grass valley

KAM-DEC-4ADC-MUX
KAMELEON SERIES MODULES

Instruction Manual

SOFTWARE VERSION 5.0.2

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FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

Software Downloads — Software updates, drivers, and patches can be downloaded.

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Preface

About This Manual

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

KAM-DEC-4ADC-MUX Kameleon Series Module

Introduction

This manual provides installation, operation and configuration information for the KAM-DEC-4ADC-MUX Kameleon Series module.

The KAM-DEC-4ADC-MUX modules provides broadcast quality NTSC/PAL to serial digital video conversion. Up to four analog audio channels are converted to two separate 48 kHz AES digital audio streams that can be multiplexed into the SDI output video.

This module features:

- NTSC/PAL video conversion to broadcast quality serial digital,

- 3D video decoding,

- Four channels of analog audio A-D conversion to two embedded 48 kHz AES digital audio streams,

- Audio and video delay, synchronization and processing amplifier,

- Powerful line-by-line VBI processing including user-configuration of active video lines for carrying data,

- Built-in 4x4 audio router for mapping audio channels to specific AES streams,

- Audio and video test generators,

- Hot swappable,

- 5 user-programmable E-MEM registers,

- Save/load module configuration files to a networked PC,

- SNMP monitoring capability,

- Web browser GUI (graphical user interface), and

- Support for Newton Control System and NetConfig Network Configuration application.

System Requirements

KAM-DEC-4ADC-MUX operation requires 2000NET Network Interface Module hardware revision 01A1 or greater with software version 4.0.0 or greater. Systems installed in the 2000T3N frame require the 2000FAN fan sled (refer to Figure 5 on page 12).

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-DEC-4ADC-MUX 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-DEC-4ADC-MUX modules, the frame must be a 2000T1DNG or 2000T3NG which include the following components:

•   2000NET module (software version 4.0.0 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-DEC-4ADC-MUX Module set	12	4

Module Placement in the 2000T3NG Kameleon Frame

There are twelve slot locations in both the front and rear of a 3 RU frame and four slot locations in a 1 RU frame to accommodate 2000 and Kameleon Series media modules (audio/video signal handling modules).

The Kameleon media modules consist of a two-module set with a processing module and a passive rear module that can be plugged into any of the frame slot pairs. The rear modules provide the input and output interface connectors.

Kameleon Audio Submodule

The KAM-DEC-4ADC-MUX module requires a KAM-ADC-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 27.

Figure 1. Kameleon Submodule Installation

KAM-ADC-S submodule

Submodule 1

Submodule 2

8343_11
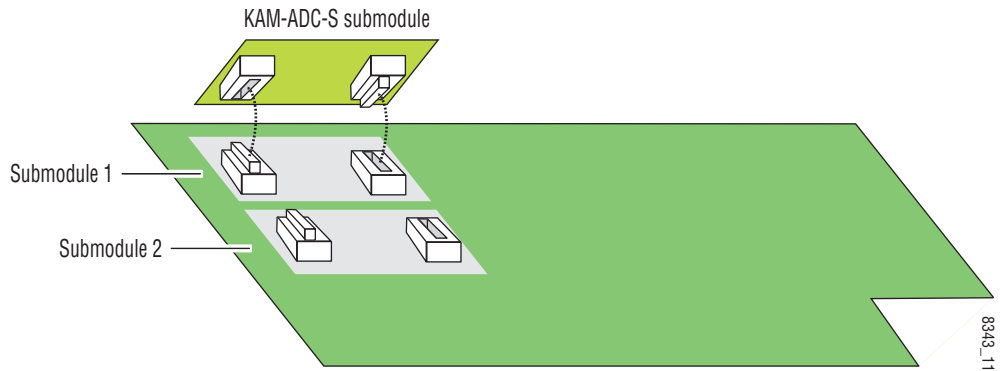
Installing the Front and Rear Modules

To install a KAM-DEC-4ADC-MUX module set in the 2000 Series frame:

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

Figure 2. 2000T3NG Frame, Rear View

Power, frame
configuration,
& frame health
connections

Media section
rear slots 7-12

Network
and reference
input connections

Media section
rear slots 1-6
(with three 2000EMI blanks)

8173-271
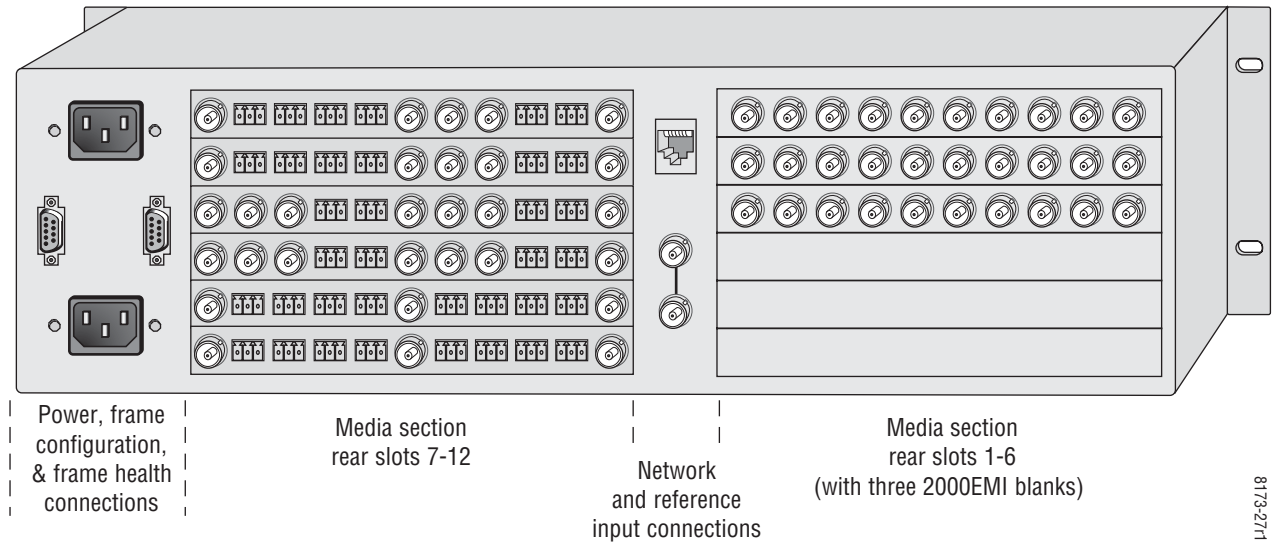
Figure 3. 2000T1DNG Frame, Rear View

Power connections

Media section
rear slots 3-4

Network
and reference
input connections

Media section
rear slots 1-2
(with one 2000EMI blank)

8173_28
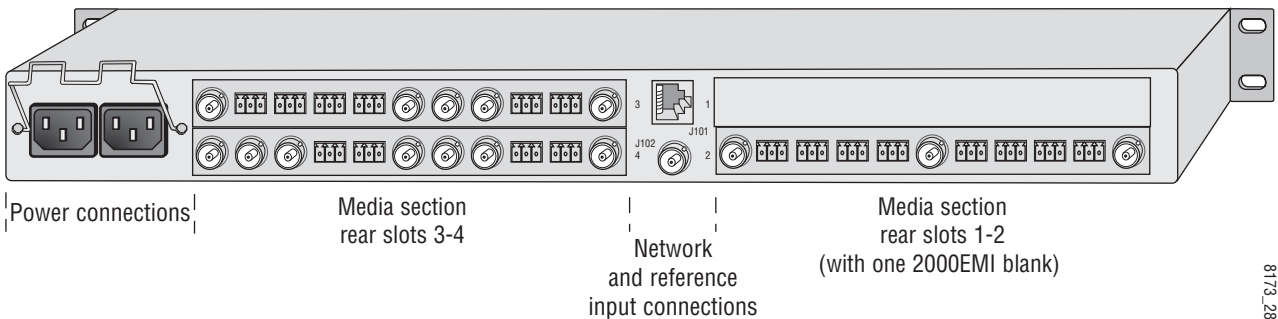
2. Insert the rear module as shown in Figure 4 on page 12.

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.

Figure 4. Installing Passive Rear Module

2000 frame (rear view)

Board edge guides
(both sides)

Rear alignment
post and receptacle

Screw lock
(both sides)

KAM-MIX-R module

8343-02
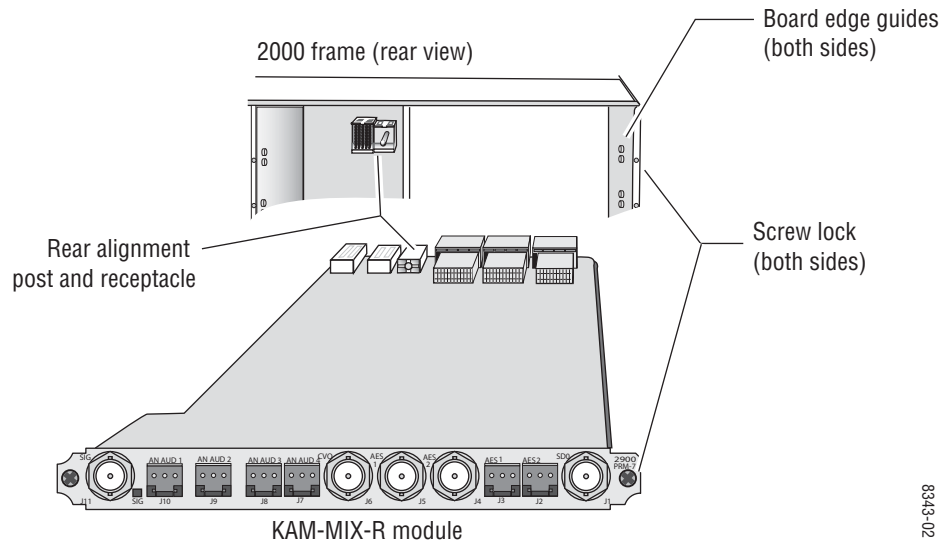
5. Locate the corresponding front media slot (1 -12) in the 3 RU frame
frame (Figure 5) or front media (slot 1-4) in the 1 RU frame (Figure 6).

