

KAM-ENC-4DAC-DMX

KAMELEON SERIES MODULES

Instruction Manual

SOFTWARE VERSION 1.0.4

071834400
DECEMBER 2004

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Preface

About This Manual

This manual describes the features of the Kameleon multi-function modules that are part of the Kameleon Media Processing System. As part of this module family, it is subject to Safety and Regulatory Compliance described in the Kameleon/2000 Series frame and power supply documentation (see the *Kameleon 2000 Series Frames Instruction Manual*).

KAM-ENC-4DAC-DMX

Kameleon Series Module

Introduction

This manual provides installation, operation and configuration information for the KAM-ENC-4DAC-DMX Kameleon Series module.

The Kameleon KAM-ENC-4DAC-DMX multifunction module provides broadcast quality conversion of SD video with embedded AES digital audio streams to NTSC/PAL analog composite video and four analog audio channels. A composite output is available along with four balanced analog audio outputs.

This module features:

- SD conversion to broadcast quality NTSC/PAL analog video,
- Two embedded 48 kHz AES digital audio streams converted to four balanced analog audio outputs,
- Audio and video delay, synchronization and processing amplifier,
- Powerful line-by-line VBI processing including user-configuration of active video lines for carrying data,
- 4x4 audio router for mapping audio channels to specific AES streams,
- Audio and video test generators,
- Hot swappable,
- 5 user-programmable E-MEM registers,
- Save/load module configuration files to a networked PC,
- SNMP monitoring capability,
- Web browser GUI (graphical user interface), and
- Support for Newton Control System and NetConfig Network Configuration application.

Note KAM-ENC-4DAC-DMX operation requires 2000NET Network Interface Module hardware revision 01A1 or greater with software version 3.2.2 or greater. Systems installed in the 2000T3N frame require the 2000FAN fan sled (refer to [Figure 4 on page 11](#)).

Installation

To install the Kameleon modules, perform the following steps:

1. Place the KAM-MIX-R passive rear module in a rear frame slot and tighten the screws on each side of the rear module.
2. Install the audio submodule on KAM-ENC-4DAC-DMX module (if required) and place the front module in the corresponding front slot.
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 front module removed from the frame (front module powered down).

System Requirements

For proper operation of the KAM-ENC-4DAC-DMX modules, the frame must be a 2000T1DNG or 2000T3NG which include the following components:

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

Frame Capacity

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

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

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

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

Item	2000T3NG Kameleon Frame Capacity	2000T1DNG Kameleon Frame Capacity
KAM-ENC-4DAC-DMX Module set	12	4

Module Placement in the 2000T3NG Kameleon Frame

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

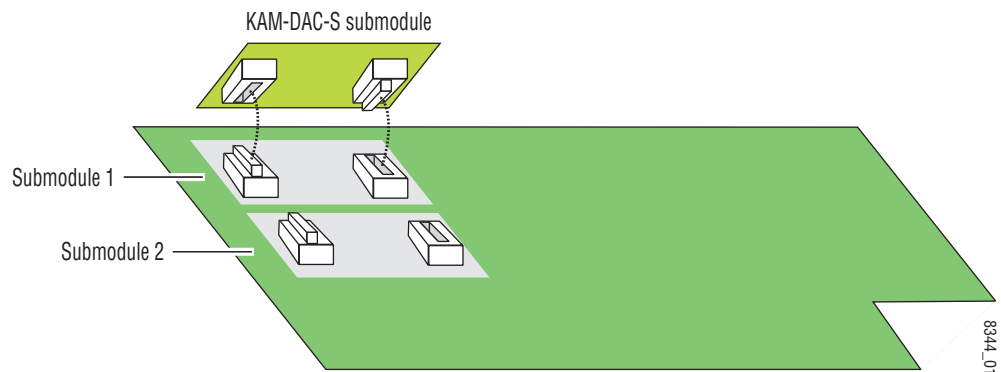
Kameleon Audio Submodule

The KAM-ENC-4DAC-DMX module requires a KAM-DAC-S submodule installed in the Submodule 1 position. The submodule will be provided with the front processing media module. The Submodule 2 position is not supported in this application.

If the submodule needs to be installed, 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 1). Press firmly to seat the submodule.

After power-up, installation status of the submodule will be reported on the Status web page as described in [Status Web Page](#) on page 25.

Figure 1. Kameleon Submodule Installation

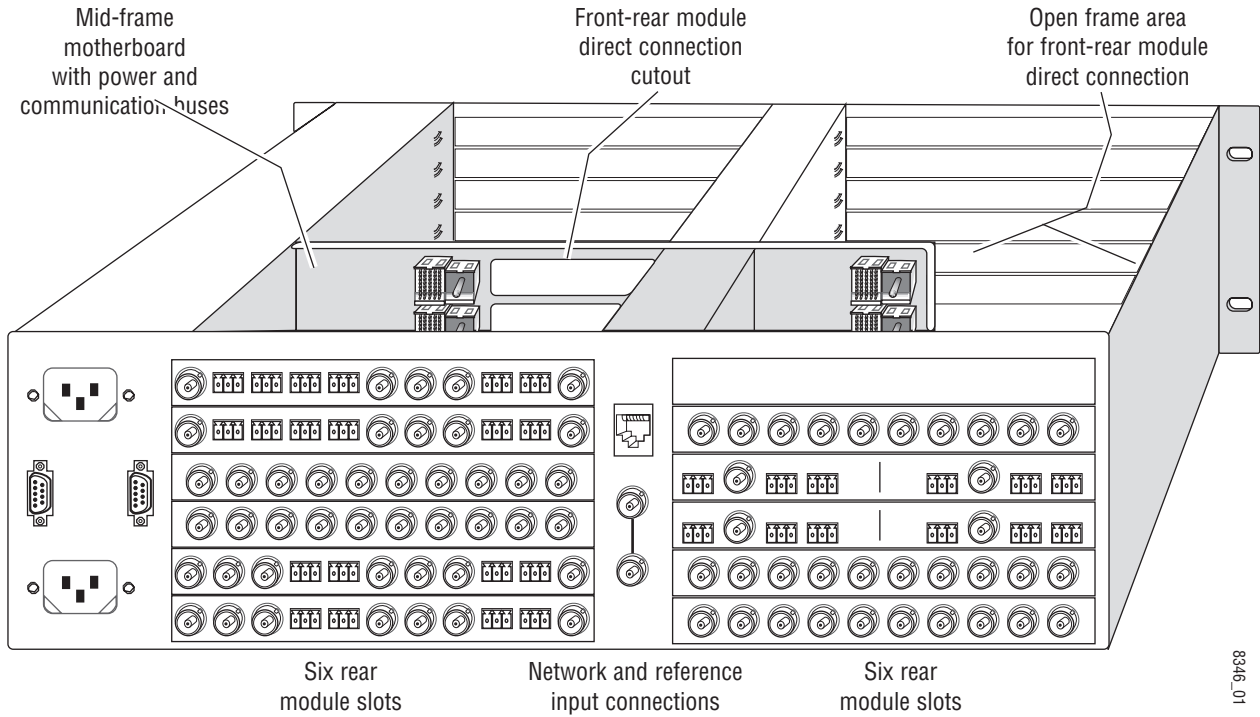


Installing the Front and Rear Modules

To install a KAM-ENC-4DAC-DMX module set in the 2000 Series frame:

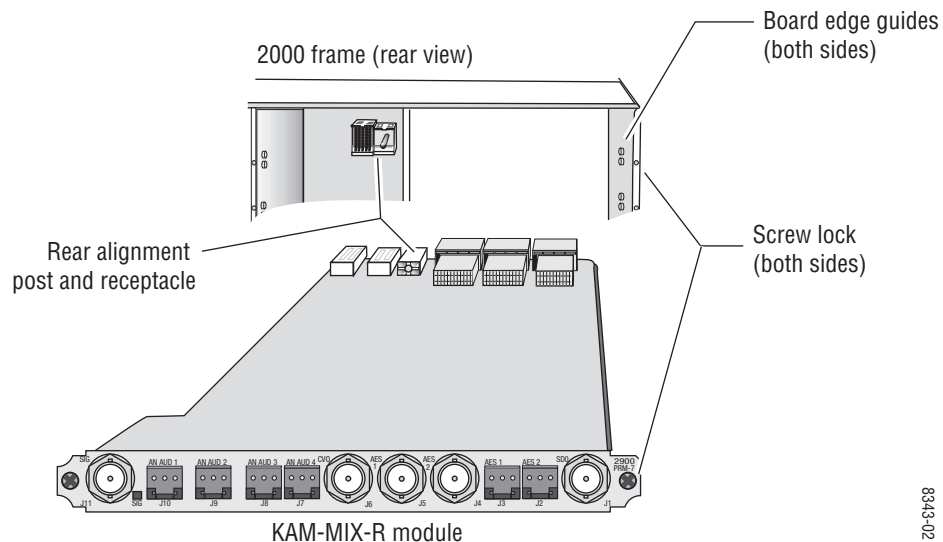
1. Locate a vacant slot in the rear of the 3 RU frame (Figure 2).

Figure 2. 2000T3NG Kameleon Frame, Rear View



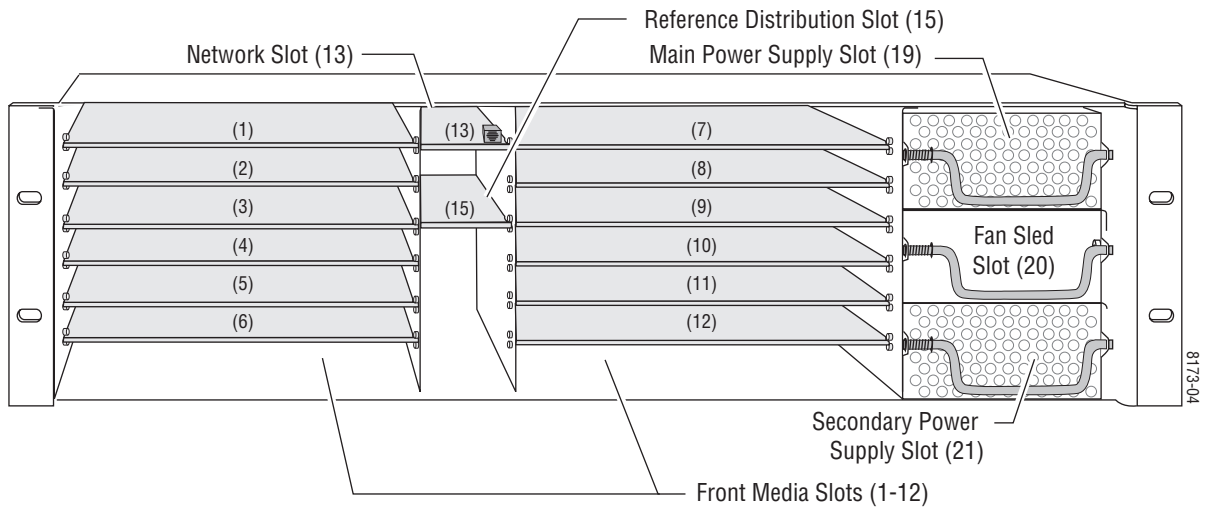
2. Insert the KAM-MIX-R passive rear module into the vacant rear slot of the frame as illustrated in Figure 3.

