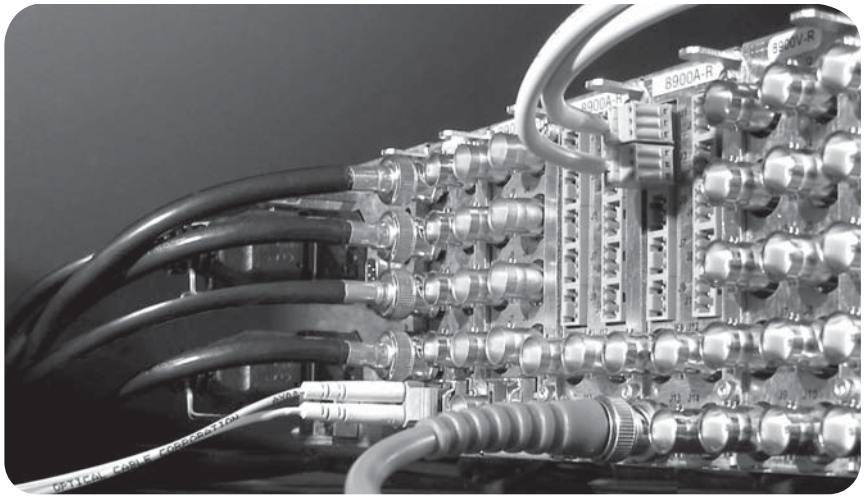
grass valley

8949MDA-CFR/-SFR

SD/HD MONITORING DA



Instruction Manual

Software Version 2.6.0

www.grassvalley.com

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OCTOBER 2011

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8949MDA-CFR/-SFR

SD/HD MONITORING DA

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

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END-OF-LIFE PRODUCT RECYCLING NOTICE

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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Grass Valley will be responsible for all costs associated with recycling and disposal, including freight. However, you are responsible for the removal of the equipment from your facility and packing the equipment to make it ready for pickup.

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, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.grassvalley.com/about/environmental-policy

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Preface

About This Manual

This manual describes the features of a specific 8900 module 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 8900 Series frame documentation (see the *GeckoFlex Frames 8900FX/FF/FFN Signal Processing System Instruction Manual).*

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

www.grassvalley.com/docs/modular

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8949MDA-CFR and 8949MDA-SFR Modules

Introduction

The 8949MDA-CFR or 8949MDA-SFR performs SD/HD equalization, and reclocking for distribution of SD/HD signals among electrical connectors and/or a fiber optic SFP device and downscaling of HD video signals to SD- SDI video (-SFR) or analog video signals (-CFR) for monitoring applications.

On the 8949MDA-SFR module with an SD-SDI video input, the module will distribute the SD-SDI signal (including embedded audio) on all outputs (distribution and monitoring). With an HD-SDI video input, the module distributes the HD-SDI signal on the HD-SDI distribution outputs (including embedded audio and HANC data – horizontal ancillary); the downscaled monitoring SDI outputs do not pass embedded audio or HANC data from the HD video input.

The two models, 8949MDA-CFR (composite downscaler outputs) and 8949MDA-SFR (serial data interface downscaler outputs) must be installed in a GeckoFlex frame and require the presence of an 8900WFR-R rear module. Optical interface requires the presence of an optional fiber optic SFP plug-in device.

Features

The 8949MDA module features include:

- Multi-format HD/SD video on one electrical input and/or up to two optical input/outputs (refer to *Cabling* on page 19),
- In HD input mode:
  - Up to four reclocked HD electrical outputs and up to two reclocked HD optical outputs,
  - Up to four downscaled HD to SD or composite (SDI signals in the case of 8949MDA-SFR or composite signals in the case of 8949MDA-CFR) electrical outputs,

- In SD input mode:
  - Up to eight reclocked SD-SDI electrical outputs and up to two reclocked SD optical outputs in the case of 8949MDA-SFR,
  - Up to four reclocked SD-SDI outputs and up to two reclocked SD-SDI optical outputs and up to four composite outputs in the case of 8949MDA-CFR,
- Auto cable equalization for up to 330m of cable in the case of SD-SDI signals and for up to 125m of cable in the case of HD-SDI signals,
- A range of standard definition or high definition input signal on one electrical input or optical inputs,
- Downscaled signals with monitoring quality (embedded audio and HANC data will be passed on all SDI outputs except for downscaled HD monitoring outputs),
- 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,
- A fiber optic SFP device option can be installed to provide optical video input/output interfaces for both models depending on the SFP device type. Refer to Table 2 on page 17 for the options available.
- Remote control and monitoring support with the 8900NET (Net Card) installed in the frame: web browser and Newton Control Panel.

Installation

The front and the rear modules are delivered together as a set: 8949MDA-CFR front module or 8949MDA-SFR front module with the 8900WFR-R rear module. Optional fiber optic SFP devices must be ordered separately. The types of optional fiber optic SFP devices available are listed in Table 2 on page 17.

The 8949MDA-CFR and 8949MDA-SFR 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 22).

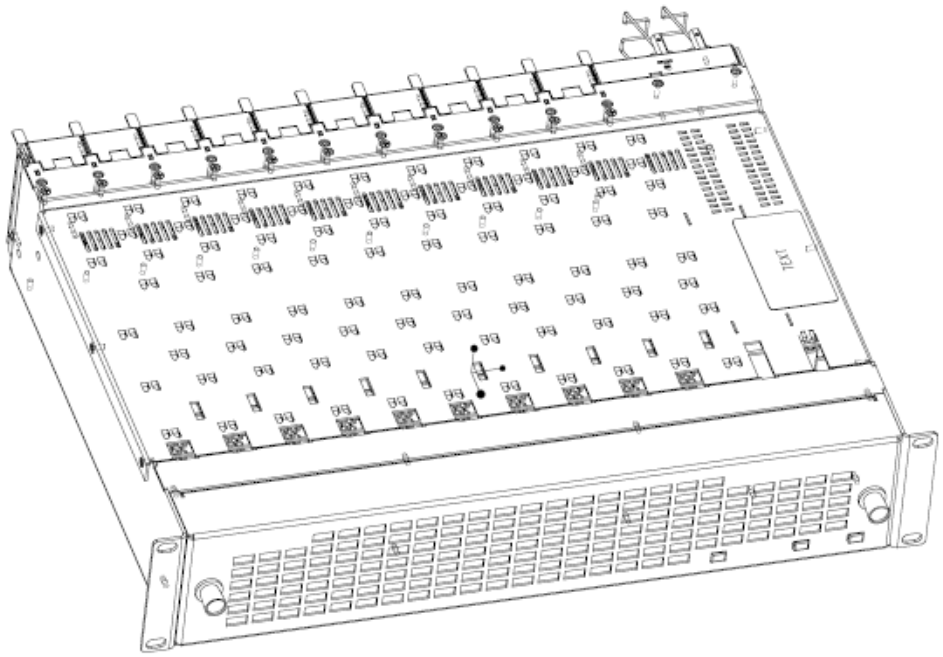
CAUTION Use anti-static precautions when installing and removing the optional fiber optic SFP devices, see *Optional Fiber Optic SFP Device Installation* on page 17.

Module Placement in the GeckoFlex Frame

There are ten rear and front slot locations in the 2 RU frame to accommodate either audio or video modules (Figure 1). The module set may be plugged into any one of the available GeckoFlex frame slots. The 8949MDA modules require a single rear and corresponding front 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 1. 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 SFP device:

- 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 tied to a metal part of the frame.
- Install the rear module first, then the front module, then the fiber optic SFP device option if used on the 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.

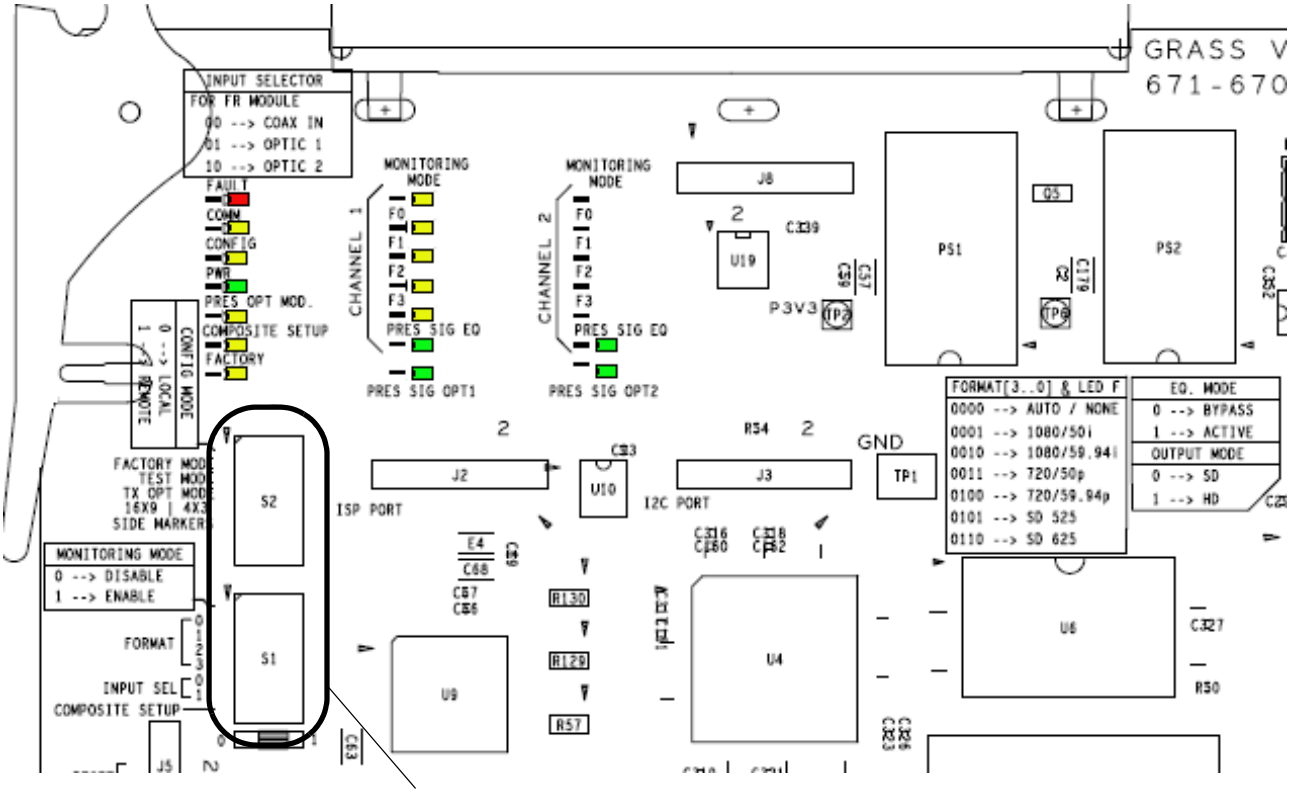
- Make every effort to leave the screws holding the retainer clips in place (do not remove them completely). They are very small and can easily drop into other equipment causing a shorting hazard. (Two turns of the screw should be enough to loosen the screws, 3 turns or more will remove it.)
- When installing 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. Refer to the **Mechanical** specifications given in Table 6 on page 43.
- If using a fiber optic SFP device on the fiber-ready module, handle it carefully, use anti-static precautions, and read the *Fiber Optic Cleaning Requirement* on page 17 before cabling.

