rear module I/O Config web page. The type of submodule in Position 1 will determine whether Analog Audio connectors J7-J10 are all inputs or all outputs. The type of submodule in Position 2 will determine whether Analog Audio connectors J2-J5 are all inputs or all outputs.

Refer to Table 2 on page 23 for submodule I/O combinations and Figure 10 on page 23 for cabling information.

Figure 24. KAM-AA-R Rear Module Configuration Web Page

I/O Config

Model: KAM-SD Description: Kameleon Module
 Frame Location: Bay 1 QA 2000 Frame , Slot: 1
 Last Recalled E-MEM: Factory Defaults

KAM-AA-R Rear Module Configuration

J11 VI Video In	J10 AN AUD1 Analog Audio	J9 AN AUD2 Analog Audio	J8 AN AUD3 Analog Audio	J7 AN AUD4 Analog Audio	J6 CVO	J5 AN AUD5 Analog Audio	J4 AN AUD6 Analog Audio	J3 AN AUD7 Analog Audio	J2 AN AUD8 Analog Audio	J1 SDO Serial Digital
Input	Input	Input	Input	Input		Output	Output	Output	Output	Output
Video In	AA In Ch1	AA In Ch2	AA In Ch3	AA In Ch4		AA Out Ch5	AA Out Ch6	AA Out Ch7	AA Out Ch8	SD Output
Present	Present	Silent	Present	Silent	Unused	Not Monitored	Not Monitored	Not Monitored	Not Monitored	Not Monitored

Legend:

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

Figure 25 illustrates the KAM-MIX-R Rear module I/O Config web page. The type of submodule in Position 1 will determine whether Analog Audio connectors J7-J10 are all inputs or all outputs. Submodule 2 is not used with this rear module.

Select the type of AES I/O with the **Unbalanced** or **Balanced** radio buttons. The selected AES connectors can be defined as inputs or outputs with the pull-down controls on this web page.

Refer to Table 3 on page 24 for submodule I/O combinations and Figure 11 on page 24 for cabling information.

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

Figure 25. KAM-MIX-R Rear Module Configuration Web Page

I/O Config

Model: KAM-AV Description: Kameleon Module
 Frame Location: Bay 1 QA 2000 Frame , Slot: 2
 Last Recalled E-MEM: Factory Defaults

KAM-MIX-R Rear Module Configuration

J11 VI Video In	J10 AN AUD1 Analog Audio	J9 AN AUD2 Analog Audio	J8 AN AUD3 Analog Audio	J7 AN AUD4 Analog Audio	J6 CVO	J5 AES 1 Unbalanced Audio	J4 AES 2 Unbalanced Audio	J3 AES 1 Balanced Audio	J2 AES 2 Balanced Audio	J1 SDO Serial Digital
Input	Input	Input	Input	Input	Output	Output	Output			Output
Video In	AA In Ch1	AA In Ch2	AA In Ch3	AA In Ch4	Comp Out	AES Out 1 Unbal	AES Out 2 Unbal	AES Out 1 Bal	AES Out 2 Bal	SD Output
Present	Silent	Present	Silent	Present	Not Monitored	Not Monitored	Not Monitored			Not Monitored
						<input checked="" type="radio"/> Unbalanced <input type="radio"/> Balanced				

Legend:

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

Figure 26 illustrates the KAM-AES-R Rear module I/O Config web page. Select the type of AES I/O with the two sets of **Unbalanced** or **Balanced** radio buttons. The selected AES connectors can be defined as inputs or outputs with the pulldown controls.

Refer to Table 4 on page 26 for submodule I/O combinations and Figure 12 on page 25 for cabling information.

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

Figure 26. KAM-AES-R Rear Module I/O Configuration Web Page

I/O Config

Model: KAM-SD Description: Kameleon Module
 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			Input	Input				Output	Output	Output
Video In	AES In 1 Unbal	AES In 2 Unbal	AES In 1 Bal	AES In 2 Bal		AES Out 1 Unbal	AES Out 2 Unbal	AES Out 1 Bal	AES Out 2 Bal	SD Output
Present	Not Avail	Not Avail	Present	Present	Unused	Not Avail	Not Avail	Not Monitored	Not Monitored	Not Monitored
	<input type="radio"/> Unbalanced <input checked="" type="radio"/> Balanced					<input type="radio"/> Unbalanced <input checked="" type="radio"/> Balanced				

Legend:

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

Figure 27 illustrates the KAM-AA-AES-UR Rear module I/O Config web page. The type of submodule in Position 1 will determine whether Analog Audio connectors J8 and J9 are inputs or outputs. The submodule in Position 2 will determine whether Analog Audio connector J6 is an input or an output.

AES unbalanced connectors J2, J3, J4 and J5 can be defined as all inputs, all outputs, or 2 inputs and 2 outputs with the pulldown controls on this I/O web page.

Note If the KAM-AA-AES-UR Rear module is installed in a frame with a 2000NET card running version 3.2.2 software, the dual Analog Audio graphics will be shown as boxes with red X's. The dual audio graphic is not recognized by this version 2000NET card. Functionality is not affected.

Refer to Table 6 on page 28 for submodule I/O combinations and Figure 13 on page 27 for cabling information.

Figure 27. KAM-AA-AES-UR Rear Module I/O Configuration Web Page

I/O Config
 Model: KAM-AV Description: Kameleon Module
 Frame Location: not assigned, Slot: 10
 Last Recalled E-MEM: Factory Defaults

KAM-AA-AES-UR Rear Module Configuration

J10 VI Video In	J9 Analog Audio	J8 Analog Audio	J7 CVO	J6 Analog Audio	J5 AES 1 Unbalanced Audio	J4 AES 2 Unbalanced Audio	J3 AES 3 Unbalanced Audio	J2 AES 4 Unbalanced Audio	J1 SDO Serial Digital
Input	Input Input	Input Input	Output	Output Output	Input	Input	Output	Output	Output
Video In	J9Ch1 AA In Ch1 J9Ch2 AA In Ch2	J8Ch1 AA In Ch3 J8Ch2 AA In Ch4	Comp Out	J6Ch1 AA Out Ch1 J6Ch2 AA Out Ch2	AES In 1 Unbal	AES In 2 Unbal	AES Out 3 Unbal	AES Out 4 Unbal	SD Output

Legend:
Present
Not Present
Not Monitored
Silent
Not Available
Unused

Figure 28 illustrates the KAM-AA-MIX-BR Rear module I/O Config web page. The type of submodule in Position 1 will determine whether Analog Audio connectors J8 and J9 are inputs or outputs. The submodule in Position 2 will determine whether Analog Audio connectors J5 and J6 are inputs or outputs.

AES balanced connectors J3 and J4 can be defined as inputs or outputs with the pulldown controls on this I/O web page. Refer to Table 6 on page 28 for submodule I/O combinations.

There are two identical SDI video outputs at connectors J1 and J2.

Note If the KAM-AA-MIX-BR Rear module is installed in a frame with a 2000NET module running version 3.2.2 or earlier software, the dual Analog and AES audio graphics will be shown as boxes with red X's. Functionality is not affected. This rear module requires 2000NET software 4.0.0 or later to recognize the dual graphics.

Refer to Table 7 on page 30 for submodule I/O combinations and Figure 14 on page 29 for cabling information.

Figure 28. KAM-AA-MIX-BR Rear Module I/O Configuration Web Page

I/O Config
 Model: KAM-AV Description: Kameleon Module
 Frame Location: not assigned, Slot: 3
 Last Recalled E-MEM: Factory Defaults

KAM-AA-MIX-BR Rear Module Configuration

J10 VI Video In	J9 Analog Audio		J8 Analog Audio		J7 CVO	J6 Analog Audio		J5 Analog Audio		J4 AES 1&2 Balanced Audio	J3 AES 3&4 Balanced Audio		J2 SDO Serial Digital	J1 SDO Serial Digital	
Input	Output	Output	Output	Output	Output	Input	Input	Input	Input	Input	Input	Output	Output	Output	Output
Video In	J9Ch1 AA Out Ch1	J9Ch2 AA Out Ch2	J8Ch1 AA Out Ch3	J8Ch2 AA Out Ch4	Comp Out	J6Ch1 AA In Ch1	J6Ch2 AA In Ch2	J5Ch1 AA In Ch3	J5Ch2 AA In Ch4	AES 1 AES In 1 Bal	AES 2 AES In 2 Bal	AES 3 AES Out 3 Bal	AES 4 AES Out 4 Bal	SD Output	

Legend:
 Present (Green) | Not Present (Yellow) | Not Monitored Silent (Light Blue) | Not Available (Dark Blue) | Unused (Grey)

Figure 29 illustrates the KAM-AA-MIX-UR Rear module I/O Config web page. The type of submodule in Position 1 will determine whether Analog Audio connectors J8 and J9 are inputs or outputs. The submodule in Position 2 will determine whether Analog Audio connectors J5 and J6 are inputs or outputs.

AES unbalanced connector J3 can be defined as inputs or outputs with the pulldown controls on this I/O web page.

There are two identical SDI video outputs at connectors J1 and J2.

Note If the KAM-AA-MIX-UR Rear module is installed in a frame with a 2000NET module running version 3.2.2 or earlier software, the dual Analog and AES audio graphics will be shown as boxes with red X's. Functionality is not affected. This rear module requires 2000NET software 4.0.0 or later to recognize the dual graphics.

Refer to Table 8 on page 32 for submodule I/O combinations and Figure 15 on page 31 for cabling information.

Figure 29. KAM-AA-MIX-UR Rear Module I/O Configuration Web Page

I/O Config

Model: KAM-AV Description: Kameleon Module
 Frame Location: not assigned, Slot: 10
 Last Recalled E-MEM: Factory Defaults

KAM-AA-MIX-UR Rear Module Configuration

J10 VI Video In	J9 Analog Audio		J8 Analog Audio		J7 CVO	J6 Analog Audio		J5 Analog Audio		J3 AES Unbalanced Audio				J2 SDO Serial Digital	J1 SDO Serial Digital
Input	Input	Input	Input	Input	Output	Output	Output	Output	Output	Input	Input	Output	Output	Output	Output
Video In	J9Ch1 AA In Ch1	J9Ch2 AA In Ch2	J8Ch1 AA In Ch3	J8Ch2 AA In Ch4	Comp Out	J6Ch1 AA Out Ch1	J6Ch2 AA Out Ch2	J5Ch1 AA Out Ch3	J5Ch2 AA Out Ch4	J3A AES In 1 Unbal	J3B AES In 2 Unbal	J3C AES Out 3 Unbal	J3D AES Out 4 Unbal	SD Output	

Legend:

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

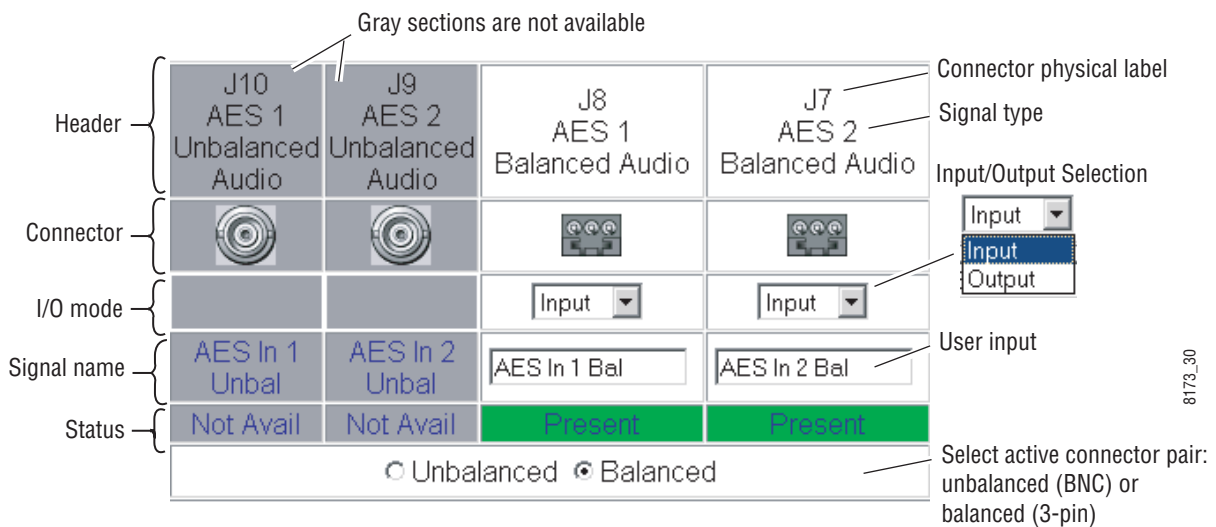
I/O Config Page Elements

Four of the AES-Rear module audio connectors are shown in [Figure 30](#) to illustrate the function of each row of the diagram.