Figure 3. Installing Passive Rear Module



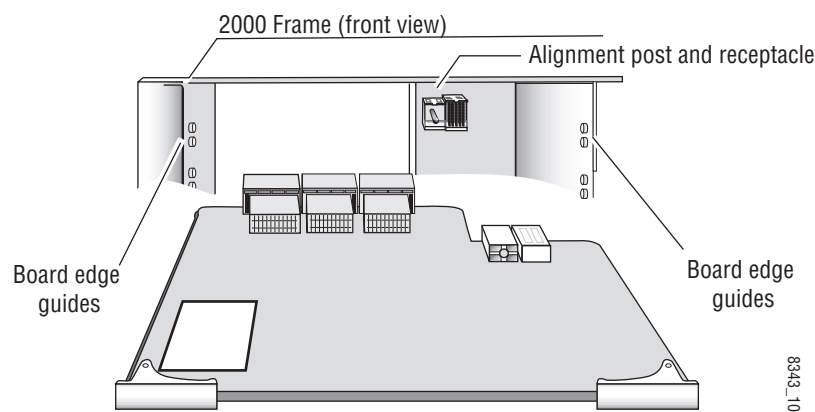
3. Verify that the module connector seats properly against the midplane.
4. Using a crossblade screwdriver, tighten the two screw locks to secure the module in the frame.
5. Locate the corresponding front media slot (1 -12) in the frame. The 3 RU frame front view is illustrated in [Figure 4](#).

Figure 4. 2000T3NG Kameleon Frame, Front Slots



6. With the component side up, insert the processing module in the corresponding front slot (see [Figure 5](#)).
7. Verify that the module connector seats properly against the midplane and rear module connector.
8. Press firmly on both ejector tabs to seat the module.

Figure 5. Installing Front Media Module



Cabling

All cabling to the module is done on the KAM-MIX-R passive rear module shown in [Figure 6](#).

SDI Video In

Connect the SDI video to be encoded to connector J11, labeled **V1**.

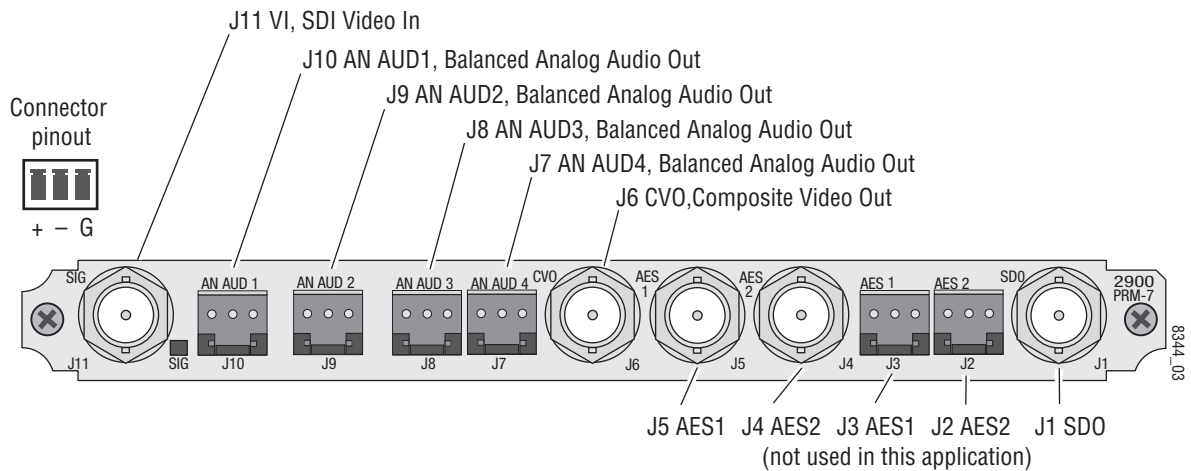
Analog Audio Outputs

Four balanced analog audio outputs are available at connectors J7, J8, J9, and J10 (AN AUD1-4). Connect analog audio as shown in the connector pinout at left of [Figure 6](#).

Composite Video Out

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

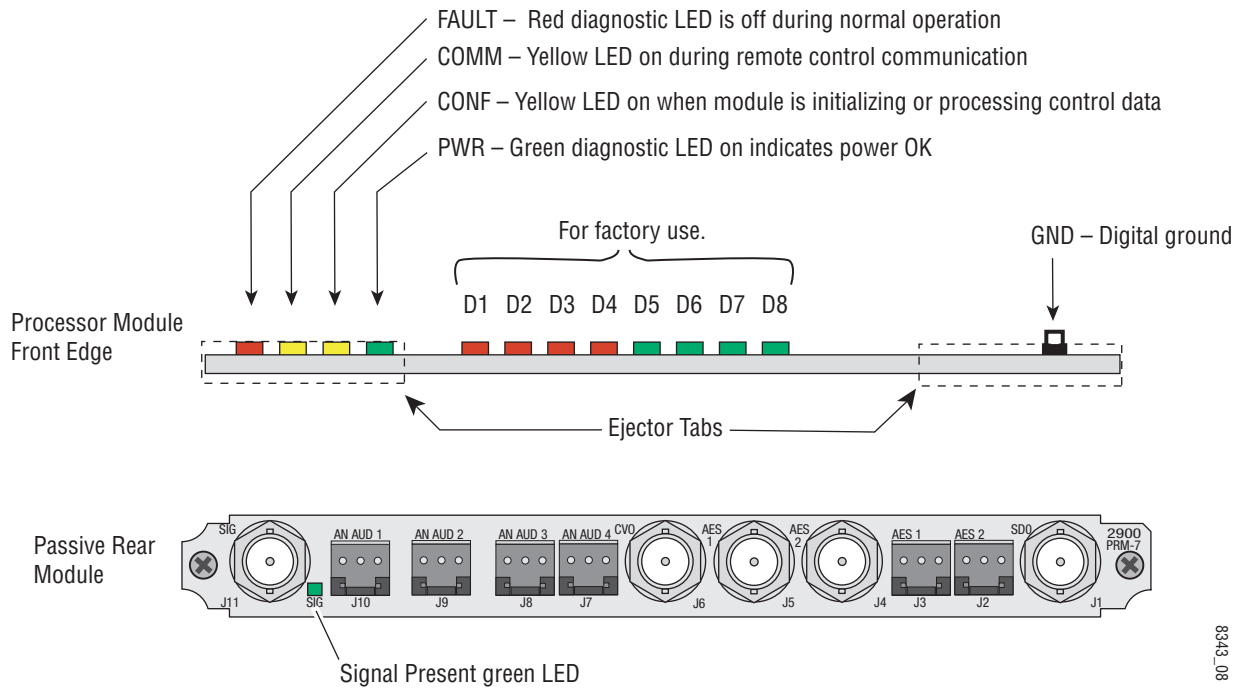
Figure 6. KAM-MIX-R Input/Output Connectors



Power Up

The front LED indicators are illustrated in [Figure 7](#).

Figure 7. Front and Rear Module Indicator LEDs



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

Operation Indicator LEDs

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

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

Table 2. Indicator LEDs and Conditions Indicated

LED	Indication	Condition
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 on page 62](#)).

Configuration and Adjustments

KAM-ENC-4DAC-DMX configuration and monitoring can be performed using a web browser GUI interface or a networked Newton Control Panel. This section provides an overview of each of these controls along with the configuration parameters available with each type of control device.

Configuration Summary

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

Table 3. Summary of KAM-ENC-4DAC-DMX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
Demultiplex embedded audio from SDI in	No Extraction	No Extraction, Video In.G1 to G4	DEMUX/ Str1 & Str2 column radio button	N/A
Sample rate convert demultiplexed group	Enable	Enable or Disable	DEMUX/ Disable checkbox	N/A
Report loss of audio stream	Report	Report or No Report	DEMUX/ Reporting checkbox	N/A
Input video status reporting	Report	Report or No Report	Video Input Select/ Input Status 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 status	Report	Report or No Report	Video Input Select/ Frame Reference Report Loss of Signal checkbox	N/A
SDI Input Error status	Warn SDI Errors	Warn SDI Errors or No Warning	Video Input Select/ SDI Input Errors Warn SDI Errors Warn SDI Errors checkbox	N/A
Select output timing source	Video In	Video In or Internal Frame Reference	Video Input Select/ Output Timing Selection radio buttons	N/A
Define VBI data lines	None	525: None, 21/284, 22/285, 23/286 or 24/287 625: None, 24/337, 25/338, 26/339 or 27/340 or 28/341	Video Input Select/ Advanced (VBI Config) radio button VBI/Data Lines Last Data Line radio button	N/A
Main video horizontal timing adjustment	0	525: 0 to 857.5 pixels 625: 0 to 863.5 (0.5 pixel steps)	Frame Sync/ HTiming control (pixels)	HTiming
Main video vertical timing adjustment	0	525: 0 to 524 lines 625: 0 to 624 lines (1 line steps)	Frame Sync/ VTiming control (Lines)	VTiming
Freeze mode selection (Video In timing source)	None	None, Field 1, Field 2, or Frame	Frame Sync/ Freeze Mode Selection radio buttons	N/A
Freeze mode selection (Internal timing source)	None	None, AutoBlack, AutoFreeze, Field 1, Field 2, or Frame	Frame Sync/ Freeze Mode Selection radio buttons	N/A

