

8935CF

4 CH ELECTRICAL TO FIBER CONVERTER

Instruction Manual

SOFTWARE VERSION 1.0.0

071854300
MAY 2007

CERTIFICATE

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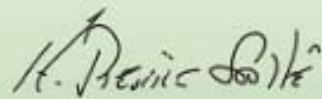
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8935CF

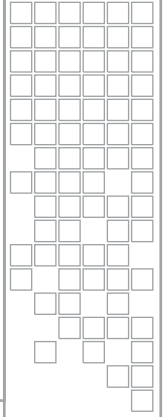
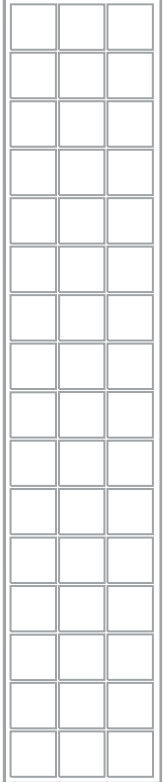
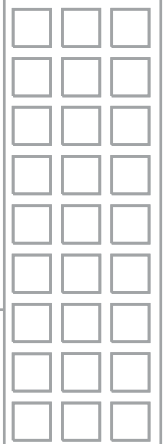
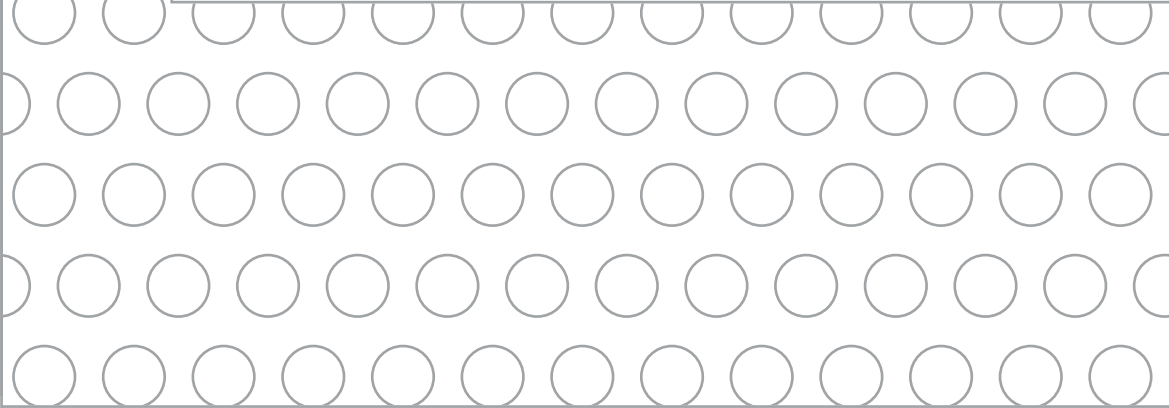
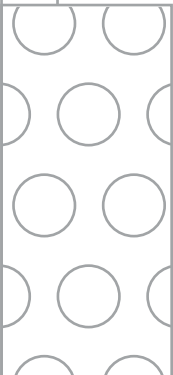
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Preface

About This Manual

This manual describes the features of the 8935CF module and the corresponding rear modules in the GeckoFlex frame. As part of this family of modular products, it is subject to the Safety and Regulatory Compliance information described in the *GeckoFlex Frames Instruction Manual*.

When using any of the fiber optic options, refer to the laser compliance information in the *GeckoFlex Frames Instruction Manual* for safety information.

8935CF 4 Channel Electrical to Fiber Converter Module

Introduction

This manual covers installation, configuration, and operation of the 8935CF 4 Channel Electrical to Fiber Converter module.

Module Features

The 8935CF module is a four channel electrical to optical converter (dual transmitter) with both electrical and fiber optic outputs. The module can accommodate a variety of high definition video inputs as well as DVB/ASI, AES, and GVG audio TDM interfaces.

The following features are available with this module:

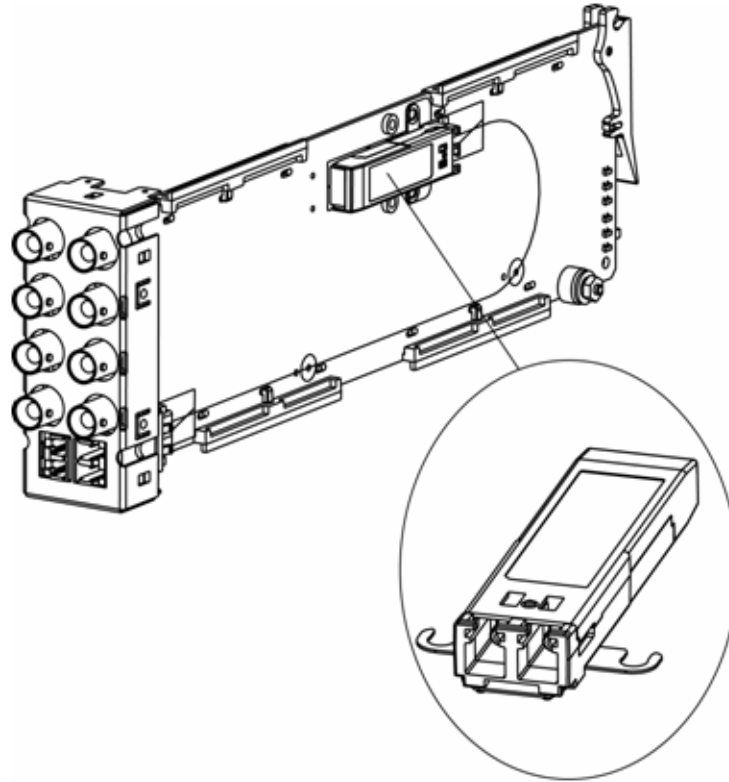
- Two module set including a hot-swappable front and rear module and up to two single mode SFP dual transmitter fiber optic submodules mounted on the front module.
- Up to ten 8935CF modules in the same 2 RU GeckoFlex frame.
- Four electrical BNC inputs to up to four fiber optic outputs and an identical electrical BNC output for each channel.
- Re-clocking for stable long distance signals or re-clocking bypass for non-SDI signals.
- Supports both HD or SD formats and passes embedded audio present in the incoming video stream.
- CWDM (Coarse Wavelength Division Multiplexing) capability when combined with 8939FCA Passive CWDM Optical Mux/Demux modules and 8935FC 4 Channel Fiber to Electrical Converter modules and other fiber-ready modules.
- SNMP and product health monitoring is supported through the 8900NET module with applications such as NetCentral.
- Software updating using the NetConfig Networking application.

The 8935CF can be populated with any two of the following SMV_SFP (Strap Mount Video Small Form-factor Pluggable) dual transmitter sub-modules, depending on the application desired:

- SFP-1310-STRX – Dual Transmitter with 1310nm FP lasers
- SFP-CWDM-1 – Dual Transmitter with CWDM lasers (1440/1490nm)
- SFP-CWDM-2 – Dual Transmitter with CWDM lasers (1510/1530nm)
- SFP-CWDM-3 – Dual Transmitter with CWDM lasers (1550/1570nm)
- SFP-CWDM-4 – Dual Transmitter with CWDM lasers (1590/1610nm)

Figure 1 illustrates an 8935CF module with a submodule and rear module (rear module attached for clarity only).

Figure 1. 8935CF Module with Rear Module and Submodule



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 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.

Installation

The 8935CF model consists of a front and rear module set that can only be installed in a GeckoFlex frame. Two SFP fiber optic dual transmitter sub-modules, shipped separately, must also be installed for full functionality of the module.

Note The 8935CF modules can only be installed in a GeckoFlex frame.

Installation of the 8935CF module set is a process of:

1. Placing the 8900CF-R rear module in a rear frame slot,
2. Installing the SFP fiber submodules on the front module,
3. Placing the front module in the corresponding front slot,
4. Cabling the signal ports, and
5. Setting module parameters with on-board switches or with the web browser interface.

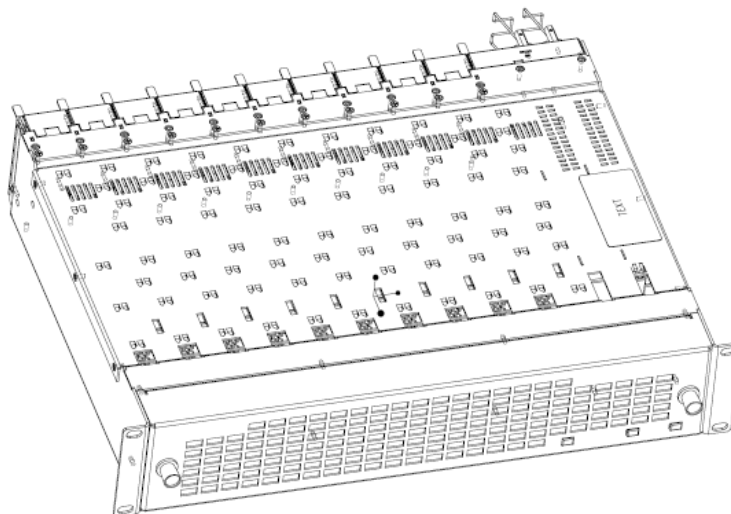
All GeckoFlex front and rear modules can be inserted and removed from an GeckoFlex frame with power on.

Note Modules and submodules are sensitive to static damage, use standard anti-static precautions when handling components.

Module Placement in the GeckoFlex Frame

There are ten front and rear cell locations in the 2 RU GeckoFlex frame ([Figure 2](#)) to accommodate either audio, analog and digital video modules.

Figure 2. GeckoFlex Frame



Rear Module Installation

Each rear module or blank rear adapter cover is held in place by two retainer strips as shown in [Figure 3](#). To install a rear module into the frame, follow these steps:

1. Loosen (but do not remove completely) the two screws holding each retainer strip to the frame with a 2 mm (5/64") hex screwdriver. Pull up on the retainer to remove it, leaving the screws in place.

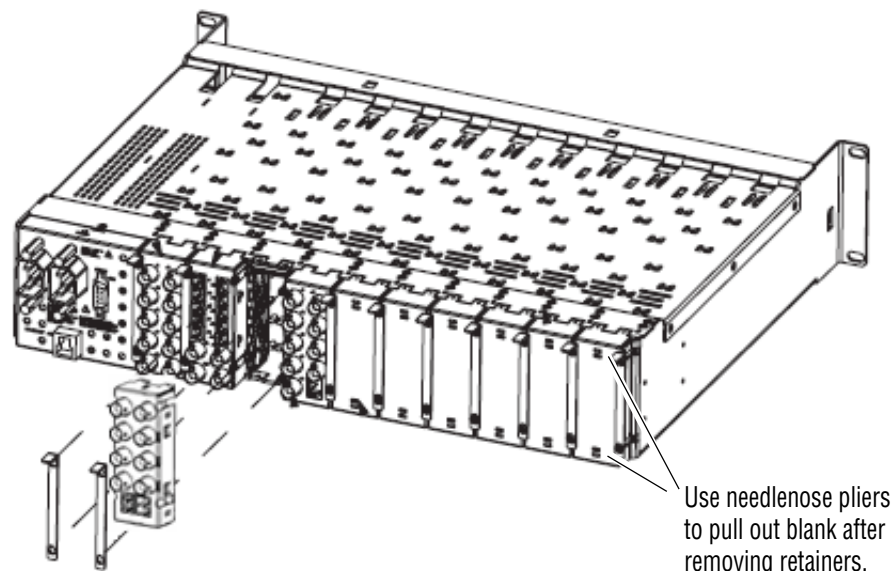
CAUTION Be careful to leave the screws in place as they can be easily lost or fall into equipment below the frame creating a shorting hazard.

2. Remove the blank adapter covers on two adjacent slots by inserting needlenose pliers into the top and bottom blank slots and pull it off.

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.

3. Before installing the 8935CF rear module, check that the blue plastic fiber optic connectors on the rear module are not mounted too rigidly. They should not be locked tightly in place. You should be able to move the connectors slightly to the left and right so they are flexible enough to accept the front module fiber connector without damaging it.
4. Insert the rear module into the empty slots.
5. Replace each retainer strip over the two screws on both sides of the module and push down to seat the retainer.
6. Tighten the screws for each retainer just until they are snug. Do not force or torque the screws too tightly.