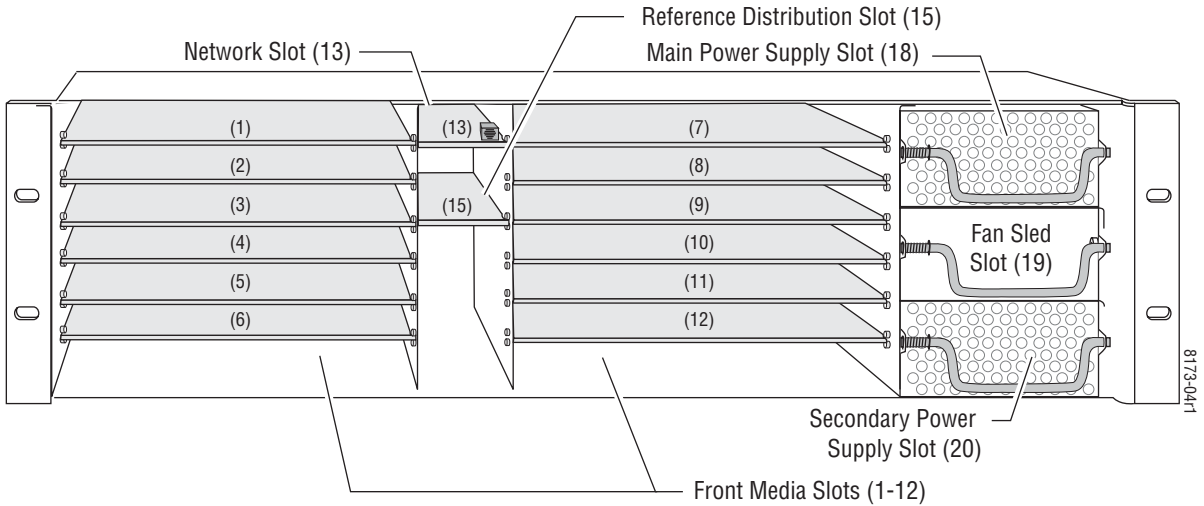*Figure 5. 2000T3NG Kameleon Frame, Front Slots*

Reference Distribution Slot (15)

Network Slot (13)

Main Power Supply Slot (18)

(1)   (13)   (7)
(2)   (8)
(3)   (15)   (9)
(4)   (10)
(5)   (11)
(6)   (12)

Fan Sled
Slot (19)

Secondary Power
Supply Slot (20)

Front Media Slots (1-12)

8173-04r1

Figure 6. 2000T1DNG Kameleon Frame, Front Slots

Reference Distribution Slot (6)

Network Slot (5)

Power Supply Slot (7)

(1)   (5)   (3)
(2)   (6)   (4)

Front Media Slots (1-4)

8039-21
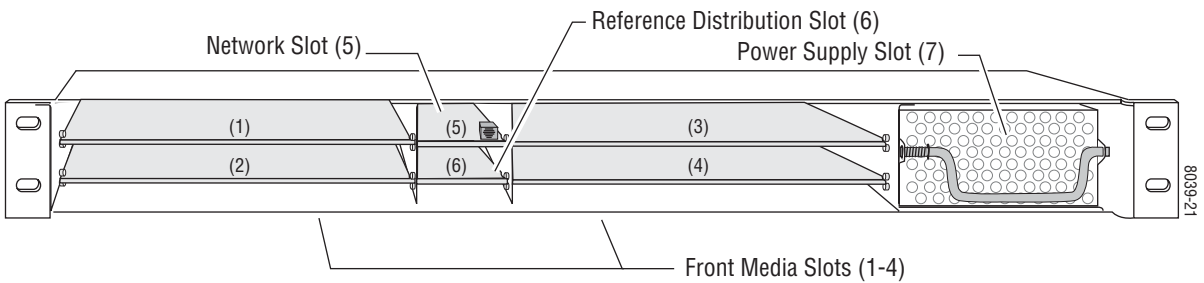
6. With the component side up, insert the processing module in the corresponding front slot (see Figure 7).

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 7. Installing Front Media Module

2000 Frame (front view)

Alignment post and receptacle

Board edge guides

Board edge guides

8343_10
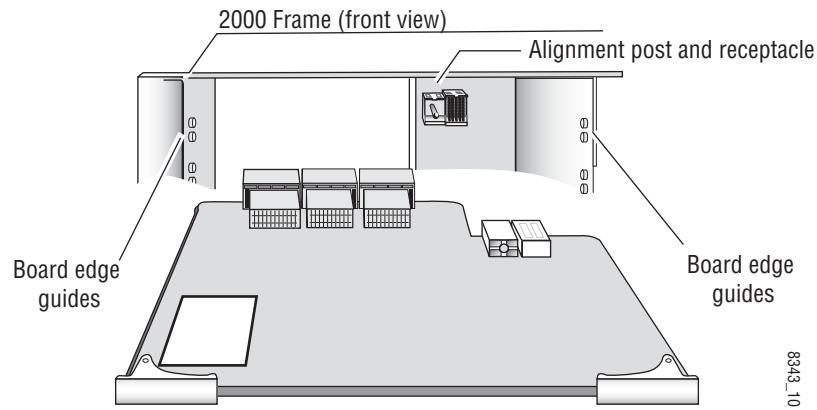
Cabling

All cabling to the module is done on the KAM-MIX-R passive rear module shown in Figure 8.

Composite Video In

Connect the NTSC or PAL composite video to be decoded to connector J11, labeled **V1**.
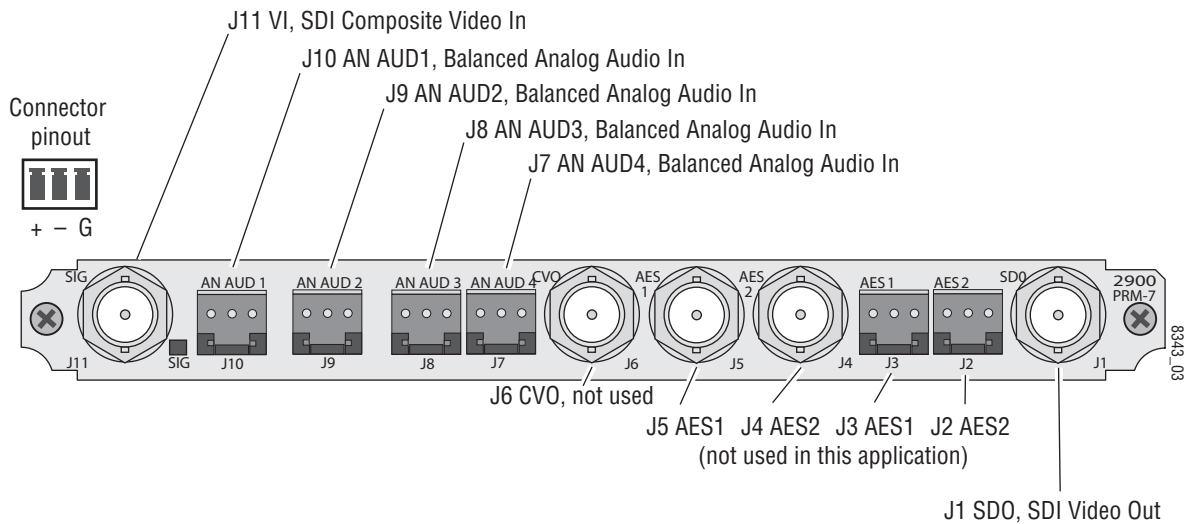
Analog Audio Inputs

Four balanced analog audio inputs 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 8.

SDI Video Out

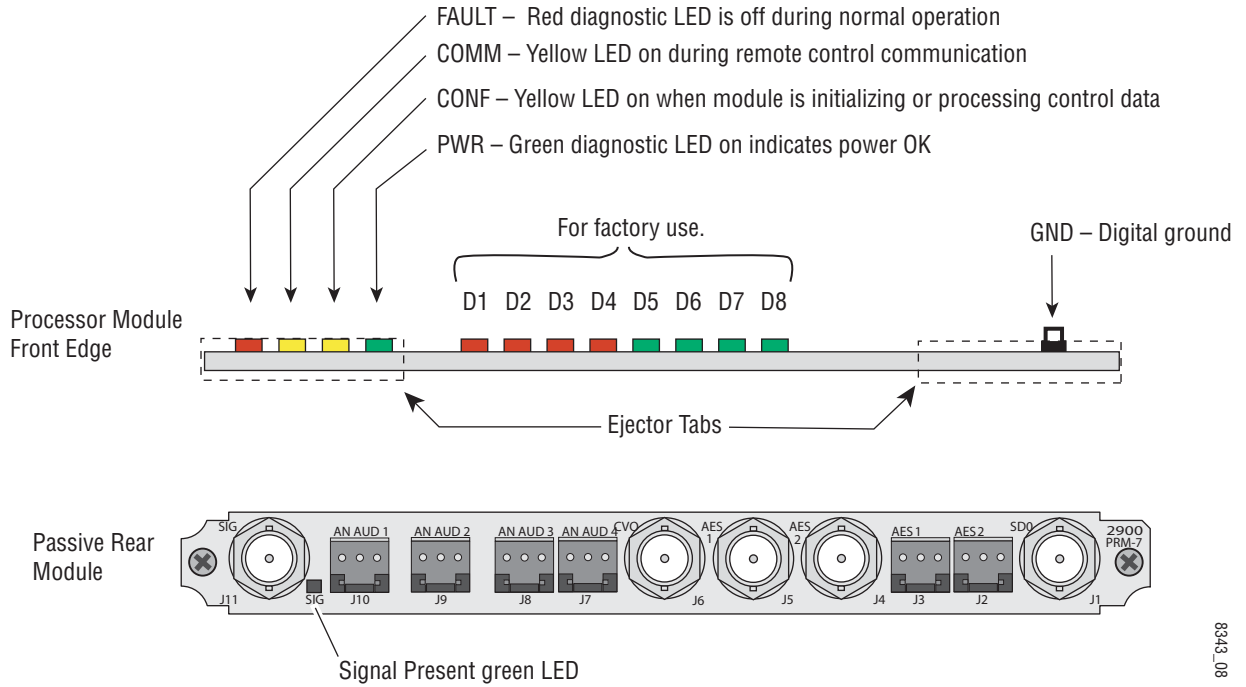The SDI video is output at BNC connector J1, labeled **SDO**.

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

Power Up

The front LED indicators are illustrated in Figure 9.

Figure 9. Front and Rear Module Indicator LEDs

FAULT – Red diagnostic LED is off during normal operation

COMM – Yellow LED on during remote control communication

CONF – Yellow LED on when module is initializing or processing control data

PWR – Green diagnostic LED on indicates power OK

For factory use.

GND – Digital ground

D1 D2 D3 D4 D5 D6 D7 D8

Processor Module
Front Edge

Ejector Tabs

Passive Rear
Module

SIG   AN AUD 1   AN AUD 2   AN AUD 3 AN AUD 4 CVO   AES 1   AES 2   AES 1   AES 2   SDO   2900 PRM-7
J11   SIG   J10   J9   J8   J7   J6   J5   J4   J3   J2   J1

8343_08

Signal Present green LED

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 64).

Configuration and Adjustments

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

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-DEC-4ADC-MUX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
Composite In video gain	100%	44 to 219.5% (0.5% steps)	Composite In/ Input Video Gain (%)	IVidGain
Composite In black level	0.0	-21.6 to + 22.4 (0.1% steps)	Composite In/ Black Level (%)	Black LVL
Input signal setup (525 only)	Setup	No Setup or Setup	Composite In/ Input Signal Setup No Setup or Setup radio button	N/A
3D motion type (Flywheel Video Decoder checkbox must be unchecked for 3D controls to appear)	Mixed Motion	Low Motion Mixed Motion High Motion	Composite In/ 3D Decoder Control Low Motion, Mixed Motion or High Motion radio button	N/A
3D motion threshold	Low – 60 Mixed – 25 High – 5	0 to 127 (1 unit steps)	Composite In/ 3D Decoder Control 3D Motion Threshold	MotThrld
3D Comb filter	Luma + Chroma	Luma + Chroma Luma Chroma	Composite In/ 3D Decoder Control Comb Filter pulldown	decmodeL
3D Luma bandwidth	Low – Wide Mixed – Wide High – Narrow	Narrow or Wide	Composite In/ 3D Decoder Control Luma Bandwidth Narrow or Wide radio button	LumaBw
3D Luma level	56	0 to 255 (1 unit steps)	Composite In/ 3D Decoder Control Luma Level control	YLevel
3D Chroma level	56	0 to 255 (1 unit steps)	Composite In/ 3D Decoder Control Chroma Level control	CLevel
3D Decoder reset to default	Mixed Motion Defaults	–	Composite In/ 3D Decoder Control Reset 3D Decoder to Default button	N/A
View Selection	Standard	Standard or Advanced	Video Input Select/ View Selection Standard or Advanced radio button	N/A
Report loss of input signal	Report	Report or No Report	Video Input Select/ Input Status Report Loss of Signal checkbox	N/A
Select video line rate	Auto	525, 625, or Auto	Video Input Select/ Video Line Rate radio button	N/A