Table 3. Summary of KAM-ENC-4DAC-DMX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
Enable video processing	Enable	Disable, Enable, or Color Bars	Video Proc/ Video Processing radio buttons	N/A
Video gain lock (Video Proc)	Off	On or Off	Video Proc/ Video Gain Lock radio buttons	N/A
Main video contrast/Y gain	100%	50 to 149.6% (0.4% steps)	Video Proc/Standard View Y Gain control (%)	YGain
Main video chroma gain	100%	50 to 149.6% (0.4% steps)	Video Proc/Standard View Chroma Gain control (%)	ChroGain
Enable Clip controls	Disable	Enable or Disable	Video Proc/Standard View Clip Settings radio buttons	N/A
Apply clips to VBI	Off	On or Off	Video Proc/Standard View Apply Clips to VBI checkbox or VBI Encode/ Apply Clips to VBI checkbox	N/A
Main video soft/Y black clip	-6.8%	-6.8 to 109% (0.1% steps)	Video Proc/Standard View Soft/Y Black Clip control (%)	YBClip
Main video hard/video black clip	-37.3% (525) -30.0% (625)	-37.3 to -7.3% (525) -30.0 to 0% (625) (0.1% steps)	Video Proc/Standard View Hard/Video Black Clip control (%)	VBClip
Main video soft/Y white clip	109%	-6.8 to 109% (0.1% steps)	Video Proc/Standard View Soft/Y Clip control (%)	YWCclip
Main video hard/video white clip	138.7%	-6.8 to 138.7% (0.1% steps)	Video Proc/Standard View Hard/Video Clip control (%)	VidWClip
Main video brightness/Y offset	0%	-3.55 to 3.44% (0.11% steps)	Video Proc/Advanced View Brightness/Y Offset control (%)	YOffset
Main video hue/chroma phase	0.0	± 89.8 degrees (0.1 degree steps)	Video Proc/Advanced View Hue/Phase control (degrees)	ChroPhs
Main video B-Y gain	100%	50 to 149.6% (0.4% steps)	Video Proc/Advanced View B-Y Gain control (%)	BYGain
Main video B-Y balance/offset	0.0	-3.55 to 3.44% (0.11% steps)	Video Proc/Advanced View B-Y Balance/Offset control (%)	N/A
Main video R-Y gain	100%	50 to 149.6% (0.4% steps)	Video Proc/Advanced View R-Y Gain control (%)	RYGain
Main video R-Y balance/offset	0.0	-3.55 to 3.44% (0.11% steps)	Video Proc/Advanced View R-Y Balance/Offset control (%)	N/A
VBI encoding blank lines	Pass	Pass or Blank	VBI Encode/ Check corresponding line Blank checkbox	N/A
VBI encoding add setup (525 only)	Add	Setup or No Setup	VBI Encode/ Check corresponding line Setup checkbox	N/A
Add setup to composite output	Setup	Setup or No Setup	Composite Out/ Setup or No Setup radio button	N/A
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

Table 3. Summary of KAM-ENC-4DAC-DMX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
Adjust Coarse Video Delay (composite out)	0	0 to 4095.5 pixels (0.5 pixel steps)	Composite Out/ Delay Coarse (pixels)	N/A
Adjust Fine Video Delay (composite out)	0	0 to 100% (1% steps)	Composite Out/ Delay Fine (%)	N/A
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
Audio Pair 1 and Pair 2 channel swap	–	–	Audio Channel Pairing/ Pair 1 and 2 Ch A and Ch B radio buttons	Pair1Swp Pair2Swp
Define audio Pair 1 and Pair 2 Ch A and Ch B audio streams	Pair1ChA= Str1.Ch1 Pair1ChB= Str1.Ch2 Pair2ChA= Str2.Ch1 Pair2ChB= Str2.Ch2	Str1.Ch1 Str1.Ch2 Str2.Ch1 Str2.Ch2 Silence	Audio Channel Pairing/ Pair 1 and 2 Ch A and Ch B radio buttons	Str1.Ch1 Str1.Ch2 Str2.Ch1 Str2.Ch2 Silence
Enable auto tracking for Pair 1 and 2 Ch A and Ch B	On	On or Off	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B Enable Auto Track On checkbox	N/A
Lock Pair 1 Ch A and Ch B delay adjustments and Pair 2 Ch A and Ch B delay adjustments	Locked	Locked or Unlocked	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B Channel Lock Locked checkbox	N/A
Audio Pair 1 Ch A delay adjust Audio Pair 1 Ch B delay adjust Audio Pair 2 Ch A delay adjust Audio Pair 2 Ch B delay adjust	0 ms	0 to 5180 ms (20 ms steps)	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B Delay controls (ms)	Ch1ADly Ch1BDly Ch2ADly Ch2BDly

Table 3. Summary of KAM-ENC-4DAC-DMX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
Select audio processing option for Pair 1 Ch A' and Ch B' and Pair 2 Ch A' and Ch B'	Pass	Pass Invert, A+B A – B, -(A+B) 1 kHz 400 Hz Silence	Audio Proc/ Pair 1 and Pair 2 Ch A' and Ch B' Processing pulldowns	Ch1AProc Ch1BProc Ch2AProc Ch2BProc
Lock Pair 1 Ch A and Ch B gain adjustments and Pair 2 Ch A and Ch B gain adjustments	Unlocked	Lock or Unlocked	Audio Proc/ Pair 1 and Pair 2 Ch A and Ch B Gain Settings Locked checkbox	N/A
Audio Pair 1 Ch A gain adjust Audio Pair 1 Ch B gain adjust Audio Pair 2 Ch A gain adjust Audio Pair 2 Ch B gain adjust	0 dB	-40 to + 6 dB	Audio Proc/ Pair 1 and Pair 2 Ch A and Ch B Gain controls (dB)	Ch1AGain Ch1BGain Ch2AGain Ch2BGain
Assign analog audio pairs to output connectors	–	Audio Pairs	Analog Audio Outputs/ J10 & J9 and J8 & J7 radio buttons	N/A
Set maximum output audio level	+24 dBu	-2 to + 24 dBu	Analog Audio Outputs/ AA Out Ch 1 – Ch 4 (dBu)	N/A

Newton Control Panel Configuration

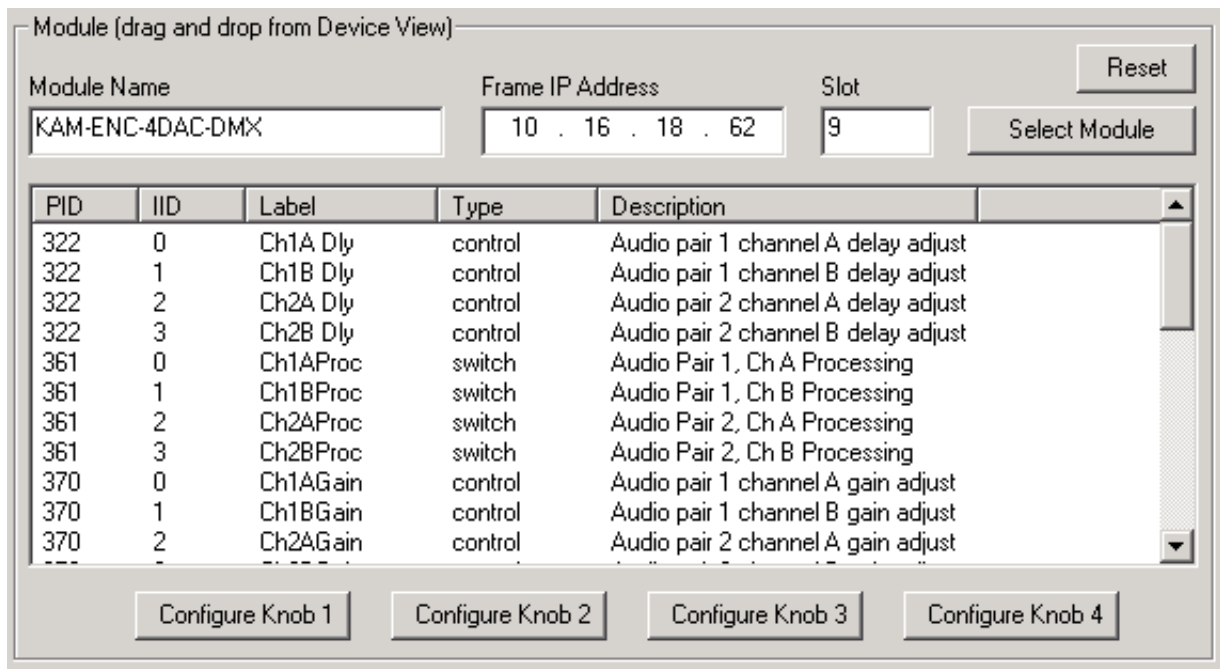
A Newton Control Panel (hard or soft version) can be interfaced to the Kameleon 2000 Series frame over the local network. Control panel access offers the following considerations for module configuration and monitoring:

- Ability to separate system level tasks from operation ones, minimizing the potential for on-air mistakes.
- Ability to group modular products—regardless of their physical locations—into logical groups (channels) that you can easily manipulate with user-configured knobs.
- Update software for applicable modules and assign frame and panel IP addresses with the NetConfig Networking application.
- Recommended for real-time control of module configuration parameters, providing the fastest response time.

Note Not all module functions are available with the control panel, such as E-MEM and factory default recalls. The available control panel controls for the module are listed in [Table 3 on page 15](#).

An example of the Newton Configurator is shown in [Figure 8](#).

Figure 8. Newton Configurator Example



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

Web Browser Interface

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

Use of the web interface offers the following considerations:

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

Refer to the Frame Status page shown in [Figure 9 on page 21](#). The Kameleon and 2000 modules can be addressed by clicking either on a specific module icon in the frame status display or on a module name or slot number in the link list on the left.

Note The physical appearance of the menu displays on the web pages shown in this manual represent the use of a particular platform, browser and version of 2000NET module software. They are provided for reference only. Displays will differ depending on the type of platform and browser you are using and the version of the 2000NET software installed in your system. This manual reflects 2000NET software version 3.2.2.

