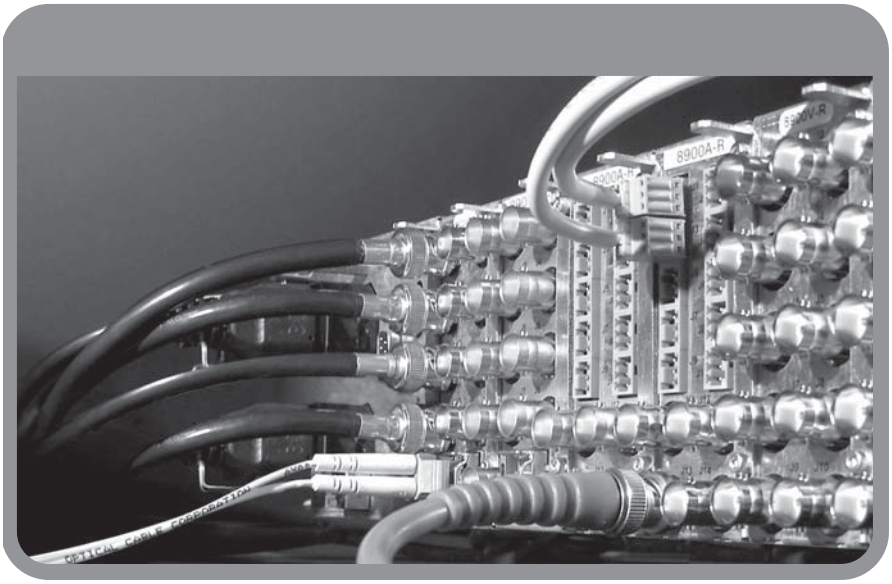
grass valley

8943RDA/-D/-DFR

SD/HD/3G-SDI FIBER READY RECLOCKING DA



Instruction Manual

Software Version 1.1.2

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071859204
MAY 2010

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Contents

Preface

About This Manual

This manual describes the features of a specific 8900 module in the GeckoFlex Signal Processing System families. 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 manuals can be found on-line in PDF format at this link:

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8943RDA/-D/-DFR SD/HD/3G-SDI Reclocking DA Modules

Introduction

This manual covers installation, configuration, and operation of the 8943RDA, 8943RDA-D, and 8943RDA-DFR (Fiber Ready) SD/HD/3G-SDI reclocking DAs supporting data rates up to 3Gb. All outputs are non-inverting and will support DVB ASI outputs.

These modules install in a GeckoFlex frame with a front and rear module for each model. All models require only one slot in the GeckoFlex frame.

The 8943RDA is an SD/HD/3G-SDI reclocking distribution amplifier providing one electrical input that can be output on eight reclocked outputs. It can distribute SD/HD/3G-SDI video as well as DVB ASI formats, making it ideal for mixed format installations or installations where an upgrade to HD is planned. It requires the 89003E-R rear module.

The 8943RDA-D is a dual reclocking distribution amplifier with two electrical inputs that can be assigned in configuration to any of four reclocked output pairs. It can be used to distribute SD/HD/3G-SDI video and DVB ASI format signals, making it ideal for mixed format applications or installations where an upgrade to HD is planned. It requires the 89003E-R rear module.

The 8943RDA-DFR is a fiber-ready reclocking distribution amplifier providing two electrical inputs and three reclocked electrical output pairs plus one single reclocked BNC. In addition, the module supports up to two fiber optic inputs, two fiber optic outputs, or one fiber optic input and one output when one of several different optional fiber optic submodules is installed. Electrical and fiber optic inputs can all be active and outputs can be mapped in any combination in configuration. This makes this model ideal for receiving DVB ASI signals from distant downlinks or transmitting them to remote uplinks. It requires the 89003FR-R rear module.