Table 3. Summary of KAM-DEC-4ADC-MUX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
Flywheel Video Decoder	Off (unchecked)	On or Off	Video Input Select/ Flywheel Video Decoder On checkbox	N/A
Report loss of reference signal	Report	Report or No Report	Video Input Select/ Frame Reference Report Loss of Signal 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
VBI View Selection (Advanced View selected)	525	525 or 625	Video Input Select/ View Selection 525 or 625 radio button	N/A
Define VBI data lines (Advanced View selected)	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/ VBI/Data Lines Last Data Line radio button	N/A
Main video horizontal timing adjustment	0	525: 0 to 857.5 pixels 625: 0 to 863.5 (0.5 pixel steps)	Frame Sync/ HTiming control (pixels)	HTiming
Main video vertical timing adjustment	0	525: 0 to 524 lines 625: 0 to 624 lines (1 line steps)	Frame Sync/ VTiming control (Lines)	VTiming
Freeze mode selection (Video In timing source)	None	None, Field 1, Field 2, Frame, or Disabled Output	Frame Sync/ Freeze Mode Selection radio buttons	N/A
Freeze mode selection (Internal timing source)	None	None, AutoBlack, AutoFreeze, Field 1, Field 2, Frame or Disabled Output	Frame Sync/ Freeze Mode Selection radio buttons	N/A
Enable video processing	Enable	Disable, Enable, or Color Bars	Video Proc/ Video Processing radio buttons	N/A
Video gain lock	Off	On or Off	Video Proc/ Video Gain Lock radio buttons	N/A
Main video contrast/Y gain	100%	50 to 149.6% (0.4% steps)	Video Proc/Standard View Y Gain control (%)	YGain
Main video chroma gain	100%	50 to 149.6% (0.4% steps)	Video Proc/Standard View Chroma Gain control (%)	ChroGain
Enable Clip controls	Disable	Enable or Disable	Video Proc/Standard View Clip Settings radio buttons	N/A
Apply clips to VBI	Off	On or Off	Video Proc/Standard View Apply Clips to VBI checkbox	N/A
Main video soft/Y black clip	-6.8%	-6.8 to 109% (0.1% steps)	Video Proc/Standard View Soft/Y Black Clip control (%)	YBClip
Main video hard/video black clip	-37.3% (525) -30.0% (625)	-37.3 to -7.3% (525) -30.0 to 0% (625) (0.1% steps)	Video Proc/Standard View Hard/Video Black Clip control (%)	VBClip
Main video soft/Y white clip	109%	-6.8 to 109% (0.1% steps)	Video Proc/Standard View Soft/Y Clip control (%)	YWClip
Main video hard/video white clip	138.7%	-6.8 to 138.7% (0.1% steps)	Video Proc/Standard View Hard/Video Clip control (%)	VidWClip

Table 3. Summary of KAM-DEC-4ADC-MUX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
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
Mux group insert to Stream A and B	No Insert	Insert or No insert	MUX/ Group Insertion Insert checkboxes	N/A
Mux group number for insertion	Group 1	Group 1 to Group 4	MUX/ Group number radio buttons	N/A
Mux Bits/Sample rate	20 Bits	20 or 24 bits	MUX/ 20 or 24 Bit radio buttons	N/A
Set analog audio input levels (Ch 1–Ch 4)	24.0 dBu	-2 to 28 dBu (0.1 dBu steps)	Analog Audio Inputs	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	Pair1ChA Pair1ChB Pair2ChA Pair2ChB Silence
Enable auto tracking for Pair 1 and 2 Ch A and Ch B	Off	On or Off	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B Enable Auto Track On checkbox	N/A

Table 3. Summary of KAM-DEC-4ADC-MUX Configuration Controls

Function	Default	Range/Choices Resolution	Web Page/ Function Name	Newton Panel
Lock Pair 1 Ch A and Ch B delay adjustments and Pair 2 Ch A and Ch B delay adjustments	Unlocked	Lock or Unlocked	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B Channel Lock Locked checkbox	N/A
Audio Pair 1 Ch A delay adjust Audio Pair 1 Ch B delay adjust Audio Pair 2 Ch A delay adjust Audio Pair 2 Ch B delay adjust	0	0 to 5180 ms (20 ms steps)	Audio Sync/ Pair 1 and Pair 2 Ch A and Ch B Delay controls (ms)	Ch1ADly Ch1BDly Ch2ADly Ch2BDly
Select audio processing option for Pair 1 Ch A' and Ch B' and Pair 2 Ch A' and Ch B'	Pass	Pass Invert, A+B A – B, -(A+B) 1 kHz 400 Hz Silence A B (Pair 1 or Pair 2)	Audio Proc/ Pair 1 and Pair 2 Ch A' and Ch B' Processing pulldowns	Ch1AProc Ch1BProc Ch2AProc Ch2BProc
Lock Pair 1 Ch A and Ch B gain adjustments and Pair 2 Ch A and Ch B gain adjustments	Unlocked	Lock or Unlocked	Audio Proc/ Pair 1 and Pair 2 Ch A and Ch B Locked checkbox	N/A
Audio Pair 1 Ch A gain adjust Audio Pair 1 Ch B gain adjust Audio Pair 2 Ch A gain adjust Audio Pair 2 Ch B gain adjust	0 dB	-40 to + 6 dB	Audio Proc/ Pair 1 and Pair 2 Ch A and Ch B Gain controls (dB)	Ch1AGain Ch1BGAin Ch2AGain Ch2BGain

Newton Control Panel Configuration

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

- Ability to separate system level tasks from operation ones, minimizing the potential for on-air mistakes.

- Ability to group modular products—regardless of their physical locations—into logical groups (channels) that you can easily manipulate with user-configured knobs.

- Update software for applicable modules and assign frame and panel IP addresses with the NetConfig Networking application.

- Recommended for real-time control of module configuration parameters, providing the fastest response time.

Note   Not all module functions are available with the control panel, such as E-MEM and factory default recalls. The available control panel controls for the module are listed in Table 3 on page 17.

An example of the Newton Configurator is shown in Figure 10.

Figure 10. Newton Configurator Example
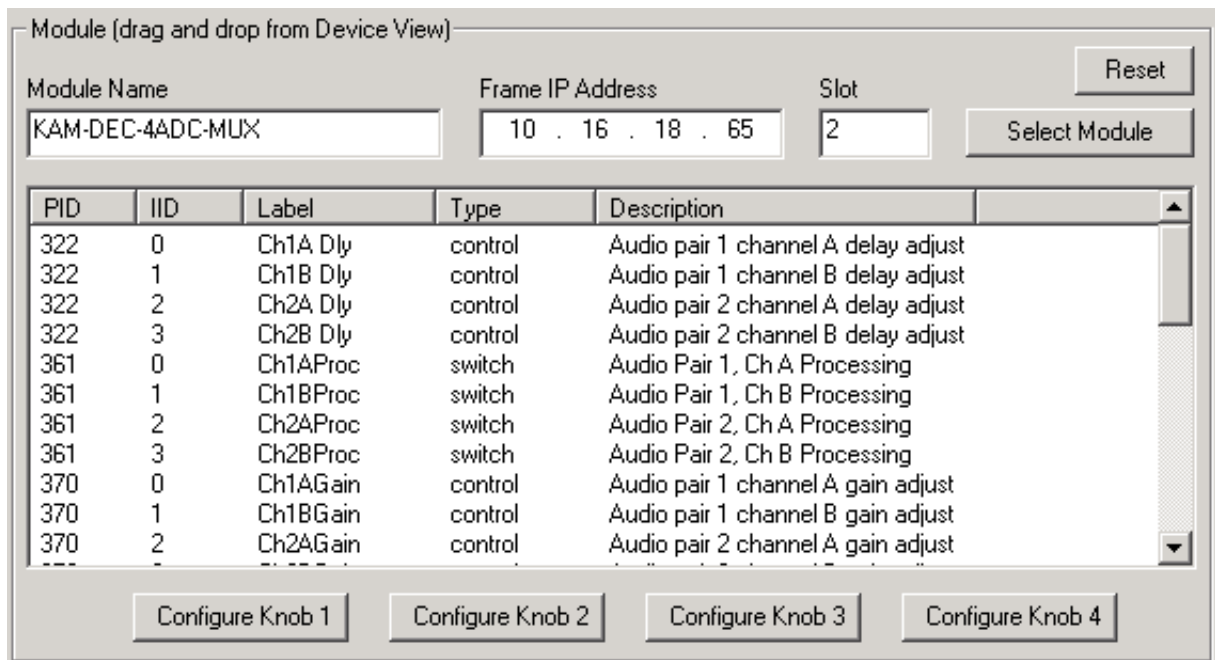
Refer to the documentation that accompanies the Newton Modular Control System for installation, configuration, and operation information.

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 11 on page 23. The Kameleon and 2000 modules can be addressed by clicking either on a specific module icon in the frame status display or on a module name or slot number in the link list on the left.

Note   The physical appearance of the menu displays on the web pages shown in this manual represent the use of a particular platform, browser and version of 2000NET module software. They are provided for reference only. Displays will differ depending on the type of platform and browser you are using and the version of the 2000NET software installed in your system. This manual reflects 2000NET software version 4.0.0.

Figure 11. 2000NET GUI

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

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

Refresh button for manual update of page

Bay 2 QA 2000
 Status
 Configuration
 Connections
 Frame Alarm Reporting
 SNMP Reporting
 Power Supply/Demand
1 KAM-SD
2 KAM-DEC-4ADC-MUX
3 KAM-SD
4 KAM-AV
5 Media Slot 5
6 Media Slot 6
7 Media Slot 7
8 Media Slot 8
9 Media Slot 9
10 Media Slot 10
11 Media Slot 11
12 Media Slot 12
13 2000NET
15 2000GEN
18 Power Sled 18
19 Fan Sled 1
20 Power Sled 20

Status

Model: 2000T3N Description: Module Frame
Frame Location: Modular Lab Bay 2
Frame Health Alarm ALARM Temperature Status PASS
Power Status   PASS   Fan Status   PASS

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

Properties

Vendor   Thomson, Grass Valley Software Version 4.0.0
Media Slots 13

8343_0R1

Web Page Operations and Functional Elements

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

Pulldown Menus

Button —

Radio button —

Check box —

Refresh button —

Coarse Adjust
Fine Adjust
Enter

Low Limit   High Limit
Status Indicator

Entry Field

Status LED —

8341_13
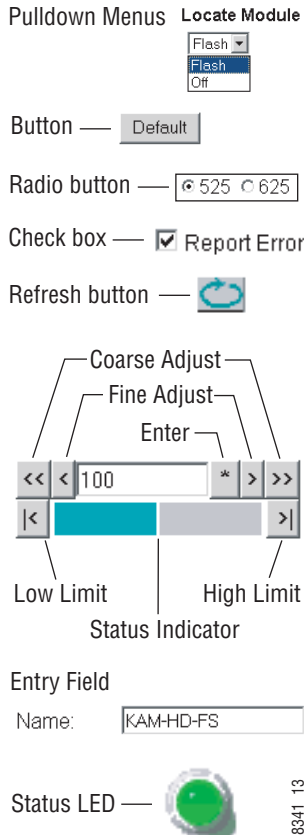
- Pulldown menus allow you to choose selections from a list.

- Clicking on a button performs an immediate action such as recall of defaults, clearing of states, learning configurations, and selecting all or none of a selection.

- Radio buttons are used to make a choice of one parameter in a group.

- Check boxes are used when a selection can be enabled or included in a group. Multiple check box selections or enables can be made for some parameters.