Figure 9. 2000NET GUI

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

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

Refresh button for manual update of page

Status

Model: 2000T3N Description: Module Frame
 Frame Location: Modular Lab
 Frame Health Alarm **PASS** Temperature Status **Pass**
 Fan Status **PASS**

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

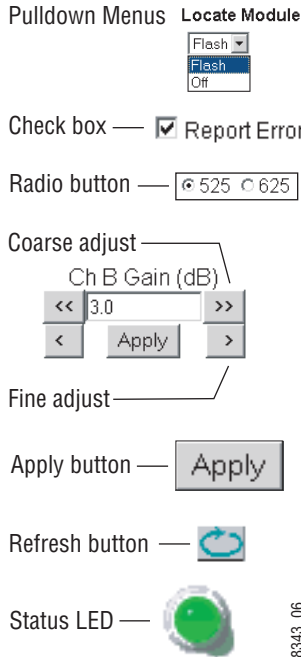
Properties
 Vendor Thomson, Grass Valley Software Version 3.2.2
 Media Slots 13

Bay 1 QA 2000 T3
[Status](#)
[Configuration](#)
[1 2040RDA-16 Optic Out](#)
[2 KAM-SD-4ADC-MUX](#)
[3 HD-FS-3](#)
[4 HD-FS-4](#)
[5 2040RDA-16 Opt Input](#)
[6 Media Slot 6](#)
[7 KAM-AV Test](#)
[8 HD-FS-8](#)
[9 KAM-ENC-4DAC-DMX](#)
[10 HD-FS-10](#)
[11 Media Slot 11](#)
[12 HD-FS-12](#)
[13 2000NET](#)
[15 2000GEN](#)
[19 Power Sled 19](#)
[20 Fan Sled 20](#)
[21 Power Sled 21](#)

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Web Page Operations and Functional Elements

The following conventions and functional elements (shown at left) are used in Kameleon web page operations. (The examples shown throughout this manual represent 2000NET software version 3.2.2 or later):

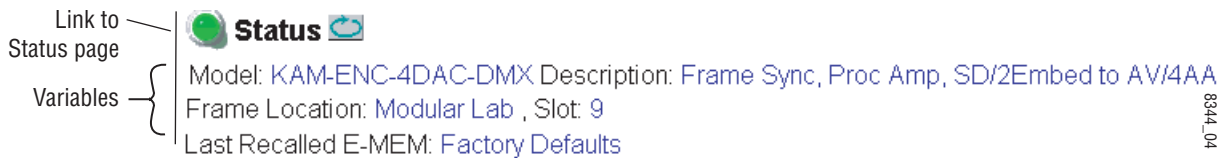


- Pulldown menus allow you to choose selections from a list.
- Check boxes are used when a selection can be enabled or included in a group. Multiple check box selections or enables can be made for some parameters.
- Radio buttons are used to make a choice of one parameter in a group.
- Each numerical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

Status and Identification Header

Each configuration web page has a Status and Identification Header.

Figure 10. Typical Status/ID Header



Status LED icon

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

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

Variables:

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

Initial Configuration Process Overview

To configure the Kameleon module proceed as follows:

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

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

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

KAM-ENC-4DAC-DMX Links and Web Pages

The 2000 GUI provides the following links and web pages for the module (Figure 11):

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

Figure 11. KAM-ENC-4DAC-DMX Web Page Links

9 KAM-ENC-4DAC-DMX

[Status](#)

[I/O Config](#)

[Functional View](#)

- [SDI In](#)

- [DEMUX](#)

- [Video Input Select](#)

- [Frame Sync](#)

- [Video Proc](#)

- [VBI Encode](#)

- [Composite Out](#)

- [Audio Channel Pairing](#)

- [Audio Sync](#)

- [Audio Proc](#)

- [Analog Audio Outputs](#)

[E-MEM@](#)

[Slot Config](#)

[Software Update](#)

Status Web Page

Use
this
link

- 9 [KAM-ENC-4DAC-DMX](#)
- [Status](#)
- [I/O Config](#)
- [Functional View](#)
- [SDI In](#)
- [DEMUX](#)
- [Video Input Select](#)
- [Frame Sync](#)

The Status web page for the KAM-ENC-4DAC-DMX module (Figure 12 on page 26) provides an overall indication of the health of the system and links to web pages for the active components:

- Status Header – the same on all Kameleon configuration pages (see *Web Page Operations and Functional Elements* on page 22),
- 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 12 on page 26. Arrows represent signal paths that may or may not be monitored. These elements act as links when their function is active (indicated by underlined function name).

Color code:

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

Status/Front Module Properties

The Status/Front Module properties in the footer provide a textual summary of the color-coded module status. Front module properties provide hardware, firmware, software identification, and asset tag number for the KAM-ENC-4DAC-DMX module. Presence and status of any sub-modules is also reported.

Submodule Properties

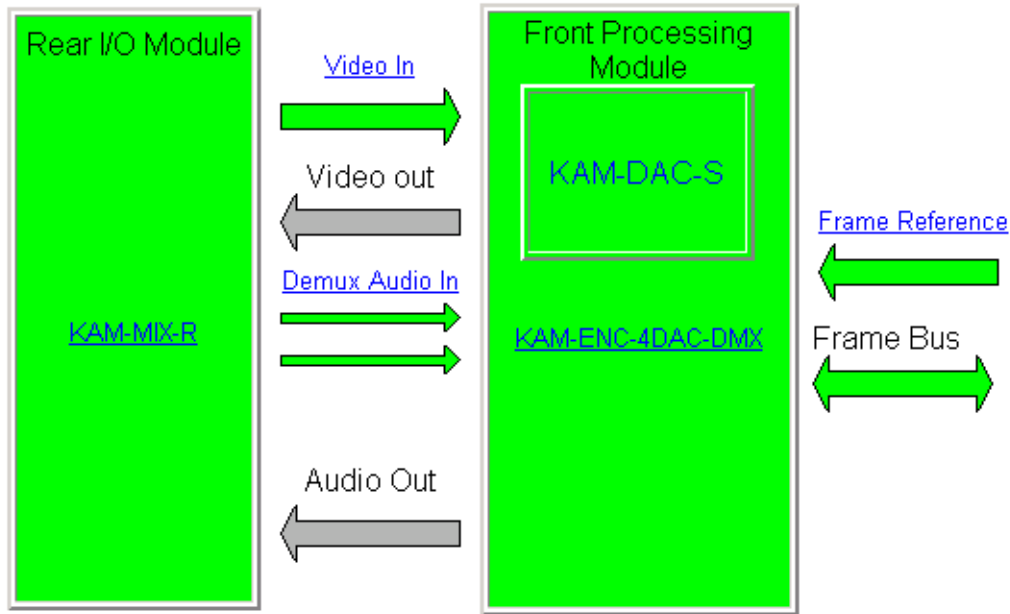
The Submodule properties in the footer provide a textual summary of the color-coded submodule status. Submodule properties provide part number, serial number, and hardware revision.

Figure 12. Module and Signal Status



Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
Frame Location: [Modular Lab](#) , Slot: [9](#)
Last Recalled E-MEM: [Factory Defaults](#)

Kameleon Module Physical Structure



Status:

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

Front Module:

Part Number: [671-6428](#)
Serial Number: [TT03467514](#)
Hardware Revision: [47A](#)
Firmware Version: [X1=48, X2=1.0.51](#)
Software Version: [1.0.4](#)
Asset Tag:

Sub Module 1:

Part Number: [671-6420](#) Serial Number: [vr02429275](#) Hardware Revision: [00C](#)

Warning/Fault Summary

The following warnings and faults are reported in the summary section (refer to [Figure 12 on page 26](#)). A **Fault** indicates a serious condition that prohibits proper operation. A **Warning** indicates a condition which may or may not adversely affect operating conditions, but should be noted. Usually warnings are something the user can correct by changing configuration, settings or input signals.

Warnings

- WARNING - Rear Module is not connected
- WARNING - Wrong Rear Module (incompatible with Kameleon)
- WARNING - Wrong Rear Module (no communication)
- WARNING - Wrong Rear Module (unknown type, incompatible)
- WARNING - Video Input is 625 and reference is 525 lines
- WARNING - Video Input is 525 and reference is 625 lines
- WARNING - Video Input is 625 but configuration is 525 lines
- WARNING - Video Input is 525 but configuration is 625 lines
- WARNING - Video Input Signal not detected
- WARNING - Frame Reference is not present
- WARNING - Frame Reference is not locked to input
- WARNING - Frame Reference is not present
- WARNING - No Video output - GenLock selected but not present
- WARNING - 1 or more Audio Input signals not detected
- Internal Error - Unknown sub module 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 to D system measuring power supplies and bus levels)
- FAULT - Xilinx 1 failure (main video processor)
- FAULT - Xilinx 2 failure (main audio processor)
- FAULT - MFM (Multi-function module) EEPROM checksum fails
- FAULT - DS1803 not responding (digital potentiometer for video in adjustment)
- FAULT - TMC22051A not responding (composite input decoder)
- Internal Error - Unknown front module type

Input/Output Configuration Web Page

- Use this link
- [9 KAM-ENC-4DAC-DMX Status](#)
 - [I/O Config](#)
 - [Functional View](#)
 - [SDI In](#)
 - [DEMUX](#)
 - [Video Input Select](#)
 - [Frame Sync](#)

Use the I/O Config web page to:

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

Figure 13 illustrates the I/O Config web page for the KAM-MIX-R passive rear module required for the KAM-ENC-4DAC-DMX front module followed by detailed information of the web page elements.

Figure 13. KAM-MIX-R Rear Module I/O Config Web Page

I/O Config

Model: KAM-ENC-4DAC-DMX Description: Frame Sync, Proc Amp, SD/2Embed to AV/4AA
 Frame Location: Modular Lab , Slot 9
 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	Output	Output	Output	Output	Output					
Video In	AA Out Ch1	AA Out Ch2	AA Out Ch3	AA Out Ch4	Comp Out					
Present	Not Monitored	Not Monitored	Not Monitored	Not Monitored	Not Monitored	Unused	Unused	Unused	Unused	Unused

Legend:

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

I/O Config Web Page Elements

The four Analog Audio Rear module connectors are shown in detail in Figure 14 to illustrate the function of each row of the diagram.

Figure 14. Analog Audio Outputs Detail

J10 AN AUD1 Analog Audio	J9 AN AUD2 Analog Audio	J8 AN AUD3 Analog Audio	J7 AN AUD4 Analog Audio
Output	Output	Output	Output
AA Out Ch1	AA Out Ch2	AA Out Ch3	AA Out Ch4
Not Monitored	Not Monitored	Not Monitored	Not Monitored

Header Row

The top header row provides the connector hardware physical label (J#) and the dedicated signal type for the connector. This information is determined by the type of rear module and front processor module installed (refer to the [Functional View Web Page on page 31](#)).

Connectors

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

Input/Output Mode

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

Signal Name

Enter a signal name (up to 15 characters) for each operational input/output. The name will be used to identify the signal in other configuration web pages. Factory default names are shown in [Figure 14 on page 28](#).

Status

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

Table 4. I/O Config Status Report Messages

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

For example, when the DAC submodule is not installed, the I/O Config web page will look similar to Figure 15. The **AA Out Ch 1-Ch 4** will be indicated as **Not Available** and a warning will be present indicating that the submodule is not present.