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 60](#)).

Figure 30. Balanced/Unbalanced AES/EBU Inputs



Connectors

The Connector row illustrates connector type provided (BNC or 3-pin terminal) for each port. Connector type and input/output possibilities vary according to the rear I/O module used or with the presence of ADC or DAC submodules.

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 pages.

Status

Table 11 shows, by color and signal type, the signal status reports that may be displayed in the Status row:

Table 11. 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	Present	None	Present	None	None
Yellow	Not present or 525/625 mismatch	None	None	Not present	None	None
Light Grey	None	Silent/Unused	Not Monitored	None	Not Monitored	Not Monitored
Medium Grey	None	Not Available	None	Not Available	Not Available	None
Dark Grey	None	None	None	None	None	Unused

Functional View Web Page

- Use this link
- 2 KAM-AV
 - [Status](#)
 - [I/O Config](#)
 - [Functional View](#)
 - [Composite In](#)
 - [VBI Decode](#)
 - [SDI In](#)
 - [DEMUX](#)
 - [Video Input Select](#)

Use the Functional View web page (KAM-AV – [Figure 31](#), KAM-SD – [Figure 32 on page 61](#)) to:

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

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

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

Figure 31. Functional View – KAM-AV Web Page

Functional View

Model: [KAM-AV](#) Description: [Kameleon Module](#)

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

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

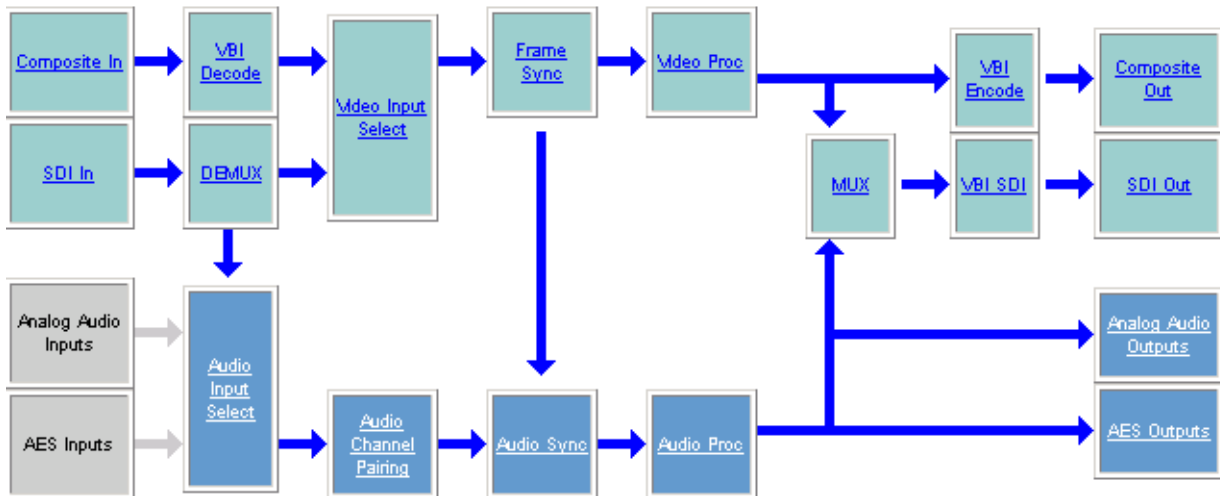


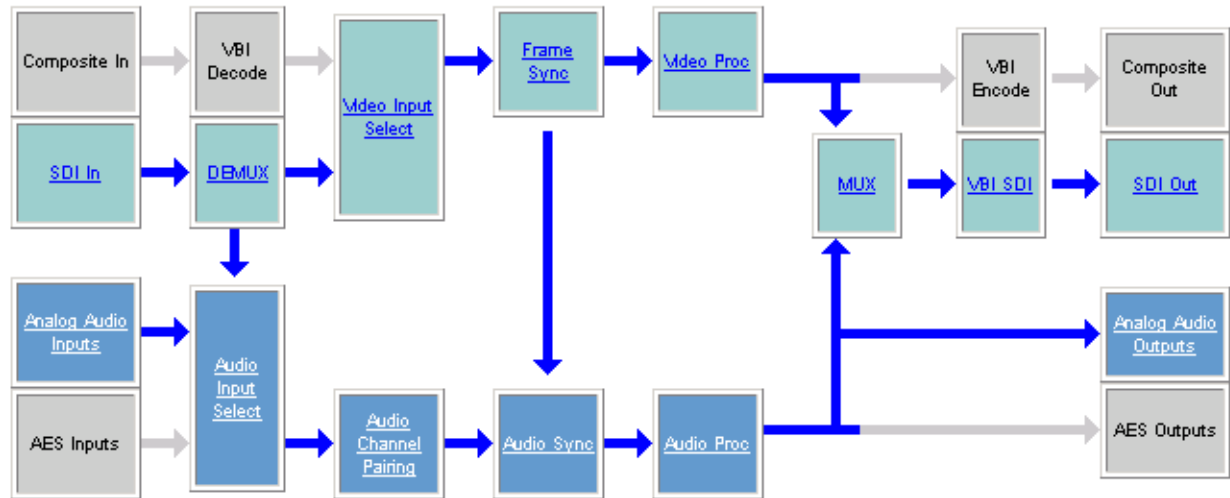
Figure 32. Functional View – KAM-SD Web Page

Functional View 

Model: [KAM-SD](#) Description: [Kameleon Module](#)

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

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



Composite In Web Page

Use
this
link

- [2 KAM-AV](#)
- [Status](#)
- [I/O Config](#)
- [Functional View](#)
- [Composite In](#)
- [VBI Decode](#)
- [SDI In](#)
- [DEMUX](#)
- [Video Input Select](#)

Use the Composite In web page ([Figure 33 on page 65](#)) to set parameters for a composite video input (if present) on the KAM-AV module as listed below:

Note This page is not present on the KAM-SD module.

- Adjust input signal gain and black level,
- Select input signal format for 525 line mode (NTSC),
- Include or omit black level Setup for 525 line mode, and
- Select the type of 3D decoding required for the application and adjust 3D Decoder parameters.

Video Input Status

The Input Status section is read-only. The Input Signal name is the one assigned on the [Input/Output Configuration Web Page on page 52](#). Input Standard can be affected by settings on the 2000GEN module (if present) and the [Video Input Select Web Page on page 71](#).

Settings for Standard 525/625

The Composite input signal may be adjusted as required before decoding by using the controls on this page. 625 line rate settings do not require and do not show Video Input Signal Option or Input Signal Setup.

Note The PAL-M standard is not supported for 3D decoding.

Input Video Gain

Input Video signal gain can be adjusted approximately ± 6 dB.

Black Level

Black level can be adjusted $\pm 20\%$ of peak black-to-white amplitude. With a video input at nominal level, 1% equals 7 mV in PAL-B and 0.93 IRE in NTSC.

Input Signal Setup

For 525 line rate, if the composite input to the module includes setup, click on the **Setup** radio button. The setup will be removed from the video signal as part of the conversion process.

Note When setup is selected, artifacts or spikes are sometimes detected at the start or end of the active picture due to the positioning of the start of setup. These can be minimized by adjusting the clipping controls on the Video Proc web page, then applying the clips to the VBI/Data Lines.

3D Decoder Control

The composite input is processed through a 3D decoder which offers three preset decoder modes and a user defined mode. Preset modes are selected according to the amount of motion present in the input video.

Note The **Flywheel Video Decoder** control on the Video Input Select web page ([page 71](#)) must be turned off to access the 3D Decoding controls.

Each decoder mode has a set of default values when selected. User controls are provided for setting motion threshold, the type of comb filtering, luma and chroma threshold levels, and luma bandwidth.

To determine the best preset decoding mode for your application, select one of the 3D preset decoding modes at the bottom of the 3D Decoder Control section depending on the amount of motion in the input video:

- **Low Motion** – this is a 3D temporal filter ideal for applications where there is little motion in the video, such as scenes involving sitting and other scenes involving little motion.
- **Mixed Motion** – a general purpose filter, this is the default choice for most video applications involving mixed motion.
- **High Motion** – a 2D adaptive filter is employed for handling change in motion recommended for video where there will be a great deal of motion such as sports. Once motion is detected in a scene, the high motion decoder should be used.
- **User Defined** – changing any preset value in the Motion decoders will switch to the user mode.

After setting the preset decoder mode for the amount of motion in the video application, use the following controls to maximize video quality.

3D Motion Threshold

This control sets the amount of motion between pixels that is detected in the incoming video. The motion detector processes the magnitude difference between luminance and chrominance on successive incoming frames. This difference is then compared to the 3D motion threshold.

For scenes with fast motion, using the **High Motion** preset decoder sets the default threshold to value of 5. This low threshold indicates that the pixels will be changing faster and will be compared for motion more often. Whereas, for a low motion scene, using the **Low Motion** preset decoder, the default threshold value is set for 60, indicating that the pixels will be changing less often so motion is detected at a higher threshold. For a general purpose video input, using the **Mixed Motion**, the default threshold is set for 25.

Use the 3D Motion Threshold control to maximize the video for motion. You may use the default threshold values of each preset decoder as a guide to setting the 3D Motion Threshold and the right preset decoder mode. Once the default threshold for a decoder type is exceeded, try switching to another decoder preset.

For example, if the preset decoder is set for **Mixed Motion** and lowering the 3D Motion Threshold improves the video, select the **High Motion** preset decoder to switch to a 2D adaptive decoder type. If increasing the threshold improves the video, switch to the **Low Motion** preset (3D decoder type).

Comb Filter

The comb filter is part of the 2D adaptive comb filter mode. It determines what component of the video will be used to detect motion (Luma and Chroma or just the Luma or Chroma portion of the video).

- **Luma + Chroma** – when set for both luminance and chrominance, the 2D adaptive decoder motion detector is controlled by both the luminance and chrominance magnitude error.
- **Luma** – in this mode, the 2D adaptive decoder motion selector is controlled by only the luminance magnitude error in the video.
- **Chroma** – in this mode, the 2D adaptive decoder motion selector is controlled by only the chrominance magnitude error in the video.

Luma Level

The Luma Level control sets the magnitude error threshold for the Y or luminance component of the video signal in the comb filter. The default value is 56.

Chroma Level

The Chroma Level control sets the magnitude error threshold for the chrominance portion of the video signal in the comb filter. The default value is 56.

Luma Bandwidth

The Luma Bandwidth sets the frequency at which the comb filtering occurs. It can be set for **Narrow** or **Wide**.

- **Narrow** – extends the 2D comb filter to lower frequencies and is the default bandwidth for the **High Motion** preset mode.
- **Wide** – allows 2D comb filtering only at higher frequencies. This is the **Mixed** and **Low Motion** default and used for 625 input video.

Note Narrow or Wide bandwidth may be selected according to the chrominance subcarrier frequency and chrominance bandwidth.

Reset 3D Decoder

Press the **Reset 3D Decoder to Default** to return to the default **Mixed Motion** mode with the defaults listed in [Table 10 on page 35](#).

Figure 33. Composite Input Web Page

Composite In

Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

Video Input Status

Input Signal Name	Video In
Input Signal State	Present
Input Detected Standard	525

Settings for Standard: [525](#)

Input Video Gain (%) << < 100.0 * > >> < █ >	Black Level (%) << < 0.0 * > >> < █ >
Video Input Signal:	NTSC
Input Signal Setup:	<input type="radio"/> No Setup <input checked="" type="radio"/> Setup

3D Decoder Control

3D Motion Threshold << < 25 * > >> < █ >	
Comb Filter Luma + Chroma ▾	Luma Bandwidth <input type="radio"/> Narrow <input checked="" type="radio"/> Wide
Luma Level << < 56 * > >> < █ >	Chroma Level << < 56 * > >> < █ >
<input type="radio"/> Low Motion <input checked="" type="radio"/> Mixed Motion <input type="radio"/> High Motion <input type="radio"/> User Defined	

Reset 3D Decoder to Default

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

VBI Decode Web Page for Composite Input

- 2 KAM-AV
 - [Status](#)
 - [I/O Config](#)
 - [Functional View](#)
 - [Composite In](#)
 - [VBI Decode](#)
 - [SDI In](#)
 - [DEMUX](#)
 - [Video Input Select](#)

Use this link

Use the VBI decode web page ([Figure 34](#) for 525, [Figure 35 on page 67](#) for 625) to configure the VBI and Data Line decoding of the composite input signal (KAM-AV only).