Figure 3. Installing Rear Module



SMV_SFP Submodule Installation

Two dual channel Tx-Tx SMV_SFP submodules must be installed on an 8935CF module to provide full functionality. The type of submodule depends on the application of the module. The submodules must be one of the following models from Grass Valley:

- SFP-1310-SDTX – Dual Transmitter with 1310nm FP lasers
- SFP-CWDM-1 – Dual Transmitter with CWDM lasers (1440/1490nm)
- SFP-CWDM-2 – Dual Transmitter with CWDM lasers (1510/1530nm)
- SFP-CWDM-3 – Dual Transmitter with CWDM lasers (1550/1570nm)
- SFP-CWDM-4 – Dual Transmitter with CWDM lasers (1590/1610nm)

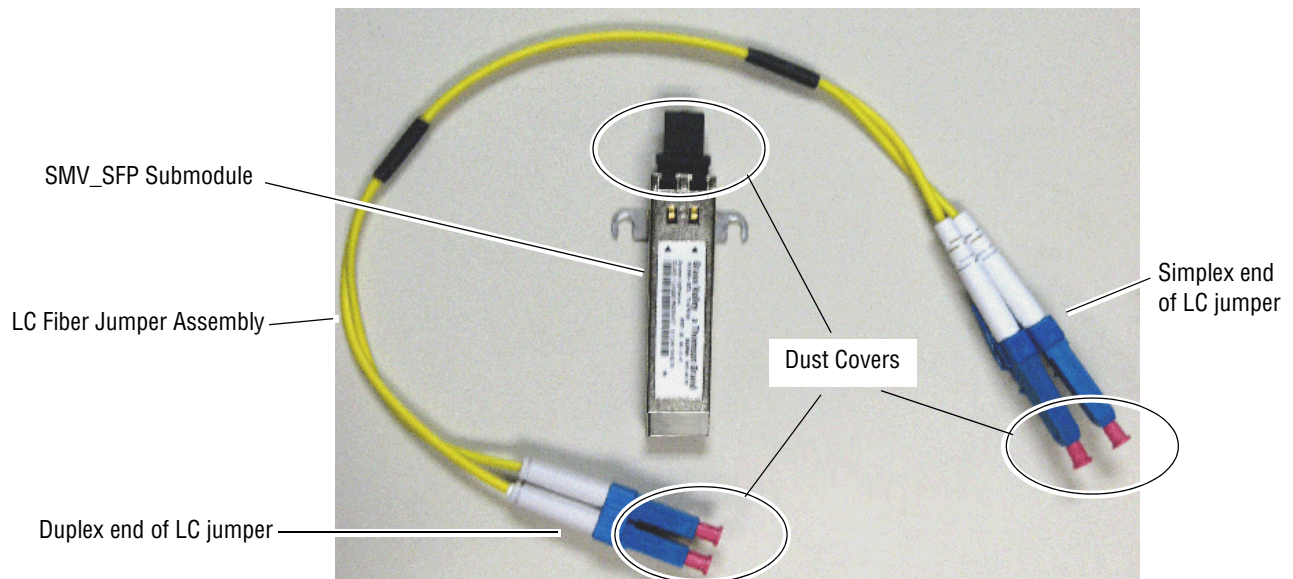
Each submodule ships in a separate kit and must be installed by the customer on the front module.

Note For using the CWDM full functionality mux/demux format with the 8939CA and the 8935FC modules, refer to [CWDM Configuration on page 20](#) for specific submodule installation location and cabling information.

The submodule kit includes one SMV_SFP submodule with dust cover protector and a dual channel single mode standard LC fiber cable assembly with dust covers on the fiber optic ferrules (glass ends of cable). A kit example is shown in [Figure 4](#).

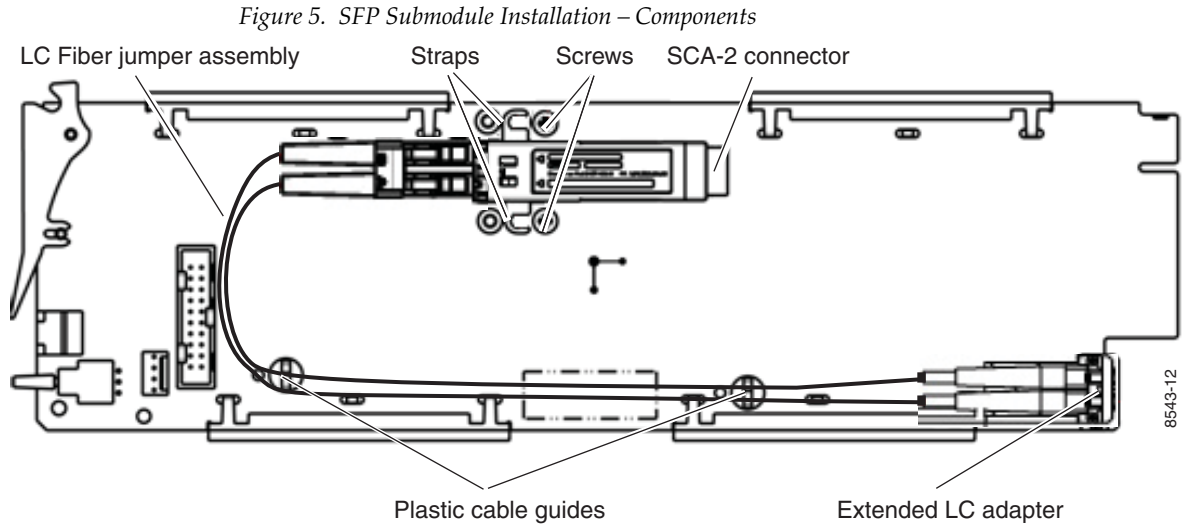
CAUTION Use industry standard practice fiber optic cleaning and anti-static handling procedures when installing and cabling the fiber optic devices. Refer to [Fiber Optic Cleaning Requirement on page 10](#).

Figure 4. SFP Submodule and Cable Assembly



Submodule Installation Overview

The two SMV-SFP submodules are installed on the top and bottom sides of the circuit board and must be cabled to the output connectors on the main module with the cable assemblies provided. [Figure 5](#) identifies the locations of the hardware components, connectors, and plastic cable guides.

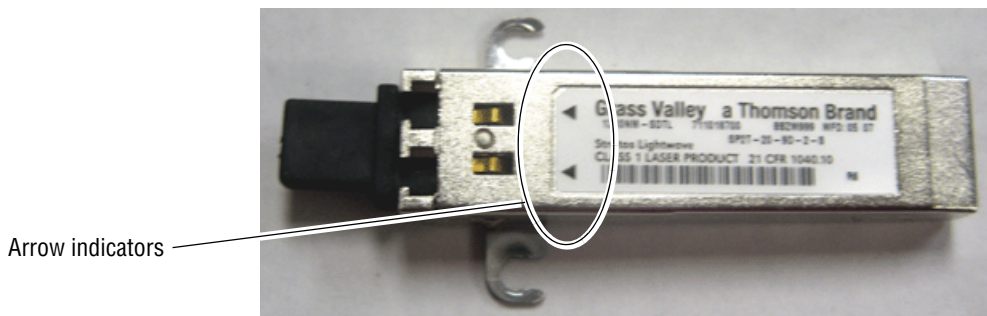


Each submodule type can be identified by a part number on the label ([Figure 6](#)). The direction of the arrows on the label indicate that the device is a dual transmitter, dual receiver, or transceiver. The device in [Figure 6](#) illustrates a 1310nm dual transmitter.

On CWDM submodules (not shown), the frequency of the device will be indicated by numbers between the arrows that correspond to the following model numbers:

- SFP-CWDM-1 – 1440nm (44) and 1490nm (49)
- SFP-CWDM-2 – 1510nm (51) and 1530nm (53)
- SFP-CWDM-3 – 1550nm (55) and 1570nm (57)
- SFP-CWDM-4 – 1590nm (59) and 1610nm (61)

Figure 6. Submodule Identification

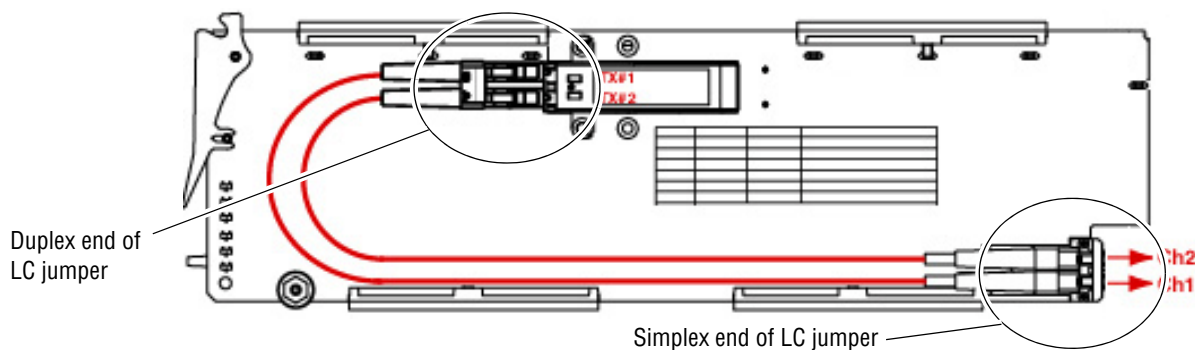


Channel 1 and Channel 2 Submodule and Fiber Cable Installation

On the top side of the module, install the submodule you wish to use for the Channel 1 and Channel 2 outputs as follows:

1. Remove the black rubber dust cover from the SMV_SFP submodule.
2. Align the submodule with the right angle SFP SCA-2 connector (J1) and the mounting screws on the 8935CF module ([Figure 5 on page 14](#)).
3. Loosen the two screws slightly (do not remove them completely) with a crossblade screwdriver so the SMV_SFP straps slide under the screws.
4. Slide the submodule towards the SCA-2 connector so the electrical connector on the submodule engages with the SCA-2 connector and the straps are underneath the two screws.
5. Tighten the screws to secure the submodule to the front module.
6. Remove the dust covers from the LC Fiber Jumper assembly ferrules.
7. Clean the LC connectors before connecting them (and after every de-mating cycle) using an industry standard fiber optic cleaning kit as described in [Fiber Optic Cleaning Requirement on page 10](#). Also visually inspect the LC ferrules for damage or blockage before installing them into the submodule.

Figure 7. Installing SMV_SFP on Top of 8935CF Module



8. Insert the duplex end of the LC jumper assembly (the two fiber optic ferrules connected together) into the submodule by holding the strain relief boot directly behind the connector housing as shown in [Figure 7](#). Push on the strain relief until you hear a click, indicating the connectors are properly mated.
9. Insert the simplex end of the LC jumper assembly (the two fiber optic connectors are separate) into the LC adapters at the rear of the module.

Note Make sure the Tx1 cable goes to the Ch 1 output LC adapter and the Tx2 cable goes to the Ch 2 LC adapter.

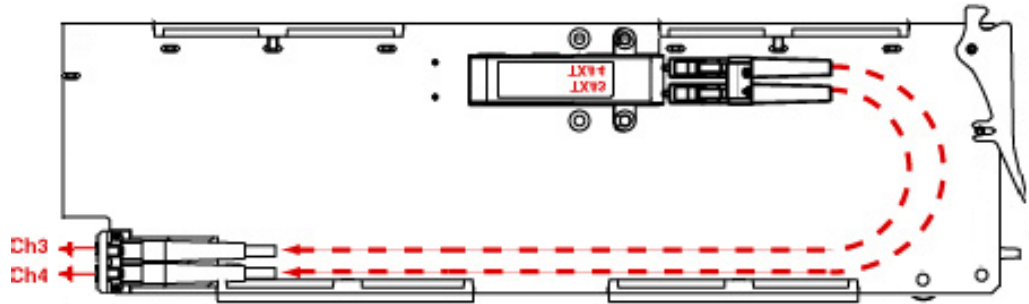
- Secure the LC jumper assembly to the module by carefully inserting the cables into the plastic fiber guides. Do not force the cables into the guides or they can break.