The information will also be reported on the Status web page in the submodule graphic and the reporting text at the bottom of the web page.

Figure 15. I/O Web Page with Submodule Not Available

I/O Config

Model: KAM-ENC-4DAC-DMX Description: Frame Sync, Proc Amp, SD/2Embed to AV/4AA
 Frame Location: Modular Lab , Slot: 9
 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					Output					
Video In	AA Out Ch1	AA Out Ch2	AA Out Ch3	AA Out Ch4	Comp Out					
Present	Not Avail	Not Avail	Not Avail	Not Avail	Not Monitored	Unused	Unused	Unused	Unused	Unused

WARNING - Sub Module 1 DAC is missing

Legend:

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

Functional View Web Page

- Use this link
- 9 KAM-ENC-4DAC-DMX
 - [Status](#)
 - [I/O Config](#)
 - [Functional View](#)
 - [SDI In](#)
 - [DEMUX](#)
 - [Video Input Select](#)
 - [Frame Sync](#)

Use the Functional View web page (Figure 16) to:

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

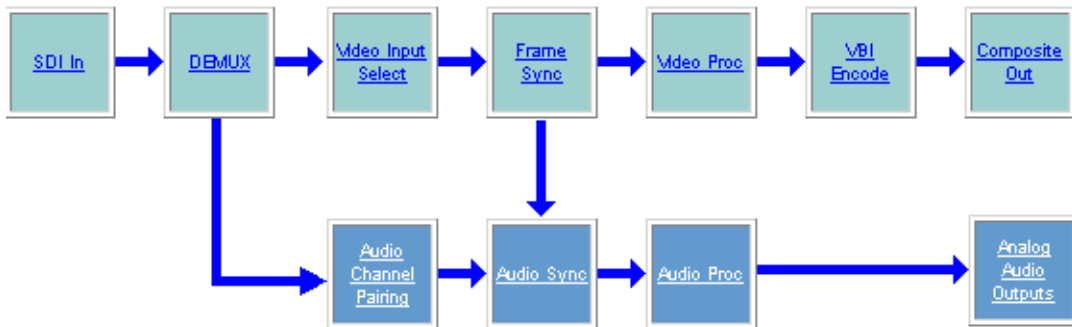
The Functional View web page is a block diagram of the installed Kameleon module that reports the module functions and signal paths that are active or inactive in the current configuration. It can be used as a link map for configuring module functions. Begin configuring with one of the input function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

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

Figure 16. Functional View Web Page

Functional View

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 Last Recalled E-MEM: [Factory Defaults](#)



SDI In Web Page

- Use this link
- [9 KAM-ENC-4DAC-DMX Status](#)
 - [I/O Config](#)
 - [Functional View](#)
 - [SDI In](#)
 - [DEMUX](#)
 - [Video Input Select](#)
 - [Frame Sync](#)

Use the SDI In web page to view the status of the SDI input signal in Summary view (Figure 17) or Detail view (Figure 18 on page 33):

- Select the **Summary** radio button to bring up the summary view shown in Figure 17.
- Use the **Clear All Status** button to clear and reset the status reporting.

Figure 17. SDI In Web Page (Summary View)



Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2Embed to AV/4AA](#)
Frame Location: [Modular Lab](#) , Slot: [9](#)
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 18 on page 33.

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

Figure 18. SDI In Web Page (Detail View)



Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 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

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

Use this link

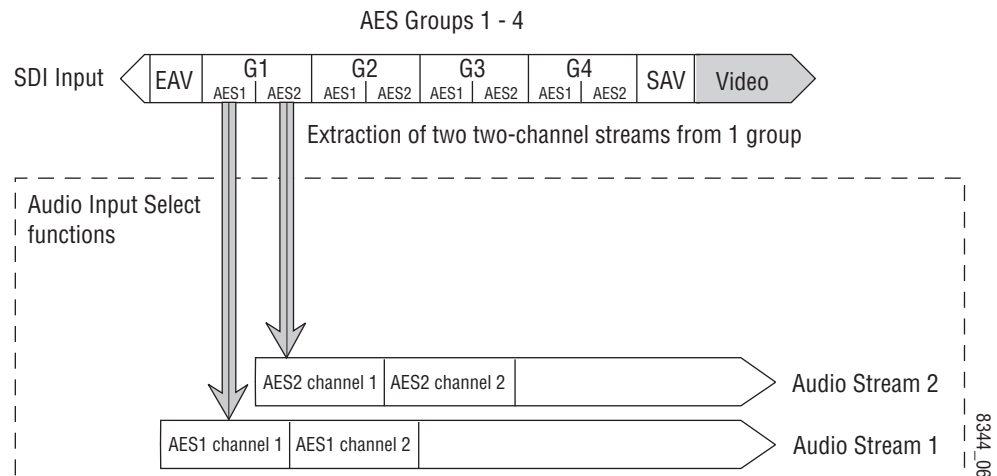
Use the DEMUX (demultiplex) web page (Figure 20 on page 35) to:

- Select which AES/EBU audio group to extract from the incoming SDI video signal for D-A conversion and output as four analog audio outputs.
- Enable/disable sample rate conversion and loss of signal reporting for the selected audio group.

An illustration of the possible embedded audio groups in the incoming SDI video is shown in Figure 19. There are four possible groups of audio carried in an SDI video signal. Each group contains two streams of audio, AES 1 Ch 1 and Ch 2 and AES 2 Ch 1 and Ch 2. The module can demultiplex one group of audio to be converted to analog and sent to the balanced or unbalanced analog audio output connectors.

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

Figure 19. Demultiplexing Audio Illustration



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

Audio Demultiplexing

The presence, status, and sample rate of embedded audio in each of the four groups in the input SDI video is indicated in the table on the DEMUX web page (Figure 20).

For demultiplexing action, do the following:

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

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

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

Figure 20. Demultiplex Web Page.



Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 Last Recalled E-MEM: [Factory Defaults](#)

SD Input Signal State: [Present](#)

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

Audio Stream Input reporting

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

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

Video Input Select Web Page

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

Use the Video Input Select web page (Figure 21) to:

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

Figure 21. Video Input Select Web Page – Standard View

Video Input Select

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync](#), [Proc Amp](#), [SDI/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 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	SDI	SDI
Video Line Rate	525	<input type="radio"/> 525 <input type="radio"/> 625 <input checked="" type="radio"/> Auto
Frame Reference	Present	<input checked="" type="checkbox"/> Report Loss of Signal
SDI Input Errors	Clear	<input checked="" type="checkbox"/> Warn SDI Errors
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	-	-

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

View Selection

In the View Selection display, choose the **Standard** radio button to display the standard settings shown in [Figure 21 on page 36](#). Use the **Advanced** view for configuring the Vertical Blanking Interval for selecting active video lines to carry data (see [Advanced VBI Configuration on page 38](#)).

Video Selection Settings

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

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

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

- Video Format – current input video format reported.
- Video Line Rate – select 525 or 625 line rate or enable automatic line rate detection
- Frame Reference –
 - 2000GEN frame reference signal presence reported,
 - Enable/disable Loss of Signal report to both Kameleon status web pages and SNMP monitoring devices.
- SDI Input Errors –
 - Input signal errors reported, and
 - Enable/disable SDI error warning report to both Kameleon status web pages and SNMP monitoring devices.
- Frame Sync/Delay – (read-only) Frame Sync mode is reported when Output Timing Selection is **Internal Frame Reference** and timing is provided from the 2000GEN module. Frame Delay mode is reported when the input signal (**Video In**) is used for timing reference.

Output Timing Selection

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

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 22).

Figure 22. Standard and Advanced View Selection

Video Input Select

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
Frame Location: [Modular Lab](#) , Slot: [9](#)
Last Recalled E-MEM: [Factory Defaults](#)

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

The **VBI/Data Lines** panel will appear at the bottom of the web page (see [Figure 23 on page 39](#) for 525 line rate and [Figure 24 on page 39](#) 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 23](#) and lines 24/337 and 25/338 in [Figure 24](#). Lines not reserved for data will be greyed out on the VBI Decode web page ([VBI Encode For Composite Output on page 46](#)).

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 23. Advanced VBI Configuration – 525 Line Rate

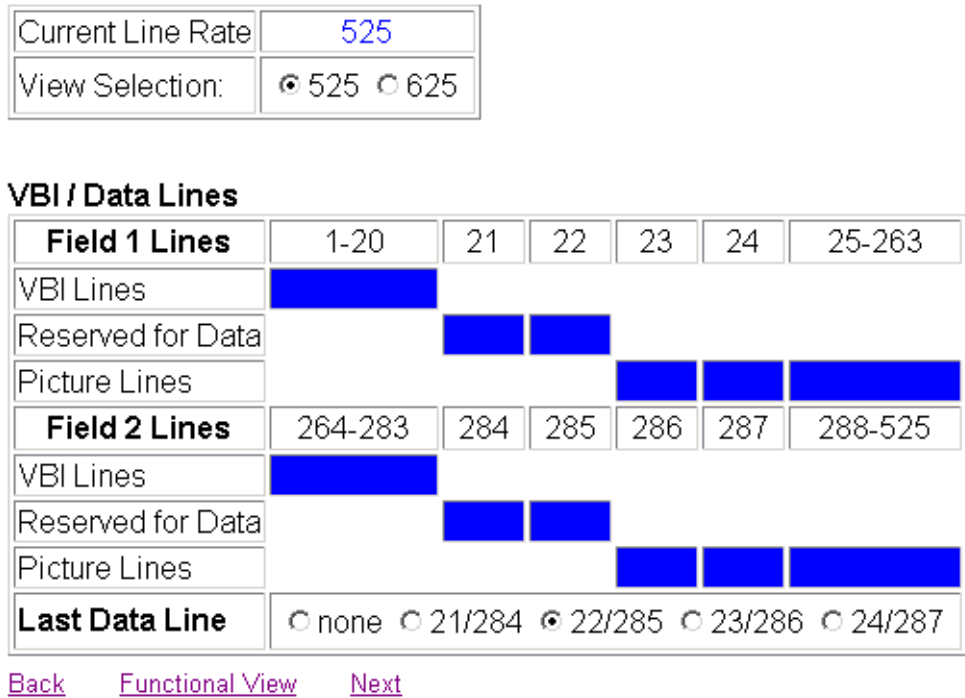
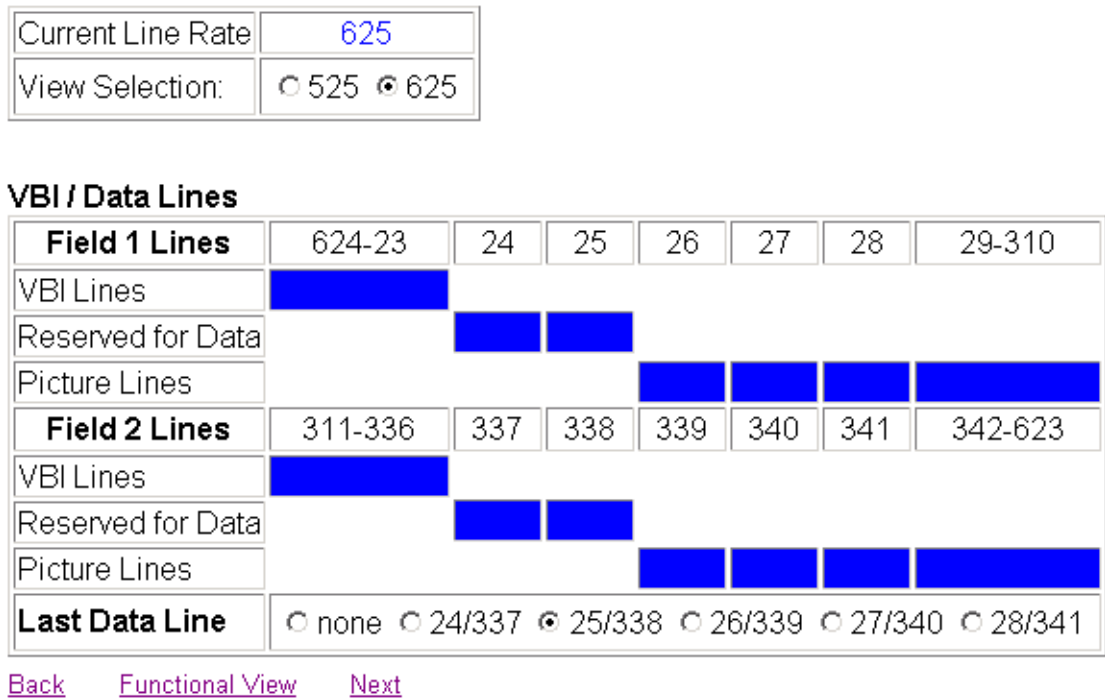