Local Configuration

If you do not have an 8900NET 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-CFR and 8949MDA-SFR consists of two DIP switches (S1 and S2) outlined in the lower left corner of Figure 2. Refer to Table 1 on page 14 for setting S1 and S2. A summary of Local and Remote (web page and Newton Control Panel) parameters is provided in Table 10 on page 49.

Figure 2. Configuration Switches on 8949MDA Module



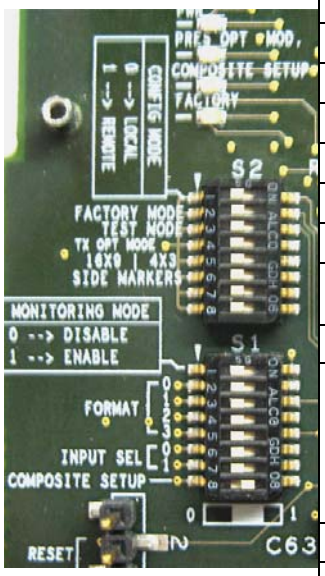
See Table 1 on page 14

Configuration Switches S1 and S2

Table 1 gives the parameters set with the onboard switches S1 and S2 on the 8949MDA module circuit board.

Note To lock out remote control, set the **Config Mode** to **Off**.

Table 1. Switch S1 and S2 Settings

Switches S1 and S2	Function	Pin	0 (Left/Off)				1 (Right/On)			
	**Switch S2**									
	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	**4**	Off (fiber optic outputs disabled)				On (fiber optic outputs enabled)			
	16X9 / 4X3	**5**	Not Used							
	Side Markers	**6**	Not Used							
	–	**7-8**	Not Used							
	Switch S1									
	Monitoring Mode	**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			

Rear Module Installation

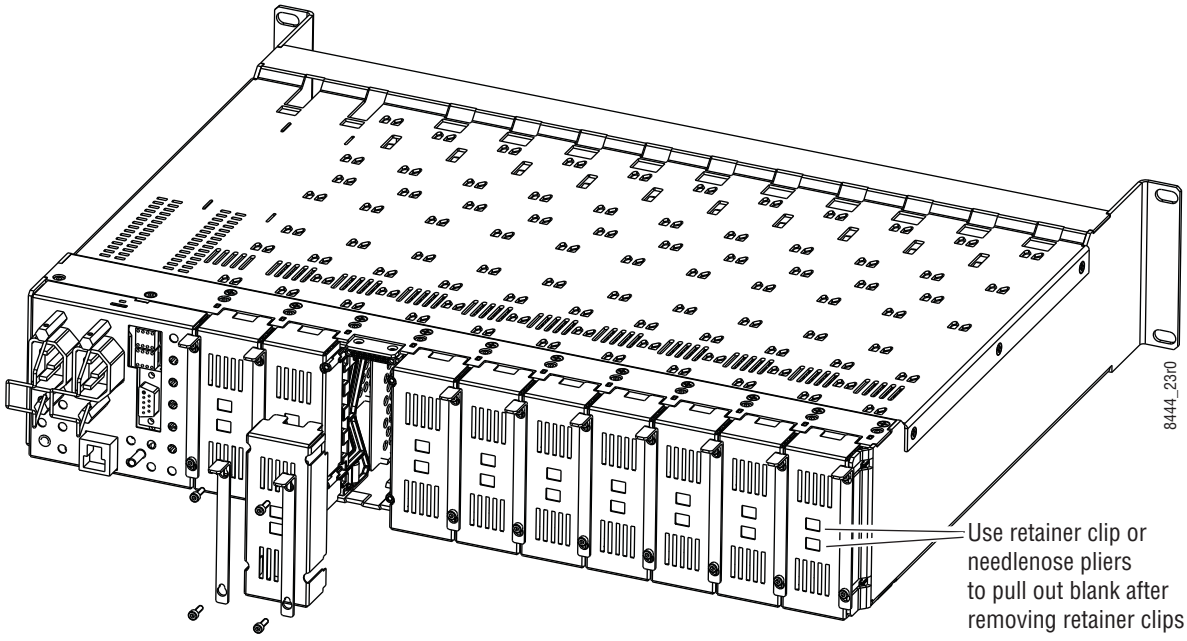
1. To remove a blank rear adapter cover (or a rear module already present), manually loosen the two screws holding each retainer clip on the rear adapter cover or rear module to the frame with the retainer clip tool provided inside the front cover of the frame (751- model frames only) or a 2 mm (5/64″) hex screwdriver.

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 the retainer clip tool or needlenose pliers into the slots in the blank cover and pulling it off (Figure 3).
3. Insert the rear module into the empty slot, guiding it into place.
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 is 4-5 inch-lb/0.45-0.6Nm). Do not force or torque the screws too tightly. The clips should not bend or be bowed.

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

Figure 3. Installing Rear Module

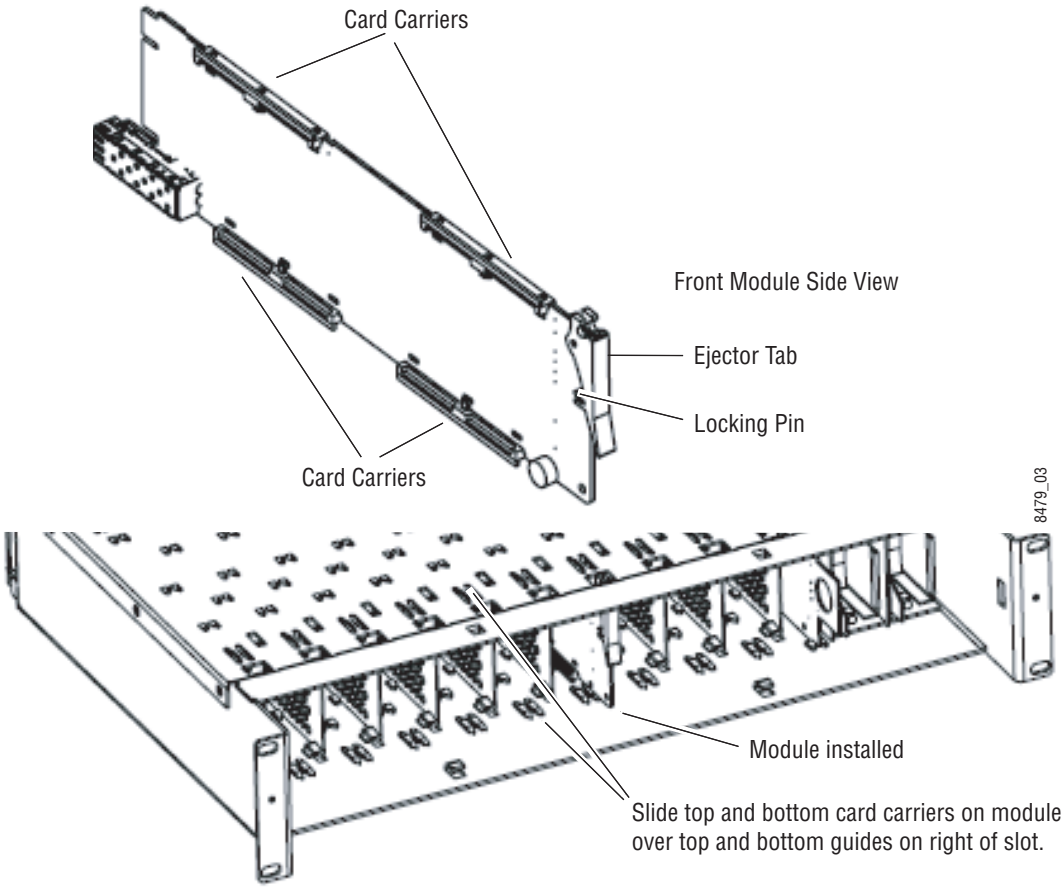


Front Module Installation

After installing the rear module and configuring the front module using local controls if required, install the front module as follows:

1. Remove the front cover of the frame.
2. Locate the front slot corresponding to the rear module you have already installed.
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 4).
4. Carefully slide the module into the rear connector, making sure the fiber optic connector on the 8949MDA module fits into the rear module properly.
5. Lock the front module ejector tab into the locking pin.
6. Replace the frame front cover during operation to maintain optimum cooling conditions.

Figure 4. Front Module Installation



Optional Fiber Optic SFP Device Installation

After the front and rear modules have been installed, install the optional fiber optic SFP device option if being used into the rear module metal cage labeled FIBER (Figure 5 on page 18). The SFP device is hot-pluggable and may be installed or removed with power applied to the module.

CAUTION Use anti-static precautions and handle the SFP device carefully when installing and the removing it. Before inserting the fiber cable, it is important to clean all fiber connections as described in *Fiber Optic Cleaning Requirement* below.

Refer to Table 2 for the correct model of SFP device to use with different software versions.

Table 2. Fiber Optic SFP Device Summary

SFP Device Model	Type	SW 2.4.1 and later	SW 2.4.1 and earlier
SFP-13103G-M2DRX	Dual Receiver	Yes	No
SFP-13103G-M2DTX	Dual Transmitter	Yes	No
SFP-13103G-M2TRX	Transceiver	Yes	No
1310nm-DRL	Dual Receiver	Yes	Yes
1310nm-DTL	Dual Transmitter	Yes	Yes
1310nm-TRL	Transceiver	Yes	Yes

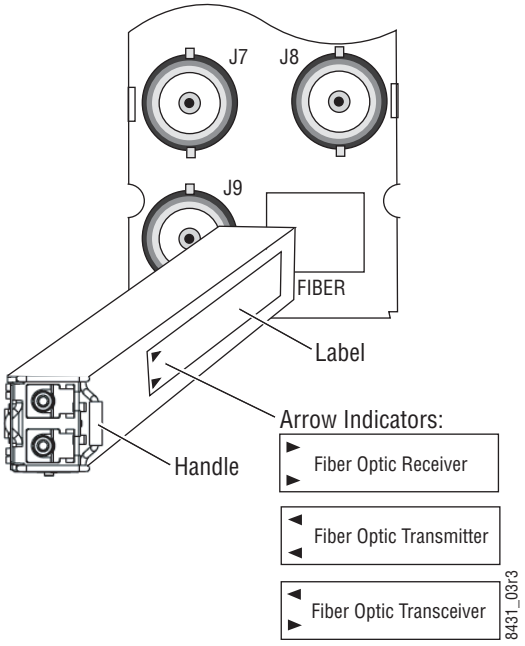
Fiber Optic Cleaning Requirement

Before making any fiber optic cable mating connections, including installation, 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 faces. 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.