Channel 3 and Channel 4 Submodule and Fiber Cable Installation

Repeat this procedure for the second submodule on the other side (bottom) of the module. [Figure 8](#) illustrates the bottom of the module. This submodule will output Channel 3 and Channel 4 and will install in SCA-2 connector, J2.

Note Make sure the Tx3 cable goes to the Ch 3 output LC adapter and the Tx4 cable goes to the Ch 4 LC adapter.

Figure 8. Installing SMV_SFP on Bottom of 8935CF Module

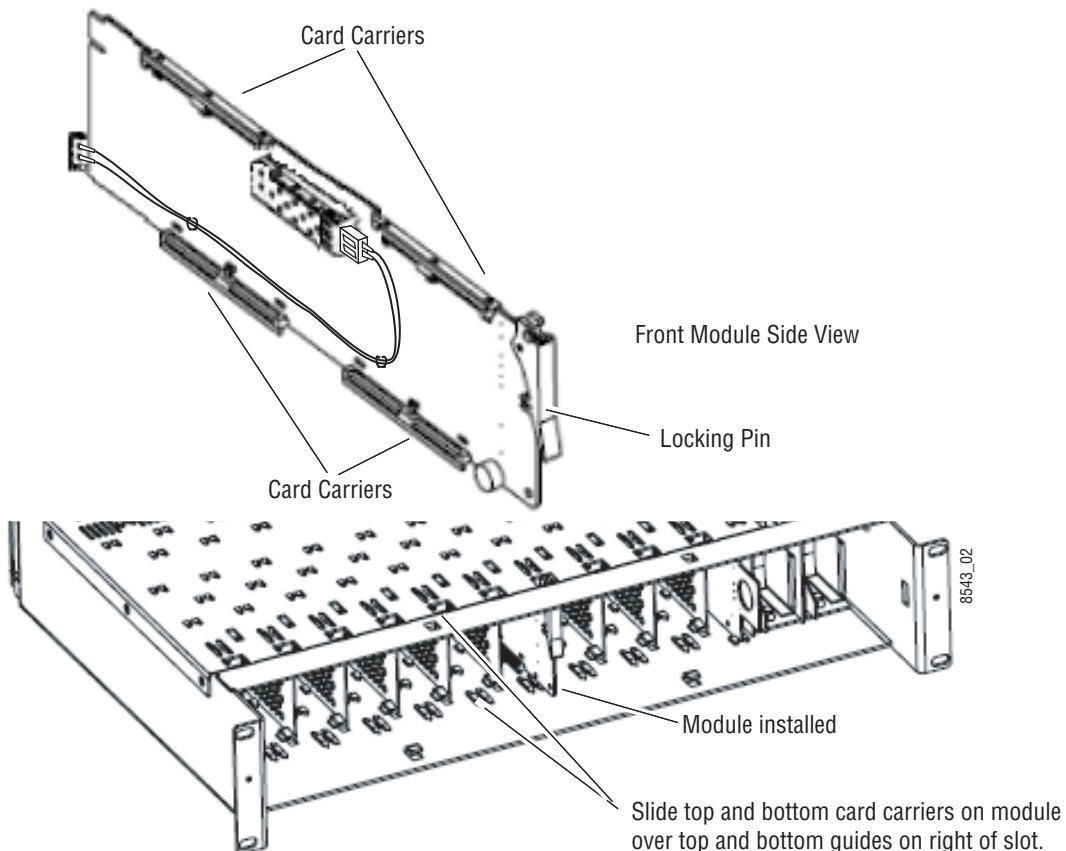


Front Module Installation

After installing the rear module and SFP submodules on the front module, install the front module as follows:

1. Remove the front cover of the frame.
2. Locate the corresponding front slot.
3. Before installing the module, set the Local/Remote onboard jumper as described in [Local/Remote Jumper on page 25](#).
4. Clean the fiber optic connections as described in the [Fiber Optic Cleaning Requirement on page 10](#).
5. 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 9](#)).
6. Carefully slide the module into the rear connector.
7. Lock the front module ejector tab into the locking pin.
8. Replace the front cover for configuring the module using remote controls.

Figure 9. Front Module Installation

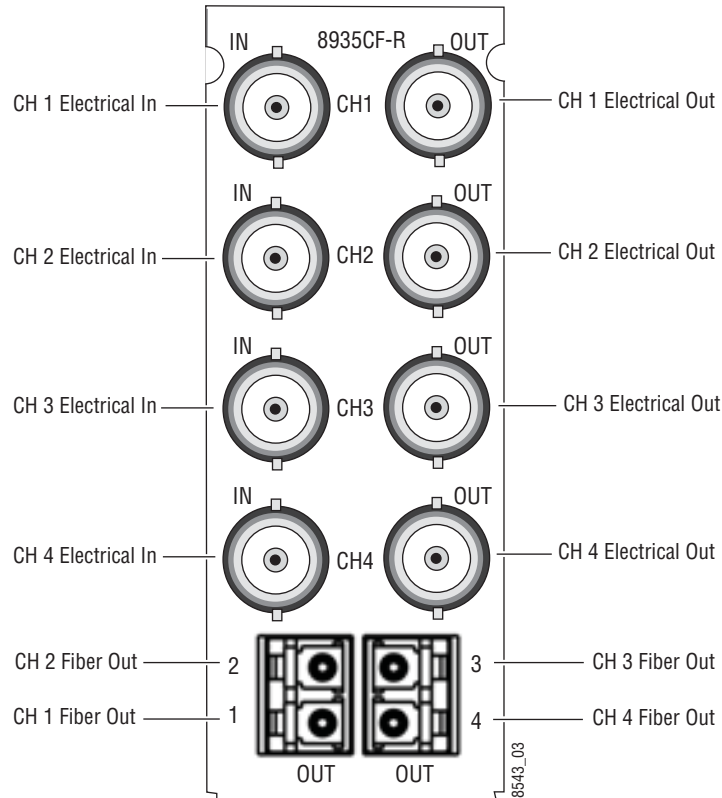


Cabling

Cabling is done on the rear BNCs of the 8935CF-R module illustrated in [Figure 10](#).

Note Read the precautions for handling fiber optics before making connections to the fiber optic connectors as described in [Fiber Optic Outputs](#) on page 19.

Figure 10. 8935CF-R Rear Module



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 1310nm Dual Transmitter (SFP-1310-SDTX) requires no attenuation between fiber transmitter and receiver connections at any cable lengths.
- CWDM devices used with 8939FCA modules for a mux/demux configuration ([page 20](#)) with a cable run from 0-12 km (7.5 miles), must be attenuated by 3 dB between 8939CFA COM ports.
- 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.

Electrical Inputs

Connect a signal conforming to the to the specifications given in [Table 6 on page 47](#) to the coax inputs for Channel 1 -4 as labeled on the rear of the 8935CF-R module.

Electrical Outputs

There are four electrical coax video outputs corresponding to Channel 1-4 as labeled on the rear of the 8935CF-R module.

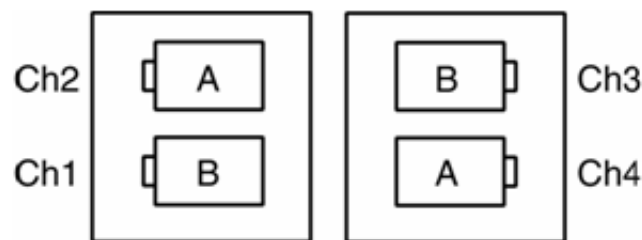
Fiber Optic Outputs

There are four fiber optic output ports corresponding to Channel 1-4 as labeled on the rear of the 8935CF-R module ([Figure 10 on page 18](#)).

Note Before making any fiber connections, follow the required fiber optic cleaning recommendations given in [Fiber Optic Cleaning Requirement on page 10](#).

For the fiber output ports, the 8935CF-R rear module shall follow the channel allocation convention shown in [Figure 11](#). Optical channel 1 and channel 3 are mapped to the B side of standard duplex fiber connector and channel 2 and channel 4 are mapped to the A side of a standard duplex fiber connector.

Figure 11. 8935CF to 8935CF Fiber Transmit Channels



8935CF to 8935FC Connections

When connecting an 8935CF module directly to an 8935FC (point-to-point), a non-crossing duplex fiber cable is required shown in [Figure 12](#). Refer to [Attenuation Requirements on page 18](#) for cable length attenuation notes.

Non-crossing is in reference to the logical A/B nomenclature associated with the duplex connector illustrated below. Side 1A connects to side 2A and side 1B connects to side 2B. Refer to

Figure 12. Non-Crossing Duplex Fiber Cable

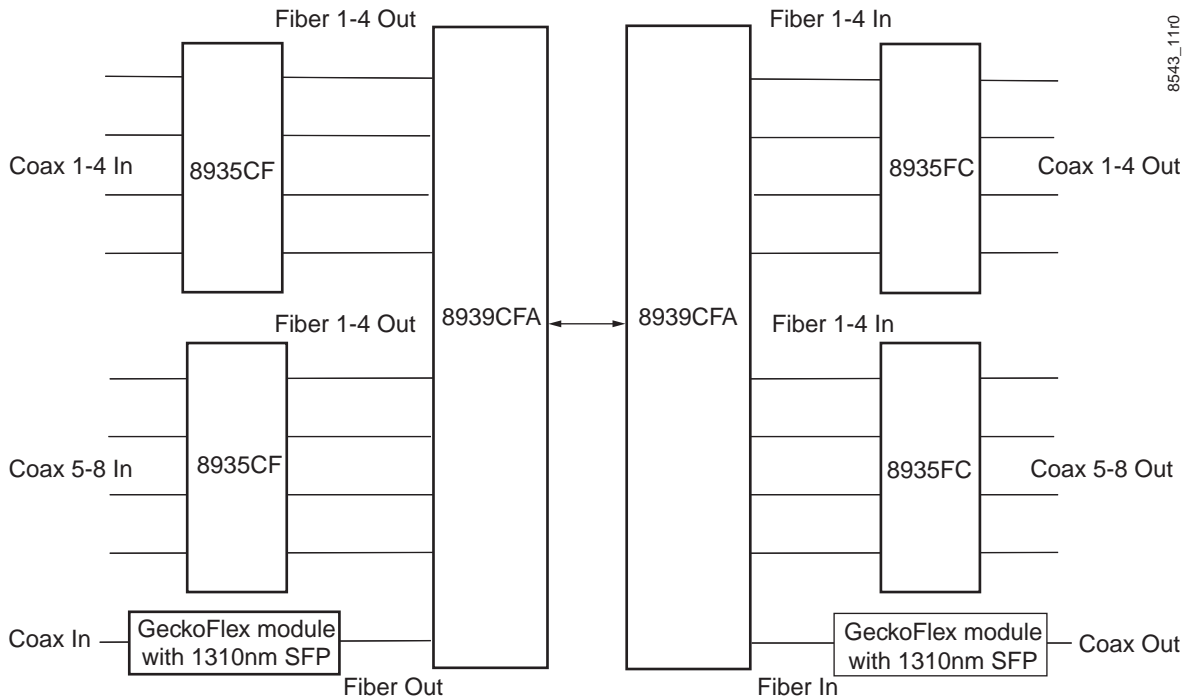


CWDM Configuration

The 8935CF module can be used for CWDM (Coarse Wavelength Division Multiplexing) in various configurations in conjunction with 8939FCA modules and 8935FC modules as well as other fiber-ready modules from Grass Valley.

The optimum use of CWDM involves the ability to multiplex and demultiplex up to nine channels of video in as shown in the simple block diagram in [Figure 13](#).

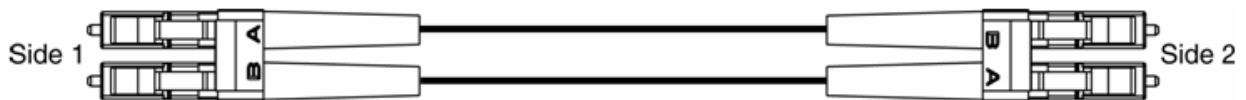
Figure 13. Simple CWDM Block Diagram



When an 8935CF module is populated with CWDM submodules, a standard crossing duplex cable is required when connecting the 8935CF modules to the 8939CFA modules.