The currently detected line rate will be reported. Use the View Selection to view the page at the correct line rate with the **525** or **625** radio button.

On a line-by-line basis you can remove black level setup (in NTSC video) and select one of the following three decoding options:

- Blank existing VBI and Data Line information,
- Select Notch Decoding of the composite signal, or
- Pass through decoded VBI and Data Lines (active video lines) information as is.

Note The data lines not reserved for carrying data on the previous page will appear greyed out.

Figure 34. VBI Decode Web Page (Composite Input, 525 Line Rate Shown)

VBI Decode

Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

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

Field 1

	VBI Line										Data Line				
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Remove Setup	<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"/>				
Blanking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Notch Decode	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Pass Through	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>				

Field 2

	VBI Line											Data Line			
	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287
Remove Setup	<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"/>				
Blanking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Notch Decode	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Pass Through	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>				

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

Figure 35. VBI Decode Web Page (Composite Input, 625 Line Rate Shown)



Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

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

Field 1

	VBI Line																		Data Line					
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Blanking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Notch Decode	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pass Through	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

Field 2

	VBI Line																		Data Line					
	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	
Blanking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Notch Decode	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pass Through	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

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SDI Input Web Page

Use this link

- [Functional View](#)
- [Composite In](#)
- [VBI Decode](#)
- [SDI In](#)
- [DEMUX](#)
- [Video Input Select](#)
- [Frame Sync](#)
- [Video Proc](#)

On the KAM-AV or KAM-SD, use the SDI In web page to view the status of the SDI input signal in Summary view or Detail view:

- Select the **Summary** radio button to bring up the summary view shown in [Figure 36](#).
- Use the **Clear All Status** button to clear and reset the status reporting.

Current State

The **Current State** summary window will indicate **Error** if any error report shown in the **Detail** status field is logged.

Reported Errors

If any error report shown in the **Detail** status field is logged, the **Reported Errors** window in the Summary field will say **Error**. Error reports are not reported to Kameleon status pages or SNMP monitoring devices unless they are enabled (checked) in the **Detail** field.

Figure 36. SDI In Web Page – Summary View



Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection: Summary Detail


Input Signal Name	Video In
Input Signal State	Present
Input Signal Standard	525
Current State	No Error
Reported Errors	No Error
<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 37 on page 69](#).

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 37. SDI Input Web Page (Detail View)

 **SDI In**
 Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection: Summary Detail

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

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

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

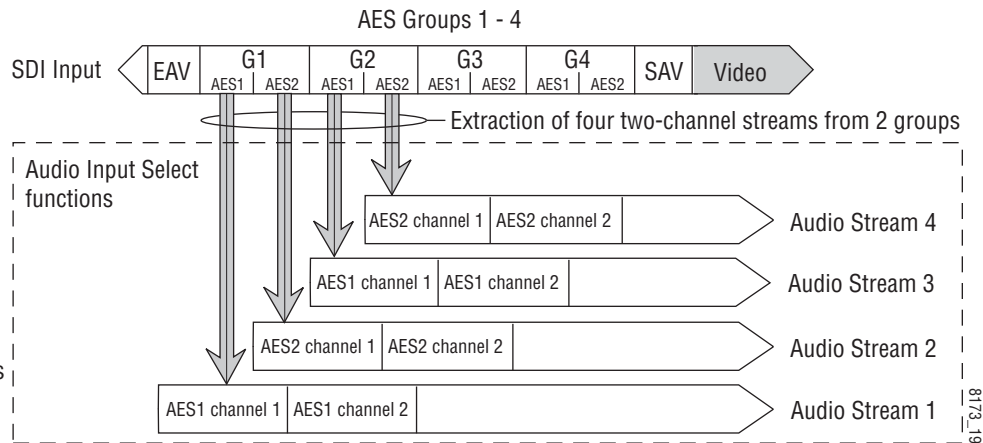
DEMUX Web Page

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

Use the DEMUX (demultiplex) web page to extract AES/EBU audio groups that are present in the incoming SDI video. These audio groups become inputs on the Audio Input Select web page (Figure 65 on page 101) and any pair can be routed to one of the four audio processing paths. The two extracted groups also remain in the SDI video signal. To delete groups from the SDI signal, go to the [MUX Web Page on page 82](#).

In Figure 38, two groups (G1 and G2) have been extracted from the SDI input providing four two-channel audio streams for input into the Audio Input Select stage. Any two of Groups G1-G4 may be extracted.

Figure 38. Demultiplexing Capacity



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

Use the DEMUX web page to demultiplex the desired streams (Figure 39).

Figure 39. Audio Demultiplex Web Page



Model: [KAM-AV](#) Description: [Kameleon Module](#)
Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2
Last Recalled E-MEM: [Factory Defaults](#)

SD Input Signal State: [Present](#)

Inputs	Str1 & Str2	Str3 & Str4	Status	AES 1	AES 2	Bits / Sample
No Extraction	<input type="radio"/>	<input type="radio"/>	-----	-----	-----	-----
Video In.G1	<input checked="" type="radio"/>	<input type="radio"/>	Present	Present	Present	20
Video In.G2	<input type="radio"/>	<input checked="" type="radio"/>	Present	Present	Present	20
Video In.G3	<input type="radio"/>	<input type="radio"/>	Empty	-----	-----	-----
Video In.G4	<input type="radio"/>	<input type="radio"/>	Empty	-----	-----	-----

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

Video Input Select Web Page

Use
this
link

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

Use the Video Input Select web page ([Figure 40 on page 73](#)) to:

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

View Setting

In the View Selection display, choose the **Standard** radio button to display the standard settings shown in [Figure 40 on page 73](#). Use the **Advanced** view for configuring the Vertical Blanking Interval for selecting active video lines to carry data (see [Advanced VBI Configuration on page 74](#)).

Video Selection Settings

The following functions are provided in the Video Selection section:

- Input Name – (read-only) signal name is entered on the **I/O Config** page
- Input Status –
 - Signal presence reported
 - Enable/disable Loss of Signal report to both Kameleon status pages and SNMP monitoring devices. When enabled, the status on the web pages will report **Present** or **Not Present**. When disabled, it will report the signal as **Not Monitored**.

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

- Video Format –
 - Current input video format reported.
 - Choose between SDI and Composite video format or select Automatic signal format detection.
- Video Line Rate – select 525 or 625 line rate or enable automatic line rate detection.
- Flywheel Video Decoder – use of the Flywheel Video Decoder is recommended when working with noisy input signals, such as satellite feeds. Turning the flywheel decoder on or off will cause a video blank of about 7 seconds as shown in the caution in [Figure 40 on page 73](#).

For best results, turn the Flywheel Video Decoder on by selecting the **On** checkbox and set the Output Timing Selection source to **Video In**. Locate the optimum video input signal, then turn the flywheel off (uncheck).

Since the Flywheel decoder generates its own video timing for the incoming video stream to deal with noise and interruptions, leaving it on during normal operation may cause undesirable re synchronization delays if the source changes or is lost. Once the optimum input signal has been acquired, turn the Flywheel Video Decoder off during normal operation.

- Frame Reference –
 - 2000GEN frame reference signal presence reported,
 - Enable/disable Loss of Signal report to both Kameleon status pages and SNMP monitoring devices.

Note When the 2000GEN module (Internal Frame Reference) is set for Free Run, the Output timing status will report Free Run for the Genlock and Audio Framing and a warning will be generated on the Status web page.

- SDI Input Errors – displayed only for SDI input (SDI or Auto)
 - Input signal errors reported.
 - Enable/disable SDI error warning report to both Kameleon status 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. Delay mode is reported when the input signal (**Video In**) is used for timing reference

Output Timing Selection

If you have a 2000GEN reference module installed in the frame and want 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**.

Note For correct composite out color framing in PAL-B, always use the Internal Frame Reference.

Note When a video input with embedded audio is switched, the audio will mute when the module is set to Delay mode (Video In reference). To avoid any audio muting, use the Internal Frame reference (Frame Sync).

Figure 40. Video Input Select Web Page

Video Input Select


Model: [KAM-AV](#) Description: [Kameleon Module](#)

Frame Location: [not assigned](#) , Slot: [7](#)

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

View Selection: Standard Advanced (VBI Config)

Video Selection

	Current	Selection
Input Name	Video In	
Input Status	Present	<input checked="" type="checkbox"/> Report Loss of Signal
Video Format	Composite	<input type="radio"/> SDI <input type="radio"/> Composite <input checked="" type="radio"/> Auto
Video Line Rate	525	<input type="radio"/> 525 <input type="radio"/> 625 <input checked="" type="radio"/> Auto
Flywheel Video Decoder		<input type="checkbox"/> On
 Switching Flywheel Video Decoder ON/OFF causes a video blank of about 7 seconds.		
Frame Reference	Present	<input checked="" type="checkbox"/> Report Loss of Signal
Frame Sync / Delay	Frame Delay	

Output Timing Selection

	Source	Status	Mode	GenLock	Audio Framing
Internal Frame Reference	<input type="radio"/>	Present	-	-	-
Video In	<input checked="" type="radio"/>	Present	525	-	-

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[Back \(DEMUX\)](#)

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.

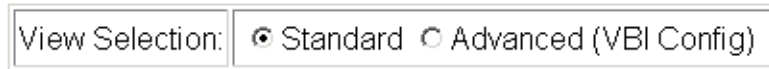
To add Data Lines to VBI:

1. Choose **Advanced (VBI Config)** on the Video Input Select web page ([Figure 41](#)).

Figure 41. Standard and Advanced View Selection



Model: [KAM-AV](#) Description: [Kameleon Module](#)
Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
Last Recalled E-MEM: [Factory Defaults](#)



The **VBI/Data Lines** panel will appear at the bottom of the web page (see [Figure 42 on page 75](#) for 525 line rate and [Figure 43 on page 75](#) 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 42 on page 75](#) and lines 24/337 and 25/338 in [Figure 43 on page 75](#).

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 42. 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]
Last Data Line	<input type="radio"/> none <input type="radio"/> 21/284 <input checked="" type="radio"/> 22/285 <input type="radio"/> 23/286 <input type="radio"/> 24/287					

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Figure 43. 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]
Last Data Line	<input type="radio"/> none <input type="radio"/> 24/337 <input checked="" type="radio"/> 25/338 <input type="radio"/> 26/339 <input type="radio"/> 27/340 <input type="radio"/> 28/341						

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Frame Sync Web Page

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

Use the Frame Sync web page to:

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

Timing Adjustment

Table 12 shows the ranges of timing for 525 and 625 signal formats.

Table 12. 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 71](#).

Frame Sync mode (using the 2000GEN **Internal Frame Reference** output timing reference) provides the manual activation selections plus **AutoBlack** and **AutoFreeze** modes to be used when the video signal is lost ([Figure 44 on page 77](#)). AutoBlack outputs a black signal while AutoFreeze outputs the last complete video field.

You may also choose **Disabled Output**, which will disable the SDI output completely (no signal of any kind) when the signal is lost.



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**, one **Frame**, or **Disabled Output** ([Figure 45 on page 77](#)). 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.

Timing Compatibility

A control is provided for re-establishing the horizontal and vertical timing parameters to the previous settings made when the module was running software version 5.0.1 or new settings made with the latest release, version 6.0.1.

Select the **5.0.1** radio button if you would like to recall the previous timing parameters or the **6.0.1** radio button to enter new values.

Figure 44. Frame Synchronizer Web Page – Internal Frame Reference

Frame Sync  

Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [not assigned](#) , Slot: 7
 Last Recalled E-MEM: [Factory Defaults](#)

Timing Adjustment

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

Freeze Mode Selection



Freeze Mode None AutoBlack AutoFreeze Field 1 Field 2 Frame Disabled Output

Timing Compatibility

Version 6.0.1 5.0.1

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Figure 45. Frame Synchronizer Web Page – Video In Reference

Frame Sync  

Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [not assigned](#) , Slot: 7
 Last Recalled E-MEM: [Factory Defaults](#)

Timing Adjustment

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

Freeze Mode Selection

Freeze Mode None Field 1 Field 2 Frame Disabled Output

Timing Compatibility

Version 6.0.1 5.0.1

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Video Processing Web Page

Use
this
link

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- [DEMUX](#)
- [Video Input Select](#)
- [Frame Sync](#)
- [Video Proc](#)
- [MUX](#)
- [VBI Encode](#)
- [VBI SDI](#)

Use the Video Proc web page ([Figure 46 on page 79](#)) 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/Data lines.

