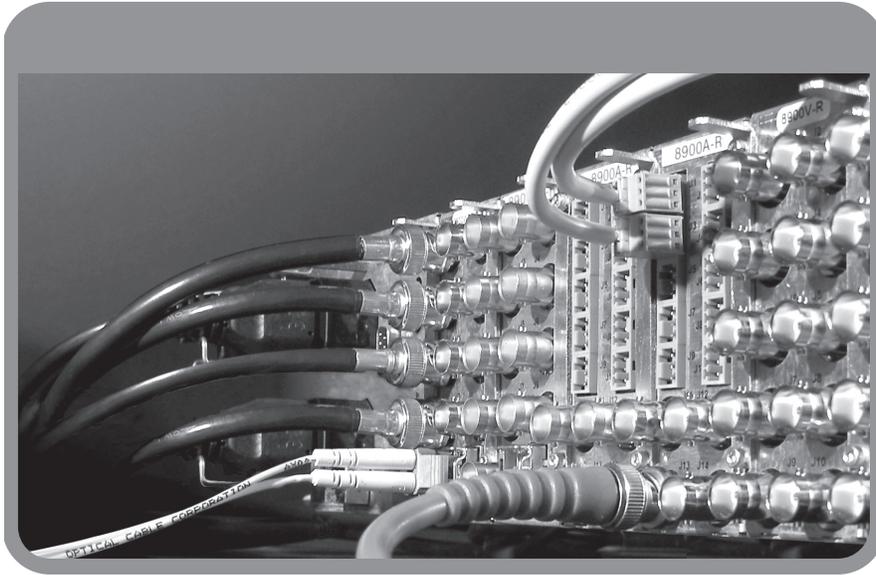**grass valley**

8949MDA-CXF/-SXF
HD/SD MONITORING DAs

Instruction Manual

Software Version 2.0.1

KEMA

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CERTIFICATE

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Including its implementation, meets the requirements of the standard:

ISO 9001:2008

Scope:
The design, manufacture and support of video and audio hardware and software products and related systems.

This Certificate is valid until: June 14, 2012
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8949MDA-CXF/-SXF
HD/SD MONITORING DAs

Instruction Manual

Software Version 2.0.1

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Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive, the United States Environmental Protection Agency, and U.S. state and local agencies.

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For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949 or 530-478-4148, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.thomsongrassvalley.com/environment

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Preface

About This Manual

This manual describes the features of the 8949MDA-CXF and 8949MDA-SXF modules in the GeckoFlex Signal Processing System family. As part of this module family, it is subject to Safety and Regulatory Compliance described in the *GeckoFlex Frames 8900FX/FF/FFN Signal Processing System Instruction Manual.*

All Modular product manuals can be found on-line in PDF format at this link:

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8949MDA-CXF and 8949MDA-SXF Modules

Introduction

The 8949MDA-CXF or 8949MDA-SXF module performs HD/SD equalization and reclocking for distribution of SD/HD signals. It also provides four dedicated downscaled electrical outputs for viewing the input video in SD-SDI format (with the 8949MDA-SXF module) or composite format (with the 8949MDA-CXF module), with aspect ratio controls for downscaled HD video on both models.

The 8949MDA-CXF module will distribute the original SD-SDI or HD-SDI input signal on four dedicated electrical outputs as well as up to two optional fiber optic outputs. The input signal from one electrical input or one of two optional fiber optic inputs is downscaled to composite video and distributed from four dedicated electrical outputs. Controls are provided for setting the aspect ratio of downscaled HD video for the desired monitor viewing. A color bars test signal may be enabled and a control is provided for enabling or disabling setup on NTSC outputs.

The 8949MDA-SXF module will distribute the original SD-SDI or HD-SDI input signal on four dedicated electrical outputs as well as up to two optional fiber optic outputs. The input signal from one electrical input or one of two optional fiber optic inputs is downscaled to SD-SDI video and distributed from four dedicated electrical outputs. Only the EDH CRC packet data from the original video input is included in the downscaled output signal. Controls are provided for setting the aspect ratio of downscaled HD video for the desired monitor viewing.

The aspect ratio controls include Anamorphic, Letterbox, 4x3 Center Cut, or 14x9 Center Cut. Aspect ratio controls are only available when an HD input signal is being downscaled.

Fiber optic interfaces can be added by ordering one of three types of optional SFP Fiber optic submodule kits to add two fiber inputs (Dual Receiver), two fiber outputs (Dual Transmitter), or one fiber input and one fiber output (Transceiver). The optional SFP strap-mount optical submodule device is mounted on the module circuit board and must be ordered separately. See Table 2 on page 16 for submodule types.

The two models must be installed in a GeckoFlex frame and require the presence of an 8900WFR-XFR rear module. Parameters can be set with local onboard controls or using remote controls (web browser or Newton Control Panel when an 8900NET (Net Card) module is present in the frame.

Features

The 8949MDA-CXF and 8949MDA-SXF module features include:

- Multi-format HD/SD video input on one electrical input or one of two optional fiber optic inputs (only one input active at a time),

- Outputs for the 8949MDA-CXF module include:

  - Four reclocked SD/HD electrical outputs and two optional reclocked SD/HD fiber optic outputs distributing the original input signal (all outputs can be active at the same time),

  - Four electrical composite outputs for monitor viewing downscaled HD or SD video and a color bars test signal and NTSC setup controls, with aspect ratio controls for HD video signals,

- Outputs for the 8949MDA-SXF module include:

  - Four reclocked SD/HD electrical outputs and two optional reclocked SD/HD fiber optic outputs (with optional fiber submodule) distributing the original input signal (all outputs can be active at the same time),

  - Four electrical SDI outputs for monitor viewing (generating a new EDH CRC packet on the output signal) with aspect ratio controls for HD video signals,

- Aspect ratio controls include Anamorphic, LetterBox, 4x3 Center Cut, or 14x9 Center Cut for downscaled HD video,

- One strap-mount SFP fiber optic submodule option can be installed to add up to two fiber optic inputs (only one input active at a time) and up to two fiber outputs (both active) depending on the option model. Refer to the list of available options in Table 2 on page 16,

- Auto cable equalization for up to 330m of cable in the case of SD signals and for up to 125m of cable in the case of HD signals,

- Alarm (signal presence detection) and status management,

- SNMP and product health monitoring is supported through the 8900NET (Net Card) module with applications such as NetCentral, and

- Remote control and monitoring support: web pages, Newton control panel, NetConfig management system.

Installation

The front and the rear modules are delivered together as a set: 8949MDA-CXF front module with the 8900WFR-XFR rear module or 8949MDA-SXF front module with 8900WFR-XFR rear module. Fiber optic submodules are optional and must be ordered separately. Fiber optic sub-module options available are listed in Table 2 on page 16.

The 8949MDA-CXF and 8949MDA-SXF front modules can be plugged in and removed from a GeckoFlex frame with power on. When power is applied to the module, LED indicators reflect the initialization process (see *Power Up* on page 25).

CAUTION   Use anti-static precautions when installing and removing the optional fiber optic submodule, see *Fiber Optics Submodule Overview* on page 16.

Local Configuration

If there is no 8900NET (Net Card) module in the GeckoFlex frame for remote monitoring and configuration, you will need to configure the module using the local onboard controls before installing the front module.

Local configuration of the 8949MDA modules consists of two DIP switches (S1 and S2) highlighted in Figure 1. Not all parameters can be set using the local controls. A summary of Local and Remote (web page and Newton Control Panel) parameters is provided in Table 9 on page 57. Refer to Figure 2 and Table 1 on page 12 for using S1 and S2.

*Figure 1. Configuration Switches on 8949MDA Module*

Local configuration switches S1 and S2
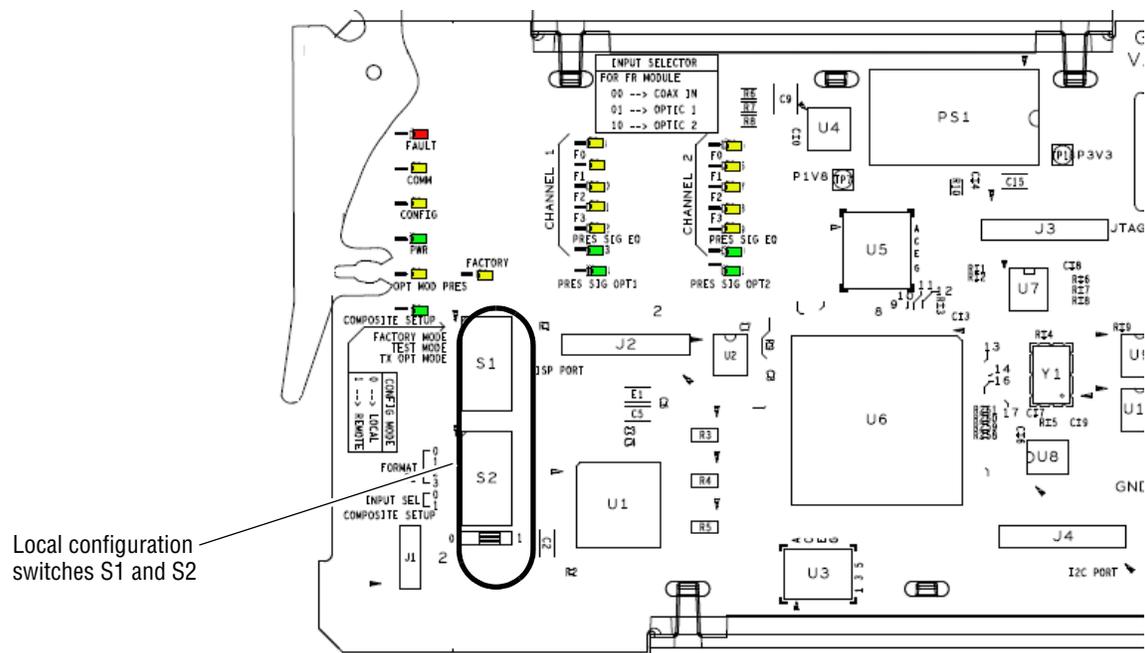
Configuration Switches S1 and S2

Figure 2 gives a photographic illustration of switches S1 and S2 and related silkscreened information. Table 1 gives the parameters set with the onboard switches S1 and S2 on the 8949MDA module circuit board.

Figure 2. Onboard Configuration Switches, S1 and S2
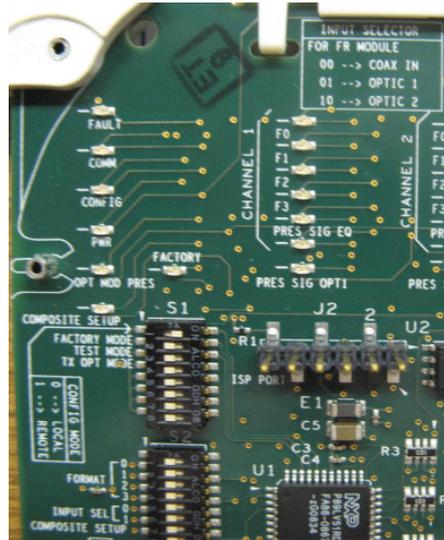
Note   Remote control settings made with the web interface will override local settings. To lock out remote control, set the Config Mode to **Off**.