Crossing is in reference to the logical A/B nomenclature associated with the duplex connector illustrated in [Figure 14](#) where side 1A connects to side 2B and side 1B connects to side 2A.

Figure 14. Standard Crossing Duplex Fiber Cable



To utilize this full Mux/Demux application, the following Grass Valley modules are needed:

- Two 8935CF 4 Channel Electrical to Fiber Converter modules with one of each type of CWDM submodule
- Two 8935FC 4 Channel Fiber to Electrical Converter modules with one of each type of CWDM submodule
- Two fiber-ready Grass Valley GeckoFlex modules with 1310nm sub-modules

As shown in the detailed block diagram in [Figure 15 on page 22](#), two 8935CF (Electrical to Fiber converters) at Location A are used to feed 8 channels of video to an 8939CFA. To utilize this application, one of each of the following four CWDM submodule types must be installed on the two 8935CF modules:

- SFP-CWDM-1 Dual Transmitter (1490nm and 1470nm frequencies)
- SFP-CWDM-2 Dual Transmitter (1510nm and 1530nm frequencies)
- SFP-CWDM-3 Dual Transmitter (1550nm and 1570nm frequencies)
- SFP-CWDM-4 Dual Transmitter (1590nm and 1610nm frequencies)

Note The four submodules can be installed in any location on the two 8935CF modules as long as the outputs are cabled to the correct frequency input on the 8939CFA. The installation configuration shown here is for clarity only.

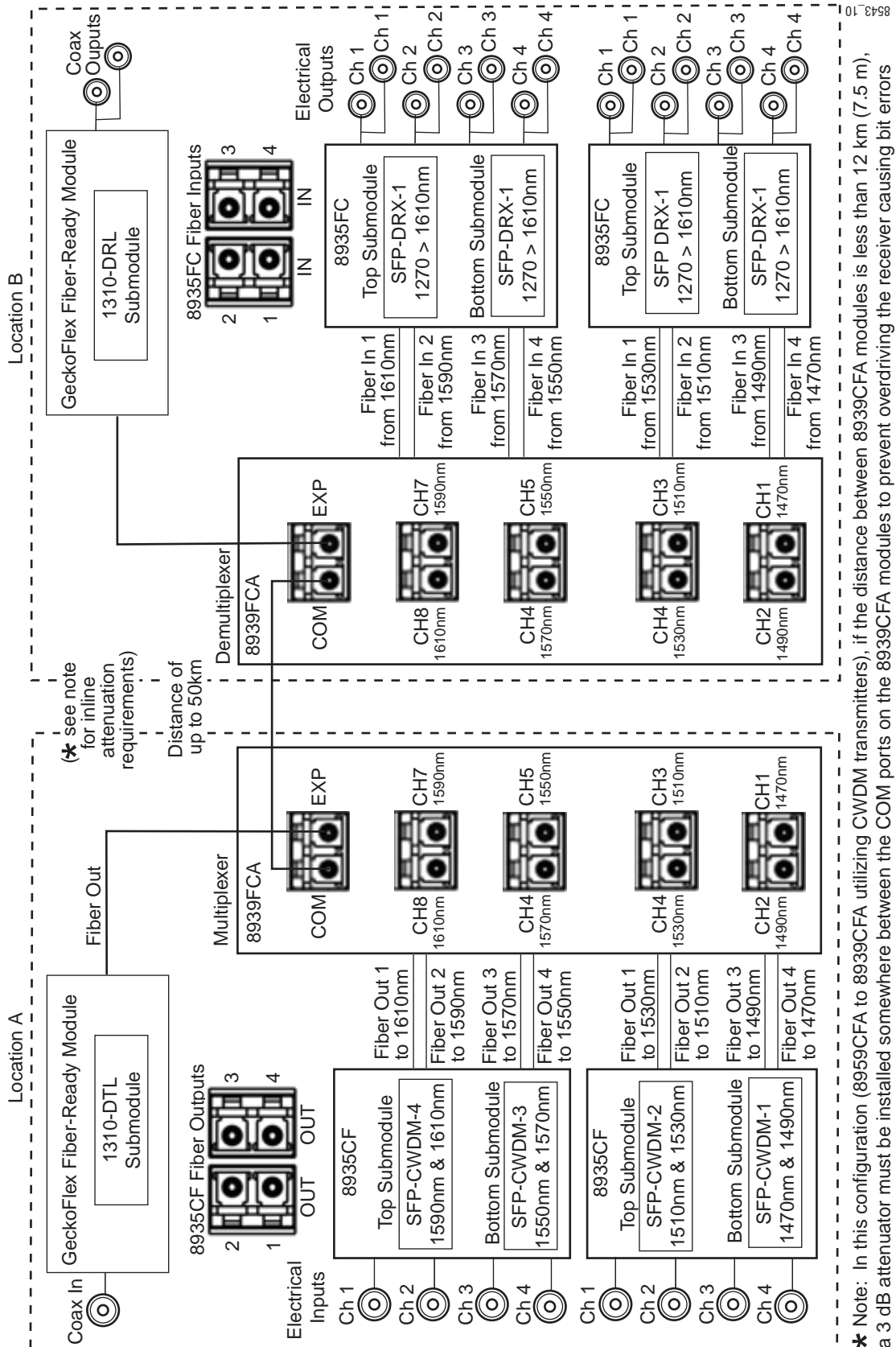
The 1310nm fiber output from a Grass Valley GeckoFlex module is cabled to the EXP (Expansion) port on the 8939CFA.

The 8939CFA module multiplexes these 9 frequencies down to a single output from the COM port. A single fiber cable carries these 9 video fiber channels to the COM port of the 8939CFA at Location B.

The 8939CFA at Location B acts as a demultiplexer and outputs 9 fiber video channels to two 8935FC (fiber to electrical) modules, each with two SFP-DRX-1 Dual Receiver submodules installed and a Grass Valley fiber-ready module. The SFP-DRX-1 submodule will accept input frequencies from 1270nm to 1610nm.

Refer to [Attenuation Requirements on page 18](#) concerning the attenuation needed depending on the length of cable run between 8939CFA COM ports.

Figure 15. CWDM Configuration



Configuration and Monitoring

8935CF module configuration and monitoring can be performed locally using the onboard controls or using a web browser GUI interface when the 8900NET Network Interface module is present in the GeckoFlex frame. Control and monitoring is described in the following sections:

- Operating Modes Overview – [page 23](#)
- Local Configuration and Monitoring – [page 25](#)
- Remote Configuration and Monitoring – [page 32](#)

Operating Modes Overview

Each of the four channels must be configured for the desired operating mode. This can be done using the onboard switches or on the Settings web page using the web browser interface. The five different modes of operation are described in this section. Input signal monitoring differs between modes as described in each mode section below. For an input signal monitoring summary, refer to [Table 3 on page 30](#).

The 8935CF supports the following modes of operation:

- Auto/Mute mode
- Fixed 270M/Mute mode
- Fixed 1.5G/Mute mode
- Auto/Bypass mode
- Fixed/Bypass mode

Auto/Mute Mode (Default)

In this mode, the electrical inputs are equalized and fed to the reclocker. If the specific bit rates of 270Mb/s or 1.5Gb/s are analyzed by the module, it will reclock the signal at the determined bit rate and feed this signal to both the electrical BNC and the fiber optic outputs. With input reporting enabled, the input signal will be reported as Present.

If the input signal is not 270Mb/s or 1.5Gb/s or the signal input is not present, the output of the reclocker will be muted and the outputs will be static (muted). With input reporting enabled, the input signal will be reported as Not Present.

Fixed 270M/Mute Mode

In this mode, the electrical inputs are equalized and fed to the reclocker. If the bit rate is analyzed as 270Mb/s, the module will reclock the signal at the determined bit rate and feed this signal to both the electrical BNC and the fiber optic outputs. With input reporting enabled, the input signal will be reported as Present.

If no input signal or a signal other than 270Mb/s is detected by the module, the output of the reclocker will be muted and the outputs will be static (muted). With input reporting enabled, the signal input will be reported as Not Present.

Fixed 1.5G/Mute Mode

In this mode, the electrical inputs are equalized and fed to the reclocker. If the bit rate is analyzed as 1.5Gb/s, the module will reclock the signal at the determined bit rate and feed this signal to both the electrical BNC and the fiber optic outputs. With input reporting enabled, the input signal will be reported as Present.

If no input signal or a signal other than 1.5Gb/s is detected by the module, the output of the reclocker will be muted and the outputs will be static (muted). With input reporting enabled, the signal input will be reported as Not Present.

Auto/Bypass Mode

In this mode, the electrical inputs are equalized and fed to the reclocker. The bit rate is analyzed by the module. If the bit rate is analyzed as 270Mb/s, 1.5Gb/s or any bit rate above 19Mb/s, the module will reclock the signal at the determined bit rate and feed this signal to the both the electrical BNC and the fiber optic outputs. With input reporting enabled, the input signal will be reported as Present.

If a bit rate other than 270Mb/s or 1.5Gb/s is detected by the module or no input signal is detected, reclocking will not be performed and the signal will be automatically bypassed to the outputs. With input reporting enabled, the input signal will be reported as Not Monitored.

Fixed Bypass Mode

In this mode, the electrical inputs are equalized and the reclocker is bypassed regardless of the electrical input data. The bypassed signal is fed to both electrical BNC and the fiber optic outputs.

Note In this mode only, HD signals will be invalid on the electrical outputs due to an SD slew rate applied to the drivers on the electrical BNCs.

With input reporting enabled, the input signal will be reported as Present for all bit rates above 19Mb/s. Inputs not recognized by the module will be reported as Not Monitored.

Local Configuration and Monitoring

The 8935CF module can be configured and monitored locally (from the front edge of the circuit board) using the rotary and paddle switches and the LEDs mounted on the top and bottom front edge of the module. LEDs are used to indicate status of the signals and the current settings.

Onboard Controls

Local/Remote Jumper

The on-board jumper Local/Remote jumper, J8, (Figure 16) is set at the factory for local and remote (LOC/REM position, pins 2-3) to allow remote control. It can be changed to lock out remote control if desired (LOC position, pins 1-2).

Rotary and Paddle Switches

Switch S1 and S2 on the front edge of the module are used for setting the operating mode of each channel. Refer to [Local Mode Configuration on page 31](#) for using these controls.