Video Processing Controls

Video Processing Enable

To bypass Video Processing on the SDI signal select **Disable** ([Figure 46 on page 79](#)). 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 47 on page 81](#).

Standard View

In Standard View ([Figure 46 on page 79](#)), 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 percentage of brightness/Y offset (-10.21 to 10.10%)
- Hue/Chroma Phase – for 525 signals only, adjust the hue/chroma phase in degrees (-89.8 to 89.8 degrees).

Figure 46. Video Processing Web Page – Standard View



Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection: Standard Advanced

Video Processing Controls

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

Clipping Controls

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

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[Next \(VBI Encode\)](#)

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 46 on page 79](#). 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/Data Lines** box. This control is also available on the VBI SDI web page ([page 89](#)).

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).

Advanced View

In Advanced View ([Figure 47 on page 81](#)), 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%)

Reset To Default

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

Figure 47. Video Proc Web Page – Advanced View



Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 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 (%) <input type="text" value="100.0"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>	Saturation/Chroma Gain (%) <input type="text" value="100.0"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>	B-Y Gain (%) <input type="text" value="100.0"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>	R-Y Gain (%) <input type="text" value="100.0"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>
Brightness/Y Offset (%) <input type="text" value="0.00"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>	Hue/Chroma Phase (Deg) <input type="text" value="0.0"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>	B-Y Balance/Offset (%) <input type="text" value="0.00"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>	R-Y Balance/Offset (%) <input type="text" value="0.00"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>

Clipping Controls

Clip Settings: Disable Enable
 Apply Clips to VBI / Data Lines

Soft/Y White Clip (%) <input type="text" value="80.0"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>	Hard/Video White Clip (%) <input type="text" value="120.0"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>
Soft/Y Black Clip (%) <input type="text" value="-6.8"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>	Hard/Video Black Clip (%) <input type="text" value="-37.3"/> * <input type="button" value="<<"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="button" value="> "/>

Reset to Default

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MUX Web Page

- Use this link —
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 - [VBI SDI](#)
 - [Composite Out](#)

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 or replace audio groups into the SDI video stream that have been selected on the Audio Input Select web page, paired on the Audio Channel Pairing web page and configured in the Audio Proc, Audio Sync, and Audio Delay web pages.

Note The audio channel pairs available to each Mux Group below are determined by the Audio Channel Pairing web page (see [page 102](#)).

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.

The MUX web page provides two functions: Group Deletion and Group Replacement.

Group Deletion

The Group Deletion area of the MUX web page reports if an embedded audio signal is present in any of the four possible audio groups in the incoming SDI signal and the output status of each group. It is the same as the Status reporting on the DEMUX web page ([Figure 39 on page 70](#)). It can be used to delete unwanted embedded audio groups or clear all HANC (horizontal ancillary data) in the SDI video input signal if present.

Composite Video Input

When composite video is selected as the input to the module (no embedded audio is possible), the MUX web page Group Deletion section will appear as shown in [Figure 48](#) with the **Delete** and **No Input HANC data to clear** greyed out.

Figure 48. Composite Video Input

Group Deletion

	Group 1	Group 2	Group 3	Group 4
Input Status	Not Present	Not Present	Not Present	Not Present
Delete	N/A	N/A	N/A	N/A
Output Status	Inserted	Inserted	Empty	Empty
No input HANC data to clear				

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 49](#). 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 49. 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
<input type="checkbox"/> Clear all input HANC data				

Pass and Delete 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 50](#). Input Status is **Present** and Output Status is **Passed**.

Audio groups present in the incoming SDI stream may also be deleted. Check the corresponding **Delete** checkbox to remove an audio group completely that is reported as **Present** from the SDI stream. The Output Status will report **Deleted**.

Figure 50. Pass and Delete Embedded Audio

Group Deletion

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

Clear All HANC Data

All horizontal ancillary data can be cleared from the SDI input signal by selecting the **Clear all HANC data** checkbox. The Output Status will then show all present groups as being deleted (Figure 51).

Figure 51. Clear All HANC Data from SDI Video

Group Deletion

	Group 1	Group 2	Group 3	Group 4
Input Status	Present	Present	Not Present	Not Present
Delete	N/A	N/A	N/A	N/A
Output Status	Deleted	Deleted	Empty	Empty
<input checked="" type="checkbox"/> Clear all input HANC data				

24-Bit Audio Warning


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 is shown in Figure 52.

Figure 52. 24 Bit Audio Warning

Group Deletion

	Group 1	Group 2	Group 3	Group 4
Input Status	Present	Present	Present	Present
Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete	<input type="checkbox"/> Delete
Output Status	Passed	Passed	Passed	Passed
<input type="checkbox"/> Clear all input HANC data				
 24 Bit Audio in all four groups may exceed data space capabilities				

Group Replacement

Mux groups A and B can replace existing audio groups in the SDI stream and/or be inserted into an empty group space with the Group Replacement function (Figure 54 on page 86). Mux Group A and Mux Group B are configured using the inputs to the Audio Input Select web page (page 99) then the Audio Channel pairing web page (page 102). Two Mux groups can be multiplexed (embedded) into the SDI output stream.

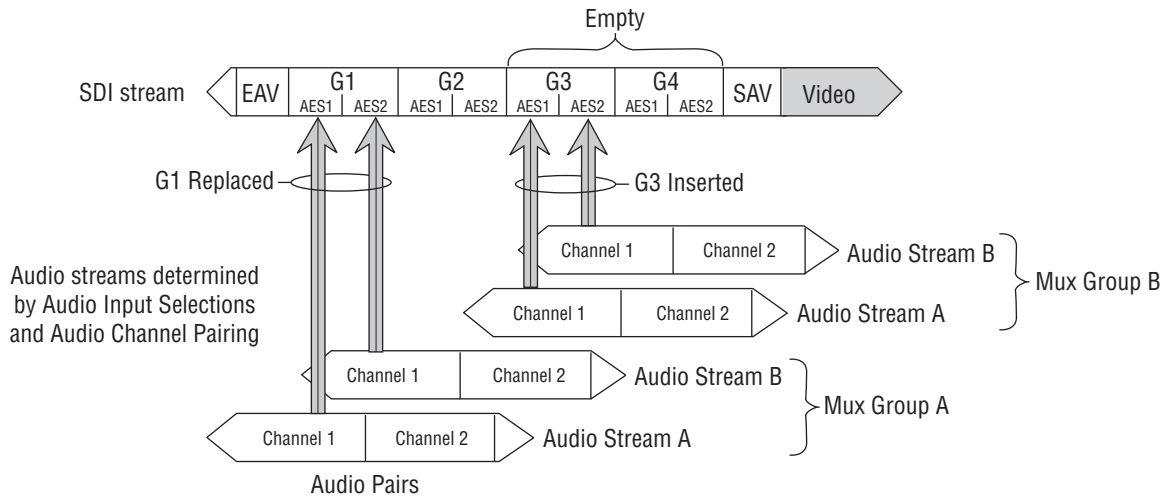
A multiplexing example of replacing and inserting audio is shown in Figure 54 on page 86. In this case, Audio Group 1, present in the incoming SDI video stream, has been replaced with Mux Group A by selecting the **Stream A** and **Stream B** checkboxes and the **Group 1** radio button in the Group column.

Mux Group B has been inserted into empty Audio Group 3, not present in the incoming SDI video stream, by selecting the **Stream A** and **Stream B** checkboxes and the **Group 3** radio button in the Group column.

The Sample rate (**20** or **24 Bits**) can be set for each Mux group before embedding.

Figure 53 depicts an example of the multiplexing of the selected audio Mux groups into the SDI video stream based on the selections made on the Mux web page in Figure 54 on page 86.

Figure 53. Multiplexing into the SDI Stream



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

8173_2001

Figure 54. MUX Web Page – Replace and Insert Audio



Model: [KAM-AV](#) Description: [Kameleon Module](#)

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

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

Group Deletion

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

Group Replacement

Mux Group A	Insert	Group	Bits/Sample
Pair 1:	<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 checked="" type="radio"/> 20 bits <input type="radio"/> 24 bits
Video In.G1.S2.Ch1 & Video In.G1.S2.Ch2			
Pair 2:	<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 checked="" type="radio"/> 20 bits <input type="radio"/> 24 bits
AES In 1 Unbal.Ch1 & AES In 1 Unbal.Ch2			

Mux Group B	Insert	Group	Bits/Sample
Pair 3:	<input checked="" type="checkbox"/> Stream A	<input type="radio"/> Group 1 <input type="radio"/> Group 2 <input checked="" type="radio"/> Group 3 <input type="radio"/> Group 4	<input checked="" type="radio"/> 20 bits <input type="radio"/> 24 bits
AES In 2 Unbal.Ch2 & AES In 2 Unbal.Ch1			
Pair 4:	<input checked="" type="checkbox"/> Stream B	<input type="radio"/> Group 1 <input type="radio"/> Group 2 <input checked="" type="radio"/> Group 3 <input type="radio"/> Group 4	<input checked="" type="radio"/> 20 bits <input type="radio"/> 24 bits
AA In Ch1 & AA In Ch2			

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VBI Encode Web Page for Composite Output

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- [Video Input Select](#)
- [Frame Sync](#)
- [Video Proc](#)
- [MUX](#)
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- [VBI SDI](#)
- [Composite Out](#)

Use this link

Use the VBI Encode web page ([Figure 55](#) for 525, [Figure 56](#) on page 88 for 625 line rate) to configure the VBI and Data Line encoding for the composite output signal (KAM-AV module only).

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.

This web page allows you to do the following on a line-by-line basis:

- Blank existing VBI and Data Line information
- Add black level setup to VBI lines (in 525 line rate only)

Note By default, there is no setup on the VBI lines, but setup is present on data lines.

You may also apply the clipping done in the Video Processor to all VBI lines by checking the **Apply Clips to VBI/Data Lines** checkbox.

Note The data lines not reserved for carrying data on the Video Input Select web page will appear greyed out. See [Advanced VBI Configuration on page 74](#).

Figure 55. VBI Encode Web Page – 525 Line Rate

VBI Encode

Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

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

Data lines configured in Advanced VBI view on Video Input Select web page

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"/>
Setup	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" 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"/>
Setup	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Apply Clips to VBI / Data Lines

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Figure 56. VBI Encode Web Page – 625 Line Rate

VBI Encode

Model: [KAM-AV](#) Description: [Kameleon Module](#)

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

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

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

Data lines configured in
Advanced VBI view on
Video Input Select web page

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 / Data Lines

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VBI Data Line Configuration for SDI Output

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 - [Video Proc](#)
 - [MUX](#)
 - [VBI Encode](#)
 - [VBI SDI](#)
 - [Composite Out](#)

Use the VBI SDI web page ([Figure 57](#) for 525, [Figure 58 on page 90](#) 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/Data Lines** checkbox to apply the clip values made with the Video Processor to all of the VBI lines. When this control on the Video Processor web page is disabled ([page 78](#)), checking this on the VBI SDI web page will cause a warning message to appear stating that: **Clip Settings is Disable in Video Proc Web Page**.

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 74](#).

Figure 57. VBI SDI Web Page – 525 Line Rate

VBI SDI

Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 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 / Data Lines

Warning: Clip Settings is Disable in Video Proc Web Page

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

Data lines configured in Advanced VBI view on Video Input Select web page

Figure 58. VBI SDI Web Page – 625 Line Rate



Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2
 Last Recalled E-MEM: [Factory Defaults](#)

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

Data lines configured in
Advanced VBI view on
Video Input Select web page

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 / Data Lines

Warning: [Clip Settings is Disable in Video Proc Web Page](#)

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Composite Out Web Page

- Use this link
- [Frame Sync](#)
 - [Video Proc](#)
 - [MUX](#)
 - [VBI Encode](#)
 - [VBI SDI](#)
 - [Composite Out](#)
 - [SDI Out](#)
 - [Analog Audio Inputs](#)
 - [AES Inputs](#)

Use the Composite Out web page (Figure 59) to adjust the following components of the video composite output signal (KAM-AV module only):

- Signal setup,
- Cross Color removal,
- Chrominance signal,
- Burst signal, and
- Gain, and Fine and Coarse delay.