Table 1. Switch S1 and S2 Settings

| Switch 1	Function	Pin	0 (Left/Off)				1 (Right/On)		
	Config Mode	1	Local mode (Remote control locked out)				Remote mode		
	Factory Mode	2	Off				Factory use only		
	Test Mode	3	Off				Factory use only		
	Tx Opt Mode[1]	4	Off (fiber optic outputs disabled)				On (fiber optic outputs enabled)		
	–	5-8	Not Used						
Switch S2									
	–	1	Not Used						
	Format (Input)		Setting	Auto	1080i/50	1080i/59.94	720p/50	720p/59.94	480i/59.94	576i/50
		2	0	0	0	0	0	0	0	0
		3	1	0	0	0	0	1	1	1
		4	2	0	0	1	1	0	0	1
		5	3	0	1	0	1	0	1	0
	Input Select		Setting	Coax In		Optic 1	Optic 2			
		6	0	0		0	1			
		7	1	0		1	0			
	Composite Setup	8	Off				On		

[1] Fiber optic outputs are present when an optional Transmitter submodule (TX1 and TX2) or a Transceiver submodule (TX2) is installed.

Module Placement in the GeckoFlex Frame

There are ten rear and front slot locations in the 2 RU frame to accommodate audio/video modules (Figure 3). The 8949MDA-CXF/-SXF module set may be plugged into any one of the available GeckoFlex frame slots. The module requires a single rear slot.

Note   Use anti-static precautions when handling the module. As the module can be changed when the GeckoFlex is powered on, before removing the cover, please put an anti-static bracelet tied to a metal part of the frame.

Figure 3. GeckoFlex Frame
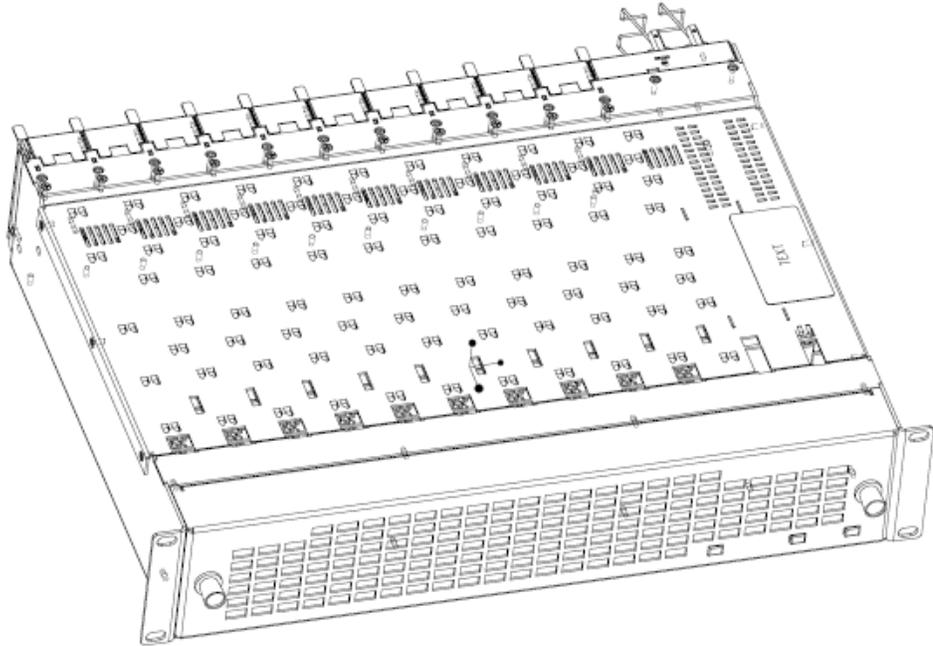
Module Installation Precautions

Please read and follow the precautions listed below before installing the front and rear modules, and any fiber optic option submodules:

• Use standard anti-static procedures during installation. As modules can be installed or removed when the GeckoFlex frame is powered up, before removing the cover, please use an anti-static bracelet or heel strap tied to a metal part of the frame.

• Install the rear module first, then the fiber optic submodule option (if used) on the back of the front module circuit board, then install the front module.

Note   If using onboard configuration, set the configuration switches described in *Configuration Switches S1 and S2* on page 12 first before installing the front module.

• When installing or removing a rear module, loosen or tighten the screws holding the retainer clips to the frame manually with the retainer clip tool provided inside the front cover of the frame or use a 2 mm (5/64") hex screwdriver. Please do not use an electric screwdriver.

Note   On newer 751- version GeckoFlex frames, a Rear Retainer Clip removal tool and 2 extra retainer clips and screws for installing them are provided on the inside of the frame cover.

• Make every effort to leave the screws holding the retainer clips in place (do not remove them completely). They are very small and can easily drop into other equipment causing a shorting hazard. (Two turns of the screw should be enough to loosen the screws, 3 turns or more will remove it.)

• When installing a rear module, tighten the screws on the retainer clips just until snug. Do not apply more force than is necessary to seat the rear module. Do not use an electric screwdriver. Refer to the rear retainer screw torque specification in the **Mechanical** section of Table 5 on page 50.

Rear Module Installation

To install the rear module, refer to Figure 4 and the instructions below:

1. To remove a blank rear adapter cover (or a rear module already present), manually loosen the two screws holding each retainer clip on the rear adapter cover or rear module to the frame with the retainer clip tool provided inside the front cover of the frame (newer model frames only) or a 2 mm (5/64") hex screwdriver. Do not remove the screws.

Note To remove a rear module already installed, follow the same steps. It is helpful to first remove the front module so the rear can be pulled out more easily.

1. After loosening the retainer clip screws, pull up on each retainer and completely remove it, leaving the screws in place.

2. Remove the blank rear adapter cover by inserting needlenose pliers or the retainer clip into the slots in the blank cover and pulling it off.

3. Insert the rear module into the empty slot, guiding it carefully.

4. Replace each retainer clip over the two screws on both sides of the module and push down to seat the retainer clip.

5. Tighten the two screws on each retainer clip just until they come into contract with the retainer clip then tighten about a 1/4 turn more (maximum torque specification is 4-5 inch lb/0.45-0.6 Nm). Do not force or torque the screws too tightly. Clips should not bend or bow.

Note All unused rear slots in a GeckoFlex frame should have a blank rear adapter cover installed.

Figure 4. Installing Rear Module (751- Version Frame)

Use retainer clip or needlenose pliers to pull out blank after removing retainer clips
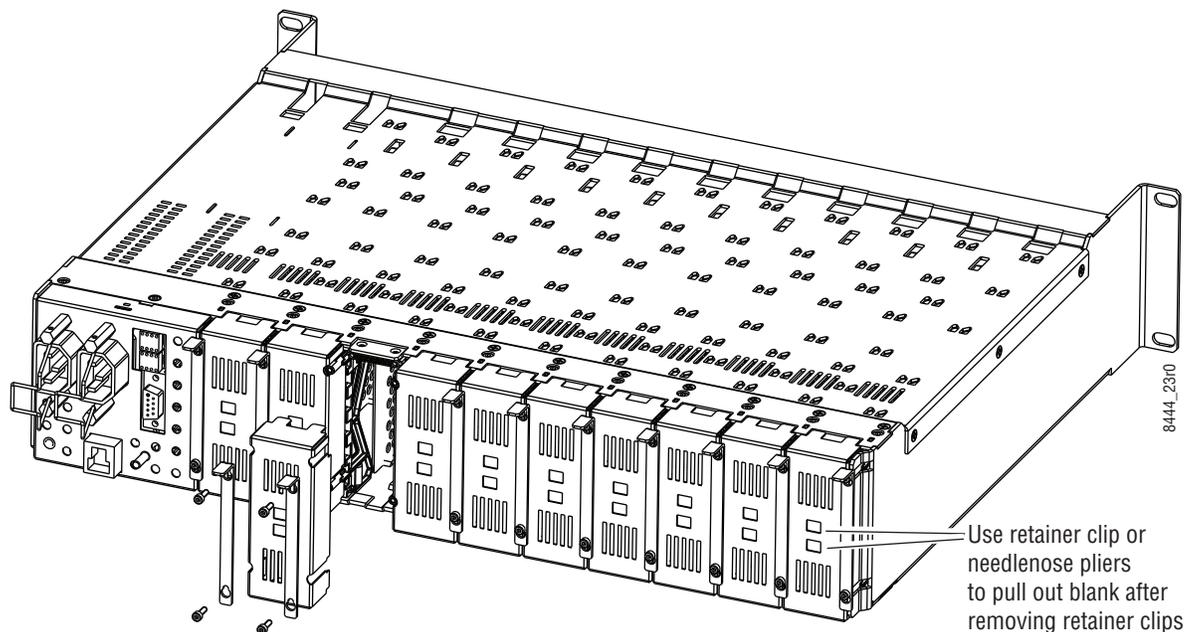
Fiber Optics Submodule Overview

Before installing the front module, if using an optional SFP submodule, install it on the front module first. For a list of the SFP fiber optic submodules options available, refer to Table 2. If not using a submodule, proceed to *Front Module Installation* on page 20.

The 8949MDA front modules can be populated with any one of the SFP (Strap Mount Video Small Form-factor Pluggable) dual transmitter, transceiver, or dual receiver submodules listed in Table 2.

Table 2. SFP Fiber Optic Submodule Option Models

SFP Model Number	Transmitter Frequencies Supported	
SFP-CWDM3G-1-K	1470 nm	1490 nm
SFP-CWDM3G-2-K	1510 nm	1530 nm
SFP-CWDM3G-3-K	1550 nm	1570 nm
SFP-CWDM3G-4-K	1590 nm	1610 nm
	Receiver Frequencies Supported	
SFP-13103G-M1DRX-K	1270 nm >1610 nm	
	Transceiver Frequencies Supported	
SFP-13103G-M1TRX-K	1310 nm (input) and 1310 nm (output)	

If you have ordered an SFP fiber optic submodule it will come in a separate kit with an SFP fiber optic submodule, a mounting bracket, and a 2-channel fiber jumper cable assembly (shown in Figure 5). The fiber optic connector ends (ferrules) are protected by covers that must be removed before cabling.

Figure 5. SFP Fiber Optic Kit
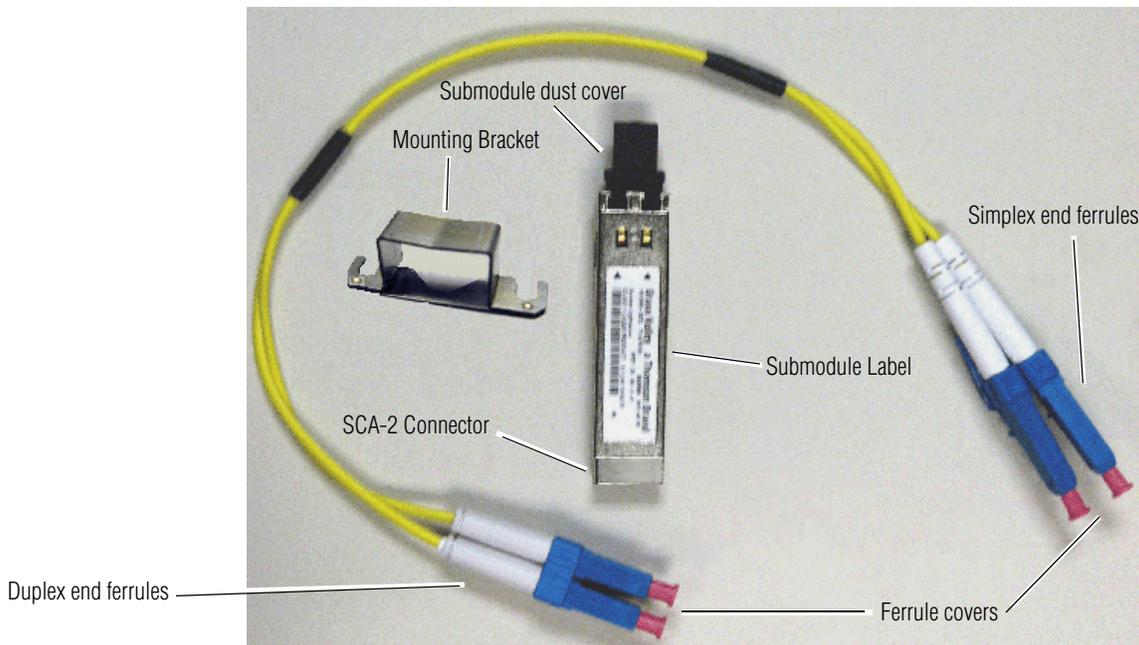
## Fiber Optic Cleaning Requirement

Before making any fiber optic cable mating connections and after every de-mating cycle, use an industry standard fiber optic cleaning kit, including oil-free compressed air, to clean the fiber connectors and the connectorized fiber end ferrules. This helps ensure optimum performance of the fiber optic interface. Industry standard fiber optic cleaning kits can be purchased on the web and in electronics stores.