To install the fiber optic SFP device:

1. Slide the fiber optic device into the metal fiber cage with the label and handle to the right.
2. Push the device in as far as it will go without forcing it. It will not go completely into the cage.
3. Cable the fiber optic connectors according to the instructions given in *8949MDA-CFR Module Cabling* on page 20 or *8949MDA-SFR Module Cabling* on page 21 depending on the type of SFP device used.

Figure 5. Installing Fiber Optics SFP Device



To extract the fiber optic SFP device follow the steps below:

1. Remove the fiber cable first.
2. Unlock the module by flipping the handle to the left.
3. Remove the fiber optic SFP device by using its handle.

Cabling

Cabling to the 8949MDA-CFR or 8949MDA-SFR module is done on the BNCs and the fiber connector on the rear module when an optional fiber optic SFP device is installed.

Cabling of the rear module depends on presence and type of fiber optic SFP device option as listed below:

- 8949MDA-CFR/-SFR without fiber optic SFP device option (electrical only),
- 8949MDA-CFR/-SFR with a Dual Receiver Fiber Optic
- 8949MDA-CFR/-SFR with a Dual Transmitter Fiber Optic and
- 8949MDA-CFR/-SFR with a Transceiver Fiber Optic.

Note Fiber input and output connections must be cleaned before cabling as described in *Fiber Optic Cleaning Requirement* on page 17.

Video Input

The 8949MDA-CFR or 8949MDA-SFR will accept any of the video standards listed in the input specifications in Table 6 on page 43.

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 SFP device option:

- Electrical BNC, J9 (always available)
- Fiber Input RX 1 or RX 2 (requires a Dual Receiver SFP device), or
- Fiber Input RX 1 (requires a Transceiver SFP device).

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 14) or using the Settings web page (page 33). The video input type must also be selected in configuration.

Video Outputs

The 8949MDA-CFR or 8949MDA-SFR outputs conform to the video standards listed in the output specifications in Table 6 on page 43.

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 14) or the Settings web page (page 33). Fiber optic outputs available depend on the presence and type of fiber optic SFP device installed.

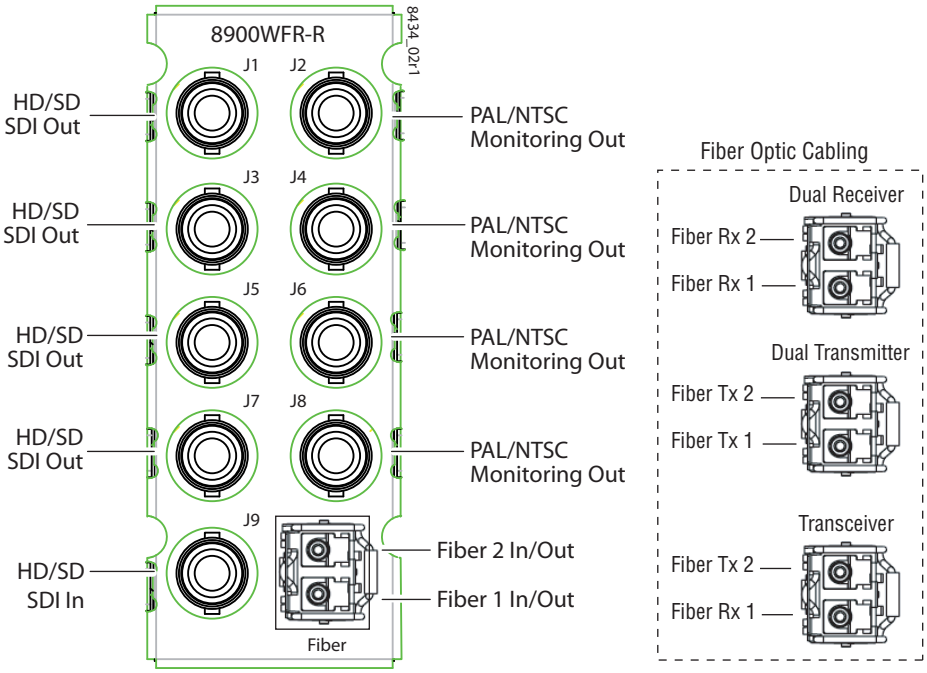
8949MDA-CFR Module Cabling

Refer to Table 3 and Figure 6 for 8949MDA-CFR cabling information.

Table 3. Cabling Inputs and Outputs for 8949MDA-CFR Module

Fiber Optic SFP Device	SDI Inputs	Outputs
No fiber optic SFP device	J9 BNC	J1, J3, J5, J7: 4 HD-SDI electrical outputs J2, J4, J6, J8: 4 downscaled PAL or NTSC electrical outputs
Dual Receiver	J9 BNC, Fiber 1, or Fiber 2	J1, J3, J5, J7: 4 HD-SDI electrical outputs J2, J4, J6, J8: 4 downscaled PAL or NTSC electrical outputs
Dual Transmitter	J9 BNC	J1, J3, J5, J7: 4 HD-SDI electrical outputs J2, J4, J6, J8: 4 downscaled PAL or NTSC electrical outputs Fiber 1 and Fiber 2: 2 optical HD outputs
Transceiver	J9 BNC or Fiber 1	J1, J3, J5, J7: 4 HD -SDI electrical outputs J2, J4, J6, J8: 4 downscaled PAL or NTSC electrical outputs Fiber 2: 1 optical HD output

Figure 6. 8949MDA-CFR Cabling



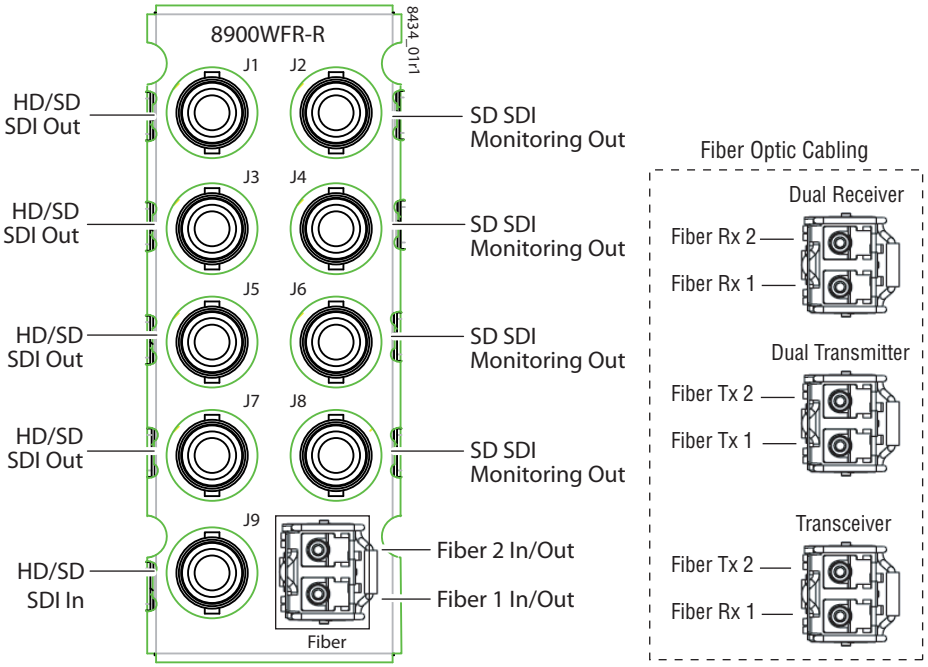
8949MDA-SFR Module Cabling

Refer to Table 4 and Figure 7 for 8949MDA-SFR cabling information.

Table 4. Cabling Inputs and Outputs for 8949MDA-SFR Module

Fiber Optic SFP Device	SDI Inputs	Outputs
No Fiber optic SFP device	J9 BNC	J1, J3, J5, J7: 4 HD-SDI electrical outputs J2, J4, J6, J8: 4 downscaled SD SDI electrical outputs
Dual Receiver	J9 BNC, Fiber 1, or Fiber 2	J1, J3, J5, J7: 4 HD-SDI electrical outputs J2, J4, J6, J8: 4 downscaled SD SDI electrical outputs
Dual Transmitter	J9 BNC	J1, J3, J5, J7: 4 HD-SDI electrical outputs J2, J4, J6, J8: 4 downscaled SD SDI electrical outputs Fiber 1 and Fiber 2: 2 optical HD outputs
Transceiver	J9 BNC or Fiber 1	J1, J3, J5, J7: 4 HD-SDI electrical outputs J2, J4, J6, J8: 4 downscaled SD SDI electrical outputs Fiber 2: 1 optical HD output

Figure 7. 8949MDA-SFR Cabling



Power Up

The on-board LED indicators are illustrated in Figure 8. Upon power-up, the green PWR LED should light and the CONFIG, FAULT and COMM LEDs should illuminate during the module initialization.

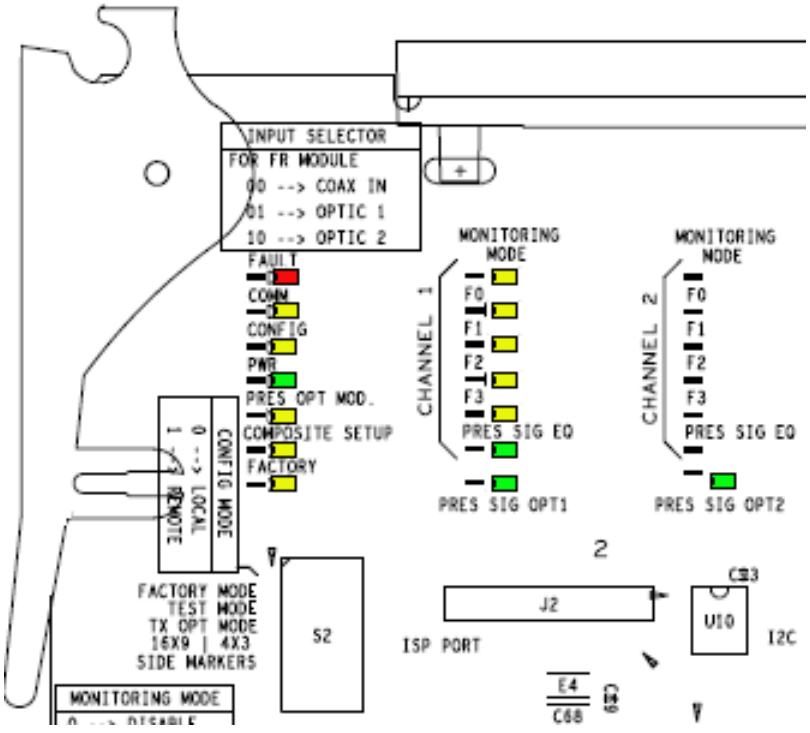
Note When a module is first plugged into a GeckoFlex frame, the 8900NET module (if present) may report a momentary fault. This will clear once the module has booted up.