Figure 24. Advanced VBI Configuration – 625 Line Rate



Frame Sync Web Page

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

Use the Frame Sync web pages ([Figure 26 on page 41](#) and [Figure 25 on page 40](#)) to:

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

Timing Adjustment

[Table 5](#) shows the ranges of timing for 525 and 625 signal formats.

Table 5. Timing Adjustment Ranges

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

Freeze Mode Selection

The Freeze mode controls available depend on the output timing reference selected on the [Video Input Select Web Page on page 36](#).

Frame Sync mode (using the 2000GEN **Internal Frame Reference** as the output timing reference) provides the manual activation selections plus **AutoBlack** and **AutoFreeze** modes to be used when the video signal is lost ([Figure 25](#)). AutoBlack outputs a black signal while AutoFreeze outputs the last complete video field.

Figure 25. Frame Synchronizer Web Page – Internal Frame Reference

Frame Sync

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SDI/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: 9
 Last Recalled E-MEM: [Factory Defaults](#)

Timing Adjustment

H Timing (pixels)		V Timing (lines)	
<<	15.0	>>	>>
<	Apply	>	>

Freeze Mode Selection

Freeze Mode	<input checked="" type="radio"/> None	<input type="radio"/> AutoBlack	<input type="radio"/> AutoFreeze	<input type="radio"/> Field 1	<input type="radio"/> Field 2	<input type="radio"/> Frame
-------------	---------------------------------------	---------------------------------	----------------------------------	-------------------------------	-------------------------------	-----------------------------

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

When set to Frame Delay mode (using the **Video In** output timing reference), Freeze Mode allows you to manually freeze the output using **Field 1**, **Field 2**, or one **Frame** (Figure 26). 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.

Figure 26. Frame Synchronizer Web Page – Video In Reference

 **Frame Sync** 

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)

Frame Location: [Modular Lab](#) , Slot: [9](#)

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

Timing Adjustment

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

Freeze Mode Selection

Freeze Mode None Field 1 Field 2 Frame

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

Video Processing Web Page

[Functional View](#)

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

Use
this
link

Use the Video Proc web page to:

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

Video Processing Controls

Video Processing Enable

To bypass Video Processing on the SDI signal select **Disable** (Figure 27 on page 43). 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 28 on page 45.

Standard View

In Standard View (Figure 27 on page 43), adjust the following for the Y Channel:

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

Figure 27. Video Processing Web Page – Standard View

 **Video Proc** 

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)

Frame Location: [Modular Lab](#) , Slot: [9](#)

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

View Selection: Standard Advanced

Video Processing Controls

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

Clipping Controls

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

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Advanced View

In Advanced View (Figure 28 on page 45), adjust the following for the B-Y and R-Y Channels:

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

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

Clipping Controls

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

Refer to Figure 28 on page 45. To enable the clip controls select the **Enable** radio button. You may also apply the clip levels to the vertical blanking interval by checking the **Apply clips to VBI** box.

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

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

Reset To Default

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

Figure 28. Video Processing Web Page – Advanced View



Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 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 (%) << 97.3 >> < Apply >	Saturation/Chroma Gain (%) << 102.3 >> < Apply >	B-Y Gain (%) << 102.3 >> < Apply >	R-Y Gain (%) << 102.3 >> < Apply >
Brightness/Y Offset (%) << 0.00 >> < Apply >	Hue/Chroma Phase (Deg) << 0.0 >> < Apply >	B-Y Balance/Offset (%) << 0.00 >> < Apply >	R-Y Balance/Offset (%) << 0.00 >> < Apply >

Clipping Controls

Clip Settings: Disable Enable

Apply clips to VBI

Soft/Y White Clip (%) << 109.0 >> < Apply >	Hard/Video White Clip (%) << 138.7 >> < Apply >
Soft/Y Black Clip (%) << 0.5 >> < Apply >	Hard/Video Black Clip (%) << -37.3 >> < Apply >

Reset to Default

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VBI Encode For Composite Output

Use
this
link

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- [Frame Sync](#)
- [Video Proc](#)
- [VBI Encode](#)
- [Composite Out](#)
- [Audio Channel Pairing](#)
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Use the VBI Encode web page ([Figure 29](#) for 525, [Figure 30](#) on page 47 for 625 line rate) to configure the VBI and Data Line encoding for the composite output signal.

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:

- Remove black level setup (in NTSC or PAL-M video)
- Blank existing VBI and Data Line information

You may also apply clips to all VBI lines by checking the **Apply clips to VBI** 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 38.

Figure 29. VBI Encode Web Page – 525 Line Rate

VBI Encode

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 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"/>
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 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"/>
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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Apply clips to VBI

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Figure 30. VBI Encode Web Page – 625 Line Rate

 **VBI Encode** 

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)

Frame Location: [Modular Lab](#) , Slot: [9](#)

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

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

Field 1 Line Blanking

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

Field 2 Line Blanking

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

Apply clips to VBI

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Composite Out Web Page

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- [Frame Sync](#)
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Use the Composite Out web page ([Figure 31 on page 49](#) for calibrated adjustment and [Figure 32 on page 50](#) for user adjustment) to set parameters for the composite video output on the module as listed below:

- Select the **Setup** or **No Setup** radio button to add or not add setup on the 525 composite outputs,
- Enable or disable the following by selecting the corresponding radio button:
 - **Cross Color Removal**– enabling this control filters our unwanted luminance and chrominance artifacts produced during encoding.
 - **Chrominance Signal** – enable this control to completely remove the chrominance portion of the composite output signal.
 - **Burst Signal** – enable this control to completely remove the burst portion of the composite output signal.

Output Video Adjustments

The following output video adjustments can be made for gain and coarse/fine delay of the composite output signal when the **Calibrated** radio button is selected ([Figure 31 on page 49](#)). The delay settings are independent of the Frame Sync controls.

- **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 to 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 to 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 to 138.5 percent.

Figure 31. Composite Out Web Page (Calibrated)

 **Composite Out** 

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)

Frame Location: [Modular Lab](#) , Slot: [9](#)

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

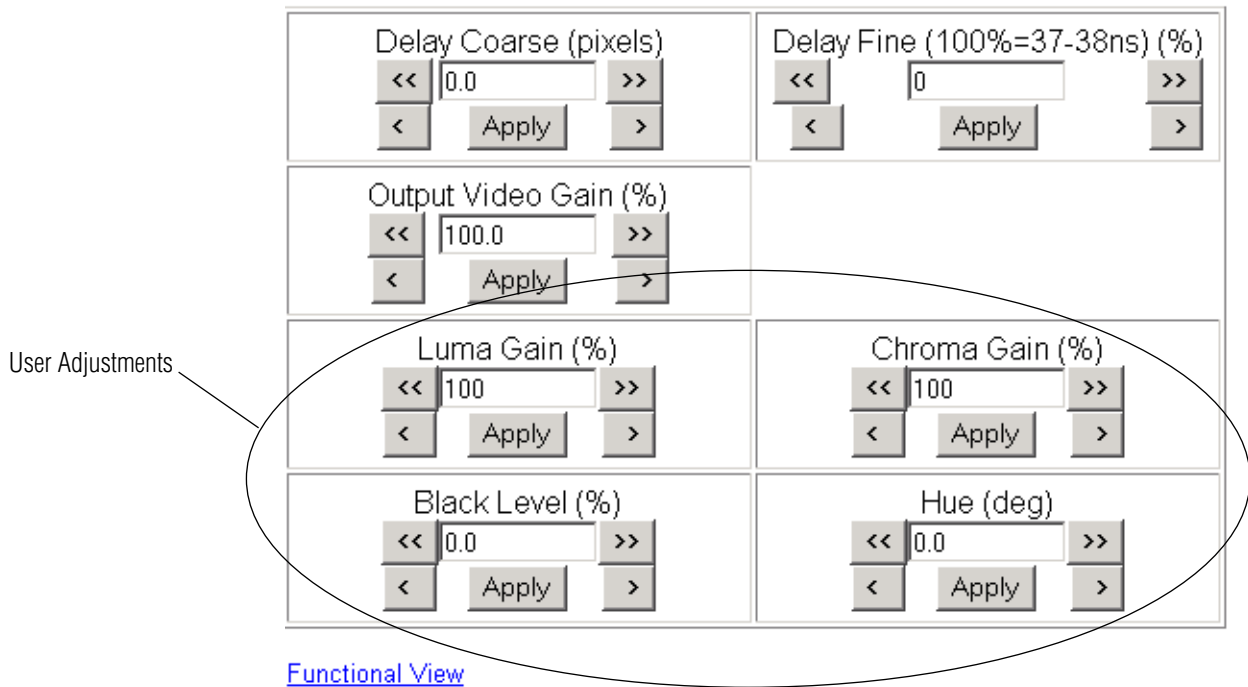
Delay Coarse (pixels) <input type="button" value="<<"/> <input type="text" value="0.0"/> <input type="button" value=">>"/> <input type="button" value="<"/> <input type="button" value="Apply"/> <input type="button" value=">"/>	Delay Fine (100%=37-38ns) (%) <input type="button" value="<<"/> <input type="text" value="0"/> <input type="button" value=">>"/> <input type="button" value="<"/> <input type="button" value="Apply"/> <input type="button" value=">"/>
Output Video Gain (%) <input type="button" value="<<"/> <input type="text" value="100.0"/> <input type="button" value=">>"/> <input type="button" value="<"/> <input type="button" value="Apply"/> <input type="button" value=">"/>	