Figure 16. Local/Remote Jumper and Onboard Controls

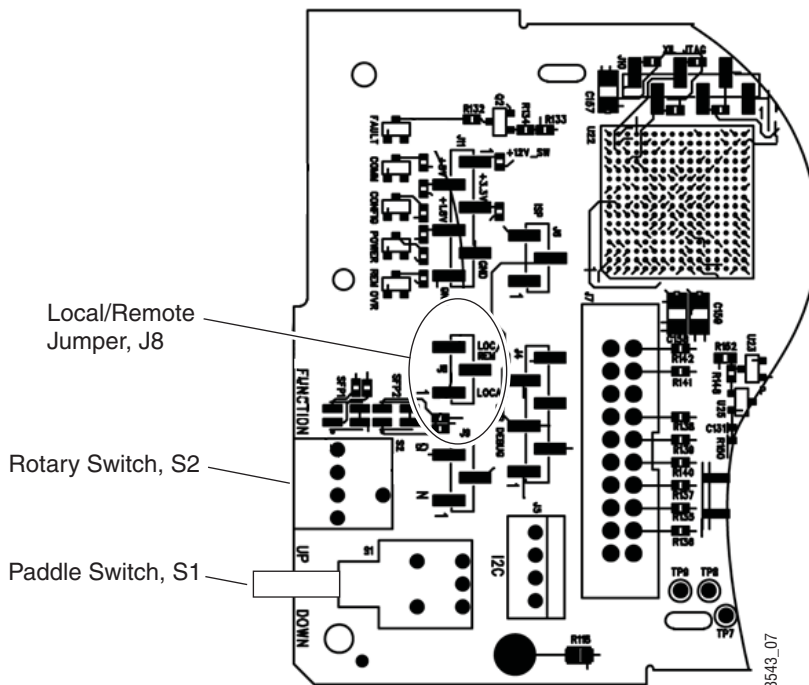


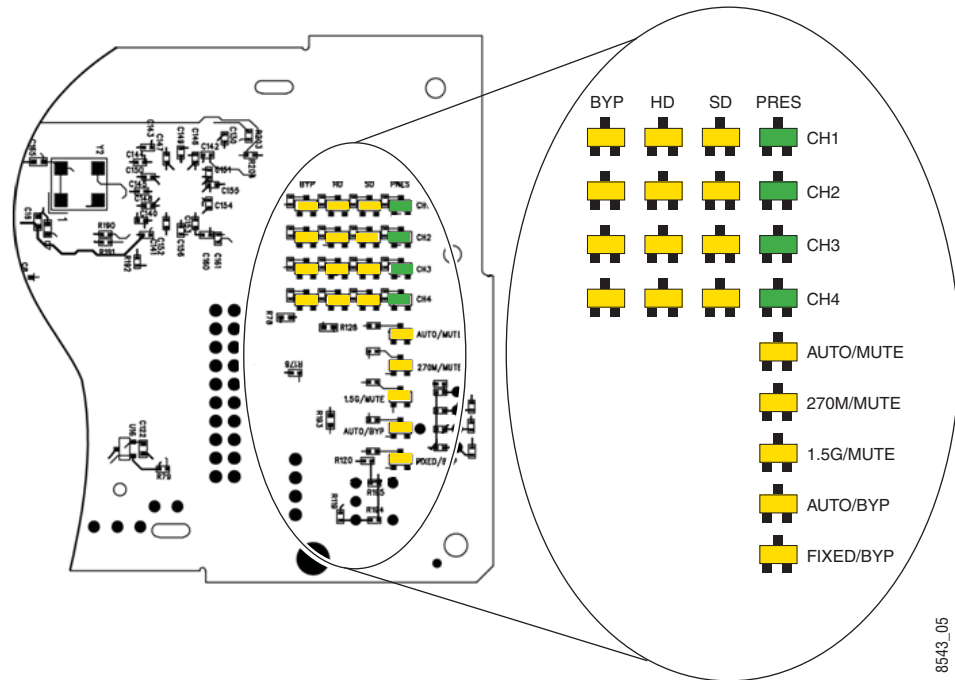
Table 1. Top Edge LED Names and Conditions

LED	Indication	Condition
FAULT (red)	Off	Normal operation, module OK.
	On continuously	Module has detected an internal fault.
	Flashing	Configuration problems. Check inputs and settings. Missing video.
COMM (yellow)	Off	No activity on frame communication bus.
	Flashing	Locate Module command received by the module from a remote control system.
	Pulse (short duration)	Activity present on the frame communication bus.
CONFIG (yellow)	Off	Module is in normal operating mode, no configuration change in progress or initialization complete.
	On continuously	Module is initiating or changing operating modes.
	Flashing	Locate Module command received by the module from a remote control system.
PWR (green)	Off	No power to module or module's DC/DC converter failed.
	On continuously	Normal operation, module is powered.
REM OVR (yellow)	Off	Not used in this application.
	On continuously	
SFP1 (bi-color red/yellow)	Off	No SFP submodule is not installed in position 1 (top of module).
	Yellow on	A supported SFP submodule is installed in position 1 (top of module). Normal operation.
	Red flashing	An unsupported SFP submodule is installed in position 1 (top of module).
	Red on continuously	The SFP submodule in position 1 (top of module) has an internal fault.
SFP2 (bi-color red/yellow)	Off	No SFP submodule is not installed in position 2 (bottom of module).
	Yellow on	A supported SFP submodule is installed in position 2 (bottom of module). Normal operation.
	Red flashing	An unsupported SFP submodule is installed in position 2 (bottom of module).
	Red on continuously	The SFP submodule in position 2 (bottom of module) has an internal fault.

Bottom Edge LEDs

The monitoring and status LEDs on the bottom front edge of the circuit board are shown in Figure 18. LED color and conditions are described in Table 2 on page 29. Refer also to Table 3 on page 30 for a summary of interpreting the LED states.

Figure 18. Bottom Edge LEDs and Controls



8543_05

Table 2. Bottom Edge LED Names and Meaning

LED	Indication	Condition
BYP (CH1-4) (yellow)	Off	Channel is not in bypass mode.
	On continuously	Channel is in bypass mode.
HD (CH1-4) (yellow)	Off	High Definition (HD) is not supported in the currently selected operating mode or HD is supported in current mode but input is not 1.5 Gb/s.
	On continuously	HD is supported in the current mode, the input is 1.5Gb/s, and is locked.
SD (CH1-4) (yellow)	Off	Standard definition (SD) is not supported in the currently selected operating mode or SD is supported in current mode but input is not 270Mb/s.
	On continuously	SD is supported in the current mode, the input is 270Mb/s, and is locked.
PRES (CH1-4) (green)	Off	No input or the incorrect input standard is present in the current operating mode.
	On continuously	The correct input standard is present. in the current operating mode.
	Flashing	Input is indeterminate. In AUTO/BYP or FIXED/BYP mode, if the input signal is less than 19 Mb/s (such as AES), the carrier detect circuit will not detect an input signal.
AUTO/MUTE (yellow)	Off	AUTO/MUTE is not the current operating mode selected.
	On continuously	AUTO/MUTE is the current operating mode selected.
270M/MUTE (yellow)	Off	270M/MUTE is not the current operating mode selected.
	On continuously	270M/MUTE is the current operating mode selected.
1.5G/MUTE (yellow)	Off	1.5G/MUTE is not the current operating mode selected.
	On continuously	1.5G/MUTE is the current operating mode selected.
AUTO/BYP (yellow)	Off	AUTO/BYP is not the current operating mode selected.
	On continuously	AUTO/BYP is the current operating mode selected.
FIXED/BYP (yellow)	Off	FIXED/BYP is not the current operating mode selected.
	On continuously	FIXED/BYP is the current operating mode selected.

Table 3 outlines the conditions that will result in the reported state of the input being Present or Not Present with the onboard LEDs and the conditions of the output based on the operating mode, the Input Presence, the actual input standard, and the Input Reporting State.

Table 3. Reported Input Status Summary

Operating Mode	Input Carrier Detect	Reclocker Locked	PRES LED	SD LED	HD LED	BYP LED	Output	Reporting	Reported Input State
Fixed Bypass	Not Present	N/A	Blinking	Off	Off	Yellow	Input Signal	Disabled	Not Monitored
								Enabled	Not Monitored
Fixed Bypass	Present	N/A	Green	Off	Off	Yellow	Input Signal	Disabled	Not Monitored
								Enabled	Present
Auto/Bypass	Not Present	N/A	Blinking	Off	Off	Yellow	Input Signal	Disabled	Not Monitored
								Enabled	Not Monitored
Auto/Bypass	Present	Not 270M or 1.5Gb/s	Green	Off	Off	Yellow	Input Signal	Disabled	Not Monitored
								Enabled	Present
Auto/Bypass	Present	270Mb/s	Green	Yellow	Off	Off	Reclocked 270Mb/s	Disabled	Not Monitored
								Enabled	Present
Auto/Bypass	Present	1.5Gb/s	Green	Off	Yellow	Off	Reclocked 1.5Gb/s	Disabled	Not Monitored
								Enabled	Present
Auto/Mute	Not Present	N/A	Off	Off	Off	Off	Mute	Disabled	Not Monitored
								Enabled	Not Present
Auto/Mute	Present	Not 270M or 1.5Gb/s	Off	Off	Off	Off	Mute	Disabled	Not Monitored
								Enabled	Not Present
Auto/Mute	Present	270Mb/s	Green	Yellow	Off	Off	Reclocked 270Mb/s	Disabled	Not Monitored
								Enabled	Present
Auto/Mute	Present	1.5Gb/s	Green	Off	Yellow	Off	Reclocked 1.5Gb/s	Disabled	Not Monitored
								Enabled	Present
Fixed 270M/Mute	Not Present	N/A	Off	Off	Off	Off	Mute	Disabled	Not Monitored
								Enabled	Not Present
Fixed 270M/Mute	Present	Not 270Mb/s	Off	Off	Off	Off	Mute	Disabled	Not Monitored
								Enabled	Not Present
Fixed 270M/Mute	Present	270Mb/s	Green	Yellow	Off	Off	Reclocked 270Mb/s	Disabled	Not Monitored
								Enabled	Present
Fixed 1.5G/Mute	Not Present	N/A	Off	Off	Off	Off	Mute	Disabled	Not Monitored
								Enabled	Not Present
Fixed 1.5G/Mute	Present	Not 1.5Gb/s	Off	Off	Off	Off	Mute	Disabled	Not Monitored
								Enabled	Not Present
Fixed 1.5G/Mute	Present	1.5Gb/s	Green	Off	Yellow	Off	Reclocked 1.5Gb/s	Disabled	Not Monitored
								Enabled	Present

Local Mode Configuration

Set the operating mode for each channel using the two local onboard control components described below and shown in [Figure 16 on page 25](#). Operating modes are described in [Operating Modes Overview on page 23](#).

- Function (rotary) switch (S2) – this switch is used to access each of the four channels for configuration. The switch has 16 possible positions (0 through 9 and A through F). Only positions 1, 2, 3, 4, and F are used (see [Table 4](#)).

Note The Function switch should be parked in an unused position such as 0 during normal operation to avoid changing the mode accidentally with the paddle switch.

- Paddle switch (S1) – scrolls through the available modes for the selected channel when the switch is held momentarily in either the up or down position.
- CONFIG (configuring) LED – when on, indicates the module is initializing or processing configuration information.

Table 4. Mode Configuration Functions

Function Switch Setting	Paddle Switch Up	Paddle Switch Down	Function Description
0	–	–	Park position for normal operation (paddle switch has no effect)
1	Increment	Decrement	Set Channel 1 operating mode as Auto/Mute, Fixed 270M/Mute, Fixed 1.5G/Mute, Auto/Bypass, or Fixed Bypass.
2	Increment	Decrement	Set Channel 2 operating mode as Auto/Mute, Fixed 270M/Mute, Fixed 1.5G/Mute, Auto/Bypass, or Fixed Bypass.
3	Increment	Decrement	Set Channel 3 operating mode as Auto/Mute, Fixed 270M/Mute, Fixed 1.5G/Mute, Auto/Bypass, or Fixed Bypass.
4	Increment	Decrement	Set Channel 4 operating mode as Auto/Mute, Fixed 270M/Mute, Fixed 1.5G/Mute, Auto/Bypass, or Fixed Bypass.
5-9	–	–	Not used
A-E	–	–	
F	Recall		Recall factory defaults (all channels have Reporting Enabled and Auto/Mute mode selected).

Remote Monitoring and Controls

The 8935CF module can be configured and monitored using the web-based GUI available when an 8900NET module is installed in the GeckoFlex frame.

Note The module cannot be controlled with the Newton Control Panel.

8900NET Module Information

Refer to the *8900NET Network Interface Module Instruction Manual* for information on the 8900NET Network Interface module and setting up and operating the GeckoFlex frame network.

Note The 8900NET module in the GeckoFlex frame must be running software version 4.0.2 or higher for proper remote and control panel operation. Upgrade software and instructions for the 8900NET can be downloaded from the Grass Valley web site.

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 (when applicable for the module):

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

Refer to the Frame Status page shown in [Figure 19 on page 33](#). The modules can be addressed by clicking either on a specific module icon in the frame status display or on a module name or slot number in the link list on the left.

Note The physical appearance of the menu displays on the web pages shown in this manual represent the use of a particular platform, browser and version of 8900NET module software. They are provided for reference only. Displays will differ depending on the type of platform and browser you are using and the version of the 8900NET software installed in your system. This manual reflects 8900NET software version 4.0.2, required for this module.

For information on status and fault monitoring and reporting shown on the Status page, refer to [Status Monitoring on page 50](#).