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 SFP device) should be on. Refer to Table 5 on page 23 to see a complete list of possible operating conditions and the resulting indicator status.

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

Figure 8. 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 5 describes signal output and LED indications for the various input/reference combinations.

Table 5. 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 SFP device not installed
	On				Fiber optic SFP device installed
COMPOSITE SETUP (yellow)	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 (green)	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 (green)	Off				No presence of optical signal on Fiber optic Input 2
	On continuously				Presence of optical signal on Fiber Optic Input 2

Remote Configuration

The 8949MDA-CFR/8949MDA-SFR configuration and monitoring can also be performed 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). Each of these interfaces is described below.

8900NET Module Information

Refer to the *8900NET Network Interface Module Instruction Manual* available online in PDF format for information on the 8900NET 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. Refer to the documentation that accompanies the Newton Modular Control System for installation, configuration, and operation information.

Control panel access offers the following considerations for module configuration and monitoring:

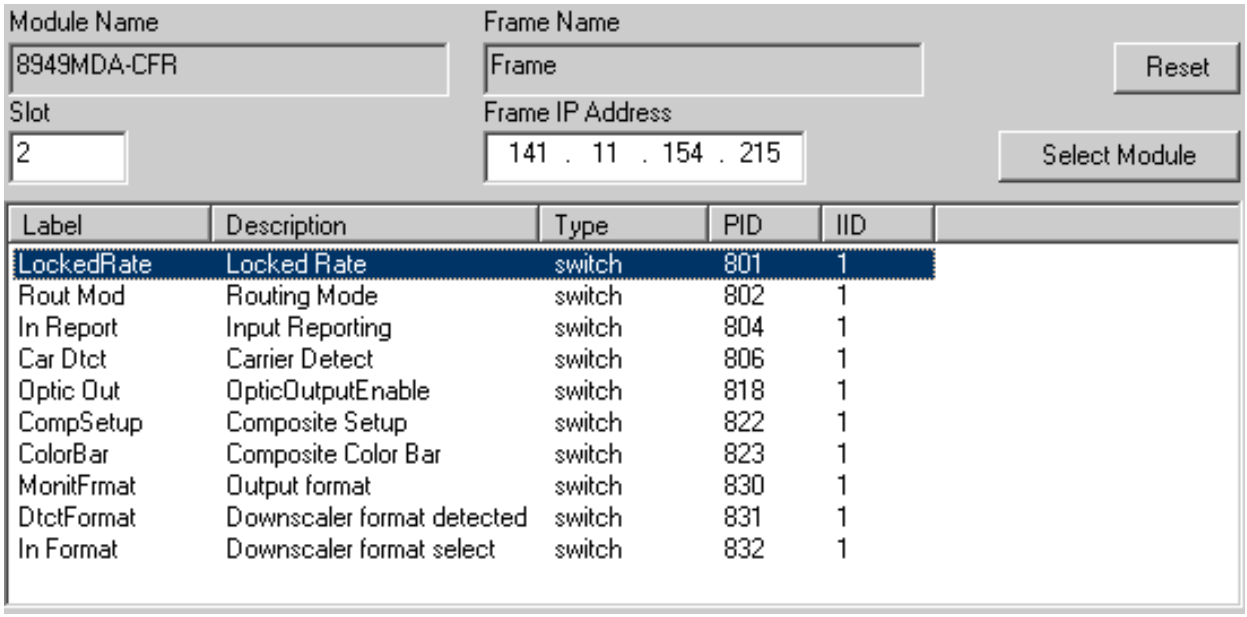
- Ability to separate system level tasks from operation ones, minimizing the potential for on-air mistakes.
- Ability to group modular products—regardless of their physical locations—into logical groups (channels) that you can easily manipulate with user-configured knobs.
- Update software for applicable 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.

Newton Control Panel parameters are listed in Table 10 on page 49.

An example of the Newton Configurator is shown in Figure 9.

Figure 9. 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:

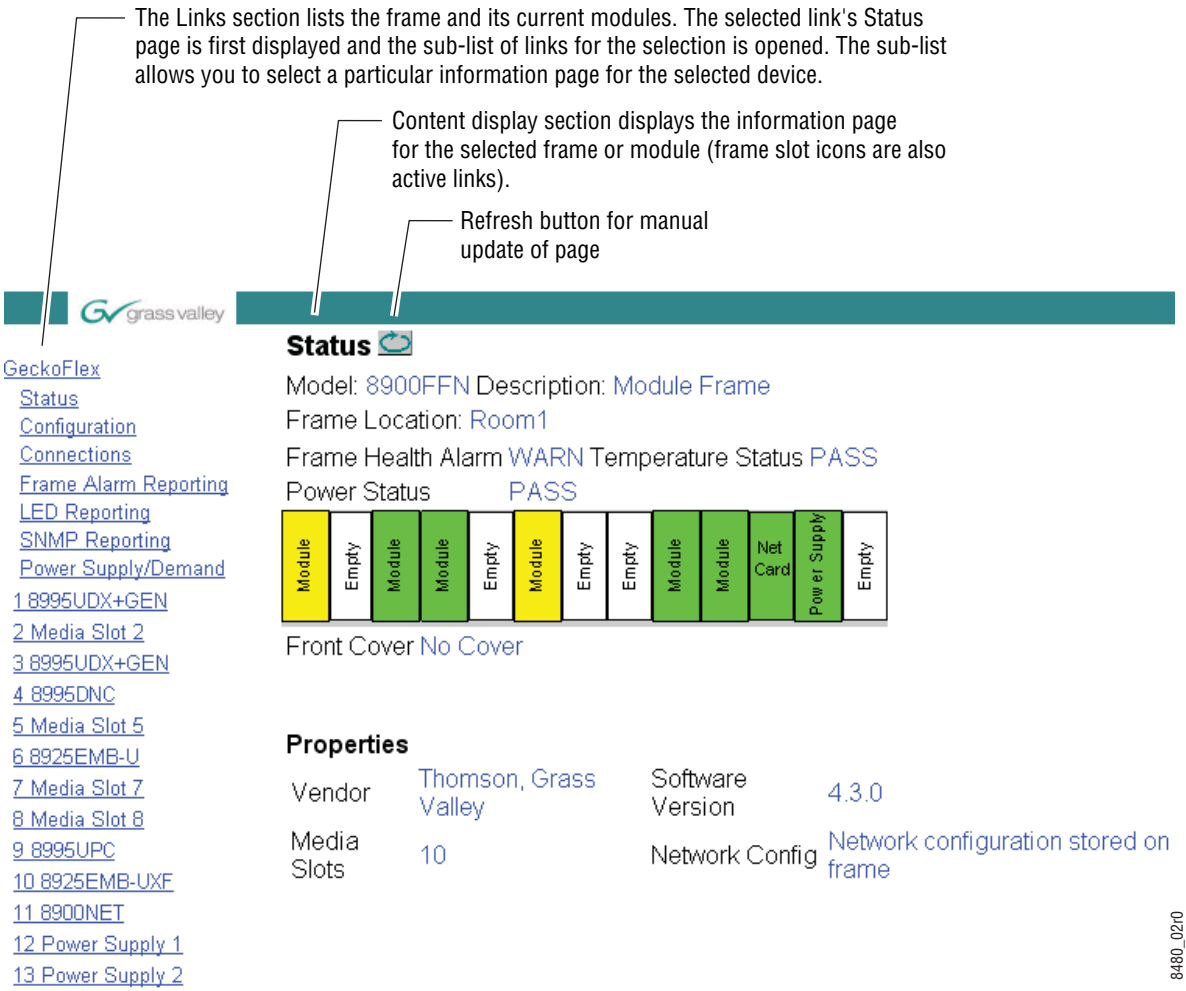
- Web access will require some normal network time delays for processing of information.
- Configuration parameter changes may require pressing **Apply** button or **Enter**, upload processing time, and a manual screen refresh to become effective.
- Web interface recommended for setting up module signal and slot names, and reporting status for SNMP and monitoring.

Refer to the Frame Status web page shown in Figure 10 on page 26. 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 Status web page, refer to *Status Web Page* on page 28.

Figure 10. Main Menu – Frame Status Web Page



8949MDA-CFR and 8949MDA-SFR Links and Web Pages

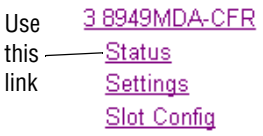
The 8900 GUI provides the following links and web pages for the 8949MDA-CFR and 8949MDA-SFR modules (Figure 11):

- Status – reports input and output signals and frame bus communication status and module information (page 28),
- Settings – allows the configuration of the inputs and outputs (page 33),
- Slot Config – provides Locate Module and Slot Memory functions along with links to the SNMP, LED Reporting, and Frame Alarm configuration web pages (page 37).

All parameters that can be set on the web pages are summarized in Table 10 on page 49.

Figure 11. 8949MDA Web Page Links

Status Web Page



The Status web page for 8949MDA-CFR for the 8949MDA-SFR) shows the signal status of the input signal(s) and communication with the frame bus. The Status page appearance will depend on the presence and type of fiber optic SFP device installed.

Use the Status web page example applicable to your configuration from the list below (the -CFR and -SFR are identical):

- 8949MDA-CFR/SFR without SFP device: Figure 12 on page 29
- 8949MDA-CFR/SFR with Dual Receiver SFP device: Figure 13 on page 30
- 8949MDA-CFR/SFR with Dual Transmitter SFP device: Figure 14 on page 31
- 8949MDA-CFR/SFR with Dual Transceiver SFP device: Figure 15 on page 32

Color coding of the display indicates the signal status. Refer to *Web Browser Interface* on page 25 for an explanation of the color coding.

- Under the **Status** title are given the model, the description and the frame location. Below, the graphic shows the input and output signals. If the status of either input or output changes, 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.
- The presence and the type of **Optic Device** installed will be reported in the double bars area below the graphic depending on the fiber optic SFP device installed.

  Other module warning messages from the module will also appear in this area. If no SFP device is installed, it will report **Optic Device: MISSING**.