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When the **User Adjustable** radio button is selected the following controls are also made available for adjustment of the composite output (Figure 32):

- 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 32. Composite Out Web Page (User Adjustments)



Audio Channel Pairing Web Page

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 - [Frame Sync](#)
 - [Video Proc](#)
 - [VBI Encode](#)
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- Use this link

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

The two AES audio streams to be extracted from the SDI input video are selected on the [DEMUX Web Page on page 34](#). Then Pair 1 Ch A and Ch B and Pair 2 Ch A and Ch B can be output on the balanced audio output connectors on the KAM-MIX-R rear module (see [Input/Output Configuration Web Page on page 28](#)).

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

Figure 33. Audio Channel Pairing Web Page

Audio Channel Pairing

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 Last Recalled E-MEM: [Factory Defaults](#)

Pair Input Audio Channels

Names	Pair 1 ChA	Pair 1 ChB	Pair 2 ChA	Pair 2 ChB	Streams
Video In.G1.S1.Ch1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str1.Ch1
Video In.G1.S1.Ch2	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Str1.Ch2
Video In.G1.S2.Ch1	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Str2.Ch1
Video In.G1.S2.Ch2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Str2.Ch2
Silence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Silence

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Audio Sync Web Page

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Use the Audio Sync web page ([Figure 34 on page 53](#)) to:

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

Enable Auto Track

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

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

Delay Adjustments

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

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

Figure 34. Audio Synchronizer Web Page



Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 Last Recalled E-MEM: [Factory Defaults](#)

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

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Audio Processing Web Page

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Use the Audio Proc web page (Figure 35 on page 55) to adjust the following for each audio pair:

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

Audio Gain

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

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

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

Output Processing

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

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

The Presence and Clipping status of each audio channel is reported as **True** or **False** in the read-only displays. If the audio is > -40 dBFS, it will be reported as **True**. If clipping is < 0.5 dBFS, it will be reported as **False** as shown in Figure 35 on page 55.

Figure 35. Audio Processing Web Page



Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync](#), [Proc Amp](#), [SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 Last Recalled E-MEM: [Factory Defaults](#)

Pair 1			Pair 2		
Ch A	Video In.G1.S1.Ch1		Ch A	Video In.G1.S2.Ch1	
Ch B	Video In.G1.S1.Ch2		Ch B	Video In.G1.S2.Ch2	
Gain Settings	<input type="checkbox"/> Locked		Gain Settings	<input type="checkbox"/> Locked	
Ch A Gain (dB) << 0.0 >> < Apply >			Ch A Gain (dB) << 0.0 >> < Apply >		
Ch B Gain (dB) << 0.0 >> < Apply >			Ch B Gain (dB) << 0.0 >> < Apply >		
	Ch A'	Ch B'		Ch A'	Ch B'
Presence	False	False	Presence	True	False
Clip	False	False	Clip	False	False
Processing	Pass	Pass	Processing	Pass	Pass

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

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Analog Audio Outputs Web Page

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Use the Analog Audio Outputs web page (Figure 36) to do the following:

- Select audio pairs for output to the assigned analog audio connectors (refer to *Input/Output Configuration Web Page* on page 28 for connector information and audio signal name assignment).
- Adjust the maximum output level for each analog audio channel (adjustable -6.0 to +24 dBu).

Figure 36. Analog Audio Outputs Web Page

Analog Audio Outputs

Model: KAM-ENC-4DAC-DMX Description: [Frame Sync](#), [Proc Amp](#), [SD/2Embed to AV/4AA](#)

Frame Location: [Modular Lab](#) , Slot: 9

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.S1.Ch1 & Video In.G1.S1.Ch2	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Video In.G1.S2.Ch1 & Video In.G1.S2.Ch2	<input type="radio"/>	<input type="radio"/>

Current Input	Output: Max Level
Video In.G1.S1.Ch1	AA Out Ch1 (dBu) << 24.0 >> <input type="button" value="<"/> <input type="button" value="Apply"/> <input type="button" value=">"/>
Video In.G1.S1.Ch2	AA Out Ch2 (dBu) << 24.0 >> <input type="button" value="<"/> <input type="button" value="Apply"/> <input type="button" value=">"/>
Video In.G1.S1.Ch1	AA Out Ch3 (dBu) << 24.0 >> <input type="button" value="<"/> <input type="button" value="Apply"/> <input type="button" value=">"/>
Video In.G1.S1.Ch2	AA Out Ch4 (dBu) << 24.0 >> <input type="button" value="<"/> <input type="button" value="Apply"/> <input type="button" value=">"/>

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E-MEM Configuration Web Page

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Use this link

The E-MEM page provides local operations for learning and recalling configurations into five E-MEM registers. File operations are also available for saving or loading the learned E-MEM files to and from a hard disk or other accessible media.

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

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

In Standard view (Figure 37), any one of five learned E-MEMs can be recalled by selecting the corresponding **Recall** button in the Local Operations window. This will place the configuration for the entire module into that E-MEM into the KAM-ENC-4DAC-DMX. 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 38 on page 58).

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



Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 Last Recalled E-MEM: [Factory Defaults](#)

View Selection: Standard Advanced

E-MEM®

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

Restore factory settings

Restore factory names

The Advanced View (Figure 38) 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 38. E-MEM Web Page (Advanced View)



Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)
 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

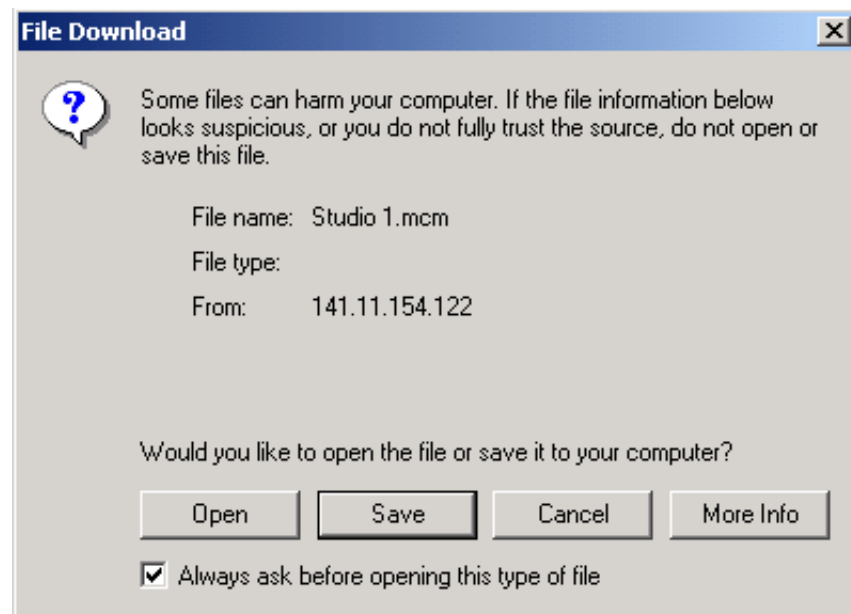
Save File

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.

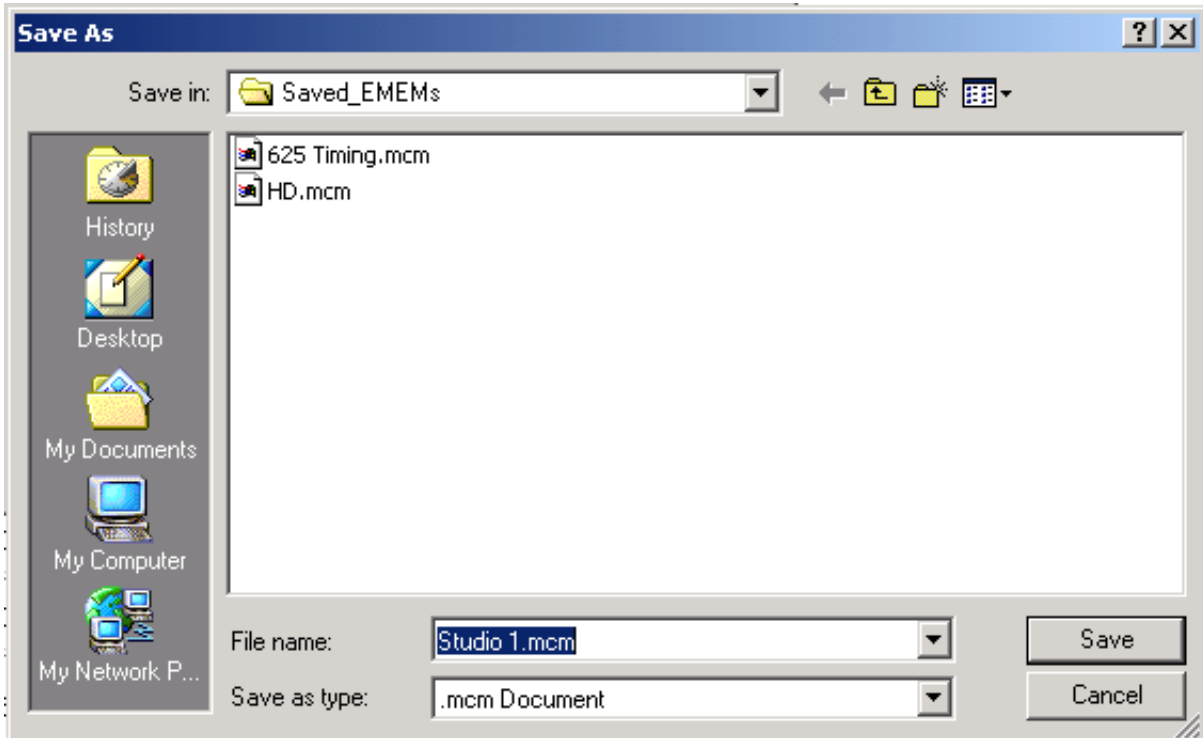
This will bring up a File Download screen similar to [Figure 39](#). Select **Save**.