Figure 19. GeckoFlex Frame Status 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

Gecko Flex
[Status](#)
[Configuration](#)
[Connections](#)
[Frame Alarm Reporting](#)
[LED Reporting](#)
[SNMP Reporting](#)
[Power Supply/Demand](#)
[1 8985FSP+GEN](#)
[2 8925DMB-B](#)
[3 8995UPC+GEN](#)
[4 Media Slot 4](#)
[5 8935CF](#)
[6 8935FC](#)
[7 8995DNC](#)
[8 Media Slot 8](#)
[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: QA - BAY9
 Frame Health Alarm ALARM Temperature Status PASS
 Power Status PASS
 WARNING - Module Data or Config Errors

Module	Module	Module	Empty	Module	Module	Module	Empty	Empty	Empty	Net Card	Power Supply	Empty
--------	--------	--------	-------	--------	--------	--------	-------	-------	-------	----------	--------------	-------

Front Cover No Cover

Properties

Vendor	Thomson, Grass Valley	Software Version	4.0.2
Media Slots	10	Network Config	Network configuration stored on frame

8543_0110

Web Page Links

The web interface GUI provides the following links and web pages for the 8935CF modules (Figure 20):

- Status – reports input video status for each of the electrical BNC inputs, presence, type, and status of Fiber Optic submodules, and module slot serial number, and software/firmware version information (page 35),
- Settings – reports the input signal status, locked rate, and SFP device type, and provides controls for setting the operating mode and enabling or disabling input reporting for each of the four channels (page 42),
- Slot Config – provides Locate Module and Slot Memory functions along with links to the 8900NET SNMP, LED Reporting, and Frame Alarm configuration web pages (page 44)

Figure 20. 8935CF Web Page Links

[5 8935CF](#)
[Status](#)
[Settings](#)
[Slot Config](#)

Status Web Page

Use
this
link — [5 8935CF](#)
[Status](#)
[Settings](#)
[Slot Config](#)

The Status web page reports the status of the input signal for each of the electrical video inputs (Channel 1-4), front and rear module information and status, and information and status on the top and bottom fiber optic submodule devices.

GeckoFlex Module Physical Structure

This graphic reports the status for each of the following items:

- BNC Input 1-4 – indicates the status of the video input to the module from the coax BNCs. Refer to the [Settings Web Page on page 42](#) for information on disabling the input status reporting.
- Fiber/BNC Out 1-4 – not monitored.
- Frame Bus – indicates the status of the communication bus to the 8900NET module.
- Rear Module – indicates status of the 8935CF-R module.
- Front Processing Module – indicates status of the 8935CF front module.
- Fiber Module #1 Top – indicates the status of the SFP fiber optic module installed in Position #1 on the top side of the module.
- Fiber Module #2 Bottom – indicates the status of the SFP fiber optic module installed in Position #2 on the bottom (solder) side of the module.

Color coding of the display and the Status LED indicate status. Refer to [Status Monitoring on page 50](#) for a complete explanation of the color coding.

Warning Messages


When the module detects an error, a warning message will appear between the lines below the status graphic.

Other Status Reporting

A read-only section at the bottom of the Status web page gives information about the module and fiber optic submodules, such as part number, serial number, hardware revision and software and firmware versions, and asset tag number (assigned on the Slot config web page).

The Status web page shown in Figure 21 show all inputs present and locked and no errors of any type. Examples of common errors on the Status web page are given in this section beginning with Figure 22 on page 37.

Figure 21. 8935CF Status Web Page – No Error Messages

Status 

Model: **8935CF** Description: **4 Ch Elec to Fiber Convert Module**
 Frame Location: **N3** , Slot: **5**

Gecko-Flex Module Physical Structure

The diagram illustrates the physical structure of the Gecko-Flex module. It consists of a **Rear Module (8935CF-R)** and a **Front Processing Module (8935CF)** connected via a **Frame Bus**. The Rear Module features four **BNC Input** ports (1-4) and four **Fiber/BNC Out** ports (1-4). The Front Processing Module contains two **Fiber Modules**, labeled **Fiber Module #1 (Top)** and **Fiber Module #2 (Bottom)**.

Status:
 Front Module: **PASS**
 Rear Module: **PASS**
 Optical Device 1: **Present: Tx-Tx SFP-CWDM-1**
 Optical Device 2: **Present: Tx-Tx SFP-CWDM-2**


Front Module:
 Part Number: **711-0162-03**
 Serial Number: **AAAE916**
 Hardware Revision: **03**
 Firmware Version: **1.0.0**
 Software Version: **1.0.0**
 Boot Version: **1.1.1**
 Asset Tag:

Warning message area

Optic device signal status and model number

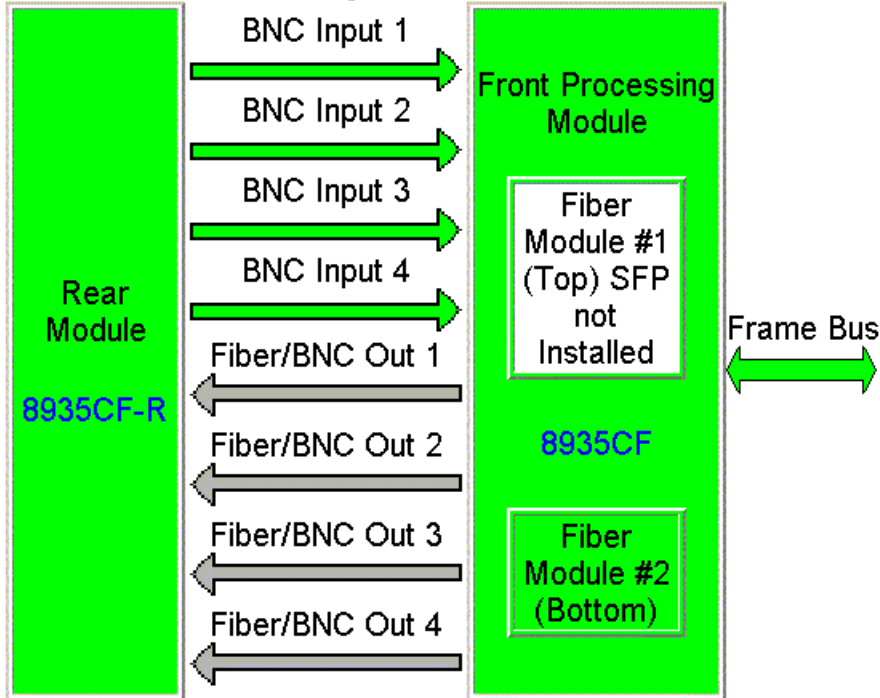
Figure 22 illustrates the Status web page reporting that the top SMV_SFP submodule is not installed.

Figure 22. 8935CF Status Web Page – No Top SFP Installed

Status 

Model: **8935CF** Description: **4 Ch Elec to Fiber Convert Module**
 Frame Location: **N3** , Slot: **5**

Gecko-Flex Module Physical Structure



Warning: Top SFP Not Installed

Status:

Front Module: **PASS**

Rear Module: **PASS**

Optical Device 1: **Warning: Top SFP Not Installed**

Optical Device 2: **Present: Tx-Tx 1310NM-SDTX**

Front Module:

Part Number: **711-0162-03**

Serial Number: **AAAE916**

Hardware Revision: **03**

Firmware Version: **1.0.0**

Software Version: **1.0.0**

Boot Version: **1.1.1**

Asset Tag:

Figure 23 illustrates the Status web page reporting that the wrong type of SMV_SFP submodule is installed in the top position. The 8935CF will accept only Dual Transmitter fiber optic submodules manufactured by Grass Valley. The correct submodule types are listed under *Module Features* on page 9.

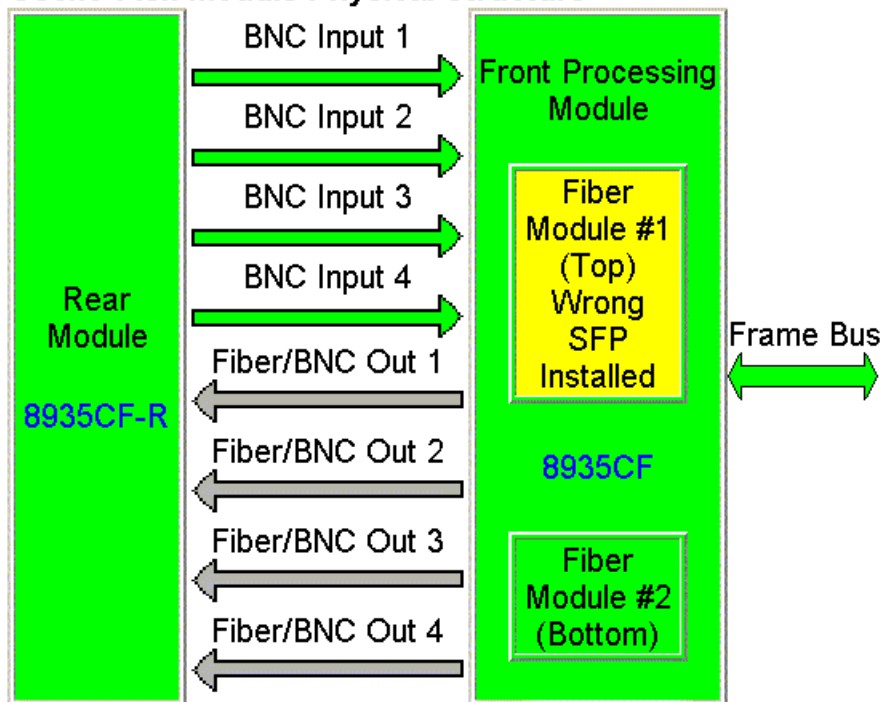
Figure 23. 8935CF Status Web Page – Wrong SFP Type

 **Status** 

Model: **8935CF** Description: **4 Ch Elec to Fiber Convert Module**

Frame Location: **N3** , Slot: **5**

Gecko-Flex Module Physical Structure



Warning: Top SFP Wrong Device Type

Status:

Front Module: **PASS**

Rear Module: **PASS**

Optical Device 1: **Warning: Top SFP Wrong Device Type**

Optical Device 2: **Present: Tx-Tx 1310NM-SDTX**

Front Module:

Part Number: **711-0162-03**

Serial Number: **AAAE916**

Hardware Revision: **03**

Firmware Version: **1.0.0**

Software Version: **1.0.0**

Boot Version: **1.1.1**

Asset Tag:

Figure 24 illustrates the Status web page reporting that the SMV_SFP submodule installed in the top position is from the wrong manufacturer. The 8935CF will only accept Dual Transmitter fiber optic submodules manufactured by Grass Valley.