Figure 59. KAM-AV Video Composite Out Web Page

Composite Out

Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

Output Signal Name	Comp Out
Video Output Standard:	525
Signal Setup:	<input checked="" type="radio"/> Setup <input type="radio"/> No Setup
Cross Color Removal:	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Chrominance Signal:	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Burst Signal:	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Output Video Adjustment:	<input checked="" type="radio"/> Calibrated <input type="radio"/> User Adjustable

<p>Delay Coarse (pixels)</p> <p><< < 75.0 * > >></p> <p> < > </p>	<p>Delay Fine (100%=37-38ns) (%)</p> <p><< < 0 * > >></p> <p> < > </p>
<p>Output Video Gain (%)</p> <p><< < 100.0 * > >></p> <p> < > </p>	

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Signal Setup

For 525 standard composite, select **Setup** to add setup to the output or **No Setup** to not add it to the composite output.

Cross Color Removal

Enable Cross Color Removal filtering for a composite signal that displays unwanted luminance and chrominance artifacts produced during encoding of the signal.

Chrominance Removal

Enable Chrominance Removal to completely remove the chrominance portion of the composite output signal.

Burst Removal

Enable Burst Removal to completely remove the burst portion of the composite output signal.

Output Video Adjustments

Gain and coarse/fine delay of the composite output signal can be set to calibrated values by selecting the **Calibrated** button. The delay settings are independent of the Frame Sync and SDI Video output controls.

If **User Adjustable** is selected use the following controls to adjust the composite output:

- **Delay Coarse** – adjusts the output delay in coarse steps of 5 pixels (double arrows) or 0.5 pixels (single arrows). The coarse delay range is from 0–4095 pixels.
- **Delay Fine** – adjusts the percent of output delay in fine steps of 10 percent (double arrows) or 1.0 percent (single arrows). The fine delay range is from 0–100% (100% = 37–38 ns)
- **Output Video Gain** – adjusts the output video gain in steps of 5 percent (double arrows) or 0.5 percent (single arrows). The output gain range is approximately 61–138.5 percent.

When the **User Adjustable** radio button is selected the following controls are also made available for adjustment of the composite output (Figure 60):

- Luma Gain – adjust percentage of luma (brightness) relative to 100%.
- Chroma Gain – adjust the percentage of color saturation relative to 100%.
- Black Level – adjust the percentage of black level relative to 0%.
- Hue – (control appears in 525 only) adjust the hue of the output signal in degrees.

Figure 60. KAM-AV Composite Out Web Page (User Adjustments)

 **Composite Out** 

Model: [KAM-AV](#) Description: [Kameleon Module](#)

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

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

User Adjustments

Output Signal Name	Comp Out
Video Output Standard:	525
Signal Setup:	<input checked="" type="radio"/> Setup <input type="radio"/> No Setup
Cross Color Removal:	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Chrominance Signal:	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Burst Signal:	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Output Video Adjustment:	<input checked="" type="radio"/> Calibrated <input type="radio"/> User Adjustable

<p>Delay Coarse (pixels)</p> <p><< < 75.0 * > >></p> <p> < > </p>	<p>Delay Fine (100%=37-38ns) (%)</p> <p><< < 0 * > >></p> <p> < > </p>
<p>Output Video Gain (%)</p> <p><< < 100.0 * > >></p> <p> < > </p>	

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SDI Out Web Page

Use
this
link

- [Video Proc](#)
- [MUX](#)
- [VBI Encode](#)
- [VBI SDI](#)
- [Composite Out](#)
- [SDI Out](#)
- [Analog Audio Inputs](#)
- [AES Inputs](#)

Use the SDI Out web page ([Figure 61](#)) to adjust the coarse delay of the SDI output signal independent of the Frame Sync and Composite Video controls. This page is present only for the KAM-AV module.

Figure 61. KAM-AV Video SDI Out Web Page



Model: [KAM-AV](#) Description: [Kameleon Module](#)
Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
Last Recalled E-MEM: [Factory Defaults](#)

Output Signal Name	SD Output
Video Output Standard:	525

Output Delay Coarse (pixels)
<input type="text" value="0.0"/> <input type="button" value="<<"/> <input type="button" value="<"/> <input type="button" value="*"/> <input type="button" value=">"/> <input type="button" value=">>"/>
<input type="button" value=" <"/> <input type="button" value="> "/>

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Output Delay Coarse

This web page provides an output delay coarse timing adjustment for the Video SDI Output signal only. This adjustment does not affect the Frame Sync timing or the Composite Video Output.

Adjust the output delay in coarse steps of 5 pixels (double arrows) or 0.5 pixels (single arrows). The coarse delay range is from 0–4095 pixels.

Analog Audio Inputs Web Page

- [MUX](#)
- [VBI Encode](#)
- [VBI SDI](#)
- [Composite Out](#)
- [SDI Out](#)
- [Analog Audio Inputs](#)
- [AES Inputs](#)
- [Audio Input Select](#)

Use this link

The Analog Audio Inputs web page is present when a KAM-ADC sub-module is installed on the front media module. Analog audio inputs are available from all rear modules except the KAM-AES-R.

Use the Analog Audio Inputs web page ([Figure 62](#)) to view the signal present and clipping status of the analog audio inputs and set maximum input levels.

These audio groups become inputs on the Audio Input Select web page ([Figure 65 on page 101](#)) and any pair can be routed to one of the four audio processing paths.

Figure 62. Analog Audio Inputs Web Page

Analog Audio Inputs

Model: [KAM-AV](#) Description: [Kameleon Module](#)

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

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

Analog Audio Inputs

Input	Name	Max Input level	Signal Present > -40dBFS	Clipping
J10	AA In Ch1	Max Input Level (dBu) << < 10.0 * > >> < ██████████ >	Signal Present	Not Clipping
J9	AA In Ch2	Max Input Level (dBu) << < 10.0 * > >> < ██████████ >	Signal Present	Not Clipping
J8	AA In Ch3	Max Input Level (dBu) << < 10.0 * > >> < ██████████ >	Signal Present	Not Clipping
J7	AA In Ch4	Max Input Level (dBu) << < 10.0 * > >> < ██████████ >	Signal Present	Not Clipping

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Input

The Input column will indicate which rear module connectors are being used to input the analog audio. Refer to the [Input/Output Configuration Web Page on page 52](#) for how to configure the analog audio input connectors.

Name

The Name column will report the default input name for these audio connectors or the name given to the inputs by the user.

Maximum Input Level

The maximum input level is adjustable -2.0 to +28 dBu. Kameleon uses this value to adjust the signal level into the A-to-D converter for the best signal-to-noise and dynamic range.

Signal Present

A Signal Present status will be reported if the incoming signal is greater than -40 dBFS.

Clipping

Clipping will be reported when incoming signals are in excess of approximately 0.5 dB of maximum level.

AES Inputs Web Page

- Use this link
- [VBI Encode](#)
 - [VBI SDI](#)
 - [Composite Out](#)
 - [SDI Out](#)
 - [Analog Audio Inputs](#)
 - [AES Inputs](#)
 - [Audio Input Select](#)
 - [Audio Channel Pairing](#)

Use the AES Inputs web page (Figure 63) to check AES/EBU input signal status decoded from the input signal status bits.

These audio groups become inputs on the Audio Input Select web page (Figure 65 on page 101) and any pair can be routed to one of the four audio processing paths.

Figure 63. AES/EBU Audio Inputs Web Page

AES Inputs

Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2
 Last Recalled E-MEM: [Factory Defaults](#)

AES Input characteristics

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

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Input

The Input column will indicate which rear module connectors are being used to input AES audio depending on the type of rear module installed. Refer to the [Input/Output Configuration Web Page on page 52](#) for how to configure the AES input connectors.

Name

The Name column will report the default input name for these audio connectors or the name given to the inputs by the user.

Signal State

The signal state of the AES audio will be reported as **Present** or **Not Present**.

Sample Rate

Kameleon accepts AES/EBU input signals at sample rates from 31 kHz to 96 kHz. The currently detected sample rate will be reported.

Mode

All Kameleon audio processing is done in 24-bit mode. 20-bit input signals are converted to 24-bits using dithering probability. 20- or 24-bit output mode is selectable on later pages for AES/EBU and multiplexed (SDI) outputs.

Emphasis

Ch1 and Ch2 Emphasis windows report whether high frequency emphasis is present (On/Off) on the audio input signal. Emphasis is high frequency gain adjustment that can conform to 50/15 μ s or CCIT J.17 standards.

Data

The Ch1 and Ch2 Data windows report whether the input channels contain standard AES/EBU Audio or Data.

AES Errors Detected

Use the **Clear** button to refresh the AES Errors Detected in the AES Errors Detected column.

Audio Input Select Web Page

Use this link

- [VBI SDI](#)
- [Composite Out](#)
- [SDI Out](#)
- [Analog Audio Inputs](#)
- [AES Inputs](#)
- [Audio Input Select](#)
- [Audio Channel Pairing](#)
- [Audio Sync](#)

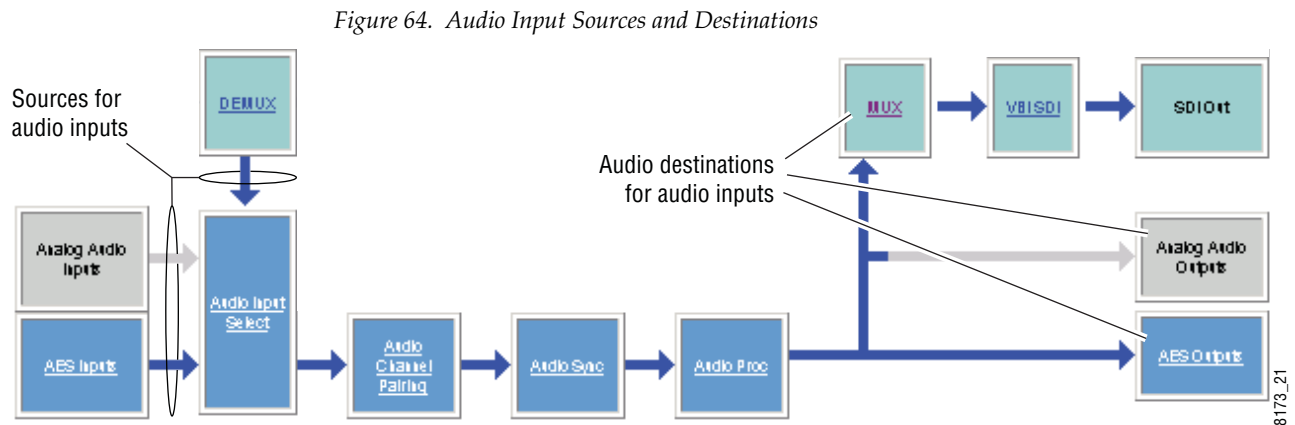
Use the Audio Input Select web page to select and format the four audio streams for downstream processing and output. The Audio Input Select web page is shown in [Figure 65 on page 101](#).

The Audio Input Select web page provides the following functions:

- Selects the source assignment for each audio stream with the radio button in each stream column.
- Enable or disables sample rate conversion for each stream,
- Enable or disables Loss of Signal reporting for each stream.
- Enable or disables AES error reporting for each AES stream.

All available audio inputs from the DEMUX, Analog Audio Inputs, and AES Inputs web pages are fed to the Audio Input Select page. From the available inputs, configure up to four audio streams for processing and output. **Silence** may also be selected for any stream.

[Figure 64](#) illustrates the possible audio sources and destinations for the configured streams.



Refer to [Figure 65 on page 101](#) for the following explanations.

Input Stream Select

All available audio inputs are listed on the Audio Input Select web page with the names defined on the I/O Config web page. For this example, module default names are used.

Select the desired Stream 1-4 by selecting the corresponding radio button for that input.

Status

The status of each of the selected inputs is reported as **Present** or **Not Present**.

Sample Rate Convert

On demultiplexed and AES audio inputs, select whether to disable sample rate conversion on each stream. This does not apply to analog audio inputs.

Loss of Signal Reporting

Enable or disable loss of signal reporting for each stream to higher levels such as SNMP reporting. This does not apply to analog audio inputs.