Note Some modules may display a part number on the Status web page that is different from the one printed on the module circuit board. These part numbers are completely compatible.

- 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 are given in a properties section at the bottom of the Status Web Page.

Figure 12. Status Web Page without Fiber Optic SFP Device

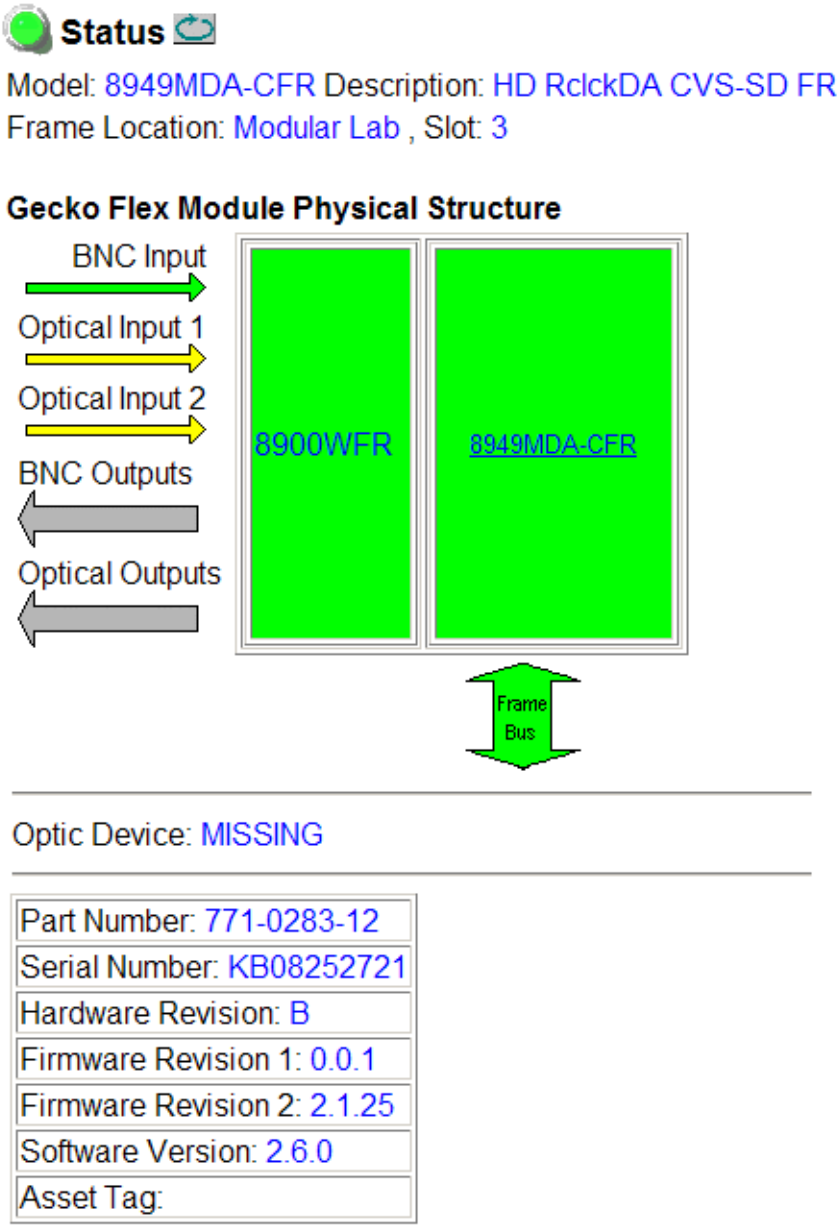


Figure 13. Status Web Page with Dual Receiver SFP Device

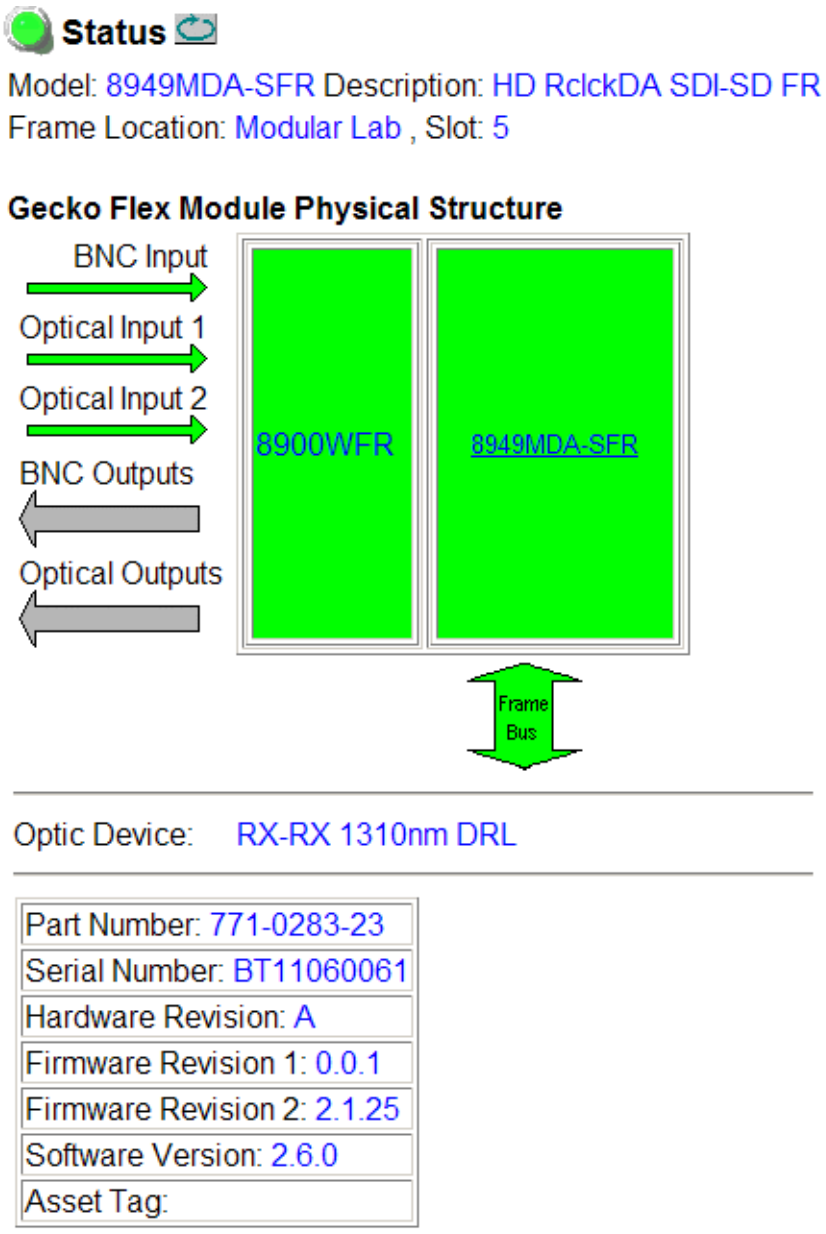


Figure 14. Status Web Page with Dual Transmitter SFP Device

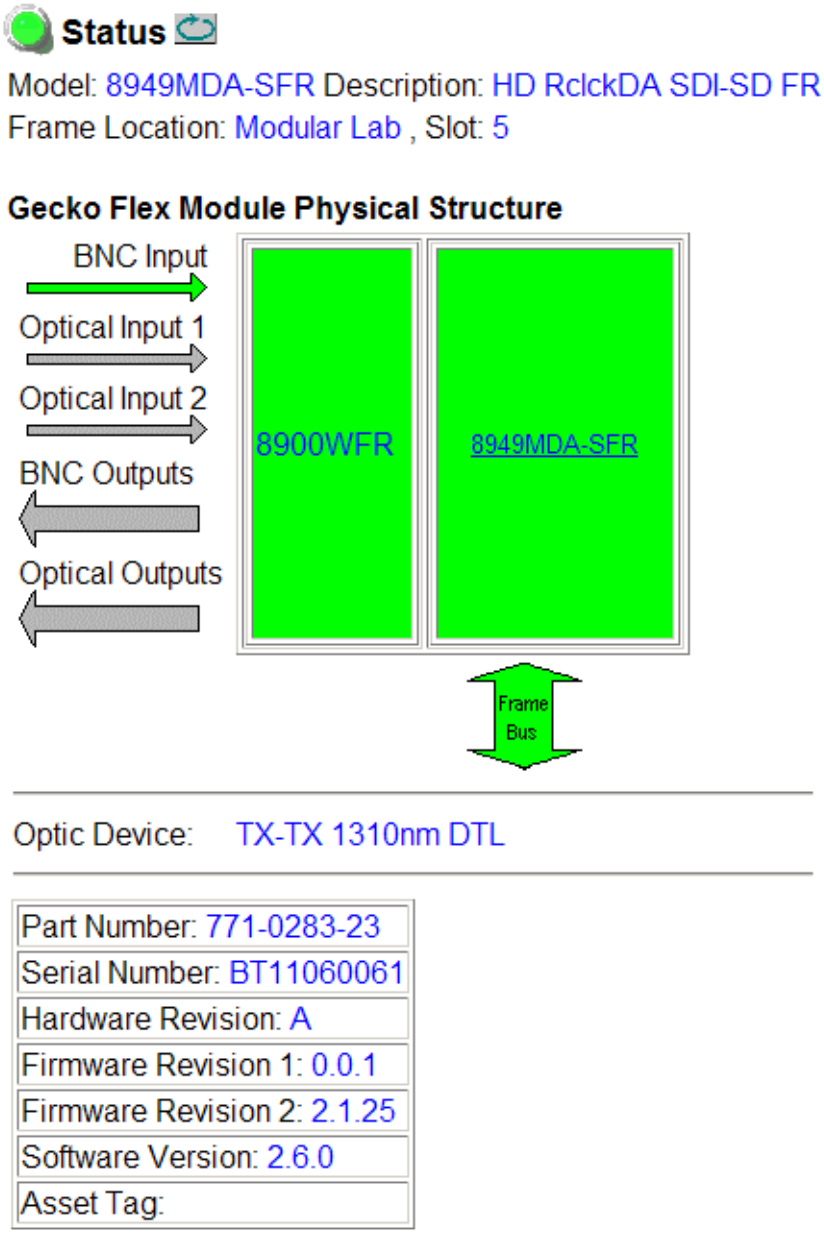
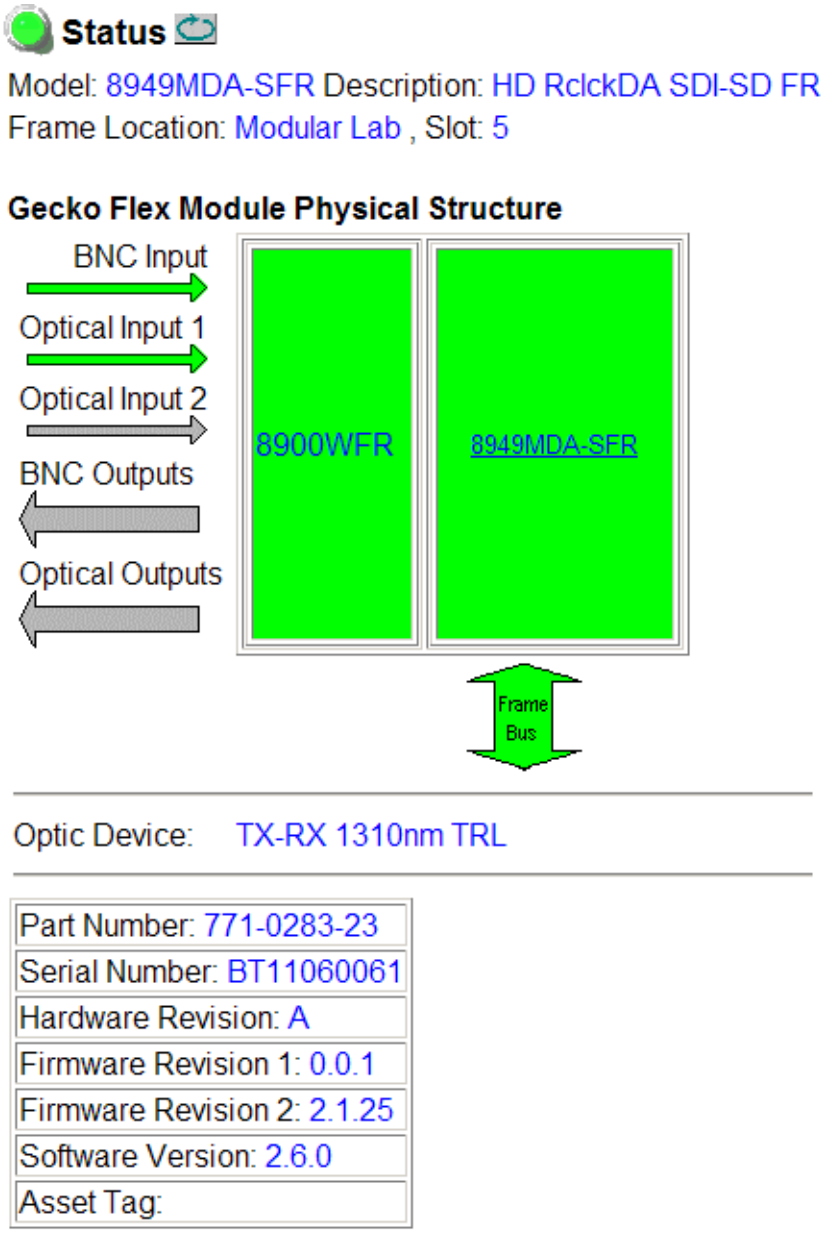
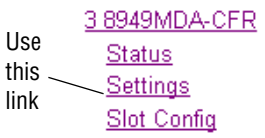