Install Mounting Bracket on Submodule

Install the mounting bracket onto the submodule as illustrated below.

1. Insert the narrow end (SCA-2 connector) of the submodule into the mounting bracket, label side up with the open slots on the bracket pointing to the rear as shown by the direction of the arrow in Figure 6.

Figure 6. Mounting Bracket
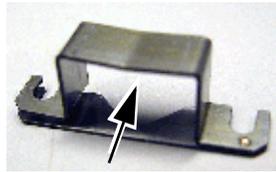
2. Attach the mounting bracket to the submodule by sliding the bottom part of the bracket under the V-connection (Figure 7) on the bottom side of the submodule to hold it in place. Make sure the open bracket slots point towards the SCA-2 (electrical) connector on the submodule.

Figure 7. Attach Bottom of Bracket to Submodule

V-connection

SCA-2 (electrical) connector
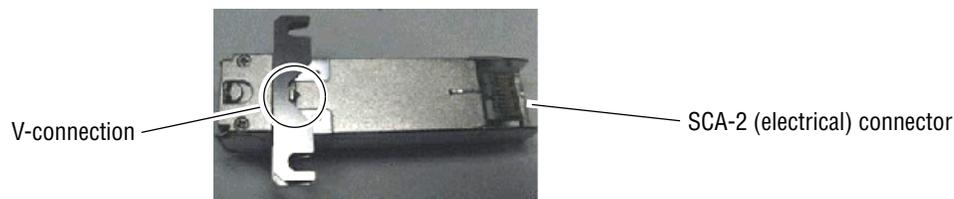
3. The finished installation should look like the example in Figure 8.

Figure 8. Finished Bracket Mounting

SCA-2 (electrical) connector

Jumper cable connectors
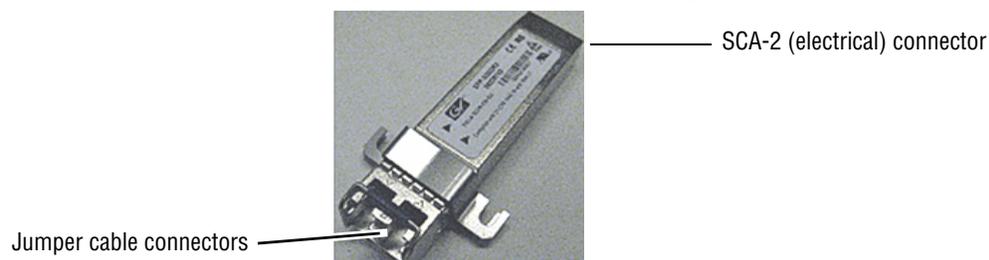
Fiber Optic Submodule Installation

Once the bracket has been installed on the submodule, install the fiber optic submodule on the back (solder) side of the 8949MDA-CXF or 8949MDA-SXF front module, as follows.

1. Remove the black rubber dust cover from the submodule.

2. On the back (solder) side of the front module, locate the two screws and the SCA-2 connector where the submodule will be installed (Figure 9).

3. Loosen the two screws slightly so you can slide the submodule bracket straps underneath the screws and the SCA-2 connector end of the submodule slides over the SCA-2 connector.

4. Once the submodule is seated into the SCA-2 connector and the straps are completely under the screws, tighten the screws to hold the submodule in place.

Figure 9. Installing Strap-Mount SFP Submodule
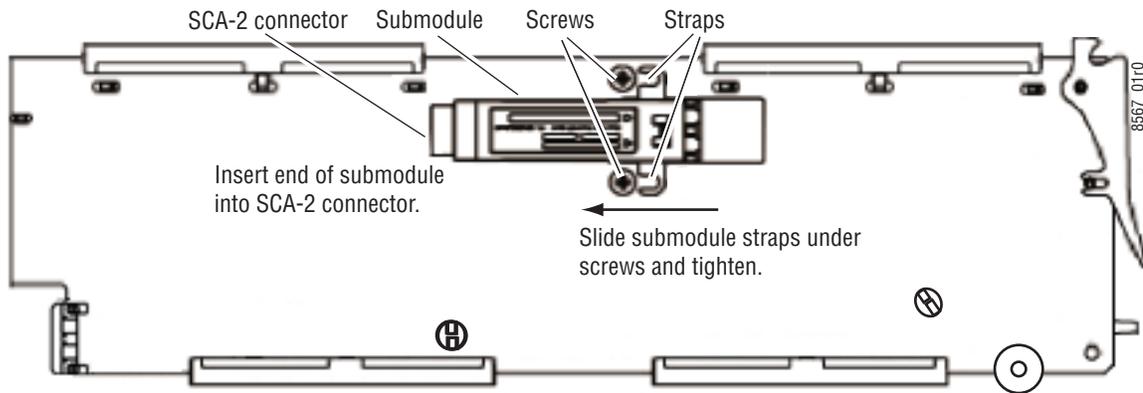
5. Before installing the jumper cable assembly, remove the protective covers from the ferrule ends of the cable and clean all fiber optic surfaces on the duplex and simplex connectors of the 2-channel fiber jumper cable assembly and the SFP submodule connector with a standard fiber optic cleaning kit as described in *Fiber Optic Cleaning Requirement* on page 17.

6. After removing the covers and cleaning the fiber optic connectors, carefully attach the duplex ferrule end of the 2-channel fiber jumper cable assembly to the submodule until the two connectors snap into place (top of Figure 10).

7. Guide the 2 fiber jumper cables around towards the front of the board and slip them through the two white plastic cable guides to hold them in place.

8. Find the ferrule end of the simplex (single) fiber jumper cable that corresponds to the top duplex cable (labeled A for clarity in this illustration) and after removing the protective cover and cleaning the connector, connect it to the bottom of the rear fiber connector (labeled A) as shown in Figure 10.

9. Find the ferrule end of the simplex (single) fiber jumper cable that corresponds to the bottom duplex cable (labeled B) and after removing the protective cover and cleaning the connector, connect it to the bottom of the rear fiber connector (labeled B) as shown at the bottom of Figure 10.

10. This completes the installation of the submodule.

*Figure 10. Installing Fiber Jumper Cables*
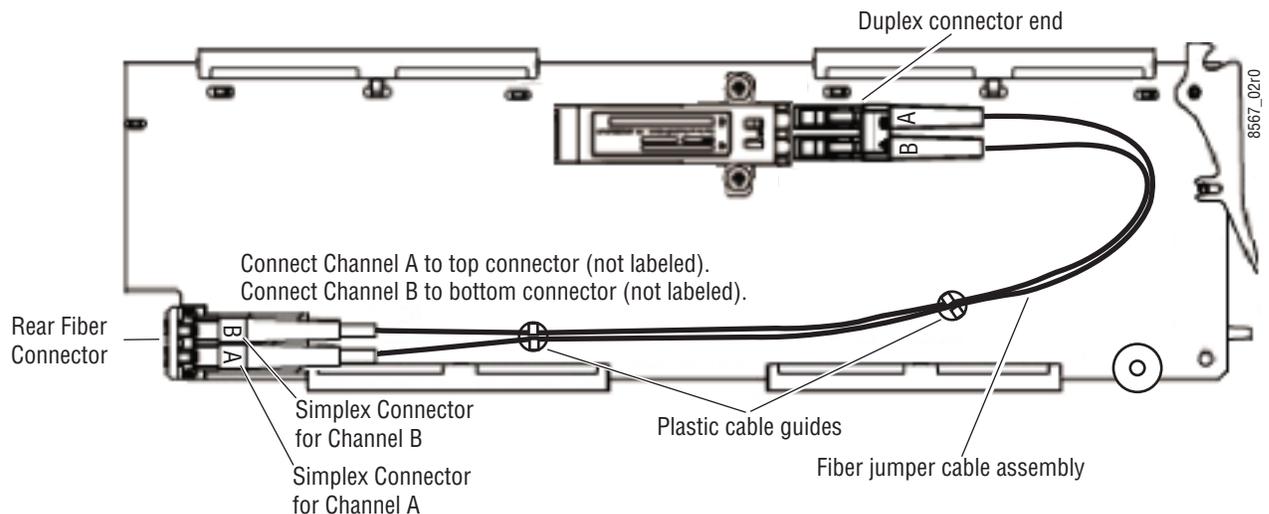
Front Module Installation

After installing the rear module and the fiber optic submodule option if purchased, if an 8900NET (Net Card) is not present in the frame, configure the module with front edge onboard controls as described in *Configuration Switches S1 and S2* on page 12, before installing the front module. If you have an 8900NET card, follow the configuration instruction in *Configuration* on page 27 after installing the front module:

1. Remove the front cover of the frame if required.

2. Locate the front slot corresponding to the corresponding rear module.

3. Insert the front module so that the plastic card guides on the module top and bottom edges go over the upper and lower raised rail guides on the right of the top and bottom of the slot (Figure 11).

4. Carefully slide the module into the rear connector, making sure the fiber optic rear connector is properly aligned.

5. Lock the front module ejector tab into the locking pin.

Figure 11. Front Module Installation
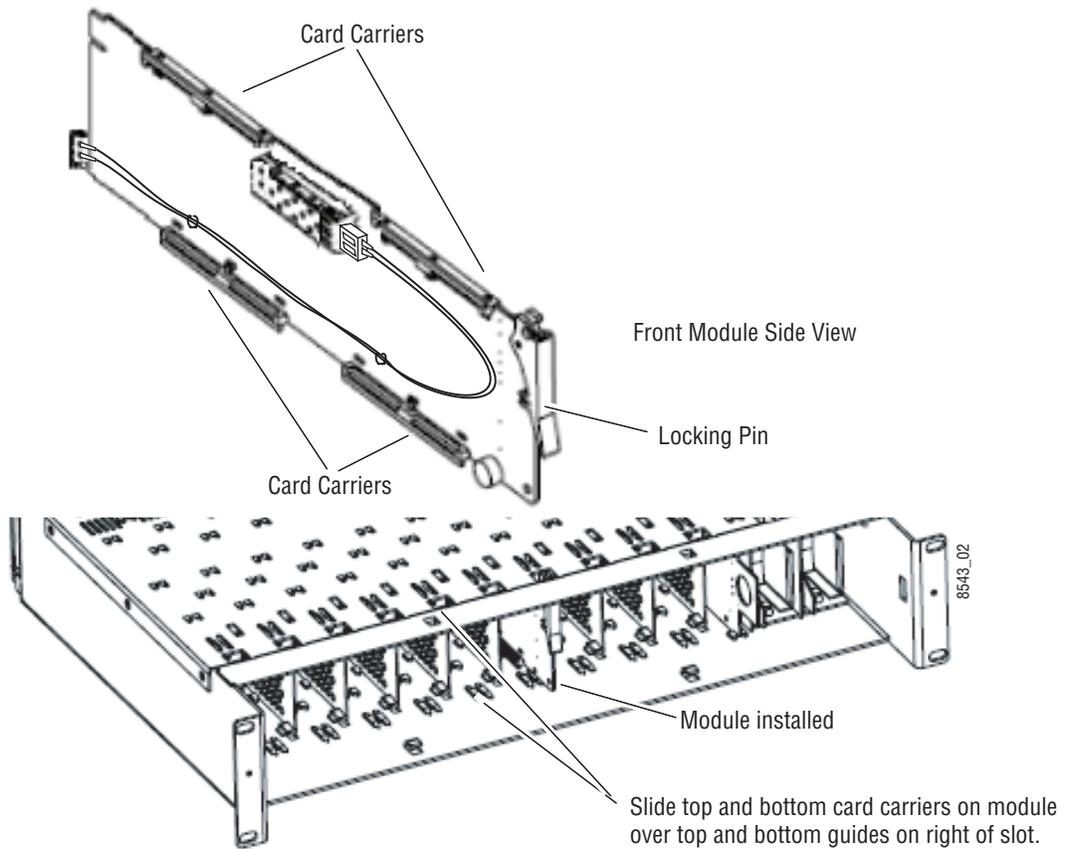
Cabling

Cabling to the 8949MDA-CXF or 8949MDA-SXF module is done on the 8900WFR-XFR rear module BNCs and the fiber connector when an optional fiber optic submodule is installed.