- A **Refresh** button (circular arrow) is provided at the top of each web page for manual refresh to view recently changed parameters.

- Each numerical adjustment control has a **Coarse** adjust button (left and right top double arrows) which increases or decreases the step value by a factor of 10. The **Fine** adjust button (left and right inside single arrows) increases or decreases the step value by 1.

    To change a value, use the arrow button controls or enter a value into the number field and select the **Enter** button (*****) or use the **Enter** key on your keyboard. The Status Indicator bar will follow the value selected.

    Use the **Low** and **High Limit** buttons to go directly to the lowest and highest limits for the parameter.

- An entry field allows naming of various module functions such as input or output signals, asset tag, and slot identification.

- The Status LED is explained in *Status LED icon* on page 25.

Status and Identification Header

Each configuration web page has a Status and Identification Header.

Figure 12. Typical Status/ID Header

Link to
Status page

Variables

8343_07

Status LED icon

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

- Green = Pass – no problems detected

- Yellow = Configuration error warning

- Red = Fault condition detected

Variables:

- Model and Description are read-only generated by the module.

- Frame Location is entered in 2000 Series Kameleon Frame configuration.

- Slot number reports the module's location in the frame.

- Last Recalled E-MEM reports the last E-MEM configuration recalled from the module.

Initial Configuration Process Overview

To configure the Kameleon module proceed as follows:

1. Go to the **I/O Config** web page to setup and name inputs and outputs.

2. If not already connected, connect all input and output signals. Go to the module **Status** web page to verify component and signal presence and condition.

3. Go to the **Video Input Select** web page to configure the video source and output timing source.

4. Go to the **MUX** web page if you are multiplexing audio into the output video signal.

5. Go to the **Functional View** web page to:
   - Verify the module's functional configuration is correct, and
   - Begin with the Input block links to configure each function in turn.

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

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

KAM-DEC-4ADC-MUX Links and Web Pages

The 2000 GUI provides the following links and web pages for the module (Figure 13):

- Status – reports input and reference signal status and module information (page 27),

- I/O Config – shows a graphic representation of inputs and outputs to the module and allows naming of each input (page 30),

- Functional View – shows a block diagram of the module with links to each configuration web page (page 33),

- Module Configuration web pages for setting up the module (beginning on page 34),

- E-MEM – provides a Standard view for Local Recall operations for up to 5 E-MEM registers (page 59) and an Advanced view providing additional **Save to** and **Load from** file operations (page 60), and

- Slot Config – provides a Locate Module function and Slot Memory, and links to the 2000NET SNMP and Frame Health reporting web pages (page 64).

Figure 13. KAM-DEC-4ADC-MUX Web Page Links

2 KAM-DEC-4ADC-MUX
   Status
   I/O Config
   Functional View
   - Composite In
   - VBI Decode
   - Video Input Select
   - Frame Sync
   - Video Proc
   - MUX
   - Analog Audio Inputs
   - Audio Channel Pairing
   - Audio Sync
   - Audio Proc
   E-MEM®
   Slot Config

Status Web Page

2 KAM-DEC-4ADC-MUX
Status
I/O Config
Functional View
- Composite In
- VBI Decode
- Video Input Select
- Frame Sync

The Status web page for the KAM-DEC-4ADC-MUX module (Figure 14 on page 29) 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 24),

- 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 14 on page 29. 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-DEC-4ADC-MUX 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.

Warning/Fault Summary

The following warnings and faults are reported in the summary section (refer to Figure 14 on page 29). 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 - <u>nn</u>V power supply bad. (<u>nn</u> = 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

Figure 14. Module and Signal Status
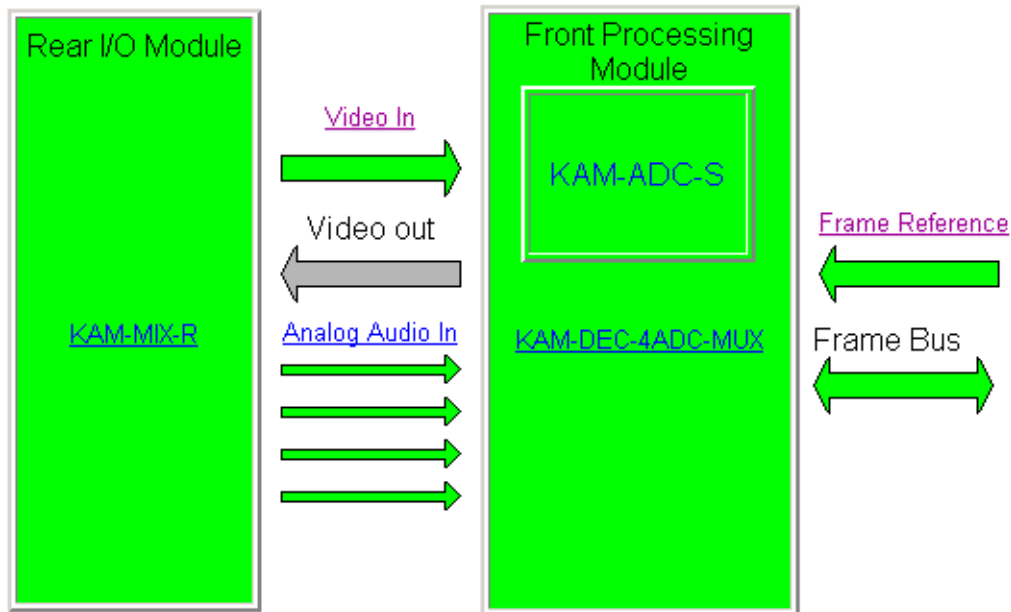
Warning and Fault summary section

Input/Output Configuration Web Page

Use this link

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 15 illustrates the I/O Config web page for the KAM-MIX-R passive rear module required for the KAM-DEC-4ADC-MUX front module followed by detailed information of the web page elements.

Figure 15. KAM-MIX-R Rear Module Configuration Web Page

I/O Config

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

MIX-R Rear Module Configuration

J11 VI Video In	J10 AN AUD1 Analog Audio	J9 AN AUD2 Analog Audio	J8 AN AUD3 Analog Audio	J7 AN AUD4 Analog Audio	J6 CVO	J5 AES 1 Unbalanced Audio	J4 AES 2 Unbalanced Audio	J3 AES 1 Balanced Audio	J2 AES 2 Balanced Audio	J1 SDO Serial Digital
⊙	⊙⊙⊙	⊙⊙⊙	⊙⊙⊙	⊙⊙⊙	◎	◎	◎	⊙⊙	⊙⊙	◎
Input	Input	Input	Input	Input						Output
Video In	AA In Ch1	AA In Ch2	AA In Ch3	AA In Ch4						SD Output
Present	Present	Present	Present	Present	Unused	Unused	Unused	Unused	Unused	Not Monitored

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 16 to illustrate the function of each row of the diagram.

Figure 16. Analog Audio Inputs

J10 AN AUD1 Analog Audio	J9 AN AUD2 Analog Audio	J8 AN AUD3 Analog Audio	J7 AN AUD4 Analog Audio
⊙⊙⊙	⊙⊙⊙	⊙⊙⊙	⊙⊙⊙
Input	Input	Input	Input
AA In Ch1	AA In Ch2	AA In Ch3	AA In Ch4
Present	Present	Present	Present

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 33).

Connectors

The connector row illustrates connector type provided (BNC or 3-pin terminal) for each port. For this rear module, one video input, four analog audio inputs, and one serial digital 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 16 on page 30.

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

For example, when the ADC submodule is not installed, the I/O Config web page will look similar to Figure 17. The **AA In 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 17. I/O Web Page with Submodule Not Available

Functional View Web Page

Use
this
link

Use the Functional View web page (Figure 18) 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 18. Functional View Web Page
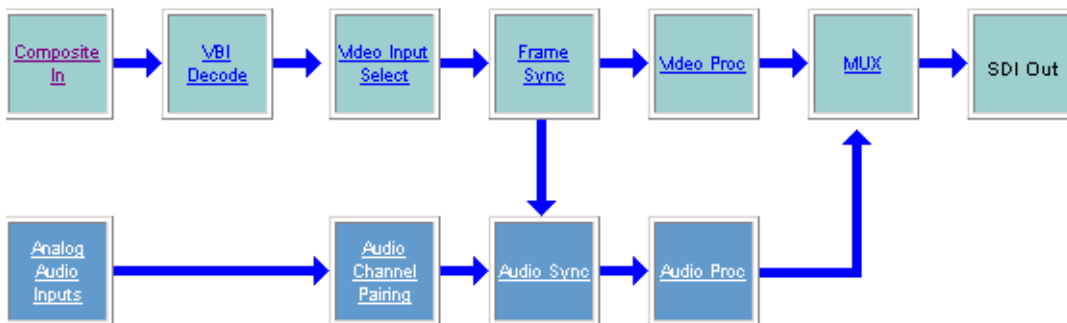
Composite In Web Page

Use
this
link

Use the Composite In web page (Figure 19 on page 35) to set parameters for the composite video input as listed below:

• Adjust input signal gain and black level,

• Select input signal format for 525 line mode (NTSC),

• Include or omit black level Setup for 525 line mode, and

• Select the type of 3D decoding required for the application and adjust 3D Decoder parameters.

Note Flywheel Video Decoder checkbox on Video Input Select page must be unchecked for 3D controls to appear.

Video Input Status

The Input Status section is read-only. The Input Signal name is the one assigned on the *Input/Output Configuration Web Page* on page 30. Input Standard can be affected by settings on the 2000GEN module (if present) and the *Video Input Select Web Page* on page 40.

Settings for Standard 525/625

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

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

Input Video Gain

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

Black Level

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

Input Signal Setup

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

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

Figure 19. Composite Input Web Page

Composite In ⟳

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

Video Input Status

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

Settings for Standard: 525

Input Video Gain (%)	Black Level (%)
<< < 100.0 * > >> |< >|	<< < 0.0 * > >> |< >|
Video Input Signal:	NTSC
Input Signal Setup:	⦿ No Setup ○ Setup

3D Decoder Control

3D Motion Threshold	
<< < 25 * > >> |< >|	
Comb Filter	Luma Bandwidth
Luma + Chroma ▼	○ Narrow ⦿ Wide
Luma Level	Chroma Level
<< < 56 * > >> |< >|	<< < 56 * > >> |< >|
○ Low Motion ⦿ Mixed Motion ○ High Motion ○ User Defined	

Reset 3D Decoder to Default

Functional View   Next

3D Decoder Control

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

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

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

- **Low Motion** – this is a 3D temporal filter ideal for applications where there is little motion in the video, such as scenes involving sitting and other scenes involving little motion.

- **Mixed Motion** – a general purpose filter, this is the default choice for most video applications involving mixed motion.

- **High Motion** – a 2D adaptive filter is employed for handling change in motion recommended for video where there will be a great deal of motion such as sports. Once motion is detected in a scene, the high motion decoder should be used.

- **User Defined** – changing any preset value in the Motion decoders will switch to the user mode.

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

3D Motion Threshold

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

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

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

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

Comb Filter

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

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

- **Luma** – in this mode, the 2D adaptive decoder motion selector is controlled by only the luminance magnitude error in the video.

- **Chroma** – in this mode, the 2D adaptive decoder motion selector is controlled by only the chrominance magnitude error in the video.

Luma Level

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

Chroma Level

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

Luma Bandwidth

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

- **Narrow** – extends the 2D comb filter to lower frequencies and is the default bandwidth for the **High Motion** preset mode.

- **Wide** – allows 2D comb filtering only at higher frequencies. This is the **Mixed** and **Low Motion** default and used for 625 input video.