Reporting

The Reporting row will display what status is being reported to the higher levels. When Reporting is unchecked, the display will report **Not Monitored**.

AES Errors

Enable or disable AES error reporting to higher levels. This is not applicable for analog or demultiplexed digital audio signals.

Figure 65. Audio Input Select Web Page

 **Audio Input Select** 
Model: [KAM-AV](#) Description: [Kameleon Module](#)Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2Last Recalled E-MEM: [Factory Defaults](#)**Input Stream Select**

	Stream 1	Stream 2	Stream 3	Stream 4
Silence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video In.G1.S1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video In.G1.S2	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video In.G2.S1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video In.G2.S2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AES In 1 Unbal	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
AES In 2 Unbal	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
AA In Ch1 & AA In Ch2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
AA In Ch3 & AA In Ch4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Status	Not Present	Not Present	Not Present	Not Present
Sample Rate Convert	<input type="checkbox"/> Disable	<input type="checkbox"/> Disable	<input type="checkbox"/> Disable	<input type="checkbox"/> Disable
Loss of Signal	<input type="checkbox"/> Report	<input checked="" type="checkbox"/> Report	<input checked="" type="checkbox"/> Report	<input checked="" type="checkbox"/> Report
Reporting	Not Monitored	Not Present	Not Present	Not Present
AES Errors	N/A	<input checked="" type="checkbox"/> Warn	N/A	<input checked="" type="checkbox"/> Warn

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Audio Channel Pairing Web Page

Use this link

- [Composite Out](#)
- [SDI Out](#)
- [Analog Audio Inputs](#)
- [AES Inputs](#)
- [Audio Input Select](#)
- [Audio Channel Pairing](#)
- [Audio Sync](#)
- [Audio Proc](#)

The Audio Channel Pairing web page (Figure 66) allows the input audio channels to be arbitrarily recombined into new pairs, streams, and groups. The rows represent the audio input channels and the columns represent the audio output channels. The columns are grouped together into four different pairs.

The recombined audio pairs can be routed as follows:

- Any output pair can be routed to any of the AES/EBU output streams of the module (see [AES Outputs Web Page on page 108](#)).
- Any output pair can be routed to an analog output pair (see [Analog Audio Outputs Web Page on page 107](#)).
- Either or both Multiplexing Groups can be inserted into the SDI output video (see [MUX Web Page on page 82](#)).

Note Audio input names are assigned using the **I/O Config** page. Factory default names are used here.

Figure 66. Audio Channel Pairing Web Page

Audio Channel Pairing

Model: [KAM-AV](#) Description: [Kameleon Module](#)

Frame Location: [not assigned](#) , Slot: [7](#)

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

Pair Input Audio Channels

Mux Group	Mux Group A				Mux Group B				
Names	Pair 1 ChA	Pair 1 ChB	Pair 2 ChA	Pair 2 ChB	Pair 3 ChA	Pair 3 ChB	Pair 4 ChA	Pair 4 ChB	Streams
Silence	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str1.Ch1
Silence	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str1.Ch2
Silence	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str2.Ch1
Silence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str2.Ch2
Silence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str3.Ch1
Silence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str3.Ch2
Silence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Str4.Ch1
Silence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Str4.Ch2

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Audio Sync Web Page

Use this link

- [SDI Out](#)
- [Analog Audio Inputs](#)
- [AES Inputs](#)
- [Audio Input Select](#)
- [Audio Channel Pairing](#)
- [Audio Sync](#)
- [Audio Proc](#)
- [Analog Audio Outputs](#)

Use the Audio Sync web page (Figure 67) to:

- Synchronize the four audio channel pairs to Video Frame Sync, and/or
- Add audio delay using the delay adjust controls.

Use the Pair Selection radio buttons to select either Pairs 1 & 2 or Pairs 3 & 4 for adjustment.

Note Enable Auto Track in both audio pairs will default to **Off** when the Output Timing selection on the Video Input Select web page is set to **Video In**.

Figure 67. Audio Synchronizer Web Page

Audio Sync

Model: [KAM-AV](#) Description: [Kameleon Module](#)

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

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

Pair Selection: Pairs 1 & 2 Pairs 3 & 4

Pair 1		Pair 2	
Ch A	Video In.G1.S2 Ch1	Ch A	AES In 1 Unbal.Ch1
Ch B	Video In.G1.S2 Ch2	Ch B	AES In 1 Unbal.Ch2
	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	0 mS	Auto Tracking Delay	0 mS
Total Delay	0 mS 0 mS	Total Delay	0 mS 0 mS
Channel Lock	<input checked="" type="checkbox"/> Locked	Channel Lock	<input checked="" type="checkbox"/> Locked
Ch A Delay Adjust (mS)		Ch A Delay Adjust (mS)	
<input type="button" value="<<"/> <input type="button" value="<"/> <input type="text" value="20"/> <input type="button" value="*"/> <input type="button" value=">"/> <input type="button" value=">>"/>		<input type="button" value="<<"/> <input type="button" value="<"/> <input type="text" value="20"/> <input type="button" value="*"/> <input type="button" value=">"/> <input type="button" value=">>"/>	
< >		< >	
Ch B Delay Adjust (mS)		Ch B Delay Adjust (mS)	
<input type="button" value="<<"/> <input type="button" value="<"/> <input type="text" value="20"/> <input type="button" value="*"/> <input type="button" value=">"/> <input type="button" value=">>"/>		<input type="button" value="<<"/> <input type="button" value="<"/> <input type="text" value="20"/> <input type="button" value="*"/> <input type="button" value=">"/> <input type="button" value=">>"/>	
< >		< >	

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[Back \(Audio\)](#)

Audio Proc Web Page

- Use this link
- [Analog Audio Inputs](#)
 - [AES Inputs](#)
 - [Audio Input Select](#)
 - [Audio Channel Pairing](#)
 - [Audio Sync](#)
 - [Audio Proc](#)
 - [Analog Audio Outputs](#)
 - [AES Outputs](#)

Use the Audio Proc web page ([Figure 68 on page 106](#)) to adjust the following for Audio Pair 1 & 2 and Audio Pair 3 & 4:

- 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.

Pair Selection

Use the Pair Selection radio buttons to select either Pairs 1 & 2 or Pairs 3 & 4 for adjustment.

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
- A+B (Pairs 1 or 2 and Pairs 3 or 4) - the sum of the opposite pair.

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 68 on page 106](#).

Selecting Audio Mode

Select the audio mode for Pair 1, Pair 2, Pair 3, and Pair 4 with the **Audio** or **Non-Audio** radio button. Non-audio modes include Dolby E and data streams.

Selecting Output Resolution

Select the AES output resolution for Pair 1, Pair 2, Pair 3, and Pair 4 with the **20 bit** or **24 bit** radio button.

Figure 68. Audio Processing Configuration Web Page



Model: [KAM-SD](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

Pair Selection: Pairs 1 & 2 Pairs 3 & 4

Pair 1			Pair 2		
Ch A	Silence		Ch A	Silence	
Ch B	Silence		Ch B	Silence	
Gain Settings	<input type="checkbox"/> Locked		Gain Settings	<input type="checkbox"/> Locked	
Ch A Gain (dB) <input type="button" value="<<"/> <input type="button" value="<"/> 0.0 <input type="button" value="*"/> <input type="button" value=">"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="text" value="0.0"/> <input type="button" value="> "/>			Ch A Gain (dB) <input type="button" value="<<"/> <input type="button" value="<"/> 0.0 <input type="button" value="*"/> <input type="button" value=">"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="text" value="0.0"/> <input type="button" value="> "/>		
Ch B Gain (dB) <input type="button" value="<<"/> <input type="button" value="<"/> 0.0 <input type="button" value="*"/> <input type="button" value=">"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="text" value="0.0"/> <input type="button" value="> "/>			Ch B Gain (dB) <input type="button" value="<<"/> <input type="button" value="<"/> 0.0 <input type="button" value="*"/> <input type="button" value=">"/> <input type="button" value=">>"/> <input type="button" value=" <"/> <input type="text" value="0.0"/> <input type="button" value="> "/>		
	Ch A'	Ch B'		Ch A'	Ch B'
Presence	False	False	Presence	False	False
Clip	False	False	Clip	False	False
Processing	Pass	Pass	Processing	Pass	Pass
Audio Mode	<input checked="" type="radio"/> Audio <input type="radio"/> Non-Audio		Audio Mode	<input checked="" type="radio"/> Audio <input type="radio"/> Non-Audio	
AES output resolution	<input checked="" type="radio"/> 20 bit <input type="radio"/> 24 bit		AES output resolution	<input checked="" type="radio"/> 20 bit <input type="radio"/> 24 bit	

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

[Back](#) [Functional View](#) [Next \(MUX\)](#)
[Next \(AES Output\)](#)
[Next \(Analog Output\)](#)

Analog Audio Outputs Web Page

- Use this link
- [AES Inputs](#)
 - [Audio Input Select](#)
 - [Audio Channel Pairing](#)
 - [Audio Sync](#)
 - [Audio Proc](#)
 - [Analog Audio Outputs](#)
 - [AES Outputs](#)
 - [E-MEM](#)

Use the Analog Audio Outputs web page (Figure 69) to:

- Select audio pairs for output to the assigned analog audio connectors (refer to *Input/Output Configuration Web Page* on page 52 for connector information and audio signal name assignment).
- Adjust the maximum output level for each analog audio channel (adjustable -6.0 to +24 dBu).

Note Analog audio outputs require the DAC submodule on the front media module.

Figure 69. Analog Audio Outputs Web Page

Analog Audio Outputs

Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2
 Last Recalled E-MEM: [Factory Defaults](#)

Audio Pairs	J10 & J9 ANA AUD1 & ANA AUD2 AA Out Ch1 & AA Out Ch2	J8 & J7 ANA AUD3 & ANA AUD4 AA Out Ch3 & AA Out Ch4
Video In.G1.S2 Ch1 & Video In.G1.S2 Ch2	<input checked="" type="radio"/>	<input type="radio"/>
AES In 1 Unbal.Ch1 & AES In 1 Unbal.Ch2	<input type="radio"/>	<input checked="" type="radio"/>
AES In 2 Unbal.Ch2 & AES In 2 Unbal.Ch1	<input type="radio"/>	<input type="radio"/>
AA In Ch1 & AA In Ch2	<input type="radio"/>	<input type="radio"/>

Current Input	Output: Max Level
Video In.G1.S2 Ch1	AA Out Ch1 (dBu) << < 24.0 * > >> < >
AES In 1 Unbal.Ch1	AA Out Ch2 (dBu) << < 24.0 * > >> < >
AES In 2 Unbal.Ch2	AA Out Ch3 (dBu) << < 24.0 * > >> < >
AA In Ch1	AA Out Ch4 (dBu) << < 24.0 * > >> < >

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

AES Outputs Web Page

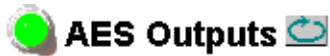
- Use this link
- [Audio Input Select](#)
 - [Audio Channel Pairing](#)
 - [Audio Sync](#)
 - [Audio Proc](#)
 - [Analog Audio Outputs](#)
 - [AES Outputs](#)
 - [E-MEM](#)
 - [Slot Config](#)

Use the AES Outputs web page (Figure 70) to:

- Select audio pairs for output to the assigned AES/EBU connectors

Kameleon AES/EBU signals are output at 48 kHz sample rate as reported in the display.

Figure 70. AES Outputs Web Page



Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

Audio Pairs	J5 AES 3 AES Out 1 Unbal	J4 AES 4 AES Out 2 Unbal	Output Resolution
Video In.G1.S2.Ch1 & Video In.G1.S2.Ch2	<input type="radio"/>	<input checked="" type="radio"/>	20 bit
AES In 1 Unbal.Ch1 & AES In 1 Unbal.Ch1	<input checked="" type="radio"/>	<input type="radio"/>	20 bit
AES In 2 Unbal.Ch2 & AES In 2 Unbal.Ch1	<input type="radio"/>	<input type="radio"/>	20 bit
AA In Ch1 & AA In Ch2	<input type="radio"/>	<input type="radio"/>	20 bit
Balanced / Unbalanced	Unbalanced	Unbalanced	
Output Sample Rate	48 kHz	48 kHz	

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

E-MEM Configuration Web Page

- [Audio Input Select](#)
 - [Audio Channel Pairing](#)
 - [Audio Sync](#)
 - [Audio Proc](#)
 - [Analog Audio Outputs](#)
 - [AES Outputs](#)
 - [E-MEM](#)
 - [Slot Config](#)
- Use this link

The E-MEM web 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.