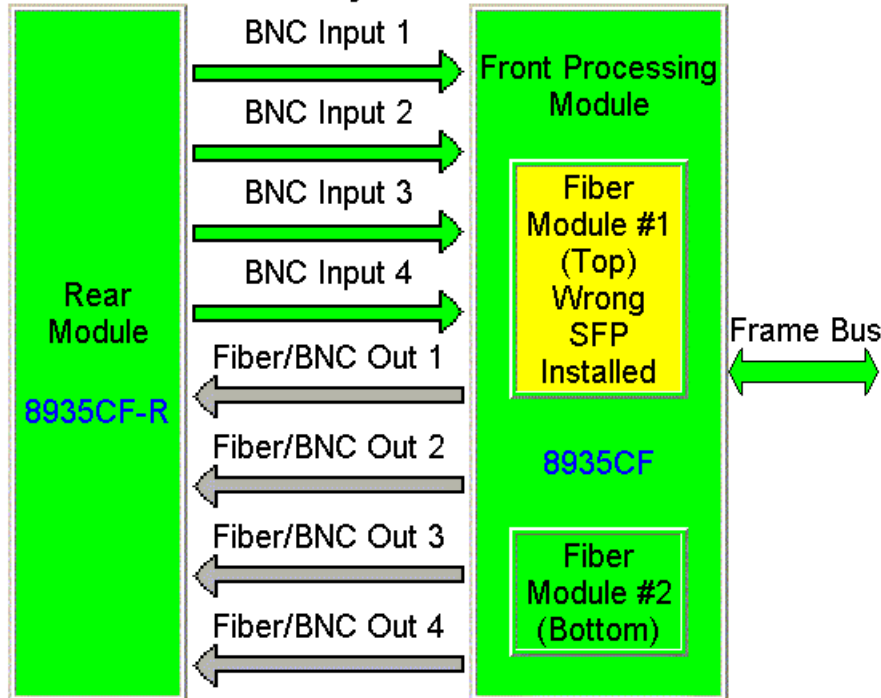
Figure 24. 8935CF Status Web Page – Wrong SFP Manufacturer

 **Status** 

Model: 8935CF Description: 4 Ch Elec to Fiber Convert Module

Frame Location: N3 , Slot: 5

Gecko-Flex Module Physical Structure



Warning: Top SFP Wrong Manufacturer

Status:

Front Module: **PASS**

Rear Module: **PASS**

Optical Device 1: **Warning:** Top SFP Wrong Manufacturer

Optical Device 2: **Present:** Tx-Tx 1310NM-SDTX

Front Module:

Part Number: 711-0162-03

Serial Number: AAAE916

Hardware Revision: 03

Firmware Version: 1.0.0


Software Version: 1.0.0

Boot Version: 1.1.1

Asset Tag:

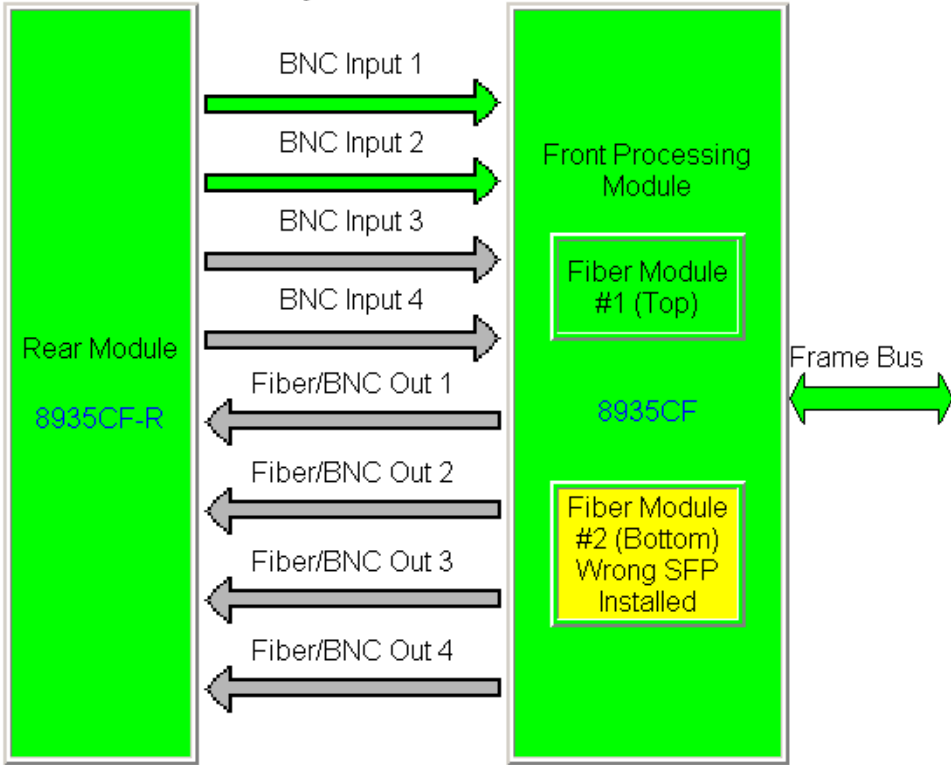
Figure 25 illustrates the Status web page reporting that the SMV_SFP submodule installed in the bottom position is not recognized as the correct type or is reporting an internal error (bad).

Figure 25. 8935CF Status Web Page – Unknown SFP Installed

Status 

Model: 8935CF Description: 4 Ch Elec to Fiber Convert Module
 Frame Location: N3 , Slot: 5

Gecko-Flex Module Physical Structure



The diagram illustrates the physical structure of the Gecko-Flex module. It consists of a Rear Module (8935CF-R) and a Front Processing Module (8935CF) connected via a Frame Bus. The Rear Module has four BNC inputs (BNC Input 1 to BNC Input 4) and four Fiber/BNC outputs (Fiber/BNC Out 1 to Fiber/BNC Out 4). The Front Processing Module contains two Fiber Modules: Fiber Module #1 (Top) and Fiber Module #2 (Bottom). Fiber Module #2 is highlighted in yellow with the text 'Wrong SFP Installed'.

Warning: Bottom SFP Unknown or Bad

Status:
 Front Module: PASS
 Rear Module: PASS
 Optical Device 1: Present: Tx-Tx 1310NM-SDTX
 Optical Device 2: **Warning:** Bottom SFP Unknown or Bad

Front Module:
Part Number: 711-0162-03
Serial Number: AAAE916
Hardware Revision: 03
Firmware Version: 1.0.0
Software Version: 1.0.0
Boot Version: 1.1.1
 Asset Tag:

The input status of all four channels is reflected (in the Status LED on each web page) and reported (to upper level devices such as the 8900NET module and SNMP traps) remotely in a collective state. Table 5 shows how the collective input status of all four channels is generated and reported for various channels states.

Table 5. Collective Remote Reporting Status of All Channels

Channel 1 Input Status	Channel 2 Input Status	Channel 3 input Status	Channel 4 Input Status	Collective Input Status
Not Monitored	Not Monitored	Not Monitored	Not Monitored	Not Monitored
Not Present	N/A	N/A	N/A	Not Present
N/A	Not Present	N/A	N/A	Not Present
N/A	N/A	Not Present	N/A	Not Present
N/A	N/A	N/A	Not Present	Not Present
Present	Not Monitored	Not Monitored	Not Monitored	Present
Not Monitored	Present	Not Monitored	Not Monitored	Present
Not Monitored	Not Monitored	Present	Not Monitored	Present
Not Monitored	Not Monitored	Not Monitored	Present	Present
Present	Present	Not Monitored	Not Monitored	Present
Present	Not Monitored	Present	Not Monitored	Present
Present	Not Monitored	Not Monitored	Present	Present
Not Monitored	Present	Present	Not Monitored	Present
Not Monitored	Present	Not Monitored	Present	Present
Not Monitored	Not Monitored	Present	Present	Present
Present	Present	Present	Not Monitored	Present
Present	Present	Not Monitored	Present	Present
Present	Not Monitored	Present	Present	Present
Not Monitored	Present	Present	Present	Present
Present	Present	Present	Present	Present

Settings Web Page

Use
this
link

[5 8935CF](#)
[Status](#)
[Settings](#)
[Slot Config](#)

Use the Settings web page ([Figure 26 on page 43](#)) to monitor the input signal, locked bit rate, and SFP device type, set the operating mode and enable or disable input reporting for each of the four channels. The different operating modes are described in detail in [Operating Modes Overview on page 23](#).

Select the channel to be monitored or configured with the **Channel 1-4** buttons.

The following information is displayed for each channel:



- Input Signal – displays the input status of the selected channel as Present, Not Present (only in Fixed 270M/Mute, Fixed 1.5G/Mute, or Auto/Mute modes), or Not Monitored. Refer to [Table 3 on page 30](#) for a summary of input status reporting.
- Locked Rate – displays the currently detected line rate for the selected channel.
- Optical Device #1 and #2 – reports the signal status and type of SFP optical device installed in the top position #1 (Channels 1 and 2) or the bottom position #2 (Channels 3 and 4) location.

Set the following controls for each channel:

- Enable Input Reporting – disable input reporting to the module and upper level devices such as the 8900NET module. Disabling this reporting will gray out the corresponding channel input arrow on the Status web page.
- Operating Mode – select one of the following operating modes for each channel:
 - Auto/Mute
 - Fixed 270M/Mute
 - Fixed 1.5G/Mute
 - Auto/Bypass
 - Fixed Bypass
- Apply Settings To: – apply the currently selected settings to another channel by selecting the available **Channel 1-4** buttons or apply settings to all channels with the **All** button.
- Reset Defaults For: – reset the default values for the currently selected channel by selecting the **Current Channel** button or for all channels with the **All Channels** button.

The default values are Input Reporting Enabled and Auto/Mute mode.

Figure 26. Settings Web Page – Signal Present

 **Settings** 

Model: [8935CF](#) Description: [4 Ch Elec to Fiber Convert Module](#)
 Frame Location: [Modular Lab](#) , Slot: [5](#)

Channel 1	Channel 2	Channel 3	Channel 4
Input Signal: Not Present		Locked Rate: Muted	
<input checked="" type="checkbox"/> Enable Input Reporting		Operating Mode: Auto/Mute ▼	
Optical Device #1: Present: Tx-Tx SFP-1310-SDTX			
Apply Settings To: Channel 2 Channel 3 Channel 4 All			
Reset Defaults For: Current Channel All Channels			

[Auto/Mute](#) ▼

[Auto/Mute](#)

[Fixed 270M/Mute](#)



[Fixed 1.5G/Mute](#)

[Auto/Bypass](#)

[Fixed Bypass](#)

The Settings web page shown in [Figure 27](#) illustrates the reporting of an input signal other than 270Mb/s or 1.5Gb/s in Auto/Bypass mode as being Not Monitored.

Figure 27. Setting Web Page – Signal Not Monitored

 **Settings** 

Model: [8935CF](#) Description: [4 Ch Elec to Fiber Convert Module](#)
 Frame Location: [Modular Lab](#) , Slot: [5](#)

Channel 1	Channel 2	Channel 3	Channel 4
Input Signal: Not Monitored		Locked Rate: Bypassed	
<input checked="" type="checkbox"/> Enable Input Reporting		Operating Mode: Auto/Bypass ▼	
Optical Device #1: Present: Tx-Tx SFP-1310-SDTX			
Apply Settings To: Channel 2 Channel 3 Channel 4 All			
Reset Defaults For: Current Channel All Channels			

Slot Config Web Page

Use
this
link

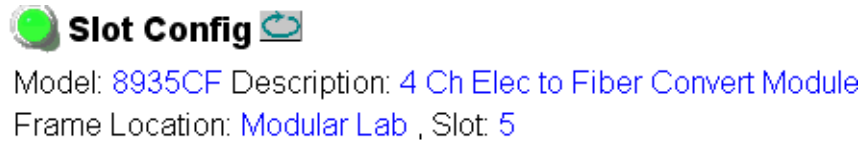
- [5 8935CF](#)
- [Status](#)
- [Settings](#)
- [Slot Config](#)

Use the Slot Config web page shown in [Figure 28](#) to perform the following functions on the module:

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

Each of these functions is described in detail below.

Figure 28. Slot Config Web Page



Locate Module

▼

Slot Identification

Name:

Asset Tag:

Slot Memory

Restore upon Install

[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 saved periodically (once an hour) to the 8900NET module in that frame. You may also select the **Learn Module Config** button at any time to save the current configuration for this slot. The configuration is saved on the 8900NET module. If the 8900NET module is removed or powered down, the stored configurations are not saved.

When the **Restore upon Install** box has been checked, the current configuration saved to this slot is saved as slot memory. When the current module is removed and another module of the same type and software version is installed, the configuration saved to the 8900NET module will be downloaded to the new module. The box must be checked before the current module with the saved configuration is removed.

Only the same module type, with the same version software should be installed in this slot. Inserting a similar module with a different version software can cause 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.

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

Frame Health Reports Link

Select the Frame Health Reports link to open the 8900NET module Frame Alarm Reporting web page. This web page allows configuration of the alarms and warnings that are reported to the external Frame Health Alarm connector on the rear of the GeckoFlex frame.

LED Reports Link

Select the LED Reports link to open the 8900NET LED Reporting web page. Normally, every module in the frame will report to the 8900NET module any Fault, Signal Loss, Reference Loss, or Config Error conditions. These conditions will be reflected by the status LEDs on the 8900NET module. Using this web page, any of these conditions can be disabled from being reported to the 8900NET module for each individual module in the frame

SNMP Trap Reports Link

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 the *8900NET Instruction Manual* for complete details on using the 8900NET web pages.

Specifications

Table 6 gives the overall specifications for the 8935CF module. Refer to Table 7 on page 49 for Dual Transmitter SFP detailed specifications.