Features

The features of the 8943RDA modules include:

- Multi-format SD-SDI, HD-SDI, 3G-SDI on electrical inputs and outputs,
- Non-inverted outputs allow distribution of signals such as DVB ASI,
- Reclocked SD, HD, or 3G electrical outputs which reduce jitter on the incoming signal,
- Auto cable auto equalization for up to 400 meters of cable in the case of SD-SDI and DVB ASI and up to 140 meters of cable in the case of HD-SDI (1.485 Gb/s), 90 meters (Input 1) and 100 meters (Input 2) for 3G-SDI (3 Gb/s) signals,
- Accepts a wide range of standard definition or high definition input signals,
- 8943RDA-D and 8943RDA-DFR inputs can be mapped to output pairs in any combination,
- Provides a bypass mode for signal rates not supported by the reclocker,
- Provide alarm (signal presence detection) and status management,
- Supports SNMP MIB reporting basic board alarms, and
- Remote control and monitoring support: web pages, Newton control panel, and NetConfig management system.

In addition to the features above, the 8943RDA-DFR fiber ready model with the 89003FR-R rear module can be populated with any one SFP (Small Form-factor Pluggable) dual transmitter (two outputs), transceiver (one input/one output), or dual receiver (two inputs) submodules for fiber optic interface as listed in Table 1 on page 14.

Installation

The front and the rear modules for each model are delivered together as a set as follows:

- 8943RDA front module with the 89003E-R rear module
- 8943RDA-D front module with the 89003E-R rear module
- 8943RDA-DFR front fiber ready module that accepts one optional SFP fiber optic submodule (see Table 1 on page 14 for model numbers) with the 89003FR-R rear module

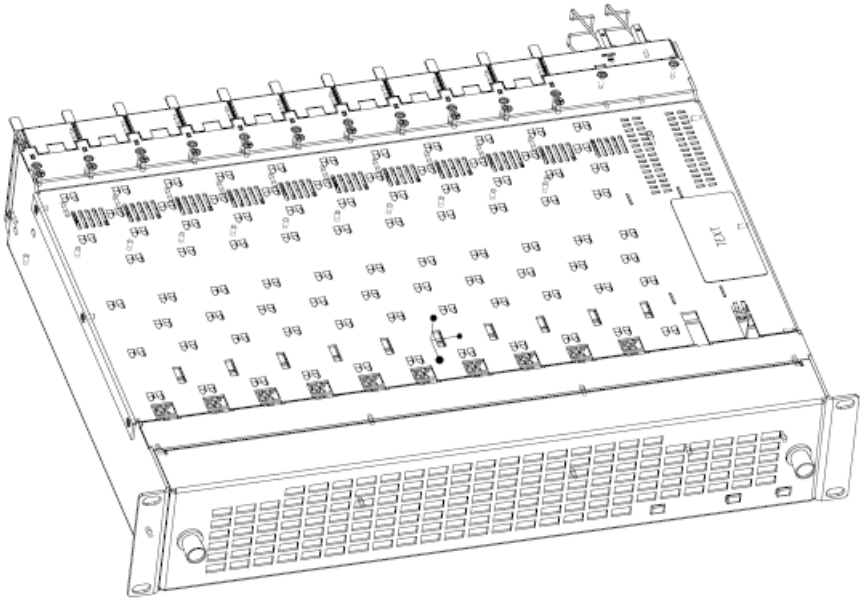
The front and rear modules can be plugged in and removed from a GeckoFlex frame with power on, without disrupting operation on adjacent modules. When power is applied to the module, LED indicators reflect the initialization process (see *Power Up* on page 25).

Module Placement in the GeckoFlex Frame

There are ten rear and front slot locations in the 2 RU frame to accommodate either video or audio modules of all types (Figure 1). Some GeckoFlex modules use two slots. The 89003E-R used with the 8943RDA and 8943RDA-D and the 89003FR-R rear modules used with the 8943RDA-DFR should be installed in any available single slot location on the back of the frame first. Then the 8943RDA/-D/-DFR front module should be plugged into the corresponding front slot.

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

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 submodules (8943RDA-DFR models only):

- 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 optical submodule option on the 8943RDA-DFR front module (used only on the 8943RDA-DFR), then the front module.
- When installing or removing a rear module, loosen or tighten the screws holding the retainer clips to the frame manually with the retainer clip tool provided inside the front cover of the frame or use a 2 mm (5/64") hex screwdriver. Please do not use an electric screwdriver.