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

Reset 3D Decoder

Press the **Reset 3D Decoder to Default** to return to the default **Mixed Motion** mode with the defaults listed in Table 3 on page 17.

VBI Decode for Composite Input

Use this link

Use the VBI decode web page (Figure 20 for 525, Figure 21 on page 39 for 625 line rate) to configure the VBI and Data Line decoding of the composite input 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.

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

- Blank existing VBI and Data Line information,

- Select Notch Decoding of the composite signal, or

- Pass through decoded VBI and Data Lines (active video lines) information as is.

Note   The data lines not reserved for carrying data on the Video Input Select web page will appear greyed out. See *Advanced VBI Configuration* on page 43.

Figure 20. VBI Decode Web Page – 525 Line Rate

🟢 **VBI Decode** 🔄

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

Current Line Rate	525
View Selection:	⊙ 525 ○ 625

Field 1

	VBI Line											Data Line			
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Remove Setup	□	□	□	□	□	□	□	□	□	□	□	□	□		
Blanking	○	○	○	○	○	○	○	○	○	○	○	○	○		
Notch Decode	○	○	○	○	○	○	○	○	○	○	○	○	○		
Pass Through	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		

Field 2

	VBI Line											Data Line			
	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287
Remove Setup	□	□	□	□	□	□	□	□	□	□	□	□	□		
Blanking	○	○	○	○	○	○	○	○	○	○	○	○	○		
Notch Decode	○	○	○	○	○	○	○	○	○	○	○	○	○		
Pass Through	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		

Back   Functional View   Next

Figure 21. VBI Decode Web Page – 625 Line Rate

Video Input Select Web Page

Functional View
- Composite In
- VBI Decode
Use
this — - Video Input Select
link
- Frame Sync
- Video Proc
- MUX
- Analog Audio Inputs

Use the Video Input Select web page (Figure 22 on page 41) to:

- Configure input video line rate,

- Enable or disable Loss of Signal reporting to the Status page and SNMP monitoring (refer to the 2000NET manual for SNMP information),

- Configure Vertical Blanking Interval (in Advanced mode), and

- Select the output timing reference.

View Setting

In the View Selection display, choose the **Standard** radio button to display the standard settings shown in Figure 22 on page 41. Use the **Advanced** view for configuring the Vertical Blanking Interval for selecting active video lines to carry data (see *Advanced VBI Configuration* on page 43).

Video Selection Settings

The following functions are provided in the Video Selection section:

- Input Name – (read-only) signal name is entered on the **I/O Config** page

- Input Status –

    - Signal presence reported

    - Enable/disable Loss of Signal report to both Kameleon status pages and SNMP monitoring devices.

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

- Video Format – Composite video format always reported as read-only.

- Video Line Rate – select 525 or 625 line rate or enable automatic line rate detection.

- Flywheel Video Decoder – use of the Flywheel Video Decoder is recommended when working with noisy input signals, such as satellite feeds. Once the optimum input signal has been acquired, turn the Flywheel Video Decoder off during normal operation.

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

Figure 22. Video Input Select Web Page

Video Input Select

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

View Selection: ⊙ Standard ○ Advanced (VBI Config)

Video Selection

	Current	Selection
Input Name	Video In	
Input Status	Not Present	☑ Report Loss of Signal
Video Format	Composite	Composite
Video Line Rate	525	○ 525 ○ 625 ⊙ Auto
Flywheel Video Decoder ⚠ Flywheel Video Decoder mode should only be ON during signal adjustment. Turn OFF once signal has been properly adjusted to resume normal operation. Switching Flywheel Video Decoder ON/OFF causes a video blank of about 7 seconds.		☑ On
Frame Reference	Present	☑ Report Loss of Signal
Frame Sync / Delay	Frame Sync	

Output Timing Selection

	Source	Status	Mode	GenLock	Audio Framing
Internal Frame Reference	⊙	Present	525	Locked	Free Run
Video In	○	No input	-	-	-

Back   Functional View   Next

When the Flywheel Video Decoder is turned on, a caution will appear as shown in . Since the Flywheel decoder generates its own video timing for the incoming video stream to deal with noise and interruptions, leaving it on during normal operation may cause undesirable re synchronization delays if the source changes or is lost. It will take about 9 seconds to change states.

- Frame Reference –

  - 2000GEN frame reference signal presence reported,

  - Enable/disable Loss of Signal report to both Kameleon status pages and SNMP monitoring devices.

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

Output Timing Selection

If you have a 2000GEN reference module installed in the frame and want the Kameleon to work as a frame synchronizer, set the output timing source to **Internal Frame Reference**. Otherwise, set the output timing source to **Video In**.

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

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

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 23).

Figure 23. Standard and Advanced View Selection

The **VBI/Data Lines** panel will appear at the bottom of the web page (see Figure 24 on page 44 for 525 line rate and Figure 25 on page 44 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 24 on page 44 and lines 24/337 and 25/338 in Figure 25 on page 44. Lines not reserved for data will be greyed out on the VBI Decode web page (*VBI Decode for Composite Input* on page 38).

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 24. Advanced VBI Configuration – 525 Line Rate

Current Line Rate	525
View Selection:	⊙ 525 ○ 625

VBI / Data Lines

Field 1 Lines	1-20	21	22	23	24	25-263
VBI Lines	■					
Reserved for Data		■	■			
Picture Lines				■	■	■
Field 2 Lines	264-283	284	285	286	287	288-525
VBI Lines	■					
Reserved for Data		■	■			
Picture Lines				■	■	■
Last Data Line	○ none ○ 21/284 ⊙ 22/285 ○ 23/286 ○ 24/287					

Back   Functional View   Next

Figure 25. Advanced VBI Configuration – 625 Line Rate

Current Line Rate	625
View Selection:	○ 525 ⊙ 625

VBI / Data Lines

Field 1 Lines	624-23	24	25	26	27	28	29-310
VBI Lines	■						
Reserved for Data		■	■				
Picture Lines				■	■	■	■
Field 2 Lines	311-336	337	338	339	340	341	342-623
VBI Lines	■						
Reserved for Data		■	■				
Picture Lines				■	■	■	■
Last Data Line	○ none ○ 24/337 ⊙ 25/338 ○ 26/339 ○ 27/340 ○ 28/341						

Back   Functional View   Next

Frame Sync Web Page

Functional View
- Composite In
- VBI Decode
- Video Input Select
Use this — Frame Sync
link - Video Proc
- MUX

Use the Frame Sync web page (Figure 26 on page 46 and Figure 27 on page 46) to:

Adjust horizontal and vertical timing, and

Freeze the current output or, if using a 2000GEN reference signal, select an automatic freeze mode for output when the signal is lost.

Timing Adjustment

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

Table 5. Timing Adjustment Ranges

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

Freeze Mode Selection

The Freeze mode controls available depend on the output timing reference selected on the *Video Input Select Web Page* on page 40.

Frame Sync mode (using the 2000GEN **Internal Frame Reference** output timing reference) provides the manual activation selections plus **AutoBlack** and **AutoFreeze** modes to be used when the video signal is lost (Figure 26 on page 46). AutoBlack outputs a black signal while AutoFreeze outputs the last complete video field.

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

When set to Frame Delay mode (using the **Video In** output timing reference), Freeze Mode allows you to manually freeze the output using **Field 1**, **Field 2**, one **Frame**, or **Disabled Output** (Figure 27 on page 46). 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 - Internal Frame Reference

Figure 27. Frame Synchronizer Web Page – Video In Reference

Video Processing Web Page

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),

- Adjust component video chroma phase (hue) in 525 line rate only,

- 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 28 on page 49). 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 29 on page 50.

Standard View

In Standard View (Figure 28 on page 49), 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 (525 line rate only) – adjust the hue/chroma phase in degrees (-89.8 to 89.8 degrees).

Advanced View

In Advanced View (Figure 29 on page 50), 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 29 on page 50. 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 – Standard View

Video Proc

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 1 QA 2000 Frame , Slot: 1
Last Recalled E-MEM: Factory Defaults

View Selection: ● Standard ○ Advanced

Video Processing Controls

Video Processing: ○ Disable ● Enable ○ Color Bars

Video Gain Lock: ○ On ● Off

Contrast/Y Gain (%)
<< < 100.0 * > >>
|< >|

Saturation/Chroma Gain (%)
<< < 100.0 * > >>
|< >|

Brightness/Y Offset (%)
<< < 0.00 * > >>
|< >|

Hue/Chroma Phase (Deg)
<< < 0.0 * > >>
|< >|

Clipping Controls

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

Soft/Y White Clip (%)
<< < 109.0 * > >>
|< >|

Hard/Video White Clip (%)
<< < 138.7 * > >>
|< >|

Soft/Y Black Clip (%)
<< < -6.8 * > >>
|< >|

Hard/Video Black Clip (%)
<< < -37.3 * > >>
|< >|

Reset to Default

Back   Functional View   Next

Figure 29. Video Processing Web Page – Advanced View

Video Proc

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

View Selection: ○ Standard ⊙ Advanced

Video Processing Controls

Video Processing: ○ Disable ⊙ Enable ○ Color Bars

Video Gain Lock: ○ On ⊙ Off

Contrast/Y Gain (%)	Saturation/Chroma Gain (%)	B-Y Gain (%)	R-Y Gain (%)
100.0	100.0	100.0	100.0

Brightness/Y Offset (%)	Hue/Chroma Phase (Deg)	B-Y Balance/Offset (%)	R-Y Balance/Offset (%)
0.00	0.0	0.00	0.00

Clipping Controls

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

Soft/Y White Clip (%)	Hard/Video White Clip (%)
109.0	138.7

Soft/Y Black Clip (%)	Hard/Video Black Clip (%)
-6.8	-37.3

Reset to Default

Back   Functional View   Next

MUX Web Page

Use this link

Use the Mux (multiplex) web page (Figure 30) to:

- Insert audio groups into the SDI output video signal.

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

Figure 30. Multiplex Web Page.

MUX

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

Group insertion

Mux Group	Insert	Group	Bits/Sample
Pair 1: AA In Ch1 & AA In Ch2	☑ Stream A	⦿ Group 1 ○ Group 2 ○ Group 3 ○ Group 4	⦿ 20 bits ○ 24 bits
Pair 2: AA In Ch3 & AA In Ch4	☑ Stream B		

Back (Video)   Functional View
Back (Audio)

Group Insertion

The Group Insertion function allows the insertion of two streams (determined on the *Audio Channel Pairing Web Page* on page 54) into any Group (1-4) in the SDI signal output with the following controls:

- Select the **Stream A** and/or **Stream B** checkboxes in the Insert column to insert Pair 1 and/or Pair 2 into the SDI output steam.

- Select the audio Group number in the SDI stream into which to insert (embed) the streams.

- Select the output sample rate for the inserted audio as **20 bits** or **24 bits**.

Figure 31 on page 52 depicts the resulting actions from the settings shown in the Mux web page in Figure 30.

Figure 31. Multiplexing into the SDI Stream
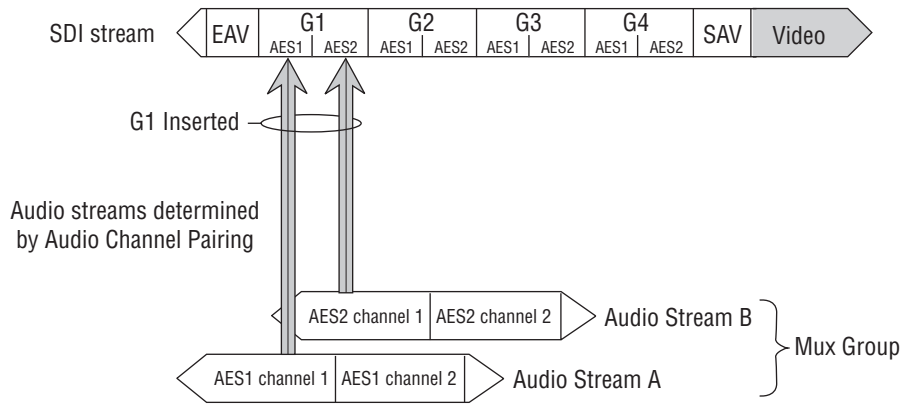
One audio Group = two streams (A & B) max.
One stream = two channels (1 & 2) max.