Table 6. 8935CF Specifications

Parameter	Value
Serial Digital Coax Input	
Connector	BNC
Input impedance	75 ohm with return loss > 15 dB from 5 MHz to 540 MHz and > 10 dB for 540 MHz to 1.485 GHz
Input signal types (bypassed)	1 Mb/s to 540 Mb/s
Rise/fall time (20-80%)	400-800 ps
Signal level	800 mV p-p \pm 10%
	AES 3id-2001
Sample rates	32k to 96k
Signal level	0.8 to 1.2 V p-p
	GV Audio TDM Interface
	Multi-channel audio digital interface (MADI)
Input signal types (reclocked)	SMPTE 259M-1997
Tolerance bit rate	270 Mb/s \pm 10%
	DVB/ASI (ETSI TR 101 891V1.1.1)
Tolerance bit rate	270 Mb/s \pm 0.5%
	SMPTE 292M-1998
Tolerance bit rate	1.485 Gb/s \pm 0.5%
Equalization cable length (for any of the above signal types)	Up to 300 meters of Belden 1694A cable for bit rates up to 270 Mb/s Up to 100 meters of Belden 1694A cable for bit rates > 270 Mb/s and < 1.485 Gb/s
Input jitter tolerance (reclock mode)	\geq 1 UI p-p, 10 Hz to 1k Hz \geq 0.2 UI p-p, 1k Hz to 15 MHz
Input jitter tolerance (bypass mode)	\leq 1 UI p-p, 10 Hz to 1k Hz \leq 0.2 UI p-p, 1k Hz to 15 MHz
Serial Digital Coax Output	
Connector	BNC
Output impedance	75 ohm with return loss > 15 dB from 5 MHz to 540 MHz and > 10 dB for 540 MHz to 1.485 GHz
Equalization cable length (for any of the above signal types)	Up to 300 meters of Belden 1694A cable for bit rates up to 270 Mb/s Up to 100 meters of Belden 1694A cable for bit rates > 270 Mb/s and < 1.485 Gb/s
Signal level	800 mV p-p, \pm 10% maximum
Rise/fall time (20-80%)	< 270 ps for reclocked HD 400-800 ps for SD and bypass mode
Output polarity	Non-inverted (all outputs)
Total jitter	\leq 0.2 UI p-p

Table 6. 8935CF Specifications

Parameter	Value
Serial Digital Fiber Outputs	
Grass Valley SMV_SFP Dual Transmitter Models Supported (2 frequencies per CWDM device) (see Table 7 on page 49 for submodule specifications)	SFP-1310-SDTX (1310nm) SFP-CWDM-1 (1470nm & 1490 nm) SFP-CWDM-2 (1510nm & 1530 nm) SFP-CWDM-3 (1550nm & 1570 nm) SFP-CWDM-4 (1590nm & 1610 nm)
Connector	4 LC
Fiber type	Single Mode 9/125 μm step index (SI) fiber complying with ITU-T recommendation G.652, TIA/EIA-492CAAA, IEC publication 60793-2 and GR-20-CORE requirements.
	Maximum attenuation of 0.4 dB/km @1310nm
	Maximum attenuation of 0.3 dB/km @1550nm
Standard	Other than LC connector, conforms to SMPTE 297M-2006
Polarity	Non-inverting
Total jitter	≤ 0.2 UI p-p
Input to Output	
Jitter transfer	< 1 dB peaking in jitter transfer function form 10Hz to 10 MHz
Intrinsic jitter	≤ 0.1 UI p-p
Electrical Length	
Reclocked at 270 Mb/s	10 ns
Reclocked at 1.5 Gb/s	8 ns
Bypass	7 ns
Mechanical	
Supported frame type	GeckoFlex
Environmental	
Frame temperature range	Refer to GeckoFlex Frame Installation Manual
Operating humidity range	
Non-operating temperature	
Power	
Power consumption	7.5 Watts

Table 7. Transmitter SFP Specifications

SFP Model Number	SFP-1310-SDTX	SFP-CWDM-1	SFP-CWDM-2	SFP-CWDM-3	SFP-CWDM-4
Parameter @HD (75% color bars)	Value	Value			
Number of transmit channels	2	2			
Connector type	LC	LC			
Fiber support	Single-mode fiber	Single-mode fiber			
Data rate	143 Mb/s to 1.485 Mb/s	143 Mb/s to 1.485 Mb/s			
Wavelength 1	1310nm	1470nm	1510nm	1550nm	1590nm
Wavelength 2	1310nm	1490nm	1530nm	1570nm	1610nm
Power output	-9 to -3 dBm (0.126 mW to 0.501 mW)	0 to +3 dBm (1 mW to 1 mW)			
Maximum distance with SFP-DRX-1	10 km	50 km ¹			
Minimum distance with SFP-DRX-1	0 km	0 km ¹			
Maximum distance with SFP-DRX-1 receiver and two 8939CFA units	N/A	50 km ¹			

¹ For attenuation requirements, refer to [Attenuation Requirements on page 18](#).

Software Updating

Software updating of the 8935CF modules is done using the NetConfig Networking Application PC option. This application is available free of charge from the Grass Valley web site.

The procedure for updating software with NetConfig is given in the 8935CF Release Notes when software updates become available. Check the Grass Valley web site for update information. Refer to [Contacting Grass Valley on page 4](#) for more information.

Status Monitoring

This section provides a summary of status monitoring and reporting for a GeckoFlex system. It also summarizes what status items are reported and how to enable/disable reporting of each item. There are a number of ways to monitor status of modules, power supplies, fans and other status items depending on the method of monitoring being used.

8900 Frame status will report the following items:

- Power supply health
- Status of fans in the frame front cover
- Temperature,
- Module health
- Frame bus status

Module health status will report the following items:

- Internal module state (and state of submodule or options enabled) including configuration errors (warning), internal faults, and normal operation (Pass).
- Signal input states including valid/present (pass), not present or invalid (warning), not monitored, and not available (no signal inputs).
- Reference input states including locked/valid (pass), not locked/invalid (warning), and not monitored.

LEDs

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

When a red FAULT LED is lit on a frame front cover, the fault will also be reported on the 8900NET or Frame Monitor module. The LEDs on the front of these modules can then be read to determine the following fault conditions:

- Power Supply 1 and 2 health
- Fan rotation status
- Frame over-temperature condition
- Frame Bus fault (8900NET only)
- Module health bus

In general, LED colors used on the frame and modules indicate:

- Green = normal operation, (Pass) or signal present, module locked.
- Red – On continuously = fault condition, flashing = configuration error.
- Yellow – On continuously = active condition (configuration mode or communication), flashing in sequence = module locator function.

Status LEDs for this module are described in [LEDs on page 50](#). LEDs for the 8900NET module are described in the *8900NET Network Interface Instruction Manual*.

Frame Alarm

A Frame Alarm connection is available on pins 8 and 9 of the RS-232 connector on the rear of GeckoFlex frame (Frame Monitor or 8900NET Network Interface module required). This will report any of the status items enabled with the 8900NET or Frame Monitor module configuration DIP switch. Connection and use of the Frame Alarm is covered in detail in the *8900NET Network Interface Instruction Manual*.

Web Browser Interface

When the 8900NET module is installed in the frame, a web browser GUI can indicate frame and module status on the following web pages:

- Frame Status web page – reports overall frame and module status in graphical and text formats.
- Module Status web page – shows specific input and reference signal status to the module along with module versions.
- A Status LED icon on each web page to report communication status for the frame slot and acts as a link to the Status page where warnings and faults are displayed (8900NET version 3.0 or later).

In general, graphics and text colors used indicate the following:

- Green = Pass – signal or reference present, no problems detected.
- Red = Fault – fault condition.
- Yellow = Warning – signal is absent, has errors, or is mis-configured.
- Gray = Not monitored (older 8900 module).
- White = Not present.

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.

SNMP Reporting

The GeckoFlex 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.

There are both hardware and software report enable switches for each report. Both must be enabled for the report to be sent. Software report switches are set on the 8900NET Configuration page for the Frame, the 8900NET module, and each module slot. Refer to the *8900NET Network Interface Instruction Manual* for installation instructions.

Module Repair

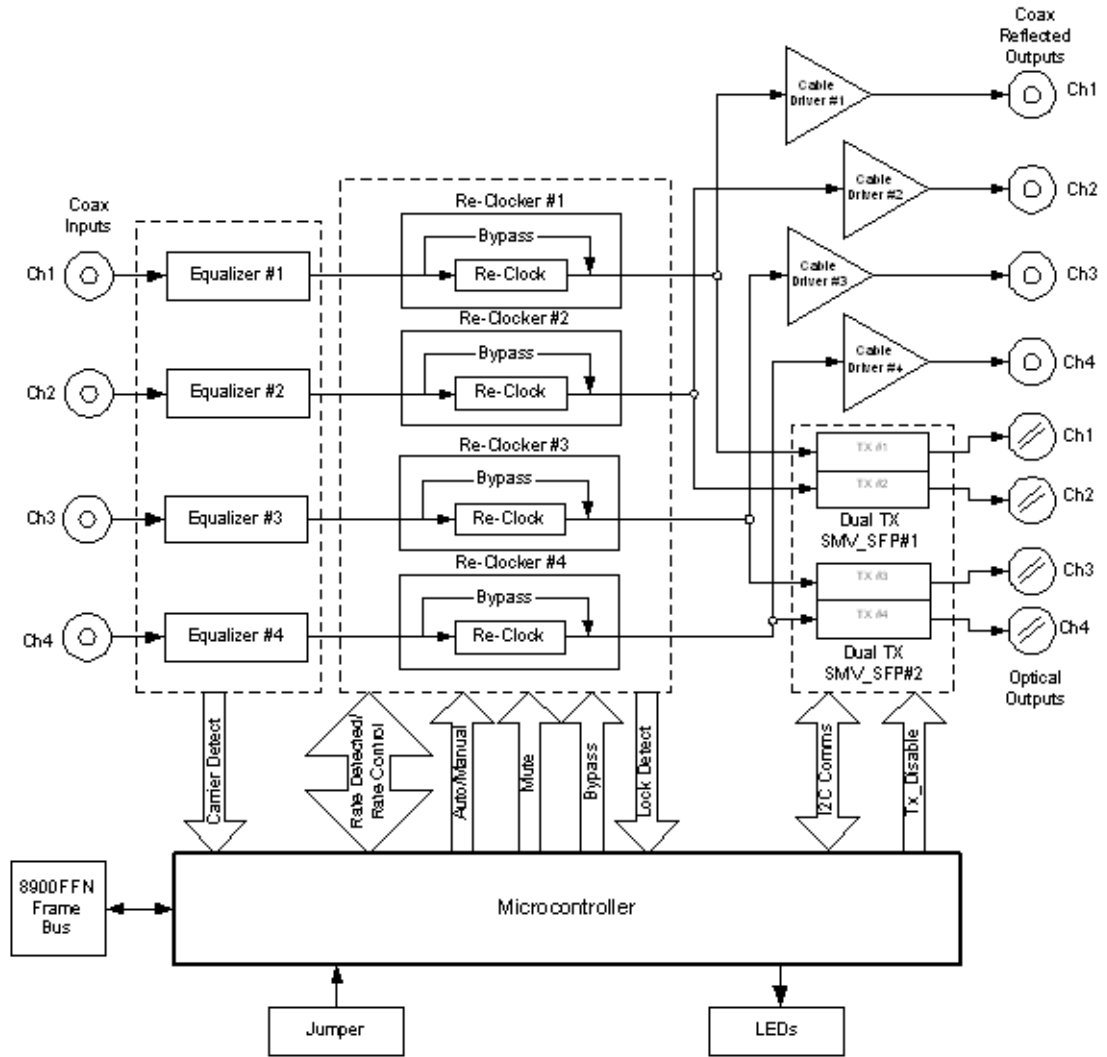
If the module is still not operating correctly, replace it with a known good spare and return the faulty module to a designated Grass Valley repair depot. Call your Grass Valley Customer Service representative for depot locations.

Refer to [Contacting Grass Valley on page 4](#) at the front of this document for the Grass Valley Customer Service contact information.

Functional Description

An overall block diagram for the 8935CF module is shown in [Figure 30](#).

Figure 30. 8935CF Block Diagram



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