Figure 15. Status Web Page with Transceiver SFP Device



Settings Web Page



The Settings web page for the 8949MDA-CFR and the 8949MDA-SFR modules provide configuration and reporting of the DA output. This page provides controls to perform input configuration depending on the module type and the presence and type of SFP device installed.

Use the Settings web page example applicable to your configuration from the list below:

- 8949MDA-CFR without SFP device: Figure 16 on page 34
- 8949MDA-CFR/SFR with Dual Receiver SFP device: Figure 17 on page 35
- 8949MDA-CFR/SFR with Dual Transmitter SFP device: Figure 18 on page 36
- 8949MDA-CFR/SFR with Dual Transceiver SFP device: Figure 19 on page 37

The parameters for configuration of a 8949MDA module are explained below. Controls act the same for the -CFR and -SFR unless otherwise noted.

- The **Routing Mode** area will be different, depending on the presence and type of fiber optic SFP devices. This area shows the available inputs. Only one input can be selected.
  - **Coax In 1** – selection of J9 BNC coax input (always available).
  - **Optic 1 or/and 2** – selection of the available optical input when a Dual Receiver fiber optic SFP device is installed (RX1 and RX2) or RX1 when a Transceiver is installed.
- **Optical Outputs** – when a fiber optic dual transmitter SFP device is installed, TX1 and TX2 outputs will be available or one TX2 output will be available when a Transceiver is installed. You must **Enable** or **Disable** the transmitter outputs.

Note Make sure that the local control TX OPT MODE at Pin 4 of S2 (Table 1 on page 14) is in the **On** position (to the right).

- **Input Reporting** – choose between **Enable** or **Disable**. The **Enable** parameter sends alarms to the 8900NET module on the input signals (presence of signal). The color of arrows on the module Status web page will report status.

  The **Disable** parameter will change the color of arrows on the Status web page to gray to show they are not being monitored or reported to upper level control devices. This is the default setting.
- **Input Format** – selection of the input format on the SD-SDI or HD-SDI signal. Refer to Figure 16 on page 34 for formats available.
- **Carrier Detect** – indicates the presence of valid input signal.

- **Locked Rate** – this value is linked to the input bitstream rate detected.
- **Video Format** – this value reports the input format detected.
- **Monitoring Format** – this value indicates the downscaled output format.
- **Composite Color Bar** – on the 8949MDA-CFR only, this parameter allows the selection of a composite color bar test pattern on the downscaled composite outputs.
- **Composite Setup** – on the 8949MDA-CFR only, this parameter will appear if the **Monitoring Format** is 480i/59.94 (NTSC). Configure as **Setup** or **No Setup** on the composite outputs as shown in Figure 16.