Cabling of the rear module depends on presence and type of fiber optic submodule option listed in Table 2 on page 16 summarized as follows:

- 8949MDA-CXF/-SXF with no fiber optic submodule option (electrical only),

- 8949MDA-CXF/-SXF with the Dual Receiver fiber optic submodule,

- 8949MDA-CXF/-SXF with any Dual Transmitter fiber optic submodule, and

- 8949MDA-CXF/-SXF with the Transceiver fiber optic submodule option.

Note   Fiber input and output connections must be cleaned and the protective covers removed from the cable ends before cabling as described in *Fiber Optic Cleaning Requirement* on page 17.

Video Input

The 8949MDA-CXF or 8949MDA-SXF will accept any of the video standards listed in the input specifications in Table 5 on page 50.

For both module types, the SD or HD video input to the module can be selected from one of the following three sources, depending on the presence and type of fiber optic submodule option:

- Electrical BNC, J9 (always available)

- Fiber Input RX 1 or RX 2 (requires Dual Receiver submodule), or

- Fiber Input RX 1 (requires Transceiver submodule).

All three sources can be connected but only be one input can be active at any time. The active input is configured with local onboard controls (*Configuration Switches S1 and S2* on page 12) or using the Settings web page (page 37) or the Newton Control Panel ().

Video Outputs

The 8949MDA-CXF or 8949MDA-SXF outputs conform to the video standards listed in the output specifications in Table 5 on page 50. Both modules require the 8900WFR-XFR rear module.

The 8949MDA-CXF has four electrical outputs for distributing the original SD-SDI or HD-SDI input signal. It also provides four downscaled outputs for monitoring each output in PAL or NTSC format with controls for enabling or disabling composite setup (NTSC only) and a composite color bars test signal, and aspect ratio controls for downscaled HD video.

The 8949MDA-SXF has four electrical outputs that distribute the original SD-SDI or HD-SDI input signal. It also provides four downscaled monitoring outputs in SD-SDI format with aspect ratio controls for downscaled HD video

Electrical outputs are always enabled. Fiber optic outputs must be enabled during configuration using the local onboard controls (*Configuration Switches S1 and S2* on page 12), the Settings web page (page 37), or the Newton Control Panel.

Note   Fiber optic outputs available depend on the presence and type of fiber optic submodule installed as listed in Table 2 on page 16.

• Electrical output BNCs (always available and enabled)

• Fiber Output TX 1 and TX 2 (requires Dual Transmitter submodule), or

• Fiber Output TX 2 (requires Transceiver submodule).

Cabling

Cabling to the 8949MDA-CXF or 8949MDA-SXF module is done on the 8900WFR-XFR rear module.

For fiber optic submodule option cabling, refer to the following:

- Before making fiber optic connections, refer to the *Fiber Optic Cleaning Requirement* on page 17.

- For available submodule types, refer to Table 2 on page 16.

- Attenuation requirements may be necessary on some fiber connections. Refer to *Attenuation Requirements* on page 52.

Cabling of the rear module depends on what fiber optic submodule option is installed as listed below:

- 8949MDA-CXF and 8949MDA-SXF without fiber optic submodule option (electrical only),

- 8949MDA-CXF and 8949MDA-SXF with Dual Receiver submodule

- 8949MDA-CXF and 8949MDA-SXF with Dual Transmitter submodule, and

- 8949MDA-CXF and 8949MDA-SXF with Transceiver submodule.

The 8949MDA-CXF and the 8949MDA-SXF will accept any of the video standards listed in the input specifications in Table 5 on page 50.

Table 3 gives the inputs and the possible video output connections for the 8900WFR-XFR, the rear modules used with the 8949MDA front modules. The rear cabling is illustrated in Figure 12 on page 24 for the 8949MDA-CXF and Figure 13 on page 24 for the 8949MDA-SXF module.

Table 3. 8900WFR-XFR Rear Module Video Cabling

Fiber Optic Submodule Option	Video Inputs Coax	Video Outputs Coax	8949MDA-CXF PAL/NTSC Monitoring Outputs	8949MDA-SXF SDI Monitoring Outputs	Fiber 1 Input or Output	Fiber 2 Input or Output
No submodule	J9	J1, J3, J5, J7	J2, J4, J6, J8	J2, J4, J6, J8	N/A	N/A
Dual Receiver	J9	J1, J3, J5, J7	J2, J4, J6, J8	J2, J4, J6, J8	RX: 1270 to 1610 nm	RX: 1270 to 1610 nm
Dual Transmitter (1310nm)	J9	J1, J3, J5, J7	J2, J4, J6, J8	J2, J4, J6, J8	TX: 1310 nm	TX: 1310 nm
Dual Transmitter (CWDM) 1470/1490nm	J9	J1, J3, J5, J7	J2, J4, J6, J8	J2, J4, J6, J8	TX: 1470 nm	TX: 1490 nm
Dual Transmitter (CWDM) 1510/1530nm	J9	J1, J3, J5, J7	J2, J4, J6, J8	J2, J4, J6, J8	TX: 1510 nm	TX: 1530 nm
Dual Transmitter (CWDM) 1550/1570nm	J9	J1, J3, J5, J7	J2, J4, J6, J8	J2, J4, J6, J8	TX: 1560 nm	TX: 1570 nm
Dual Transmitter (CWDM) 1590/1610nm	J9	J1, J3, J5, J7	J2, J4, J6, J8	J2, J4, J6, J8	TX: 1590 nm	TX: 1610 nm
Transceiver	J9	J1, J3, J5, J7	J2, J4, J6, J8	J2, J4, J6, J8	RX: 1310 nm	TX: 1310 nm

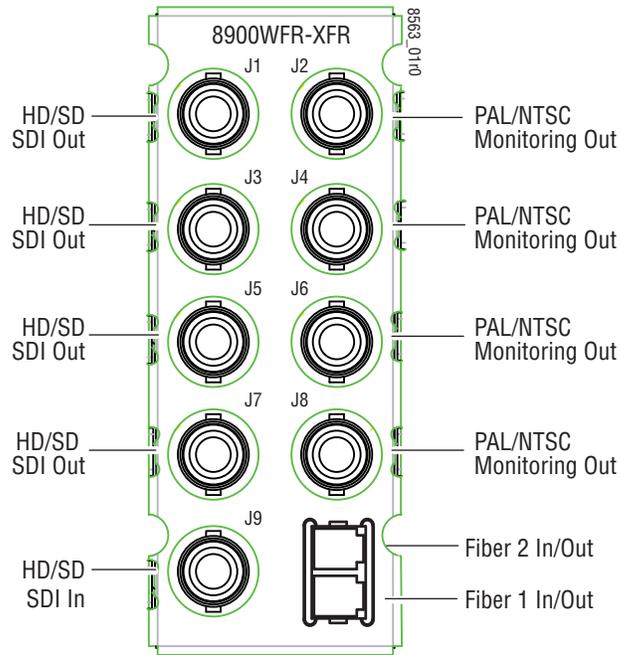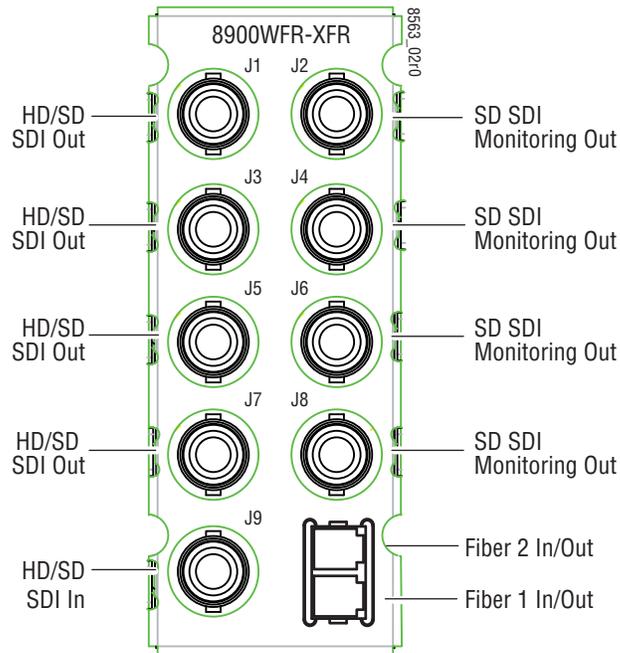*Figure 12. 8949MDA-CXF Cabling on 8900WFR-XFR Rear Module*

Figure 13. 8949MDA-SXF Cabling on 8900WFR-XFR Rear Module

Power Up

The onboard LED indicators are illustrated in Figure 14. Upon power-up, the green PWR LED should light and the CONFIG, FAULT and COMM LEDs should illuminate during the module initialization.

Note   When a module is first plugged into a GeckoFlex frame, the 8900NET module (if present) may report a momentary fault. This will clear once the module has booted up.

Operation Indicator LEDs

With a valid input signal connected, the Channel 1 PRES SIG LED EQ (input to BNC J9), OPT 1, and/or OPT 2 (depends on presence and type of fiber optic submodule) should be on. Refer to Table 4 on page 26 to see a complete list of possible operating conditions and the resulting indicator status.

Note   Channel 2 Monitoring Mode LEDs are not present or used at this time.

Figure 14. Front Module Indicator LED
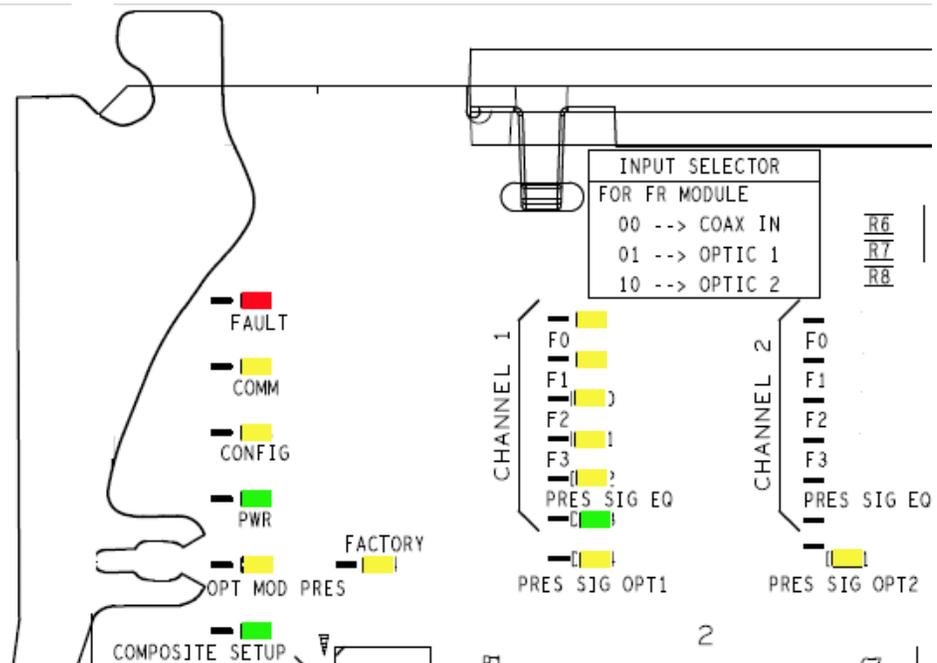
A red FAULT LED indicates an error situation and, when noted with the other indicator LEDs, can indicate a specific problem area. Table 4 describes signal output and LED indications for the various input/reference combinations.