8343_05

Analog Audio Inputs Web Page

Use this link

Use the Analog Audio Inputs web page (Figure 32) to set maximum analog audio input levels.

- **Signal Present** is reported if the incoming signal is greater than -40 dBFS.

- **Clipping** is reported for incoming signals in excess of approximately 0.5 dB of maximum level.

- **Maximum Input Level** is adjustable -2.0 to +28 dBu for each analog audio input. Kameleon uses this value to adjust the signal level into the A-to-D converter for the best signal-to-noise and dynamic range.

Figure 32. Analog Audio Inputs Web Page

Analog Audio Inputs ↻

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

Analog Audio Inputs

Input	Name	Max Input level	Signal Present > -40dBFS	Clipping
J10	AA In Ch1	Max Input Level (dBu) `<<` `<` 24.0 `*` `>` `>>` `|<` `>|`	Not detected	Not Clipping
J9	AA In Ch2	Max Input Level (dBu) `<<` `<` 24.0 `*` `>` `>>` `|<` `>|`	Not detected	Not Clipping
J8	AA In Ch3	Max Input Level (dBu) `<<` `<` 24.0 `*` `>` `>>` `|<` `>|`	Not detected	Not Clipping
J7	AA In Ch4	Max Input Level (dBu) `<<` `<` 24.0 `*` `>` `>>` `|<` `>|`	Not detected	Not Clipping

Functional View   Next

Audio Channel Pairing Web Page

Use this link

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

The streams in each pair are grouped together into a Mux group on the Mux web page. Then Stream A or Stream B or both can be inserted into the SDI output video (see *MUX Web Page* on page 51).

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

Figure 33. Audio Channel Pairing Web Page

Audio Channel Pairing

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

Pair Input Audio Channels

Names	Pair 1 ChA	Pair 1 ChB	Pair 2 ChA	Pair 2 ChB	Streams
AA In Ch1	⦿	○	○	○	Str1.Ch1
AA In Ch2	○	⦿	○	○	Str1.Ch2
AA In Ch3	○	○	⦿	○	Str2.Ch1
AA In Ch4	○	○	○	⦿	Str2.Ch2
Silence	○	○	○	○	Silence

Back   Functional View   Next

Audio Sync Web Page

Use this link →

Use the Audio Sync web page (Figure 34) 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.

Figure 34. Audio Synchronizer Web Page

Audio Sync

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

Pair 1			Pair 2		
Ch A	AA In Ch1		Ch A	AA In Ch3	
Ch B	AA In Ch2		Ch B	AA In Ch4	
	Ch A	Ch B		Ch A	Ch B
Enable Auto Track	☑ On		Enable Auto Track	☑ On	
Auto Tracking Delay	16 mS		Auto Tracking Delay	16 mS	
Total Delay	816 mS	816 mS	Total Delay	16 mS	16 mS
Channel Lock	☑ Locked		Channel Lock	☑ Locked	
Ch A Delay Adjust (mS) << < 800 * > >> |< ▮ >|			Ch A Delay Adjust (mS) << < 0 * > >> |< >|		
Ch B Delay Adjust (mS) << < 800 * > >> |< ▮ >|			Ch B Delay Adjust (mS) << < 0 * > >> |< >|		

Back (Video)   Functional View   Next
Back (Audio)

Enable Auto Track

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

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

Delay Adjustments

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

- To lock the two channels in a pair together, select the **Channel Lock** checkbox for Pair 1 or Pair 2.

- Adjust the delay for each channel with the Ch A Delay Adjust and Ch B Delay adjust controls for each pair. If the pair is locked, adjusting either control will set the delay to the same value for each channel in the pair.

Audio Processing Web Page

Use
this
link

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

- Adjust audio signal gain for each individual channel or the two audio pairs,

- Lock gain settings for simultaneous channel A/channel B adjustment, and

- Select a processing option for each channel.

Figure 35. Audio Processing Web Page

Audio Proc

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

Pair 1			Pair 2		
Ch A	AA In Ch1		Ch A	AA In Ch3	
Ch B	AA In Ch2		Ch B	AA In Ch4	
Gain Settings	☐ Locked		Gain Settings	☐ Locked	

Ch A Gain (dB) 0.0   Ch A Gain (dB) 0.0

Ch B Gain (dB) 0.0   Ch B Gain (dB) 0.0

	Ch A'	Ch B'		Ch A'	Ch B'
Presence	True	True	Presence	True	True
Clip	False	False	Clip	False	False
Processing	Pass	Pass	Processing	Pass	Pass

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

Back   Functional View   Next

Audio Gain

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

- To lock the two channels in a pair together, select the Gain Settings **Locked** checkbox for Pair 1 and/or Pair 2.

- Adjust the gain (-40 to +6 dB) for each channel with the Ch A Gain Adjust and Ch B Gain adjust controls for each pair. If the pair is locked, adjusting either control will set the gain to the same value for each channel in the pair.

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

Output Processing

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

- Pass

- Invert

- A+B

- A-B

- -(A+B)

- 1 kHz (test tone)

- 400 Hz (test tone)

- Silence

- A + B (Pair 1 or Pair 2)

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 57.

E-MEM Configuration Web Page

- MUX
- Analog Audio Inputs
- Audio Channel Pairing
- Audio Sync
- Audio Proc

Use this ── E-MEM®
link　Slot Config

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

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

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

In Standard view (Figure 36), any one of five learned E-MEMs can be recalled by selecting the corresponding **Recall** button in the Local Operations window. This will place the configuration for the entire module into that E-MEM into the KAM-DEC-4ADC-MUX. This change will occur immediately upon recall. The name of the last recalled E-MEM will appear in the top header of each web page for the module.

To learn an E-MEM select the **Advanced** button in the View Selection section. This will open the Advanced view (Figure 37 on page 60).

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

E-MEM®

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2
Last Recalled E-MEM: Factory Defaults

View Selection: ⊙ Standard ○ Advanced

E-MEM®

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

Recall　Restore factory settings

Recall　Restore factory names

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

To learn an E-MEM:

1. Open the Advanced view.

2. When the configuration is complete for all channels on the module, type a descriptive name for the configuration into an unused E-MEM register (or overwrite an existing one).

3. Learn the E-MEM to memory by selecting the corresponding **Learn** button. All channel configurations are learned at once and stored in the same register. This register is now learned and ready for recall.

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

File Operations

Save File

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

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

This will bring up a File Download screen similar to Figure 38. Select **Save**.

Figure 38. File Download Screen
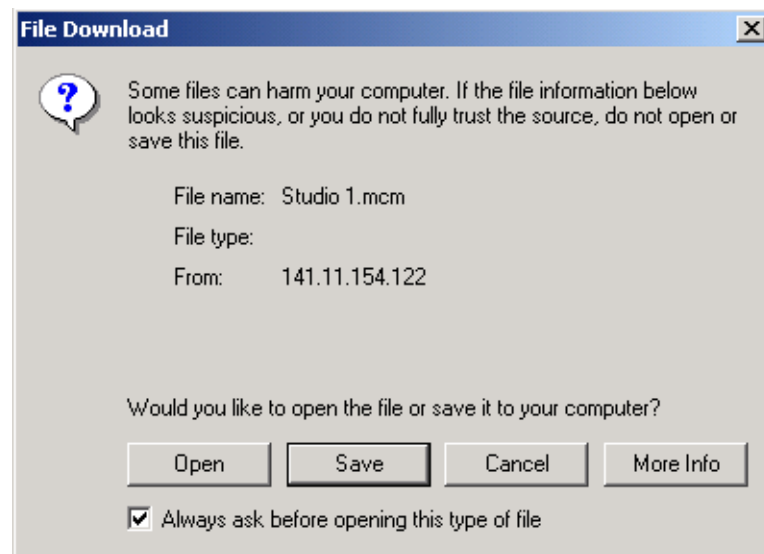
This will bring up the Save As screen as shown in Figure 39. Locate or create a directory for storing the E-MEMs and select **Save**. This E-MEM register is now saved to the selected location and may be recalled as described below.