Figure 16. Settings Web Page without SFP Device

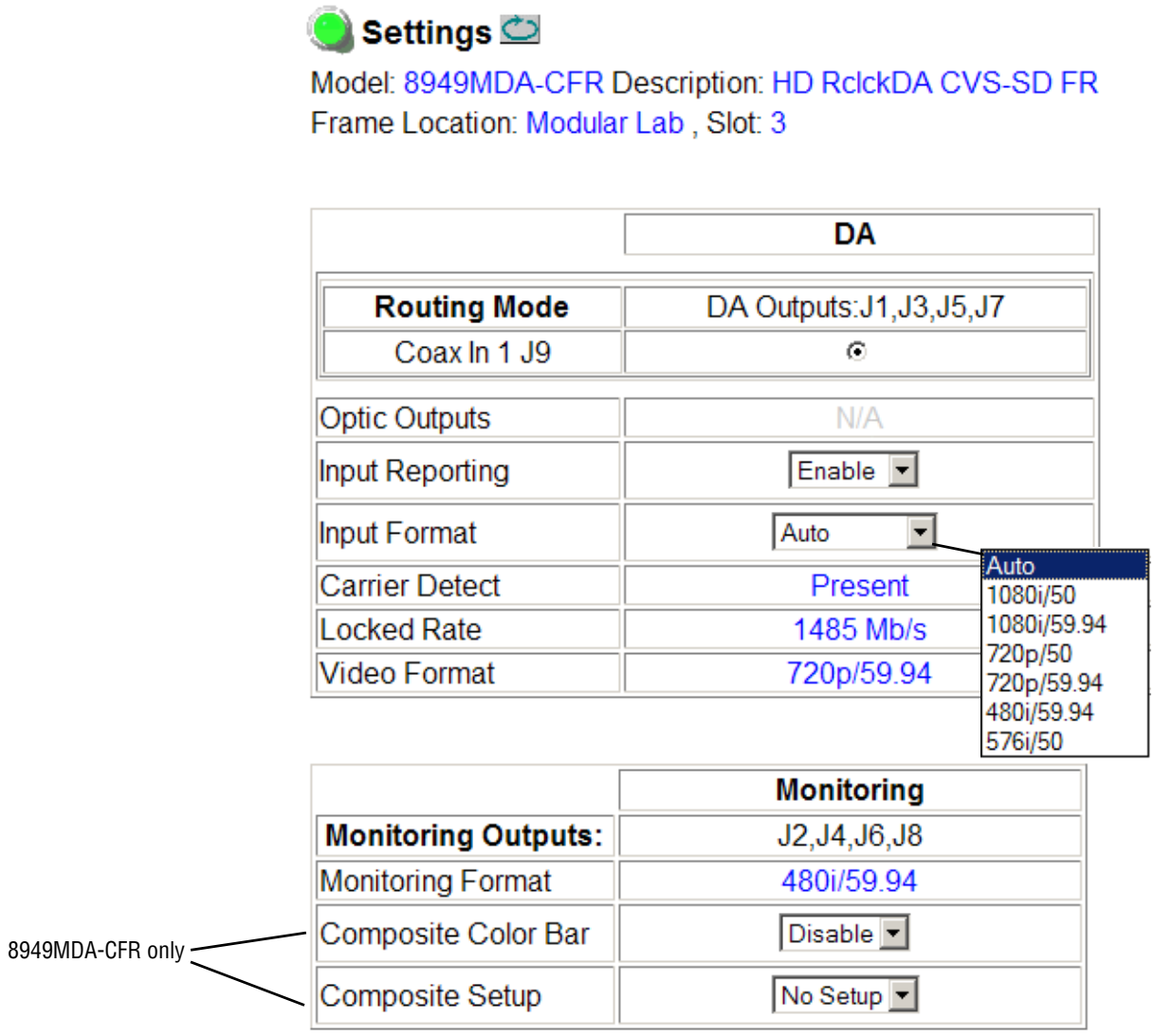


Figure 17. Settings Web Page With Dual Receiver SFP Device

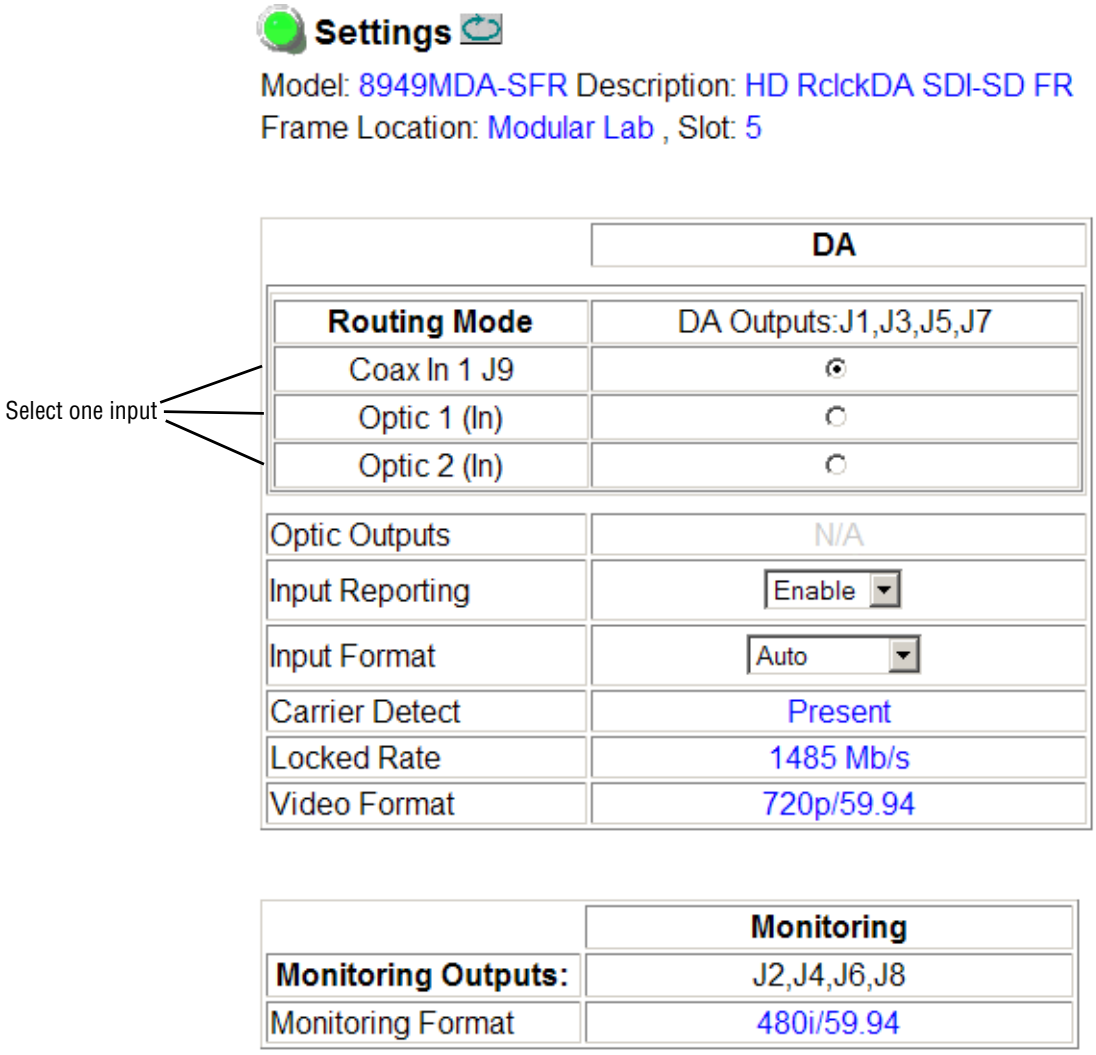


Figure 18. Settings Web Page with Dual Transmitter SFP Device

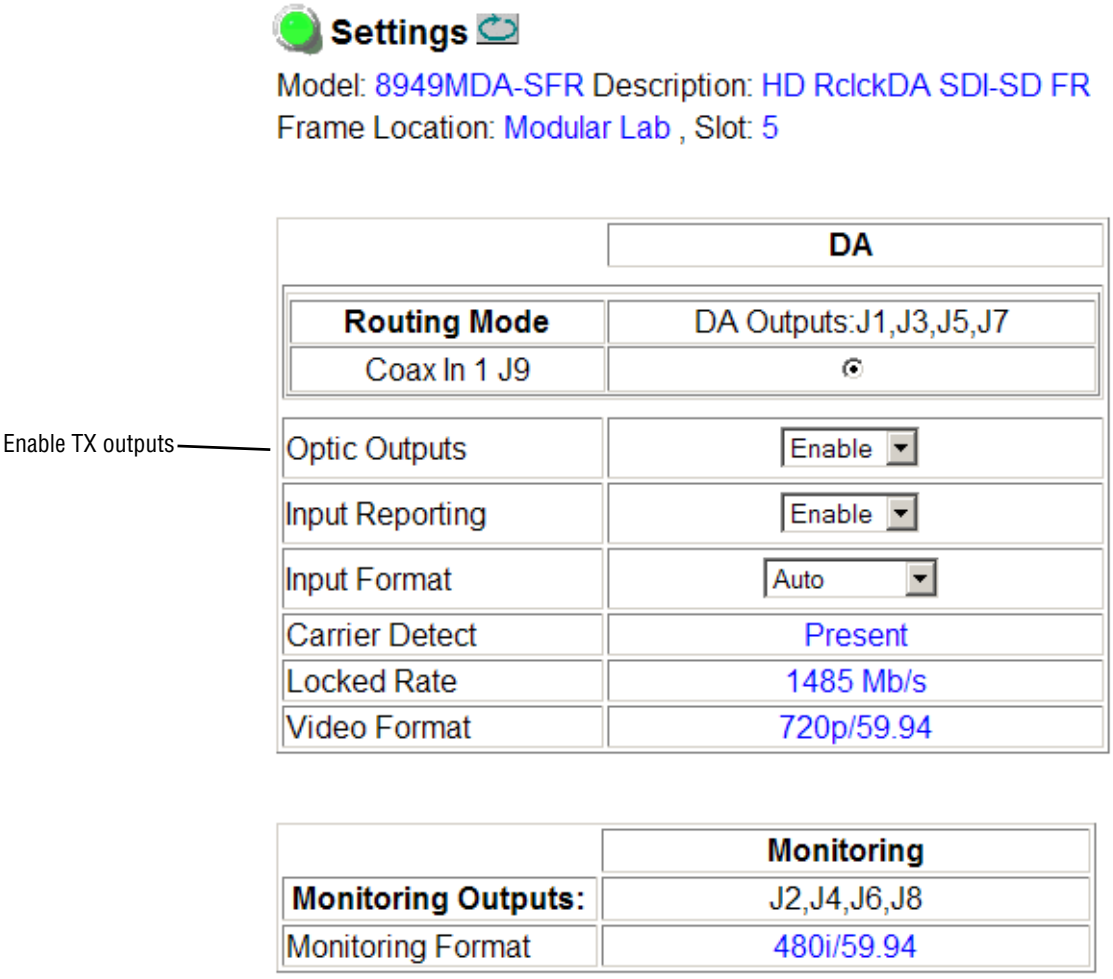
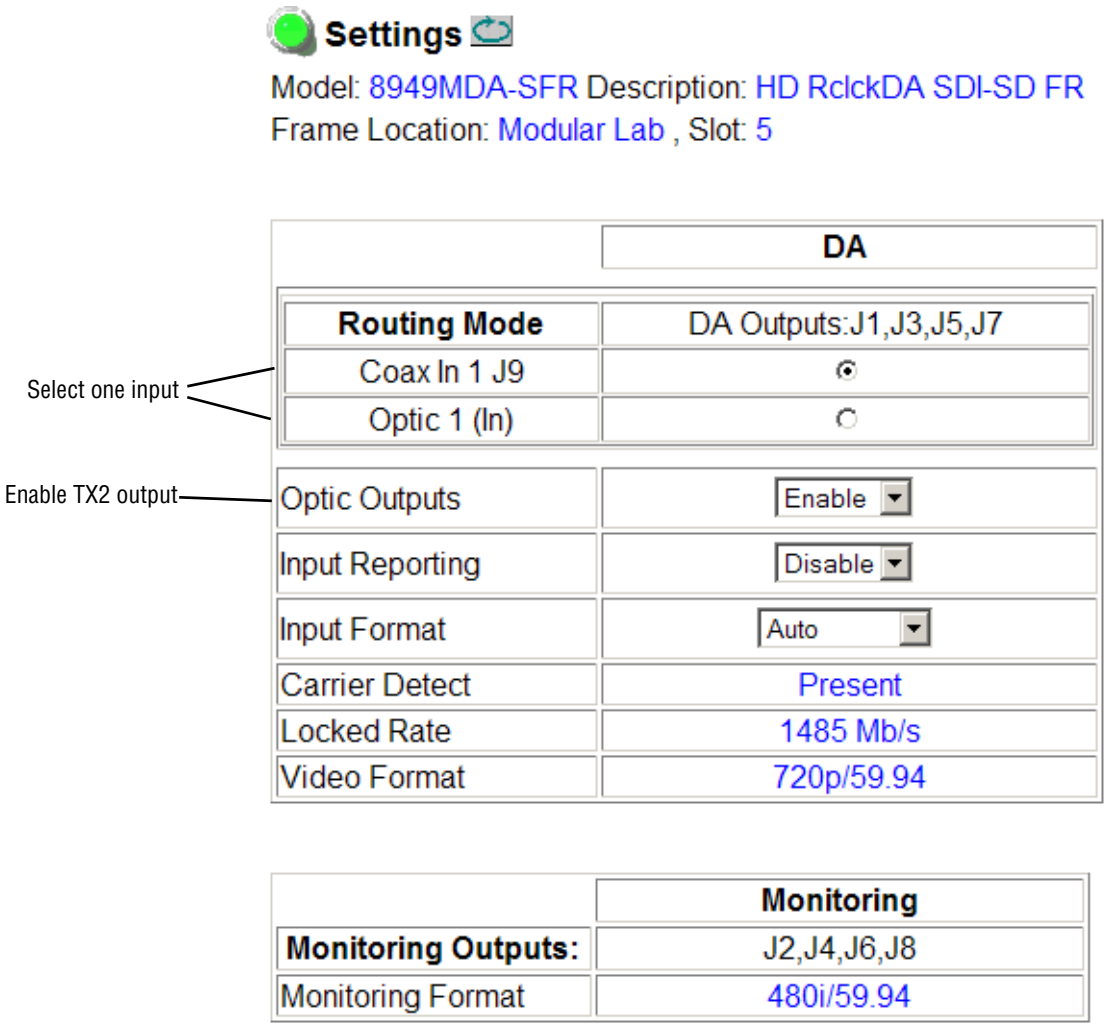
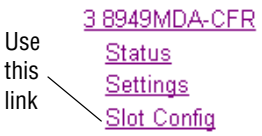