Table 4. LED Indicators

LED	Indication				Condition
FAULT (red)	Off				Normal operation
	On continuously				Module has detected internal fault
COMM (yellow)	Off				No activity on frame communication bus
	Long flash				Location Command received by the module from a remote control system
	Short flash				Activity present on the frame communication bus
CONFIG (yellow)	Off				Module is in normal operating mode
	On continuously				Module is initializing, changing operating modes or updating firmware
PWR (green)	Off				No power to module or module's DC/DC converter failed
	On continuously				Normal operation, module is powered
PRES OPT MOD (yellow)	Off				Fiber optic submodule not installed
	On				Fiber optic submodule installed
COMPOSITE SETUP (green)	Off				Setup disabled
	On				Setup enabled
FACTORY (yellow)	Off				Normal operation
	On				Test mode or factory mode
MONITORING MODE (Channel 1 F0, F1, F2 and F3) (yellow)	F0	F1	F2	F3	
	Off	Off	Off	Off	0000 --> Auto
	Off	Off	Off	On	0001 --> 1080i/50
	Off	Off	On	Off	0010 --> 1080i/59.94
	Off	Off	On	On	0011 --> 720p/50
	Off	On	Off	Off	0100 --> 720p/59.94
	Off	On	Off	On	0101 --> 480i/59.94
	Off	On	On	Off	0110 --> 576i/50
Channel 1 PRES SIG EQ (green)	Off				No presence of signal on BNC J9 connector
	On continuously				Presence of signal on BNC on J9 connector
PRES SIG OPT 1 (yellow)	Off				No presence of optical signal on Fiber optic input 1
	On continuously				Presence of optical signal on Fiber Optic input 1
PRES SIG OPT 2 (yellow)	Off				No presence of optical signal on Fiber optic Input 2
	On continuously				Presence of optical signal on Fiber Optic Input 2

Configuration

The 8949MDA-CXF/8949MDA-SXF configuration and monitoring can be configured with front edge onboard controls when no 8900NET (Net Card) is present or using a web browser GUI interface or a networked Newton Control Panel when the 8900NET Network Interface module is present in the GeckoFlex frame (8900FFN).

Local Onboard Configuration with no 8900NET Module

When no 8900NET (Net Card) module is present, local onboard controls must be used to set module parameters (see *Local Configuration* on page 11.)

Web Browser Configuration with 8900NET Module

Refer to the *8900NET Network Interface Module Instruction Manual* available online in PDF format for information on the 8900NET (Net Card) Network Interface Module and setting up and operating the GeckoFlex 8900 frame network.

Note   Upgrade software and instructions for the 8900NET can be downloaded from the Grass Valley web site.

Newton Control Panel Configuration

A Newton Control Panel (hard and/or soft version) can be interfaced to the GeckoFlex frame over the local network when the 8900NET (Net Card) is present. Refer to the documentation that accompanies the Newton Modular Control System for installation, configuration, and operation.

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 factory default recalls.

An example of the Newton Configurator is shown in Figure 15. Newton Control Panel parameters are listed in Table 9 on page 57.

Figure 15. Newton Configurator Example

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:

• Web access will require some normal network time delays for processing of information.

• Configuration parameter changes may require pressing **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, and reporting status for SNMP and monitoring.

Refer to the Frame Status web page shown in Figure 16 on page 29. The 8900 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.

Refer to the Frame Status web page shown in Figure 16. The 8900 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 graphics on the web pages shown in this manual represent the use of a particular platform, browser and version of 8900NET module software. They are provided for reference only. Web pages will differ depending on the type of platform and browser you are using and the version of the 8900NET software installed in your system. This manual reflects an 8900NET module with software version 4.3.0, using Internet Explorer, the recommended web browser, and Windows XP operating system.

For information on status, fault monitoring and reporting shown on the module Status web page, refer to *Status Web Page* on page 32.

Figure 16. Frame Status Web Page

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

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

Refresh button for manual update of page

Bay 5-8949MDAs
Status
Configuration
Connections
Frame Alarm Reporting
LED Reporting
SNMP Reporting
Power Supply/Demand
1 8949MDA-SXF
2 Media Slot 2
3 Media Slot 3
4 8949MDA-CXF
5 8949MDA-CXF
6 Media Slot 6
7 Media Slot 7
8 8949MDA-SXF
9 Media Slot 9
10 Media Slot 10
11 8900NET
12 Power Supply 1
13 Power Supply 2

Status
Model: 8900FFN Description: Module Frame
Frame Location: Bay 5 Desktop
Frame Health Alarm WARN Temperature Status PASS
Power Status   PASS

Front Cover No Cover

Properties
Vendor   Thomson, Grass Valley Software Version 4.3.0
Media Slots 10   Network Config   Network configuration stored on frame

Web Page Operations and Functional Elements

The following conventions and functional elements (shown at left) are used in GeckoFlex web page operations. (The examples shown throughout this manual represent 8900NET software version 4.3.0):

Pulldown Menus   Locate Module

Button —— Default

Radio button —— 525 625

Check box —— Report Error

Refresh button ——

Coarse Adjust
Fine Adjust
Enter

<< < 100 * > >>
|< >|

Low Limit   High Limit
Status Indicator

Entry Field
Name: KAM-HD-FS

Status LED ——
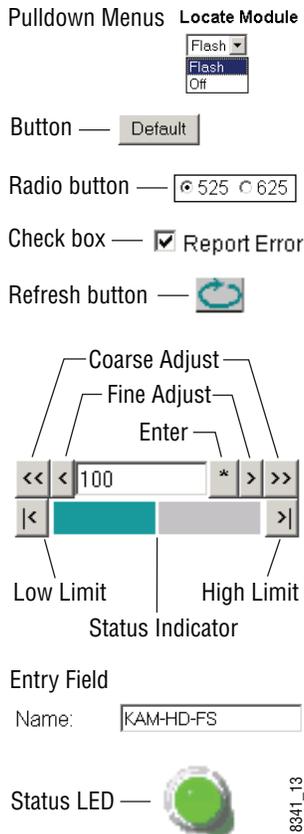
8341_13

- 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.

  After a parameter has been changed, it will take approximately 10 seconds for the change to be entered into the module backup memory. Allow the module enough time to update the change before removing the module from its slot.

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

- The **Status** LED icon indicates module status and is a link to the module Status web page where status is reported.

  LED colors indicate:

  - Green = Pass – no problems detected

  - Yellow = Configuration error warning

  - Red = Fault condition detected (presence of at least one alarm)

8949MDA-CXF and 8949MDA-SXF Links and Web Pages

The 8900 GUI provides the following links and web pages for the 8949MDA-CXF and 8949MDA-SXF modules (Figure 17):

- Status – reports input signals and frame bus communication status, fiber optic submodule and module information (page 32),

- Settings – allows the routing configuration of the possible video inputs and enabling of optional fiber optic outputs, enabling and disabling of status reporting, aspect ratio selection for downscaled HD outputs, reporting of carrier detect status, detected locked video rate and video format. On the 8949MDA-CXF with composite downscaled outputs, controls are present for enabling a composite color bars output and enabling and disabling setup (on NTSC outputs only) (page 37),

- Slot Config – provides Locate Module and Slot Memory functions along with links to the SNMP, LED Reporting, and Frame Alarm configuration web pages (page 45).

Figure 17. 8949MDA-CXF and -SXF Web Page Links

1 8949MDA-SXF   5 8949MDA-CXF
   Status   Status
   Settings   Settings
   Slot Config   Slot Config

Status Web Page

The Status web page shows the signal status of the input signal(s), both electrical and fiber optic (when an optional submodule is installed) and communication status with the frame bus. It also provides module/sub-module software version and other information as described below. The Status web page for the 8949MDA-CXF and the 8949MDA-SXF are identical in operation.

There are four possible Status web page views for the 8949MDA-CXF or 8949MDA-SXF. The Status web page view will vary depending on the presence and type of optional submodule as shown in Figure 18 through Figure 20 starting on page 33.

The Status web page is described in detail below.

- Under the **Status** title at the top of the page are given the model, the description and the frame location.

- A graphics section shows the status of the front and rear modules and input and output signals available. Color coding of the graphics in the display indicate the signal status. Refer to *Web Browser Interface* on page 28 for an explanation of the color coding. If the status of the inputs change, it will be reflected in the color status of the arrow (linked to the **Input Reporting** parameter) and the status LED on the module web page. Signal output status is not reported.

Note   On the 8949MDA modules, input signals are represented by up to three input signal arrows. If the status of either input signal changes, it will be reflected in the color status of the arrow and the Status LED on the module web pages. To determine specific signal status for DA, refer to the Status web page or the onboard LED.

- The presence and the type of **Optic Device** installed will be reported in the double bars area below the graphic. Error messages, such as Missing, will be displayed concerning the fiber optic device depending on the fiber optic submodule installed. Other module warning messages from the module will also appear in this area.

- Information about the module, such as Part Number, Serial Number, Hardware Revision, Firmware Revision 1 (CPLD), Firmware Revision 2 (FPGA), Software Version, and Asset Tag number (assigned on the Slot Config web page) are given in a properties section at the bottom of the page.

Note   The color of the LED present on the top left of each web page is managed by the 8900NET accordingly to the alarms status.

An 8949MDA-CXF Status web page without a fiber optic submodule installed (Figure 18) reports the Optic Device as **Missing** and the optical inputs are shown as not present.

Figure 18. Status Web Page for 8949MDA-CXF without Submodule

An 8949MDA Status web page with a Dual Receiver (DRL) submodule installed (Figure 19) reports the Optic Device as a dual receiver (RX-RX 1310nm DRL).

Both the BNC Input and Optical Input 1 and 2 arrows will be active and report the status of the input. One of the three inputs must be selected in configuration as the active input.