Note E-MEM and factory default recalls can also be performed using the Newton Control Panel. Refer to [Table 10 on page 35](#) for the Newton parameters.

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 71](#)), 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 Kameleon module. 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 72 on page 110](#)).

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

E-MEM®

Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection: Standard Advanced

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

Recall Restore factory settings

Recall Restore factory names

The Advanced View (Figure 72) 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 72. E-MEM Web Page (Advanced View)



Model: [KAM-AV](#) Description: [Kameleon Module](#)
 Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: [2](#)
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection: Standard Advanced

E-MEM®

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

Restore factory settings

Restore factory names

File Operations

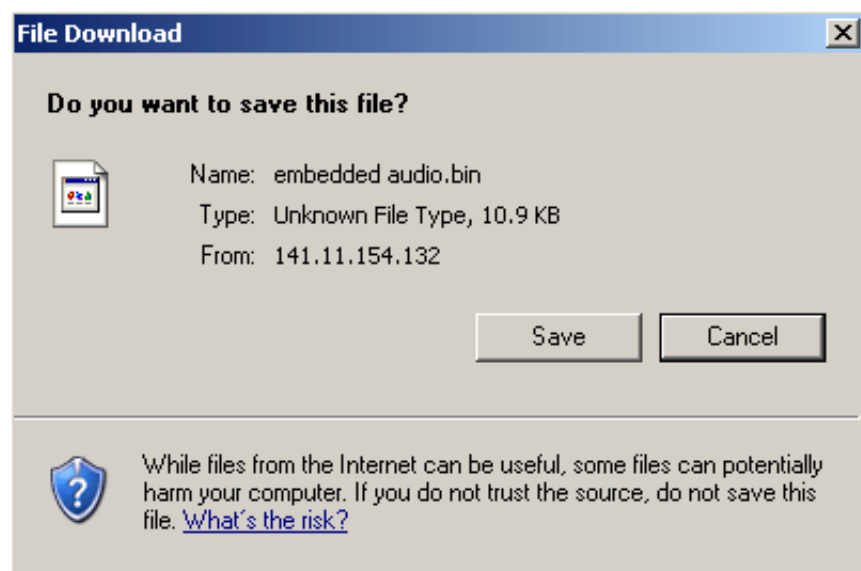
Save File

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

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

This will bring up a File Download screen similar to [Figure 73](#). Select **Save**.

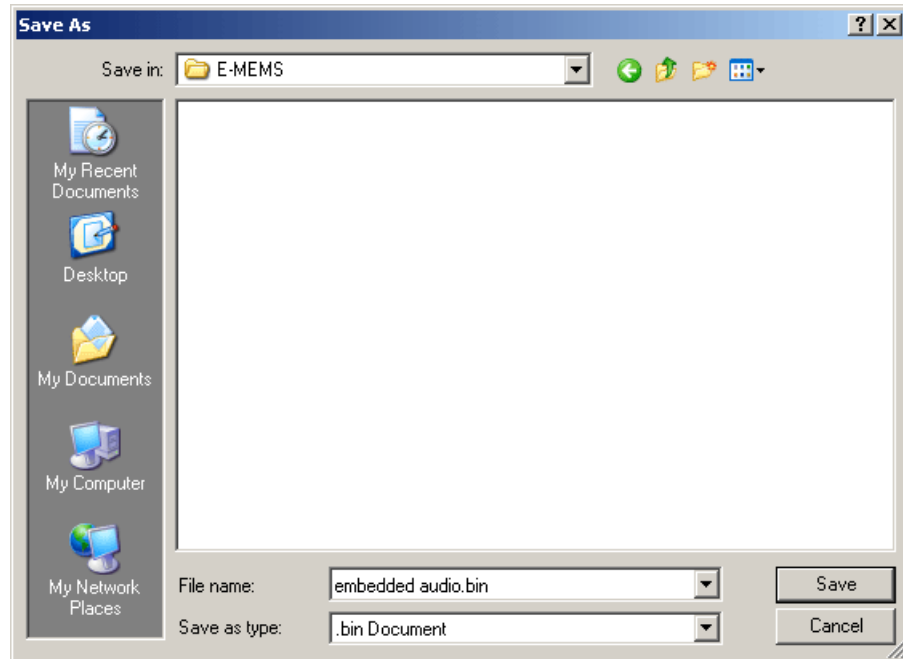
Figure 73. File Download Screen



This will bring up the Save As screen as shown in [Figure 74](#). 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.

Note For frames running 2000NET software version v3.2.2 and earlier, files will be saved with a .mcm extension. For later version 2000NET software, files will be saved as .bin. Either file type can be used with the later version software.

Figure 74. 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 75](#)).

Figure 75. Load E-MEM Web Page



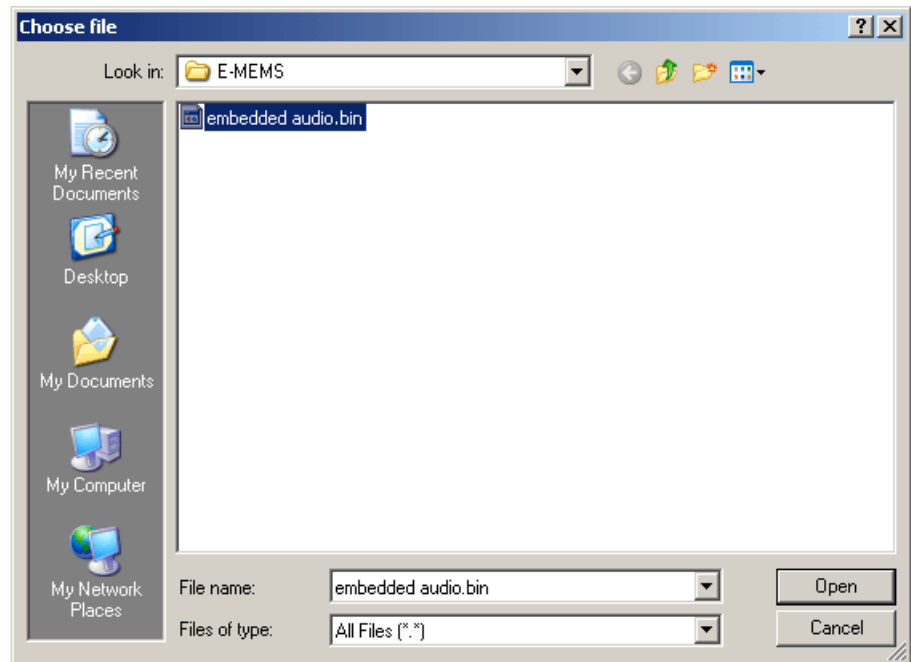
Model: [KAM-AV](#) Description: [Kameleon Module](#)
Frame Location: [Bay 1 QA 2000 Frame](#) , Slot: 2

Load file into E-MEM 1...

Enter filename:

Enter a path and filename or use the **Browse** button to locate your saved E-MEM files. Browse to the Choose File screen ([Figure 76](#)), select the E-MEM file to download and select **Open**.

Figure 76. Choose File Screen



This will place the path and filename in the Load E-MEM screen ([Figure 75 on page 112](#)). 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 Web Page

Use
this
link

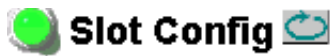
- [Audio Channel Pairing](#)
- [Audio Sync](#)
- [Audio Proc](#)
- [Analog Audio Outputs](#)
- [AES Outputs](#)
- [E-MEM](#)
- [Slot Config](#)

Use the Slot Config web page shown in [Figure 77](#) to perform the following functions on the module:

- Slot Identification
- Locate Module
- Slot Memory
- Frame Health Reporting (2000T3 Frame only)
- LED Reports
- SNMP Trap Reporting

Each of these functions is described in detail below.

Figure 77. Slot Configuration Web Page



Model: [KAM-DEC-2AES-MUX](#) Description: [Frame Sync, Proc A](#)
Frame Location: [not assigned](#) , Slot: [7](#)

Slot Identification

Name:

Asset Tag:

Locate Module

▼

Slot Memory

Restore upon Install

[Frame Health Reports](#)

[LED Reports](#)

[SNMP Trap Reports](#)

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 34](#)).

Slot Memory

The slot configuration for each media module is automatically saved periodically (once an hour) to the 2000NET module in that frame. You may also select the **Learn Module Config** button at any time to save the current configuration for this slot. The configuration is saved on the 2000NET module. If the 2000NET module is removed or powered down, the stored configurations are not saved.

When the **Restore upon Install** box has been checked, the current configuration saved to this slot is saved as slot memory. When the current module is removed and another module of the same type and software version is installed, the configuration saved to the 2000NET module will be downloaded to the new module. The box must be checked before the current module with the saved configuration is removed.

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

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

Frame Health Reports Link

Select the Frame Health Reports link to open the 2000NET module Frame Alarm Reporting web page. This web page allows configuration of the alarms and warnings that are reported to the external Frame Health Alarm connector on the rear of the 2000T3 frame.

Note The external Frame Health Alarm is not present on the 2000T1 frame.

LED Reports Link

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

SNMP Trap Reports Link

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

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

Software Updating

Software updating of the Kameleon modules is done using the NetConfig Networking Application PC option. This application is available free of charge from the Thomson Grass Valley web site as described in the KAM-AV/SD software release notes. When the Kameleon module is installed in a frame with a 2000NET module running version 4.0.0 or later, the Software Update web page is no longer present.

Note If you are using a 2000NET card with software earlier than 4.0.0, you may still use the Software Update page, but updating to the latest version of the 2000NET module and using the NetConfig application is recommended.

The procedure for updating software with NetConfig is given in the latest KAM-AV/SD Release Notes. Refer to this document for complete details on features of the new software release and other important notes about the modules.

Specifications

Note Specifications are subject to change without notice.

Table 13. SDI Input/Output Specifications

Parameter	Value
SDI Input	
Signal type	Serial digital video conforming to SMPTE259M 10-bit 4:2:2 component digital signal
Input impedance	75 Ω
Connector type	75 Ω 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
SDI Output	
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 Ω
Connector type	75 Ω BNC on rear module
DC offset	< 0.5 V when terminated into 75 Ω
Output return loss	>15 dB up to 270 MHz
Jitter	Conforms to SMPTE 259M and RP184-2004 <2UI above 1 kHz
Rise/fall time	700 – 900 ps (20 – 80% amplitude)
SDI I/O Control Parameters	
Vertical blanking processing	Line by line blank

Table 14. Composite Input Specifications

Parameter	Value
Composite Input	
Signal types	Composite analog video conforming to: NTSC (525/59.9) SMPTE170M PAL-B/PAL-I (625/50) CCIR 624-4
Level	0.5 V p-p to 2 V p-p, 1 V p-p nominal
Impedance	75 Ω terminating
Signal source	75 Ω BNC on rear module or internal signal
Return loss	> 40 dB to 5.75 MHz
Common mode rejection ratio	> 60 dB to 60 Hz
HUM peak	< 4.5 V p-p
Clamping hum rejection	0 dB
Composite In Performance	
Sampling	27 MHz (2x oversampling)
Input quantization	12 bits

Table 14. Composite Input Specifications

Parameter	Value
Overall processing accuracy	10 bits
Luma frequency response	± 0.1 dB to 5.5 MHz
Chroma (R-Y,B-Y) response	-1.5 dB @ 1.3 MHz
Group delay error	< 5 ns to 5.5 MHz
Chroma/luma delay	< 10 ns
Luma non-linearity	< 0.15%
K factor (2T)	< 0.5%
Line tilt	< 0.5%
Field tilt	< 0.5%
Differential phase	< 1 degree
Differential gain	< 1%
Signal/noise ratio (CCIR410 or EIA RS-250B)	> 60 dB to 5.5 MHz
Phasing	None
Picture centering error	0.0 ±20 ns non-adjustable
Decoding modes	Three-line adaptive with two pre-programmed adaption threshold levels high/low
Blanking start/end	SMPTE170M or CCIR624, non-adjustable
Composite In Control	
Overall video gain range	44% to 219% in 0.5% steps, 100% default
Black range	-21.5% to +22% of luma full-scale in 0.1% steps, 0 default
Hue range	-180 to + 179 degrees in 0.1 degree steps, 0 degree default (525 only)
Setup processing in vertical	Line by line on/off (525 only)
Vertical blanking processing	Line by line blank/notch decode/pass