Figure 19. Settings Web Page with Transceiver SFP Device



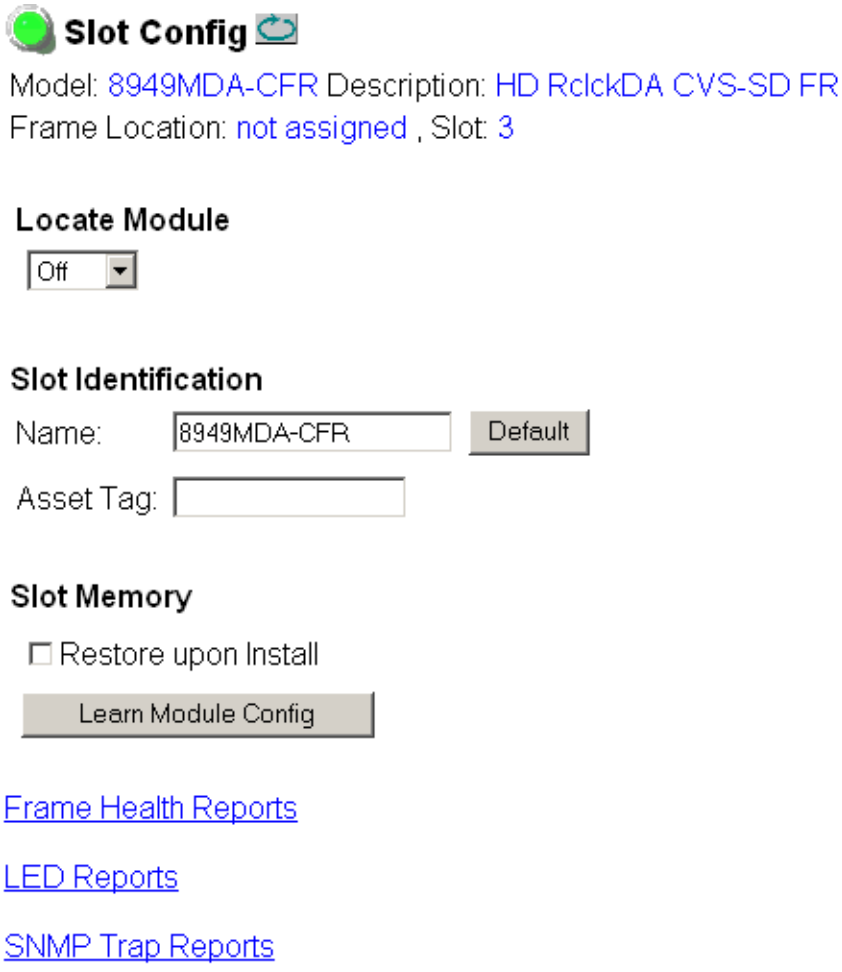
Slot Config Web Page



Use the Slot Config web page (Figure 20) to perform the following functions on the module:

- Locate Module
- Slot Identification
- Slot Memory
- Frame Health Reports link
- LED Reports link
- SNMP Trap Reports link.

Figure 20. Slot Config Web Page



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.

Software Updating

Software updating of the 8949MDA modules is done using the NetConfig Networking Application PC option. 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.

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 22. 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 10 on page 26 for an example.
- Module Status web page (Figure 12 on page 29) – 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 6. 8949MDA-CFR and 8949MDA-SFR 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
Auto equalization	• 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
DA Coax Outputs	
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-SFR Module)	
Number and type of outputs	4 BNCs
Signal type	Conforming to the SMPTE 259M standard
SDI level	800 mV±10%
Return loss	> 15 dB
Output jitter	Conforming to the SMPTE 259M standard
Downscaler delay	< 0.95 ms
Downscaler output	9 bits representation
Embedded audio and HANC passed to output	SD SDI only
Downscaled Composite Outputs (8949MDA-CFR Module)	
Number and type of outputs	4 BNCs
Signal type	Conforming to the SMPTE 170M standard for NTSC and CCIR624 for PAL-B
Return loss	> 40 dB, 0 to 10 MHz
Output impedance	75 Ohm
Downscaler delay	< 0.97 ms
Downscaler output	9 bits representation

Table 6. 8949MDA-CFR and 8949MDA-SFR Specifications

Parameter	Value
Power	
Maximum Input power (with fiber optic SFP device) 8949MDA-CFR 8949MDA-SFR	 8.5 W 7.9 W
Mechanical	
Number of frame slots	1 slot
Rear module type	8900WFR-R
Rear module retainer maximum screw torque	4-5 inch-lb./0.45-0.6Nm
Environmental	
Frame temperature range	Refer to GeckoFlex Frames 8900FX/FF/FFN Signal Processing Systems Instruction Manual at www.grassvalley.com/docs/modular
Operating humidity range	
Non-operating temperature	

Table 7. Receiver/Transceiver Fiber Optic SFP Device Specifications

Model Number	SFP-13103G-M2DRX	SFP-13103G-M2TRX
Low wavelength	1270nm	1270nm
High wavelength	1610nm	1610nm
Receiver channels	2	1
Connector type	LC	
Fiber support	Single mode	
Data rate	143 Mb/s to 2.97 Gb/s	
Maximum receive signal levels @2.97Gb/s, 360Mb/s, and 270Mb/s	-3 dBm (0.501) mW	
Minimum receive signal levels @2.97Gb/s, 360Mb/s, and 270Mb/s	-23 dBm (0.500974 mW)	

Table 8. Transmitter/Transceiver Fiber Optic SFP Device Specifications

Model Number	SFP-13103G-M2DTX	SFP-13103G-M2TRX
Wavelength 1	1310nm	1310nm
Wavelength 2	1310nm	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 @2.97Gb/s, 360Mb/s, and 270Mb/s	-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.

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

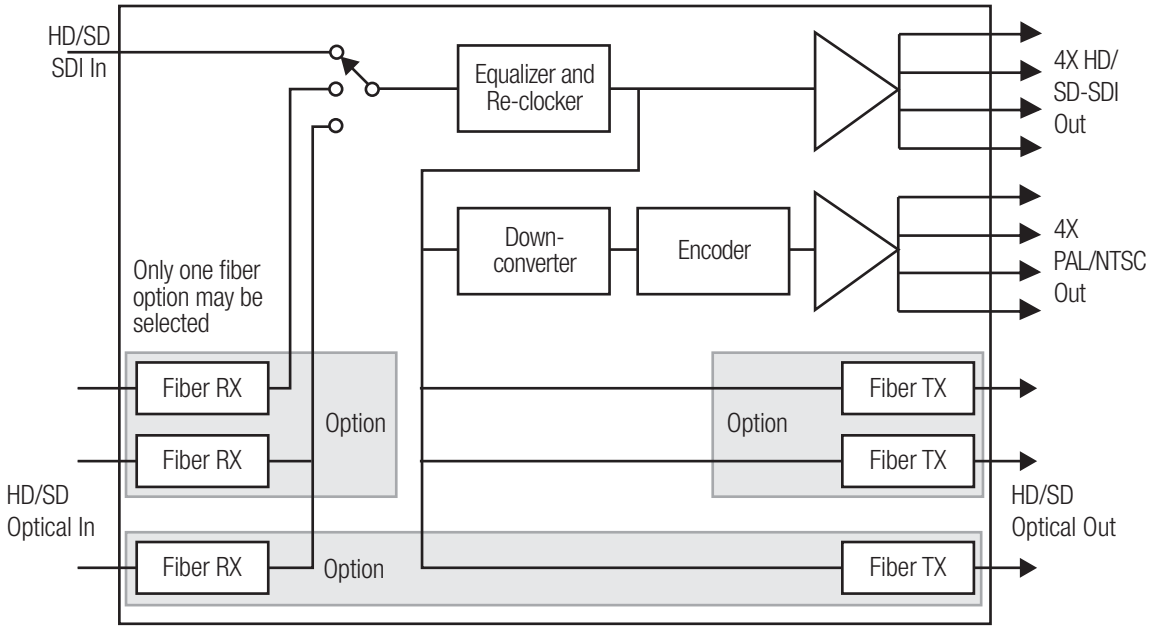
Table 9. List of Alarms for 8949MDA module

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 SFP device 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-CFR or 8949MDA-SFR	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

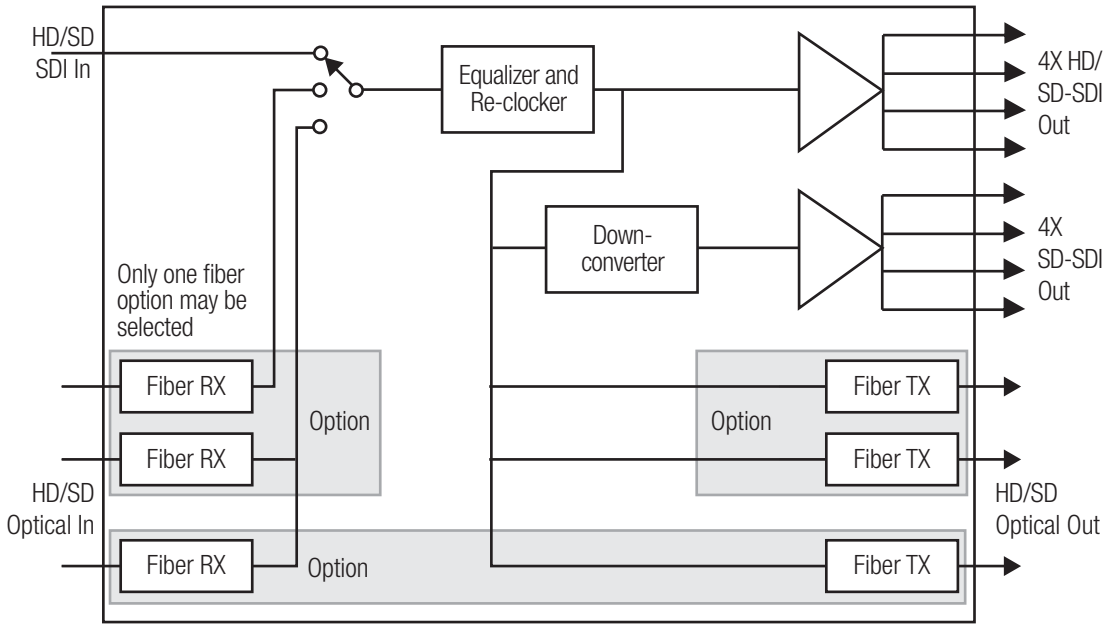
A block diagram of the 8949MDA-CFR is shown in Figure 21.

Figure 21. 8949MDA-CFR Block Diagram



A block diagram of the 8949MDA-SFR is shown in Figure 22.

Figure 22. 8949MDA-SFR Block Diagram



Configuration Summary Table

Table 10 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 10. 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 by Local controls	S2: Pin 1 Off = Local Only On = Local&Remote	N/A
Routing mode (Up to three inputs depending on type of fiber optic SFP device 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 SFP device 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
Composite Color Bars test signal (8949MDA-CFR only)	Disable	Enable or Disable	Settings/ Composite Color Bar pulldown	N/A	ColorBar
Composite Setup (8949MDA-CFR only)	Setup	Setup or No Setup	Settings/ Composite Setup pulldown	S1: Pin 8 Off = No Setup On = Setup	CompSetup

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