Figure 19. Status Web Page for 8949MDA-CXF with DRL Submodule

● Status ↻

Model: 8949MDA-CXF Description: HD RclckDA CVS-SD FR
Frame Location: Bay 5 Desktop , Slot: 4

Gecko Flex Module Physical Structure
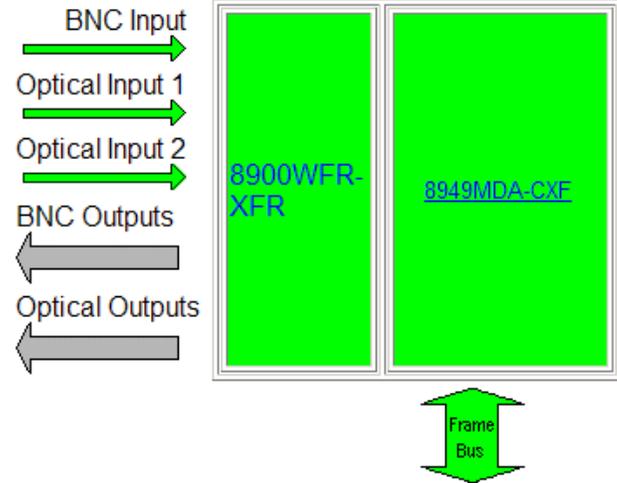
BNC Input →
Optical Input 1 →
Optical Input 2 →

8900WFR-XFR   8949MDA-CXF

BNC Outputs ←
Optical Outputs ←

Frame Bus
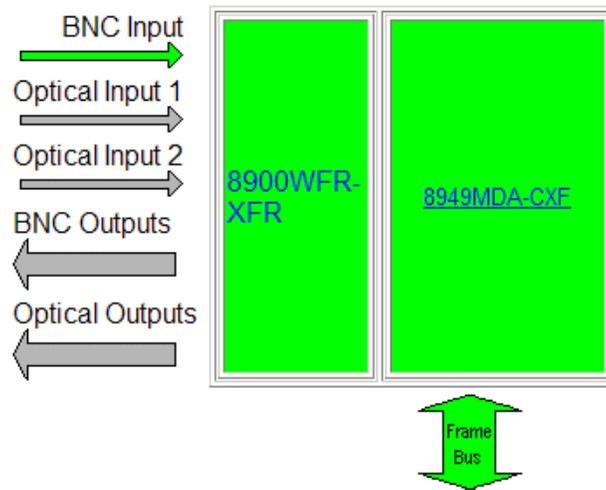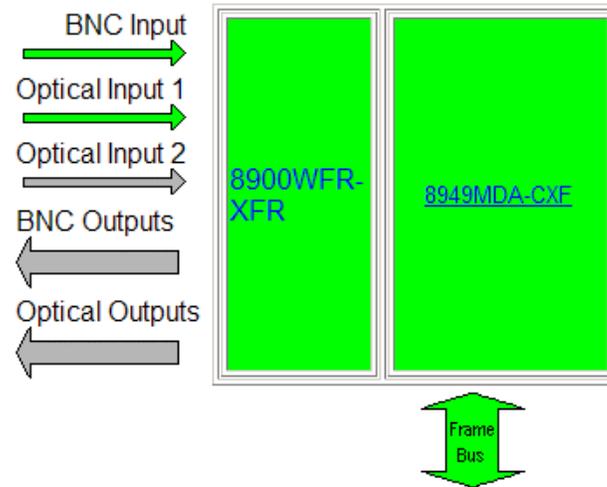
Optic Device: RX-RX 1310nm DRL

Part Number:	771-0346-01
Serial Number:	BH09250678
Hardware Revision:	A
Firmware Revision 1:	0.0.4
Firmware Revision 2:	1.1.5
Software Version:	2.0.1
Boot Version:	2.1.0
Asset Tag:	

An 8949MDA Status web page with a Dual Transmitter (DTL) submodule installed (Figure 20) reports the Optic Device as a dual transmitter (TX-TX 1310nm DTL). Optic Input arrows are inactive.

The optional fiber optic outputs must be enabled in configuration. All BNC and optional fiber optic outputs can be active at the same time.

Figure 20. Status Web Page for 8949MDA-CXF with DTL Submodule

An 8949MDA Status web page with a Transceiver (RTL) submodule installed (Figure 21) reports the Optic Device as a Transceiver (TX-RX 1310nm TRL).

Optical Input 1 is active and reports the status of the fiber input. Either the BNC or the fiber optic input can be active. This must be set in configuration.

The fiber output must be enabled in configuration.

Figure 21. Status Web Page for 8949MDA-CXF with TRL Submodule

Settings Web Page

Use
this
link

The Settings web page provides routing configuration of the available video inputs, enabling of optional fiber optic outputs, enabling and disabling of status reporting, aspect ratio selection for the downscaled outputs, reporting of carrier detect status, and detected locked video input rate and video format.

Note The 8949MDA-CXF also includes composite monitoring reporting status and controls for enabling a color bars test signal and enabling and disabling of setup on NTSC outputs.

The parameters for configuration of a 8949MDA module are explained in detail below and in Figure 27 on page 41:

• **Routing Mode** – input video selections in the Routing Mode control will vary depending on the presence and type of fiber optic submodules installed. This area can show up to three available video inputs. All video inputs can be present, but only one video input can be configured as active.

   • **Coax In 1 J9** – the electrical input at BNC J9 will always be present. When no fiber optic option is installed, the web page will appear as shown in Figure 26 on page 40. It will default to the coax input.

   • **Optic 1 (In)** – this selection will be present when an Dual Receiver (Figure 27 on page 41) or Transceiver fiber optic submodule is installed (Figure 29 on page 43).

   • **Optic 2 (In)** – this selection will only appear when an Dual Receiver fiber optic submodule is installed (Figure 27 on page 41).

• **Optic Outputs** – this control, used to enable or disable fiber optic outputs, will only be active when either a Dual Transmitter (Figure 28 on page 42) or a Transceiver (Figure 29 on page 43) fiber optic submodule is installed. All available fiber optic outputs can be enabled at the same time. In addition, the four electrical outputs are always active, allowing for a total of up to six possible outputs active at one time.

• **Input Reporting** – choose between **Enable** or **Disable** signal status reporting to the module level. When reporting has been disabled, the input arrows will be grayed out to show they are not being monitored or reported to the module level or upper level control devices.

• **Input Format** – the video input format can be selected from the following pulldown selections:

   • Auto

   • 1080i/50 or 59.94

   • 720p/50 or 59.94

   • 480i/59.94

   • 576i/50

- **Aspect Ratio**– this pulldown allows selection of one of four aspect ratio conversions on the downscaled HD electrical outputs. (This control has no effect on SD downscaled outputs.):

  - **Anamorphic** – this mode converts a 16x9 HD image to a 4x3 SD image. Shapes are not preserved causing them to stretch vertically as shown in Figure 22.

Figure 22. Anamorphic Aspect Ratio

1080i on 16x9 Monitor   Anamorphic on 4x3 Monitor
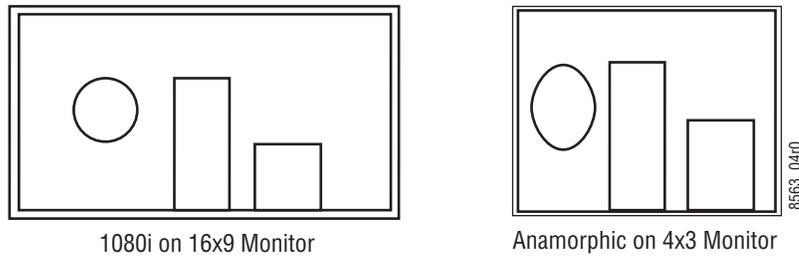
  - **Letterbox** – this mode maintains a 16x9 SD image centered in the middle three-quarters of the screen with black horizontal bars above and below the picture. Shapes are preserved in this mode as shown in Figure 23

Figure 23. .Letterbox Aspect Ratio

1080i on 16x9 Monitor   Letterbox on 4x3 Monitor
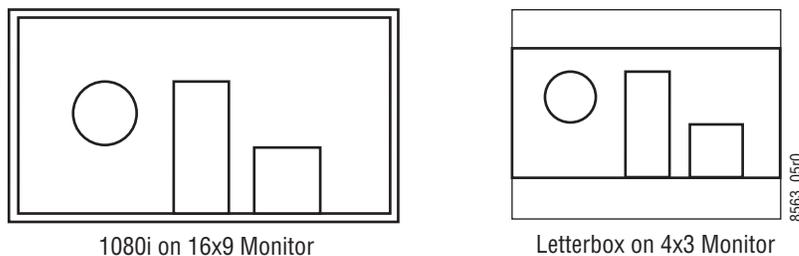
  - **4x3 Center Cut** – this mode is a 4x3 image that fills the screen, cutting off one-quarter of the horizontal image and one-eighth of each side. Shapes are preserved as shown in Figure 24.

Figure 24. 4x3 Center Cut Aspect Ratio

1080i on 16x9 Monitor   4x3 Center Cut on 4x3 Monitor
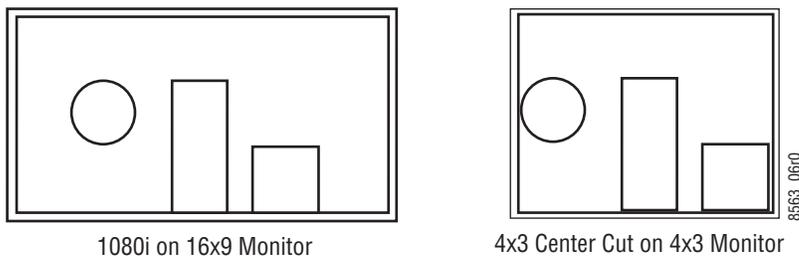
- **14x9 Center Cut** – this mode allows a compromise between Letterbox and 4x3 Center Cut. It cuts off one-eighth of the horizontal image, one-sixteenth from each side and fits vertically in the middle 6/7 of the screen with black horizontal bars above and below the picture. Shapes are preserved.

Figure 25. 14x9 Center Cut Aspect Ratio

1080i on 16x9 Monitor   14x9 Center Cut on 4x3 Monitor
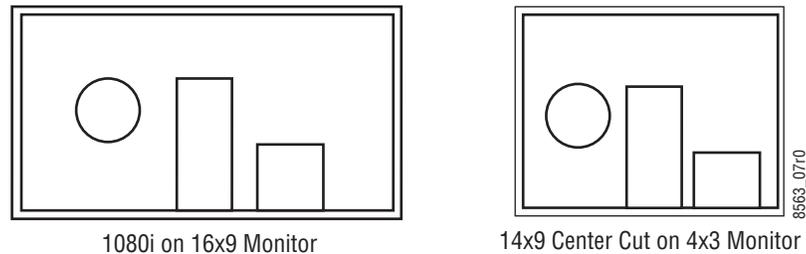
- **Carrier Detect** – indicates the presence of valid input signal.

- **Locked Rate** – this value is linked to the input bloodstream rate detected.

- **Video Format** – this value reports the input video format detected.

- **Monitoring Format** – this value indicates the downscaled output video format.

- **Composite Color Bar** – (8949MDA-CXF only) this parameter allows the enabling and disabling of a composite color bar test pattern on the composite downscaled outputs.

- **Composite Setup** – (8949MDA-CXF only) this parameter is shown if the **Monitoring Format** is 480i/59.94. Configure as **Setup** or **No Setup** on the composite outputs.

Note   The composite controls will not be present on the 8949MDA-SXF Settings web page as shown in the example in Figure 30 on page 44.