Table 15. Composite Output Specifications

Parameter	Value
Composite Output	
Number of outputs	1
Signal type	Composite analog video conforming to SMPTE170M for NTSC and CCIR624 for PAL-B
Signal level	600 mV to 1.4 V p-p adjustable, 1 V p-p default
Output clamping level	0 VDC ±20 mV
Output impedance	75 Ohm
Connector type	75 Ohm BNC on rear module
Output return loss	> 40 dB to 5.5 MHz
Output isolation	> 46 dB to 5.5 MHz
Composite Output Performance	
Response	± 0.1 dB to 5.0 MHz
Differential phase	< 0.5 degrees
Differential gain	< 0.9%
Group delay	< 10 ns to 5.5 MHz
RMS signal-to-noise	> 59 dB to 5.5 MHz

Table 15. Composite Output Specifications - (continued)

Parameter	Value
Resolution	10 bits
Accuracy	9.2 bits
Subcarrier jitter	< 1 degree when input clock jitter spec is met
Blanking start/end	SMPTE170M or CCIR624, non-adjustable
Composite Output Control Parameters	
Overall video gain	61% to 138% in 0.5% steps, 100% default
Black range	-7.5% to +15% of luma full-scale in 0.1% steps, 0 default
Luma gain	50 – 150% in 1% steps, 100% default
Chroma gain	50 – 150% in 1% steps, 100% default
Hue range	± 22.5 degree 0.5 degree steps, 0 degree default (525 only)
Setup processing in vertical	Line by line on/off (525 only)
Vertical blanking processing	Line by line blank/unblank
Prefiltering	Cross-color & luma reduction 2D filtering on/off

Table 16. AES/EBU Input Specifications

Parameter	Value	
	Balanced (AES3-1992)	Unbalanced (AES3id 2001)
AES/EBU Input		
Common mode range	+ 10/-10 V, 50 Hz to 20 kHz	NA
Differential voltage range	200 mV p-p to 12 V p-p	320 mV p-p to 2 V p-p ¹
Input return loss	> 25 dB (100 kHz to 6 MHz)	>15 dB (100 kHz to 6 MHz)
Sample rate	32 – 96 kHz	32 – 96 kHz
Performance		
Static withstand	5 kV (330 Ω, 150 pF)	

¹ Connector J5 on the KAM-AA-AES-UR specification is 400 mV p-p to 2 V p-p.

Table 17. AES/EBU Output Specifications

Parameter	Value	
	Balanced (AES3-1992)	Unbalanced (AES3id 2001)
AES/EBU Output		
Signal type	AES3 1992, 110 Ω	AES3id 2001, 75 Ω
Signal level	3 V p-p ±0.2 V @ 110 Ω	1 V p-p ±0.2 V @ 75 Ω
Rise/fall time	5 ns to 30 ns, 110 Ω load	37 ns ± 7 ns, 75 Ω load
Output return loss	> 25 dB (100 kHz to 6 MHz)	>15 dB (100 kHz to 6 MHz)
DC offset	< 50 mV	< 50 mV
Sample rate	48 kHz	48 kHz
Bits/sample	20/24 bits/sample, selectable	20/24 bits/sample, selectable
AES/EBU Performance		
Static withstand	5 kV (330 Ω, 150 pF)	

Table 18. Audio ADC Specifications

Parameter	Value
Analog Input (ADC)	
Number of inputs	4 per submodule
Level for full-scale output	-2 dB to +28 dBu, adjustable in 0.1 dBu steps
Input impedance	> 22 k Ω
Common mode input voltage	20 V maximum
Differential DC	0.25 V maximum
Common mode rejection ratio	> 72 dB, 20 Hz to 20 kHz
Connector type	Multi-pin (receptacle)
Analog Audio Input Conversion Performance	
Signal-to-noise ratio	> 102 dB, 20 Hz to 20 kHz > 105 dB, "A" weighted
THD+noise, swept 20 Hz-20 kHz	< -75 dB, 20 to 20 kHz, @ +28 dBu
Interchannel crosstalk	< -95 dB, 20 Hz to 20 kHz
Intermodulation distortion	< -100 dB CCIF two-tone test, 19 & 20 kHz tones
Interchannel gain mismatch	0.1 dB
Frequency response	\pm 0.1 dB, relative to 1 kHz, 20 Hz to 20 kHz
DC offset	\pm 1 mV
Emphasis	Not selectable
Output resolution	24 bits
Effective number of bits	18
Static withstand	5 kV (330 Ω , 150 pF) any input or output

Table 19. Audio DAC Specifications

Parameter	Value
Analog Audio Output (DAC)	
Number of outputs	4 per submodule
Signal type	-2 dB to +24 dBu, adjustable in 0.1 dBu steps
Output impedance	100 Ω balanced
Drive capability maximum	+24 dBu balanced @ 10 K Ω load
Differential DC	0.25 V maximum
Connector type	Multi-pin (receptacle)
Analog Audio Output Performance (48 kHz sampling rate)	
Signal/noise ratio	> 102 dB, 20 Hz to 20 kHz > 105 dB, "A" weighted
THD+noise, swept 20 Hz-20 kHz	< -75 dB, 20 Hz to 20 kHz, @ +24 dBu
Interchannel crosstalk	< -80 dB, 20 Hz to 20 kHz
Intermodulation distortion	< -80 dB CCIF two-tone test, 19 & 20 kHz tones
Interchannel gain mismatch	0.1 dB
Frequency response	\pm 0.2 dB, relative to 1 kHz, 20 Hz to 20 kHz @ +24 dBu
DC offset	\pm 50 mV

Table 19. Audio DAC Specifications - (continued)

Parameter	Value
Output resolution	24 bits
Effective number of bits	18
Static withstand	5 kV (330 Ω , 150 pF) any input or output

Table 20. Frame Sync/Timing Specifications

Parameter	Value
Video Frame Sync Timing Control Parameters	
Delay adjustment (main)	0 to 1 frame in 37 ns steps
Additional delay, composite out	0 to 151 μ s in 37 ns steps
Fine phase delay, composite out	0 to 37 ns in 100 steps
Additional delay, SDI out	0 to 151 μ s in 37 ns steps

Table 21. Main Video Processing Specifications

Parameter	Value
Main Video Frame Processing Control Parameters	
Y gain	\pm 50% in 0.4% steps, 100% default
Y offset	\pm 3.5% of 100% white in 0.11% steps, 0% default
B-Y gain	\pm 50% in 0.4% steps, 100% default
B-Y offset	\pm 3.5% of 100% white in 0.11% steps, 0% default
R-Y gain	\pm 50% in 0.4% steps, 100% default
R-Y offset	\pm 3.5% of 100% white in 0.11% steps, 0% default
Color bars	On/Off

Table 22. Multiplexing/Demultiplexing Specifications

Parameter	Value
MUX/DEMUX Performance	
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 23. Audio Processing Specifications

Parameter	Value
Audio Processing	
Number of channels supported	8
Sample Rate Conversion	All audio inputs (analog, AES or DEMUX) retimed to output timing reference (either input video or frame reference)
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 24. Electrical Length Specifications

Parameter	Value
Electrical Length	
Composite In to Composite Out (2D Decoder)	2 lines + 248 pixels (2 lines + 21 μ s)
Composite In to Composite Out (3D Decoder)	4 lines + 768.5 pixels (4 lines + 57 μ s)
Composite In to SDI Out (2D Decoder)	1 line + 219.5 pixels (1 line + 16 μ s)
Composite In to SDI Out (3D Decoder)	3 lines + 701.5 pixels (3 lines + 52 μ s)
SDI In to Composite Out	1 line + 358 pixels (1 line + 27 μ s)
SDI In to SDI Out	313 pixels (23 μ s)
Composite Reference Input to SDI Out	2 lines + 544 pixels (2 lines + 40.3 μ s)
Composite Reference Input to Composite Out	3 lines + 587 pixels (3 lines + 43.5 μ s)
SDI In to AES/EBU Out (DMUX)	3.8 ms
SDI In to Analog Audio Out (DMUX)	4.5 ms
Analog Audio to Analog Audio	1.9 ms
Analog Audio to AES/EBU	1.2 ms
Analog Audio to SDI Out (MUX)	3.0 ms
AES/EBU to Analog Audio	2.5 ms @ 48 kHz
AES/EBU to AES/EBU	2.0 ms @ 48 kHz
AES/EBU to SDI Out (MUX)	3.8 ms @ 48 kHz
SDI In to SDI Out Audio Delay (DMUX, retime, MUX)	5.6 ms

Table 25. Environmental/Power Specifications

Parameter	Value
Environmental	
Frame temperature range	See Kameleon Frame Manual
Operating humidity range	0 to 90% non-condensing
Non-operating temperature	-10 to +70 degrees C
Mechanical	
Frame type	2000T1DNG Kameleon Frame or 2000T3NG Kameleon Frame
Power	
Consumption	KAM-AV – 14 Watts typical KAM-SD – 11 Watts typical KAM-ADC-S – 2 Watts typical KAM-DAC-S – 2 Watts typical

Service

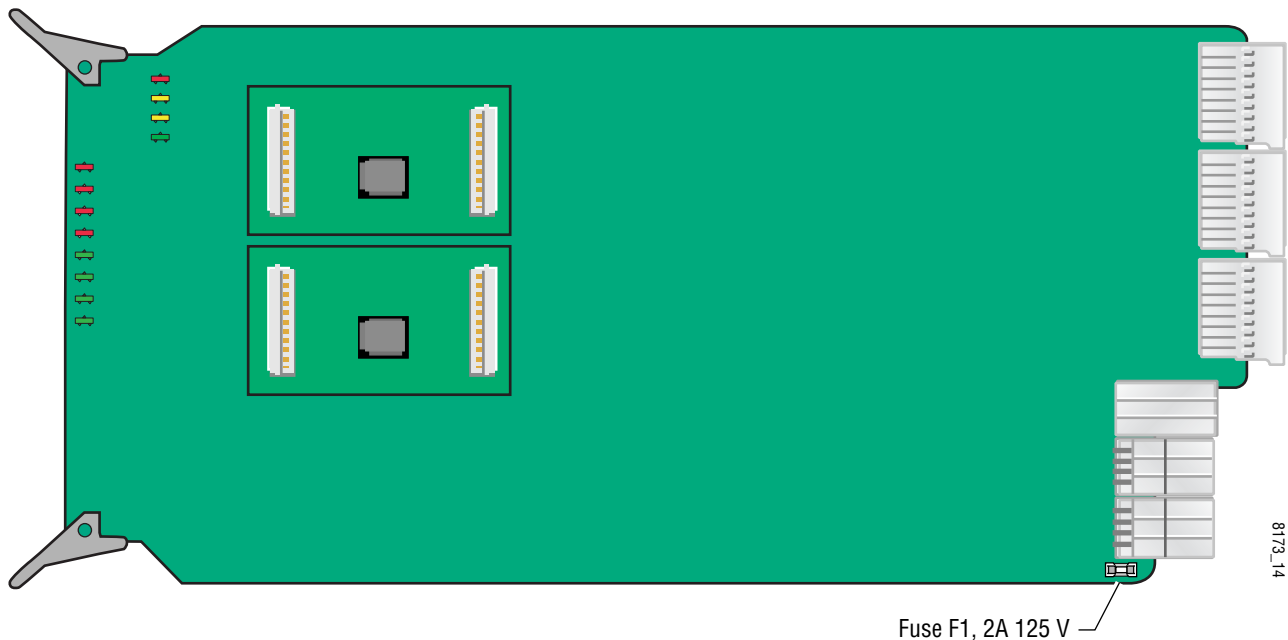
The Kameleon modules make extensive use of surface-mount technology and programmed parts to achieve compact size and adherence to demanding technical specifications. Circuit modules should not be serviced in the field except to check and replace fuses.

Troubleshooting

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

- Check frame and module power. If power is not present, check the fuse on the +24 V input to the module as illustrated in [Figure 78](#).
- Check for presence and quality of input signals.
- Verify that source equipment is operating correctly.
- Check cable connections.

Figure 78. Location of Module Fuse



Refer to [Figure 16 on page 33](#) for the location of PWR LED and [Table 9 on page 34](#) 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 Thomson Grass Valley repair depot. Call your Thomson Grass Valley representative for depot location. Refer to the [Contacting Grass Valley](#) at the front of this document for the Grass Valley Customer Support Information number.

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