Figure 39. File Download Screen



This will bring up the Save As screen as shown in Figure 40. Locate or create a directory for storing the E-MEMs and select **Save**. This E-MEM register is now saved to the selected location and may be recalled as described below.

Figure 40. 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 41).

Figure 41. Load E-MEM Web Page

Load E-MEM 1

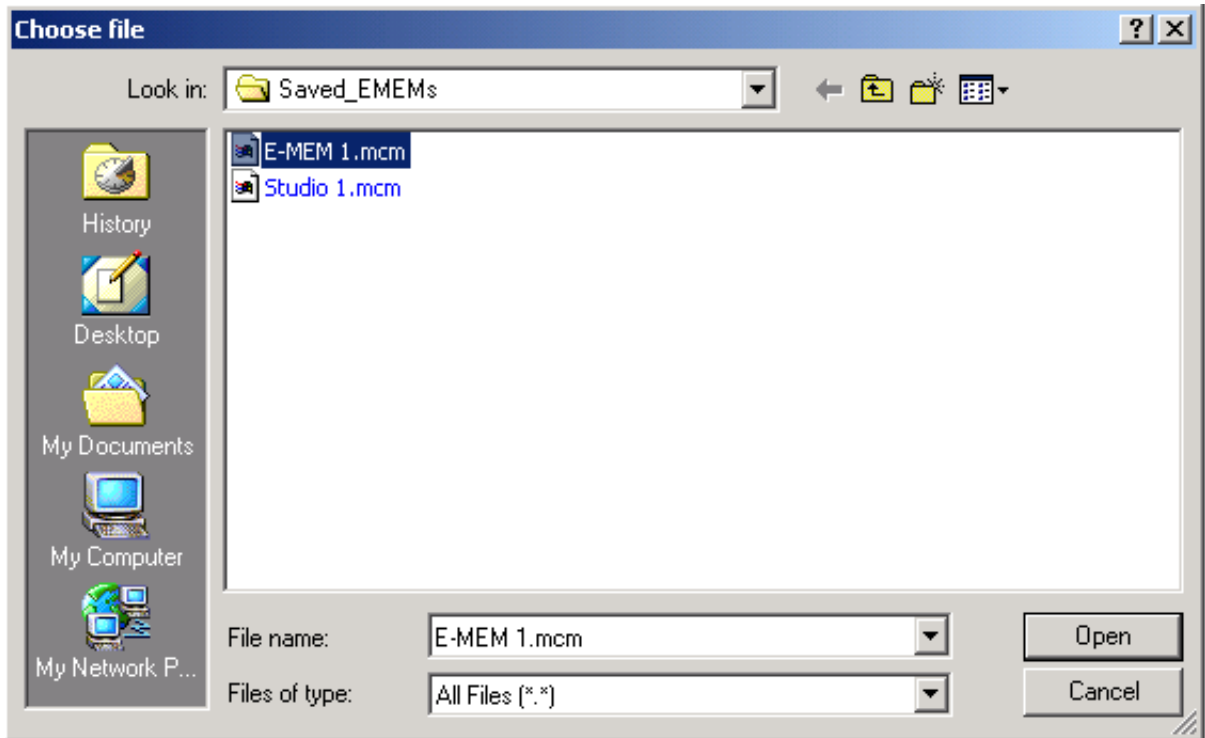
Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)

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 42), select the E-MEM file to download and select **Open**.

Figure 42. Choose File Screen



This will place the path and filename in the Load E-MEM screen (Figure 41 on page 60). If this is the correct file, select **Load**. Continue to load files or select **Cancel** to return to the main E-MEM web page. Loaded files will now be entered in the associated E-MEM registers.

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

Slot Configuration

Use
this
link

- [Composite Out](#)
- [Audio Channel Pairing](#)
- [Audio Sync](#)
- [Audio Proc](#)
- [Analog Audio Outputs](#)
- [E-MEM®](#)
- [Slot Config](#)
- [Software Update](#)

Use the Slot Config web page (Figure 43 on page 63) to:

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

Slot Identification

You may identify the module by typing a specific name in the **Name** field. The assigned name is stored on the 2000NET module and travels with the 2000NET module if it is moved to another frame. Select **Default** to enter the factory default module name.

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

Locate Module

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

Slot Memory

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

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

Figure 43. Slot Configuration Web Page

 **Slot Config** 

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)
 Frame Location: [Modular Lab](#) , Slot: [9](#)

Slot Identification

Name:

Asset Tag:

Locate Module

▾

Slot Memory

Restore upon Install

Frame Health Reporting

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

Hardware Switch Controls

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

Slot SNMP Trap Reports

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

Frame Health Reporting

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

Hardware Switch Controls

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

Slot SNMP Trap Reports

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

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

Software Update Web Page

Use
this
link

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

The Software Update web page (Figure 44) allows you to download new software versions for the module using the FTP server method described in the 2000NET Instruction Manual available on-line.

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

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

Figure 44. Software Update Web Page

Software Update

Model: [KAM-ENC-4DAC-DMX](#) Description: [Frame Sync, Proc Amp, SD/2Embed to AV/4AA](#)

Frame Location: [Modular Lab](#) , Slot: [9](#)

Software Version: [1.0.4](#) Firmware Version: [X1=48, X2=1.0.51](#)

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

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

Specifications

Note Specifications are subject to change without notice.

Table 6. SDI Input 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

Table 7. 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 \pm 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	\pm 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
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

Table 7. Composite Output Specifications - (continued)

Parameter	Value
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 8. 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	±0.2 dB, relative to 1 kHz, 20 Hz to 20 kHz @ +24 dBu
DC offset	±50 mV
Output resolution	24 bits
Effective number of bits	18
Static withstand	5 kV (330 Ω , 150 pF) any input or output

Table 9. 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 10. Main Video Processing Specifications

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

Table 11. 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
Buffer size	170 samples
DEMUX 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 12. Audio Processing Specifications

Parameter	Value
Audio Processing	
Number of channels supported	4
Sample Rate Conversion	All audio inputs (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 13. Electrical Length Specifications

Parameter	Value
Electrical Length	
SDI In to Composite Out	1 line + 16 μ s
SDI In to Analog Audio Out (DMUX)	4.5 ms

Table 14. Environmental/Power Specifications

Parameter	Value
Environmental	
Frame temperature range	0 to 40 degrees C ambient
Operating humidity range	0 to 90% non-condensing
Non-operating temperature	-10 to +70 degrees C
Mechanical	
Frame type	2000T1DNG Kameleon Frame or 2000T3NG Kameleon Frame
Power	
Consumption	16 Watts typical

Service

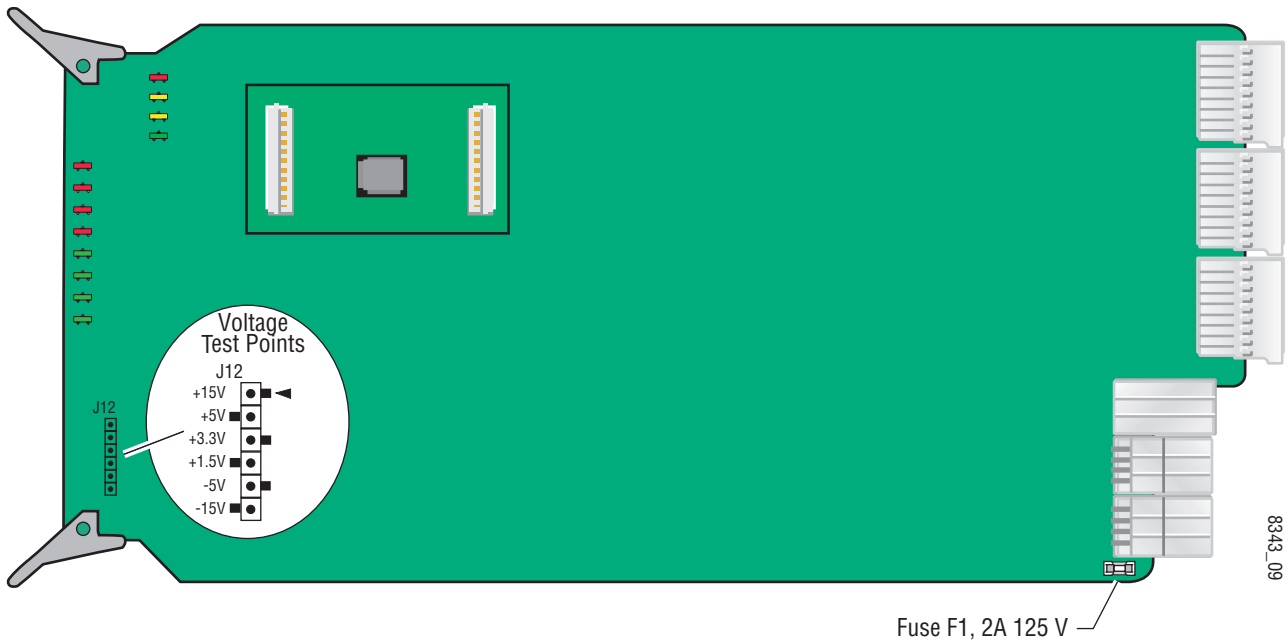
The Kameleon modules make extensive use of surface-mount technology and programmed parts to achieve compact size and adherence to demanding technical specifications. Circuit modules should not be serviced in the field except to check and replace fuses.

Troubleshooting

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

- Check frame and module power at the front edge testpoints (Figure 45).
- If power is not present, check the fuse on the +24 V input (Figure 45).
- Check for presence and quality of input signals.
- Verify that source equipment is operating correctly.
- Check cable connections.

Figure 45. Location of Module Fuse and Voltage Testpoints



Refer to [Figure 7 on page 13](#) for the location of PWR LED and [Table 2 on page 14](#) for proper LED indications.

If the module is still not operating correctly, replace it with a known good spare and return the faulty module to a designated Grass Valley repair depot. Call your Grass Valley representative for depot location.

Refer to the [Contacting Grass Valley](#) at the front of this document for the Grass Valley Customer Support Information number.

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