Figure 39. Save As Screen
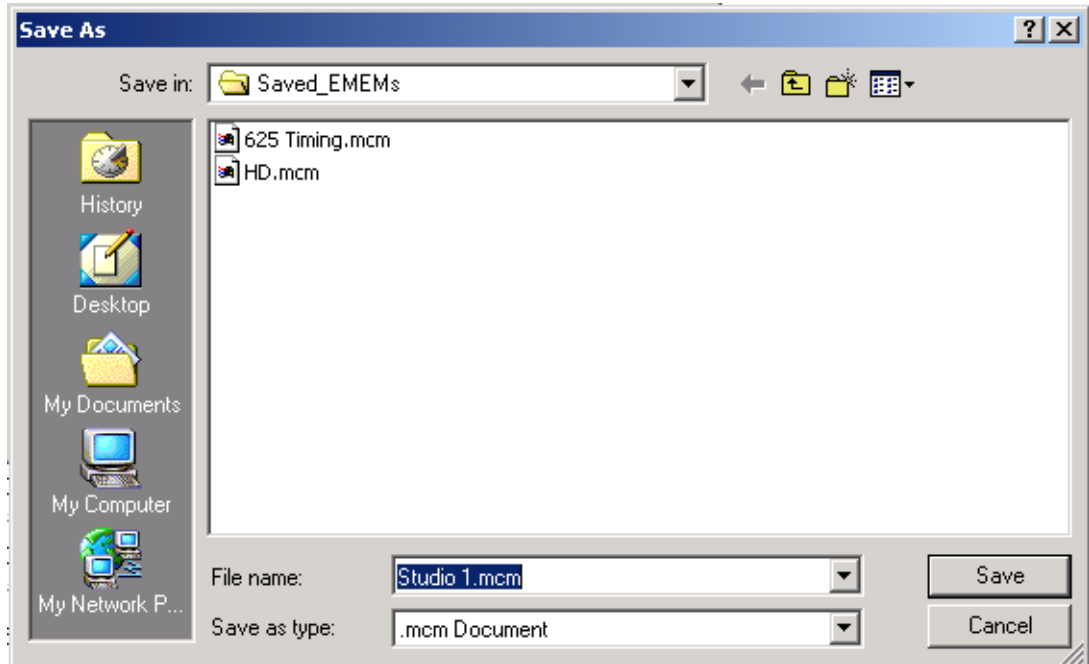
Load File

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

Figure 40. Load E-MEM Web Page

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

Figure 41. Choose File Screen
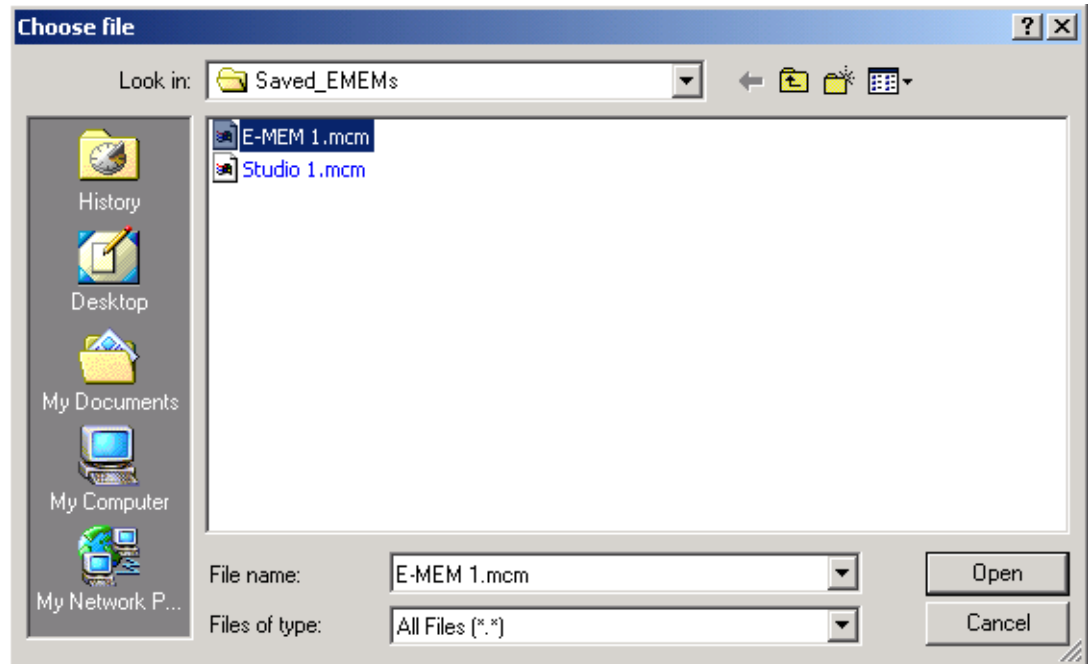
This will place the path and filename in the Load E-MEM screen (Figure 40 on page 62). If this is the correct file, select **Load**. Continue to load files or select **Cancel** to return to the main E-MEM web page. Loaded files will now be entered in the associated E-MEM registers.

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

Slot Configuration

Use the Slot Config web page (Figure 42) 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, and

* Link to the 2000NET Frame Health Reporting and SNMP Reporting web pages.

Figure 42. Slot Configuration Web Page

Slot Config

Model: KAM-DEC-4ADC-MUX Description: Frame Sync, Proc Amp, AV/4AA to SD/2Embed
Frame Location: Bay 9 QA 2000 Frame , Slot: 2

Slot Identification

Name: KAM-DEC-4ADC-MUX   Default

Asset Tag:

Locate Module

Off

Slot Memory

☐ Restore upon Install

Learn Module Config

Frame Health Reports

SNMP Trap Reports

Slot Identification

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

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

Locate Module

When enabled by selecting the **Flash** pulldown, the **Locate Module** function flashes the yellow COMM and CONF LEDs on the front of the module to make it easy to locate in the frame (see *Operation Indicator LEDs* on page 16).

Slot Memory

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

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

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

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

Frame Health Reports Link

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

Note   This link will not appear when the module is installed in a 2000T1 frame.

This web page contains the following sections:

- **Hardware Switch Status** – the Hardware Switch Status section of this web page displays the current settings of the alarm and warning configuration DIP switches, S1 and S2, on the 2000NET circuit board in this frame. These switches allow enabling and disabling of what overall status reporting information is provided to the external Frame Alarm.

- **Output Format for Warnings** – set the Output Format for Warnings on the external RS-232 Frame Alarm output on the rear of the frame. When the **Open** radio button is selected, warnings are not reported to the external frame alarm. Selecting the **Closed** radio button, causes warnings to be reported in the same manner as alarms.

- **Frame Health Reporting** – this section provides a table showing the presence and status of all frame devices such as modules, power supplies, and fans and other frame functions such as Module Health and Frame Bus status. Use the corresponding **Report** checkboxes to indicate which alarms and warnings should be reported to the Frame Health alarm for the following conditions:

  - Faults

  - Signal Loss

  - Reference Loss

  - Config Error

SNMP Trap Reports Link

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

- **Hardware Switch Status** – the Hardware Switch Status section of this web page displays the current settings of the alarm and warning configuration DIP switches, S1 and S2, on the 2000NET circuit board in this frame. These switches allow enabling and disabling of what overall status reporting information is provided to the SNMP traps.

Note   Slot SNMP traps can be enabled only when the hardware switches for Module Fault reporting and Asynchronous Status reporting are in enabled on the 2000NET module (DIP switch S1 segment 7 and DIP switch S2 segment 1).

- **SNMP Trap Reporting** – this section provides a table showing the presence and/or status of all frame devices such as modules, power supplies, power and fan sleds and other frame functions such as fan and Frame Bus status.

- Use the corresponding **Report** checkboxes to indicate what trap warnings and alarms should be reported to the SNMP manager for the following conditions:

  - Faults

  - Devices removed

  - Signal Loss

  - Reference Loss

  - Config Error

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.

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

Software Updating

Software updating of all Kameleon modules is now done using the Net-Config Networking Application PC option. This application is available free of charge from the Thomson Grass Valley web site as described below. When the Kameleon module is installed in a frame with a 2000NET module running version 4.0.0 required for this release, the Software Update web page is no longer present.

Acquiring Software

NetConfig Software

Use the NetConfig Networking application to update all software. The latest version of the NetConfig Networking application must be at version 2.0.6 for proper operation.

To determine your NetConfig version, open NetConfig click on the **About** link on the top of the NetConfig Tool Bar.

If you do not have NetConfig or the latest version, you can download it from the Thomson Grass Valley ftp site at this URL:

ftp://ftp.thomsongrassvalley.com/pub/router/NetConfig/
Version 2.0.6/

1. Right-click on the NetConfig link to download the zipped file to the C:\temp folder or other convenient location on your PC.

2. Extract the zipped files onto your local drive:

3. Double-click on the NetConfig.EXE file to install NetConfig.

Note   Installing NetConfig into the default location given in the install script (C:\Programs\Grass Valley Group) is recommended for future NetConfig and module software updates.

Kameleon Software

To acquire the latest KAM-DEC-4ADC-MUX software, connect to the Thomson Grass Valley ftp site at the following URL:

ftp://ftp.thomsongrassvalley.com/pub/modular/Kameleon/

1. Create a temporary folder on your C:\ drive if one does not exist.

2. Select the link to KAM-DEC-4ADC-MUX. If a README file is present, open it and read the information before attempting to download the files.

   Download the following files to the C:\temp directory or other convenient location on your PC by right-clicking on the file link and selecting **Save Target As…** :

   • KAM-DEC-4ADC-MUX_5.0.2.sw2 (required for NetConfig download)

Note   Do not save this file as a text document. Select **All Files** under the **Save As Type** pulldown. NetConfig will not recognize this file if it has a .txt extension.

   • KAM-DEC-4ADC-MUX_5.0.2_appli_only.fld (first .fld download file with application only required for updating from version 1.0.4 only).

   • KAM-DEC-4ADC-MUX_5.0.2.fld (required for all versions of software updating)

Updating Software With NetConfig

Updating from v1.0.4 to v5.0.2

For updating KAM-DEC-4ADC-MUX modules running software version 1.0.4, use the complete download procedure given next. This involves downloading two .fld files.

For a more detailed description of this 1.0.4 update procedure and a summary of the new functionality for the updated version 5.0.2 software covered in this manual, also refer to the KAM-DEC-4ADC-MUX Release Notes.

Updating from v5.0.2 and Later

If you are currently running software version 5.0.2 on your KAM-DEC-4ADC-MUX, you will only need to do the second .fld download, starting with .

NetConfig Upgrade Procedure

Use the following procedure to upgrade using NetConfig:

1. Copy all Kameleon software download files from the C:\temp directory into the main NetConfig directory on your PC. This is normally in the default location in C:\Program Files\Grass Valley Group\NetConfig.

   If you have installed NetConfig in another location, find the location of the NetConfig directory by right-clicking on the NetConfig shortcut. Select **Properties** and note the location in the **Start In** field. Download the package to the NetConfig directory.

2. In the main NetConfig directory, locate a folder named **modular**. If this folder does not exist, create a folder called **modular** in the main NetConfig directory.

3. There are two .fld files available. Move the .fld files named KAM-DEC-4ADC-MUX_5.0.2.fld and KAM-DEC-4ADC-MUX_5.0.2_appli_only into this **modular** folder.

4. Verify that the KAM-DEC-4ADC-MUX.sw2 file is somewhere in the main NetConfig directory (not in the **modular** folder). This file should not have a .txt extension or it will not work properly.

Note NetConfig reads each .sw2 file in its main directory and navigates to the directory given in these files to find the .fld files available. There may be a number of .sw2 and .fld files in your NetConfig directory for other modular products. These will not interfere with the update.

5. Locate the module(s) with version 1.0.4 software to be upgraded in your frame and unplug each one. Plug each one back in to reset before beginning the upgrade.

CAUTION During the download, the module will have no video output, so be sure the module is off-air before upgrading.
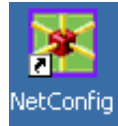
6. Open NetConfig.

7. Navigate to the frame containing the KAM-DEC-4ADC-MUX modules running version 1.0.4 you wish to upgrade on the left of the screen in the network tree.

Note If you have not used NetConfig before, refer to the *NetConfig Instruction Manual* included during installation in the main NetConfig directory in pdf format (NetConfig.pdf).
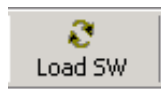
8. Click on the **Load SW** button on the top of the NetConfig toolbar.

Note Different versions of NetConfig may differ in the software update directory structure used for accessing software. This manual shows NetConfig version 2.0.6. Refer to the NetConfig manual for the version you are using.

9. This will bring up the Load Software screen (Figure 43).

10. Open the **modular** directory. Locate the following file name in the Modular directory and select it so it is highlighted:

- KAM-DEC-4ADC-MUX_appli_only (KAM-DEC-4ADC-MUX_5.0.2)

Figure 43. NetConfig Load Software Screen – First .fld Download
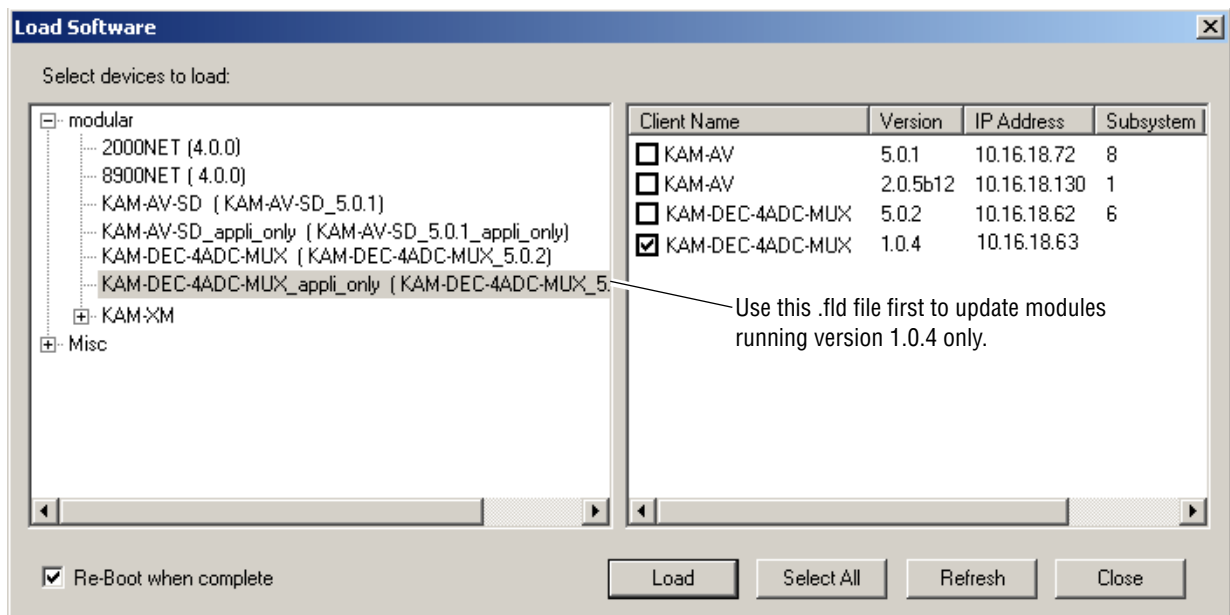
11. In the Client Name list on the right side of the Load Software screen, find the KAM-DEC-4ADC-MUX modules. Check the corresponding checkboxes for KAM-DEC-4ADC-MUX modules running version 1.0.4 only in the window on the right to indicate you wish to update these devices. For updating modules running version 5.0.2 or later, go to Step 18 on page 73.