Figure 26. Settings Web Page for 8949MDA-CXF without Submodule/NTSC Input

Present on NTSC outputs only

Figure 27. Settings Web Page for 8949MDA-CXF with DRL/576i Input

Settings

Model: 8949MDA-CXF Description: HD RclckDA CVS-SD FR
Frame Location: Bay 5 Desktop , Slot: 4

	DA
Routing Mode	DA Outputs:J1,J3,J5,J7
Coax In 1 J9	●
Optic 1 (In)	○
Optic 2 (In)	○

Dual Receiver provides two optical inputs

Optic Outputs	N/A
Input Reporting	Enable ▼
Input Format	Auto ▼
Aspect Ratio	4x3 Center Cut ▼
Carrier Detect	Present
Locked Rate	270 Mb/s
Video Format	576i/50

	Monitoring
Monitoring Outputs:	J2,J4,J6,J8
Monitoring Format	576i/50

PAL input has no setup

Configuration

Figure 28. Settings Web Page for 8949MDA-CXF with DTL

Dual Transmitter provides two optical outputs

Figure 29. Settings Web Page for 8949MDA-CXF with TRL

Settings

Model: 8949MDA-CXF Description: HD RclckDA CVS-SD FR
Frame Location: Bay 5 Desktop , Slot: 4

	DA
Routing Mode	DA Outputs:J1,J3,J5,J7
Coax In 1 J9	⊙
Optic 1 (In)	○
Optic Outputs	Enable
Input Reporting	Enable
Input Format	Auto
Aspect Ratio	Anamorphic
Carrier Detect	Present
Locked Rate	270 Mb/s
Video Format	480i/59.94

Transceiver provides one optical input and one optical output

	Monitoring
Monitoring Outputs:	J2,J4,J6,J8
Monitoring Format	480i/59.94
Composite Color Bar	Disable
Composite Setup	Setup

Figure 30. Settings Web Page for 8949MDA-SXF without Submodule

🟢 **Settings** ↻

Model: 8949MDA-SXF Description: HD RclckDA SDI-SD FR
Frame Location: Bay 5 Desktop , Slot: 1

	DA
Routing Mode	DA Outputs:J1,J3,J5,J7
Coax In 1 J9	⊙
Optic Outputs	N/A
Input Reporting	Enable ▼
Input Format	Auto ▼
Aspect Ratio	Letterbox ▼
Carrier Detect	Present
Locked Rate	270 Mb/s
Video Format	480i/59.94

No composite controls

	Monitoring
Monitoring Outputs:	J2,J4,J6,J8
Monitoring Format	480i/59.94

Slot Config Web Page
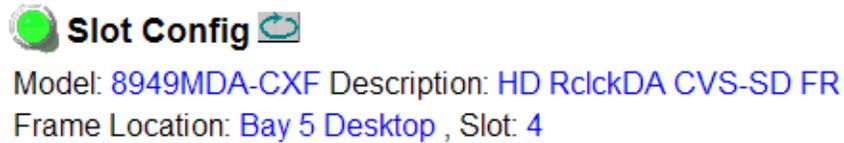
5 8949MDA-CXF
Status
Settings
Slot Config

Use the Slot Config web page (Figure 31) to perform the following functions on the module. The Slot Config page is the same for all modules:

- Locate Module

- Slot Identification

- Slot Memory

- Frame Health Reports link

- LED Reports link

- SNMP Trap Reports link

Note   This web page reflects an 8900NET module running version 4.3.0 in the frame. Other 8900NET versions will vary in the appearance of this web page.

Figure 31. Slot Config Web Page

🟢 **Slot Config** 🔄

Model: 8949MDA-CXF Description: HD RclckDA CVS-SD FR
Frame Location: Bay 5 Desktop , Slot: 4

Locate Module

[Off ▾]

Slot Identification

Name: [8949MDA-CXF]   [Default]

Asset Tag: [   ]

Slot Memory

☐ Restore upon Install

[Learn Module Config]

Frame Health Reports

LED Reports

SNMP Trap Reports

Locate Module

Selecting **Flash** from the **Locate Module** pulldown flashes the yellow COMM and CONF LEDs on the front of the module so it can be located in the frame.

Slot Identification

You may identify the module by typing a specific name in the **Name** field. The assigned name is stored on the 8900NET module and travels with the 8900NET 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.

Slot Memory

The slot configuration for each media module is automatically polled and refreshed periodically (about every 50 minutes) by the 8900NET module when the **Always Slot Refresh** checkbox on the 8900NET Configuration web page (with 4.3.0 software) and/or the **Restore upon Install** checkbox on any media module Slot Config web page is selected.

When the **Restore upon Install** checkbox on any media module Slot Config web page has been selected, the current configuration from that module is saved in slot memory on the 8900NET module. This allows the current module to be removed and when another module of the same part number, and software version is installed, the configuration saved to the 8900NET module will be downloaded to the installed module. The **Restore upon Install** checkbox must be selected before the current module with the saved configuration is removed.

Note   Make sure all modules of the same model type are running the same software version and have the same part number silk-screened on the printed circuit board. Downloading a configuration to a module with a different software version or part number can produce unexpected results.

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.

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 8900NET module. If the 8900NET module is removed or powered down, the stored configurations are not saved.

When no **Restore upon Install** checkboxes on any of the media module Slot Config web pages are selected and the **Always Slot Refresh** checkbox on the 8900NET Configuration web page is unchecked, the slot refresh polling function on the 8900NET module will be disabled. See the **Always Slot Refresh** checkbox description in the *8900NET (Net Card) Network Interface Module Instruction Manual* for more details.

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

Frame Health Reporting

This web page allows configuration of the alarms and warnings that are reported to the external Frame Health Alarm connector on the rear of the GeckoFlex frame. Refer to *8900NET Instruction Manual* for more details.

LED Reports

This link appears when the 8900NET module has software version 4.0.2 or later installed. When the link is selected, a read-only status report of the 8900NET Hardware Switch state is given. In the LED Reporting section of the web page, LED Reporting can be enabled or disabled as desired.

SNMP Trap Reports

Select the SNMP Trap Reports link to open the 8900NET SNMP Reporting web page. this link will only be present when SNMP Agent software has been installed on the 8900NET module. This web page allows configuration of which alarms and warnings that are reported to the SNMP management software.

Refer to *8900NET Instruction Manual* for more details on the links to the 8900NET module.

Software Updating

Software updating of the 8949MDA modules is done using the NetConfig Networking Application and other software update tools. The NetConfig application is available free of charge from the Grass Valley web site. Check the Grass Valley web site for update information. Refer to *Contacting Grass Valley* on page 4 for more information on obtaining the other required update tools for this module.

All modular product documentation can be found in PDF format on the Grass Valley web site at this link:

www.grassvalley.com/docs/modular

Status Monitoring

There are a number of ways to monitor frame and module status. These methods are summarized here. For more detailed information, refer to the *8900NET (Net Card) Network Interface Module Instruction Manual* and the *8900 Gecko* or *8900 GeckoFlex Frame Instruction Manuals.*

All modular product documentation is available on-line in PDF format at this link*:*

www.grassvalley.com/docs/modular

The main status monitoring methods include the following:

• External frame alarm output on the rear of the 8900 frame with reporting from the Module Health Bus and other frame status alarm reports,

• LEDs on the Frame, 8900NET module, and individual frame media modules,

• Web browser status reporting for each frame component, and

• SNMP traps, captured by Grass Valley's NetCentral or another SNMP Manager Application.

Note   SNMP trap information is only available when an SNMP Agent has been installed and configured.

External Frame Alarm

An external Frame Alarm output is available on pins 8 and 9 of the RS-232 connector on the rear of the frame. The Frame Alarm outputs a voltage level indicating there is an alarm condition on the Module Health Bus or one of the other frame components reported to the Frame Monitor module in a Gecko 8900TF or GeckoFlex 8900FF frame or the 8900NET module in an 8900TFN and GeckoFlex 8900FFN frame.

• The Module Health bus is a separate line on the frame motherboard that provides a means for older or less capable modules (such as DAs with no microprocessor) that cannot communicate over the Frame (serial) bus to report warning and alarm conditions to the external Frame Alarm. All media modules in the frame report a voltage level to this line when a warning condition occurs on the module. The specific warning or module location is not reported, only an indication that an warning condition has occurred.

• Frame alarm reporting from other frame components can be enabled and disabled using DIP switches on the Frame Monitor and 8900NET module. For frames with an 8900NET module, the Frame Alarm Reporting web page allows configuration of the alarms and warnings that are reported to this external Frame Health Alarm*.*

LED Reporting

LEDs on the front of media modules, the Frame Monitor or 8900NET modules, and the front covers of the 8900TF/TFN and GeckoFlex FF/FFN frames indicate status of the frame and the installed power supplies, fans in the front covers, and module status. (The 8900TX-V/A and GeckoFlex 8900FX frames have no LED indicators on the front cover.)

- LED reporting from the modules in the frame to the 8900NET module is configurable using the 8900NET LED Reporting web page.

- The Status LEDs for this module are described in *Operation Indicator LEDs* on page 25. LEDs for the 8900NET module are described in the *8900NET (Net Card) Network Interface Instruction Manual*.

Web Browser Interface

The 8900NET module controls a web browser GUI that indicates frame and module status on the following web pages:

- Frame Status web page – reports overall frame and module status in colored graphical and text formats. Refer to Figure 16 on page 29 for an example.

- Module Status web page (Figure 18 on page 33) – shows specific input and reference signal configuration error status to the module along with module status and information (part number, serial number, hardware version, software/firmware/boot versions, and Asset number (as assigned on the Slot Config web page).

- A Status LED icon on each web page reflects the module status on the module Status web page where warnings and faults are displayed and is a link to the module Status web page.

SNMP Reporting

The Gecko 8900 Series system uses the Simple Network Monitoring Protocol (SNMP) internet standard for reporting status information to remote monitoring stations. When SNMP Agent software is installed on the 8900NET module, enabled status reports are sent to an SNMP Manager such as the Grass Valley's NetCentral application.

Status reporting for the frame is enabled or disabled with the configuration DIP switches on the 8900NET module. Most module status reporting items can be enabled or disabled on individual configuration web pages.

Specifications

Table 5. 8949MDA-CXF and 8949MDA-SXF Specifications

Parameter	Value
Coax Input	
Number and type of inputs	1 BNC
Input impedance	75 Ohm
Input signal type	Serial digital component conforming to the following formats: • SMPTE 292M for 1080i/50, 1080i/59.94, 720p/50 and 720p/59.94 • SMPTE 259M (270 Mb/s)
Signal level	SDI 800 mV p-p ±10% max
Return loss	>15 dB 0.004 to 1.50 GHz
Equalization	Auto equalizing: HD signals up to 125m of Belden 1694A SD signals up to 330m of Belden 1694A
Tolerated input jitter	Compliant with the SMPTE 259M (270 Mb/s) and SMPTE 292M standards
Distributed Coax Outputs (both models)	
Number and type of outputs	4 BNCs
Output impedance	75 Ohm
Signal type	Serial digital component conforming to the following formats: • 1080i/50, 1080i/59.94, 720p/50 and 720p/59.94 • SMPTE 259M (270 Mb/s)
Signal level	SDI 800 mV p-p ±10%
Return loss	>15 dB 4 to 270 MHz >13 dB 0.27 to 1.50 GHz
Output jitter	For input with < 0.1 UI jitter, the output jitter complies with the SMPTE 292M and SMPTE 259M standards
Downscaled Serial Outputs (8949MDA-SXF Module)	
Number and type of outputs	4 BNCs
Impedance	75 ohm
Signal type	Conforming to SMPTE 259M for 480i/59.94 and 576i/50
SDI level	800 mV±10%
Return loss	> 15 dB
Output jitter	Conforming to SMPTE 259M for 480i/59.94 and 576i/50
Downscaler delay	< 0.95 ms
Downscaler output	10 bits representation
Output transcoding	New EDH CRC packet generated on output
Downscaled Composite Outputs (8949MDA-CXF Module)	
Number and type of outputs	4 BNCs
Impedance	75 ohm
Signal type	Conforming to the SMPTE 170M standard for NTSC and CCIR624 for PAL-B
Return loss	> 40 dB, 0 to 10 MHz
Downscaler delay	< 0.97 ms
Downscaler output	8 bits representation