> **CAUTION** All Kameleon type modules will also appear in the list of Client Names, do not attempt to download this first .fld software to any module but a KAM-DEC-4ADC-MUX module at version 1.0.4.

12. Check the **Re-Boot when complete** checkbox in the lower left corner of the screen.

13. Click on the **Load** button at the bottom of the Load Software screen to begin the update.

14. If the load has been successful, a popup will appear as shown in Figure 44. Click the **OK** button.

Figure 44. Load Successful Popup
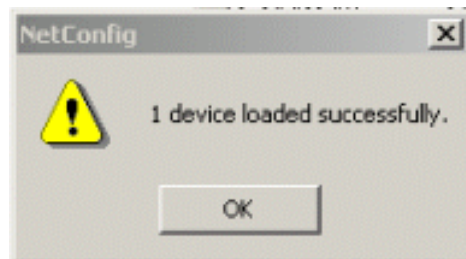
15. Allow the reboot to complete.

16. Open the Status web page of each module. The Status web page will show the front module in a red FAULT condition. Check that the software version at the bottom of the screen has been updated to version 5.0.2.

17. Bring up NetConfig again and click on the **Discover** button in the top menu bar. Then click on the **Load SW** button.

18. Select the KAM-DEC-4ADC-MUX (KAM-DEC-4ADC-MUX_5.0.2) selection in the modular directory on the left so it is highlighted (Figure 45).

19. Select the same Client Names on the right as the first download. Note that each version will now report 5.0.2.

    If you are updating other modules that are currently at version 5.0.2 and later, you may also select their Client Name(s) on the right of the screen to update at this point.

20. Check the **Re-Boot when complete** checkbox in the lower left corner of the screen.

21. Press the **Load** button to download the full package to the module(s) selected.

22. If the load has been successful, a popup will appear as shown in Figure 44 on page 72. Click the **OK** button in the popup.

23. Allow the reboot to complete.

Figure 45. NetConfig Load Full Package
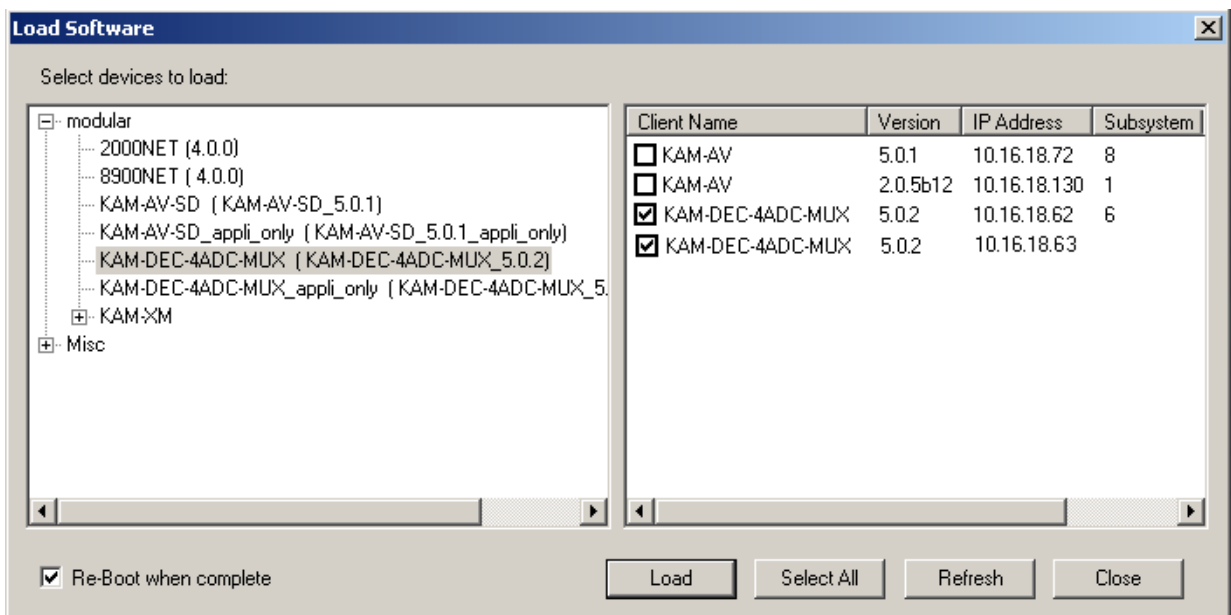
24. Open the Status web page of each module and verify the module has no fault indicators.

25. Go to the E-MEM web page and select the **Recall** button to restore factory settings. Verify proper operation of the module.

26. This completes the update. Refer to the latest KAM_DEC-4ADC-MUX Release Notes in PDF format for an overview on new functionality for this software release.

Specifications

Note Specifications are subject to change without notice.

Table 6. SDI Output Specifications

Parameter	Value
SDI Output	
Number of outputs	1
Signal type	Serial digital video conforming to SMPTE259M 10-bit 4:2:2 component digital signal
Signal level	800 mV ±10%
Output impedance	75 Ω
Connector type	75 Ω BNC on rear module
DC offset	< 0.5 V when terminated into 75 Ω
Output return loss	> 15 dB up to 270 MHz
Jitter	Conforms to SMPTE17.12/002 <400 ps above 1 KHz
Rise/fall time	700 – 900 ps (20 – 80% amplitude)
SDI I/O Control Parameters	
Vertical blanking processing	Line by line blank

Table 7. Composite Input Specifications

Parameter	Value
Composite Input	
Signal types	Composite analog video conforming to: NTSC (525/59.9) SMPTE170M PAL-B/PAL-I (625/50) CCIR 624-4 PAL-M (525/59.9) CCIR 624-4 (note, PAL-M input not supported by 2000GEN)
Level	0.5 V p-p to 2 V p-p, 1 V p-p nominal
Impedance	75 Ω terminating
Signal source	75 Ω BNC on rear module or internal signal
Return loss	> 40 dB to 5.75 MHz
Common mode rejection ratio	> 60 dB to 60 Hz
HUM peak	< 4.5 V p-p
Composite In Performance	
Sampling	27 MHz (2x oversampling)
Input quantization	12 bits
Overall processing accuracy	10 bits
Luma frequency response	± 0.1 dB to 5.5 MHz
Chroma (R-Y,B-Y) response	-1.5 dB @ 1.3 MHz
Group delay error	< 5 ns to 5.5 MHz
Chroma/luma delay	< 10 ns
Luma non-linearity	< 0.15%
K factor (2T)	< 0.5%
Line tilt	< 0.5%

Table 7. Composite Input Specifications

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

Table 8. Audio ADC Specifications

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

Table 9. Frame Sync/Timing Specifications

Parameter	Value
Video Frame Sync Timing Control Parameters	
Delay adjustment (main)	0 to 1 frame 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. Multiplexing Specifications

Parameter	Value
MUX 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)
Insert	1 group
Bits/sample on inserted audio	20/24 bits, selectable
Buffer size	170 samples
MUX delay	1.77 ms
Distribution	Evenly distributed, minimum of 3 samples per line, maximum of 4 samples per line except near switching lines Switch line and nearby lines (lines 4, 5, 6, 317, 318, 319 for 625; 8, 9, 10, 270, 271, 272 for 525) have 0 samples

Table 12. Audio Processing Specifications

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

Table 13. Electrical Length Specifications

Parameter	Value
Electrical Length	
Composite In to SDI Out (2D decoder) Composite In to SDI Out 3D decoder)	1 line + 16 µs 3 lines + 52 µs
Analog Audio to SDI Out (MUX)	3.0 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 46).

- If power is not present, check the fuse on the +24 V input (Figure 46).

- Check for presence and quality of input signals.

- Verify that source equipment is operating correctly.

- Check cable connections.

Figure 46. Location of Module Fuse and Voltage Testpoints
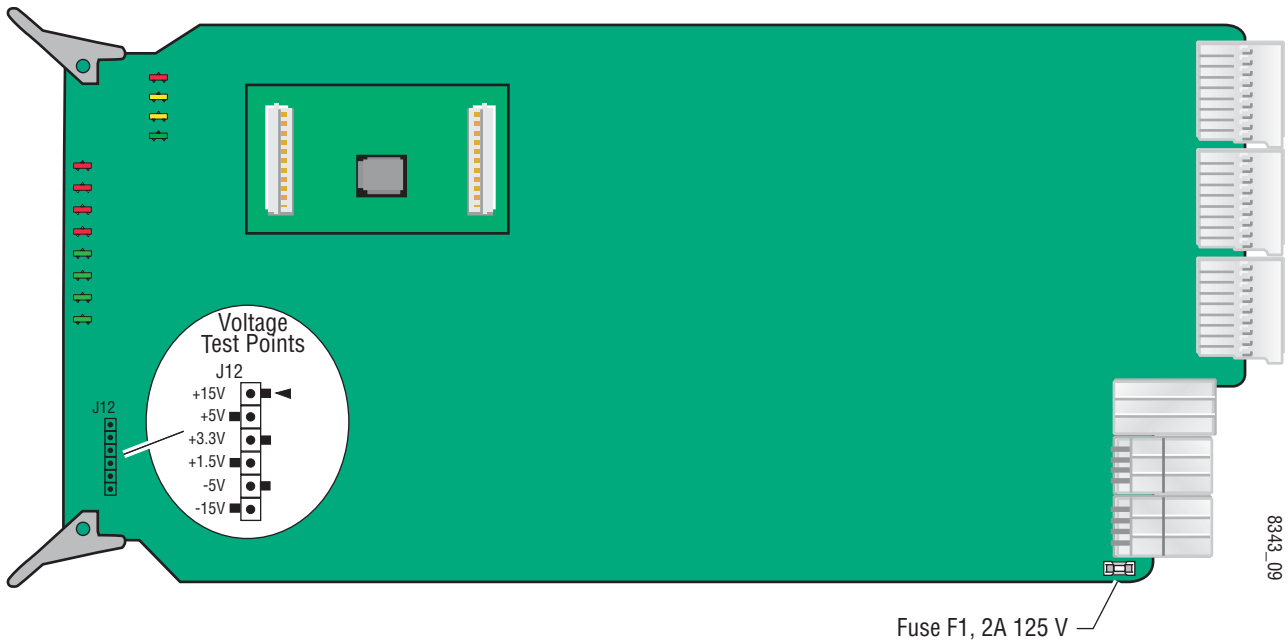
Refer to Figure 9 on page 15 for the location of PWR LED and Table 2 on page 16 for proper LED indications.

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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Numerics