Table 5. 8949MDA-CXF and 8949MDA-SXF Specifications

Parameter	Value
Power	
Maximum Input power	
8949MDA-SXF	8.1W (without submodule), 8.8W (with submodule)
8949MDA-CXF	7.3W (without submodule), 8.0W (with submodule)
Environmental	
Frame temperature range (Refer to GeckoFlex Instruction Manual)	Refer to GeckoFlex Frames 8900FX/FF/FFN Signal Processing Systems Instruction Manual at www.grassvalley.com/docs/modular
Operating humidity range	
Non-operating temperature	
MTBF at 40°C (inside the frame) in hours with Tellcordia SR-332 Issue 1 8949MDA-CXF 8949MDA-SXF	573,300 594,000
UL and EU compliance	When installed in a GeckoFlex frame
Mechanical	
Frame type	GeckoFlex 8900FFN
Number of slots required	1 slot
Rear module type required	
8949MDA-CXF	8900WFR-XFR
8949MDA-SXF	
Rear Retainer clip screw torque	4-5 inch-lb./0.45-0.6Nm

Table 6. SFP Receiver/Transceiver Fiber Optic Submodule Specifications

Model Number	SFP-13103G-M1DRX	SFP-13103G-M1TRX
Low wavelength	1260nm	1260nm
High wavelength	1620nm	1620nm
Receiver channels	2	1
Connector type	LC	
Fiber support	Single mode	
Data rate	50Mb/s to 3Gb/s	
Maximum distance @ 3Gb/s	10km	
Minimum distance	30km	

Table 7. SFP Transmitter/Transceiver Fiber Optic Submodule Specifications

Model Number	SFP-13103G-M1DTX	SFP-13103G-M1TRX
Wavelength 1	1310 nm	1310 nm
Wavelength 2	1310 nm	N/A
Transmit channels	2	1
Connector type	LC	
Fiber support	Single-mode	
Data rate	143 Mb/s to 2.97 Gb/s	
Power output	-5 to 0 dBm (-2dBm typical)	
Maximum distance	10 km[1]	
Maximum distance	20 km	

[1] The 1310 nm Dual Transmitter (SFP-13103G-M1DTX) and Transceiver (SFP-13103G-M1TRX) require no attenuation between fiber transmitter and receiver connections at any length.

Attenuation Requirements

Some shorter length cable runs will require attenuation to prevent over-driving the receiver causing bit errors to occur on the fiber link. Use the following guidelines for adding attenuation:

• The Dual Transmitter requires no attenuation between fiber transmitter and receiver connections at any cable lengths.

• All CWDM devices used in a point-to-point configuration with a cable run from 0-20 km (12.4 miles), must be attenuated by 5 dB between fiber transmitter and receiver connections.

• CWDM devices used with 8939FCA modules for a mux/demux configuration with a cable run from 0-12 km (7.5 miles), must be attenuated by 3 dB between 8939CFA COM ports.

Service

The 8949MDA 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 unless otherwise directed by Customer Service.

Power-up Diagnostics Failure

If the module has not passed self-diagnostics, do not attempt to troubleshoot. Return the unit to Grass Valley (see *Module Repair* below).

Troubleshooting

Electronic Circuit Breaker

The electronic circuit breaker works during a fault condition or an overcurrent which stops the module.

Remove the module and replace it in the frame. If the problem persists, please refer to the Grass Valley Customer Service.

Module Repair

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 *Contacting Grass Valley* on page 4 at the front of this document for information on contacting Grass Valley Customer Service.

Table of Alarms

Table 8 below describes the different type of alarms that can occur on the module.

Table 8. List of Alarms for 8949MDA module

Alarm type	Web Page Description	LED	Comments	Query status towards Net Card&SNMP
Fault	Firmware failure		If the firmware is wrong or after a bad download STATUS PAGE: The color of the front module becomes red	Yes
Fault	Optical failure			Yes
Fault	Optical submodule communication error		communication problem with the optical module	Yes
Fault	Software/Firmware version incompatible			Yes
Warning	Signal not Present on BNC Input	PRES COAX IN (green)	STATUS PAGE: The electrical input arrow is yellow SETTING PAGE: The carrier detect option is not present	Yes
Warning	Wrong Rear Module		The rear module is not compatible with the front module 8949MDA-CXF or 8949MDA-SXF	Yes
Warning	Signal not Present on Optic Input 1	PRES OPT IN 1 (orange)	STATUS PAGE: Optic input arrow is yellow	Yes
Warning	Signal not Present on Optic Input 2	PRES OPT IN 2 (orange)	STATUS PAGE: Optic input arrow is yellow	Yes
Warning	Mismatch or unknown format		Format detected different of format selected or unknown format detected	No
Warning	Module not locked			No
Warning	Incoming bit stream error		Video input signal have a bit stream error	No

Functional Description

A block diagram of the 8949MDA-CXF is shown in Figure 32.

Figure 32. 8949MDA-CXF Block Diagram
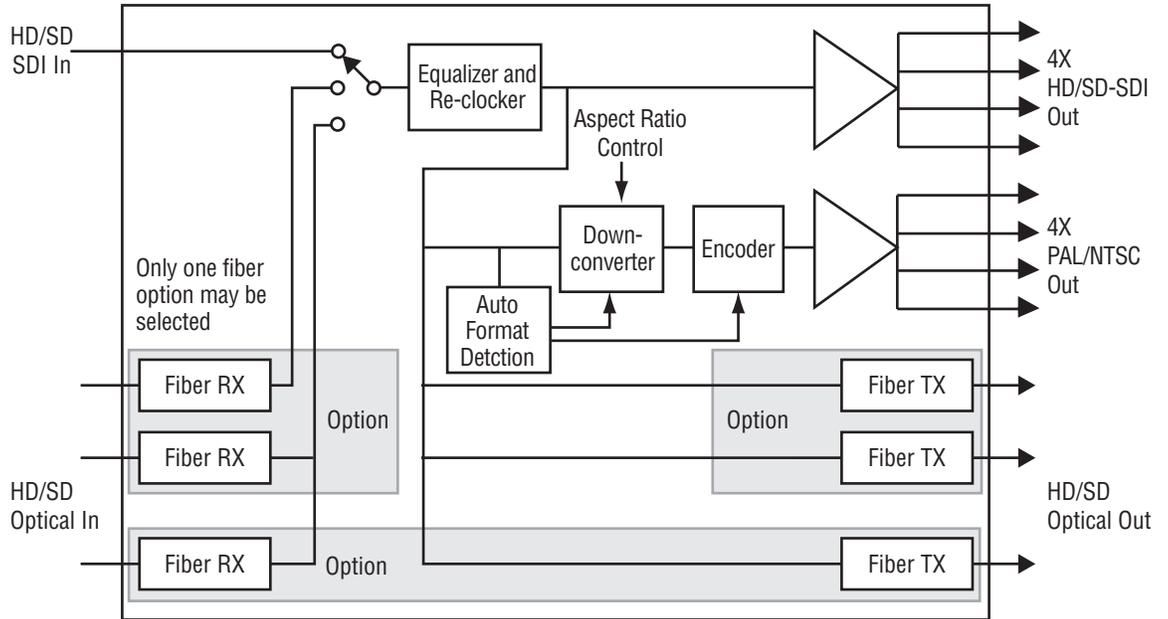
A block diagram of the 8949MDA-SXF is shown in Figure 33.

Figure 33. 8929MDA-SXF Block Diagram
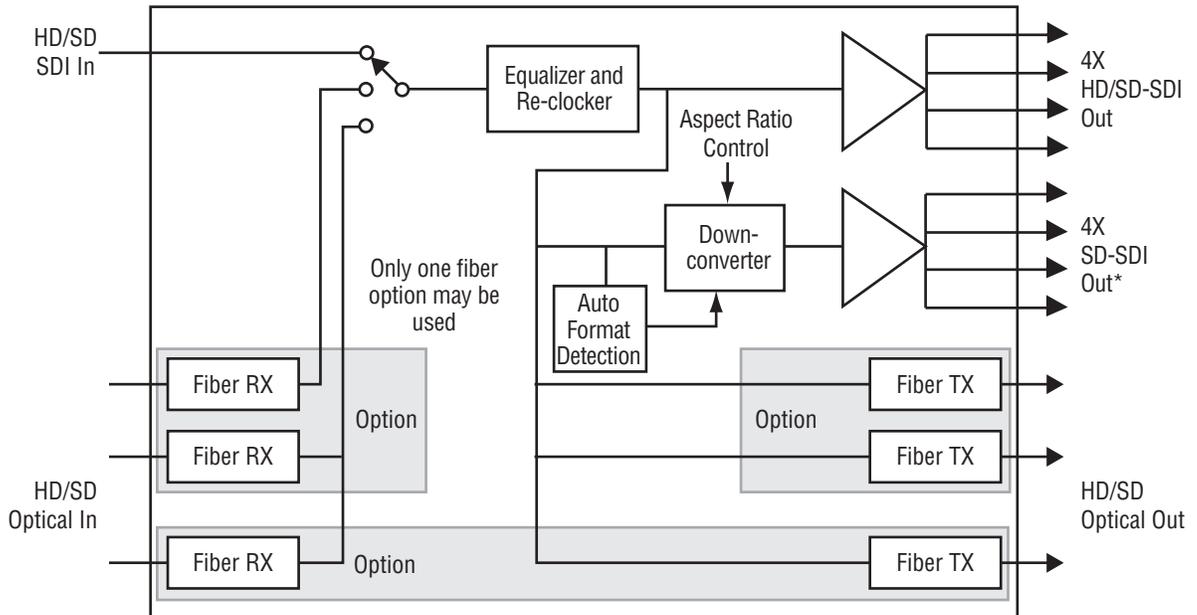
✳ Downscaled SD-SDI output transcoding includes only generation of new EDH CRC packet

Configuration Summary Table

Table 9 provides a complete summary of the module functions and a comparison of the functionality available with each control type along with the ranges and default values for each parameter and notes on each control.

Table 9. Summary of Configuration Functions

Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	Local Controls Switches S1 and S2	Newton Control Panel
Config mode	Local&Remote	Local or Local&Remote	Access to web pages can be locked out only by Local controls	S1: Pin 1 Off = Local Only On = Local&Remote	N/A
Routing mode (Up to three inputs depending on type of fiber optic submodule installed.) Only one input can be active at a time.	Coax In J9	Coax In J9, Optic 1 (In), or Optic 2 (In)	Settings/ Routing Mode Coax In J9, Optic 1 (In), or Optic 2 (In) radio button	S1: Pins 6 and 7 Input Select Coax In: 0 0 Optic 1: 0 1, or Optic 2: 1 0	Rout Mode
Optic outputs enable (Up to two outputs depending on type of fiber optic submodule installed.) All fiber outputs can be active at the same time.	Disable	Disable or Enable	Settings/ Optic Outputs pulldown	S2: Pin 4 Off = Disabled On = Enabled	Optic Out
Input reporting enable	Enable	Disable or Enable	Settings/ Input Reporting pulldown	N/A	N/A
Input Format selection	Auto	Auto, 1080i/50, 1080i/5994 720p/50, 720p/59.94, 480i/59.94, or 576i/50	Settings/ Input Standard Selection pulldown	S1: Pins 2, 3, 4,5 Auto: 0 0 0 0 1080i/50: 0 0 0 1 1080i/59.94: 0 0 1 0 720p/50: 0 0 1 1 720p/59.94: 0 1 0 0 480i/59.94: 0 1 0 1 576i/50: 0 1 1 0	N/A
Aspect Ratio control (used only for HD downscaled video)	Anamorphic	Anamorphic, Letterbox, 4x3 Center Cut, or 14x9 Center Cut.	Settings/ Aspect Ratio pulldown	N/A	AspRatio
Composite Color Bars test signal (8949MDA-CXFonly)	Disable	Enable or Disable	Settings/ Composite Color Bar pulldown	N/A	ColorBar
Composite Setup (8949MDA-CXF NTSC output only)	Setup	Setup or No Setup	Settings/ Composite Setup pulldown	S1: Pin 8 Off = No Setup On = Setup	CompSetup

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