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

- Make every effort to leave the screws holding the retainer clips in place (do not remove them completely). They are very small and can easily drop into other equipment causing a shorting hazard. (Two turns of the screw should be enough to loosen the screws, 3 turns or more will remove it.)
- When installing a rear module, tighten the screws on the retainer clips just until snug. Do not apply more force than is necessary to seat the rear module. Refer to the **Mechanical** specifications given in Table 10 on page 82.
- If using a fiber optic submodule on the 8943RDA-DFR fiber ready module, handle it carefully, use anti-static precautions, and read the *Fiber Optic Cleaning Requirement* on page 21 before cabling.

Rear Module Installation

To install the rear module, refer to Figure 2 and the instructions below:

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

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

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

3. Remove the blank rear adapter cover by inserting needlenose pliers into the slots in the blank cover and pulling it off.

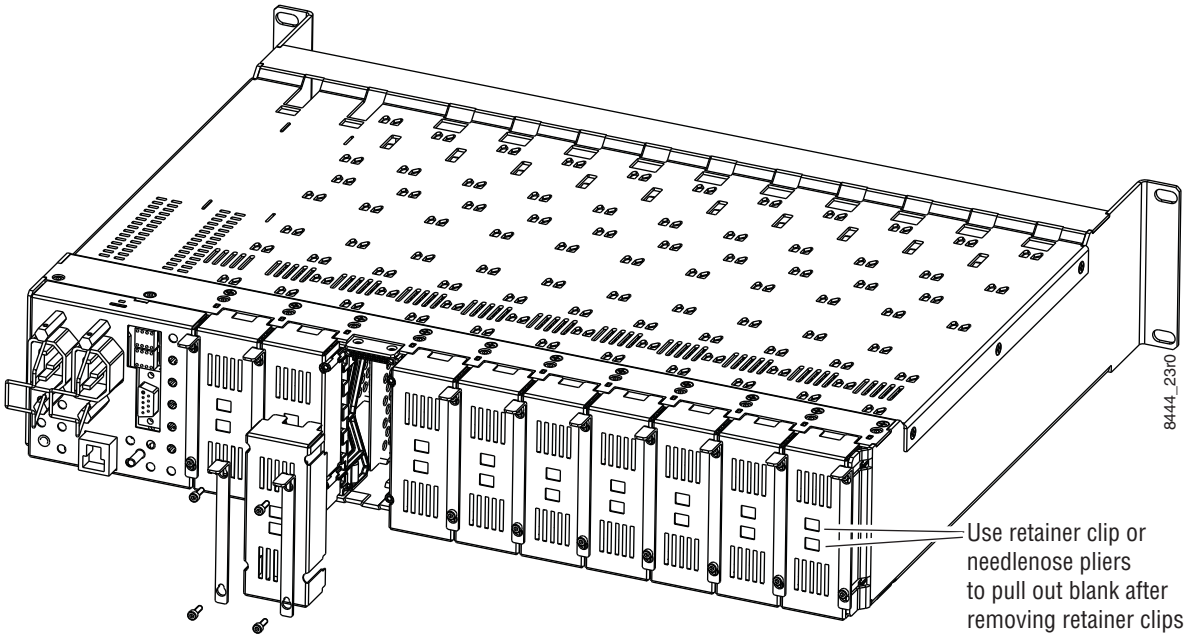
4. Insert the rear module into the empty slot, guiding it carefully.

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

6. 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 2. Installing Rear Module (751- Version Frame)



Fiber Optics Submodule Installation (8943RDA-DFR only)

The 8943RDA-DFR front modules can be populated with any one of the SFP dual transmitter, transceiver, or dual receiver submodules listed in Table 1.

Table 1. SFP Fiber Optic Submodule Option Models

SFP Model Number	Transmitter Frequencies Supported
SFP-13103G-M1DTX-K	1310 nm
	Receiver Frequencies Supported
SFP-13103G-M1DRX-K	1270 nm >1610 nm
	Transceiver Frequencies Supported
SFP-13103G-M1TRX-K	1310 nm (input) and 1310 nm (output)

The optional strap mount SFP Fiber Optic kit for GeckoFlex fiber-ready modules (handling video from 143 Mb/s to 3 Gb/s) includes:

- One Strap Mount SFP Fiber Optic Submodule (labeled for type)
- Mounting bracket for submodule installation
- Jumper cable assembly for connecting submodule to front module rear connector

Installation of the submodule involves three steps:

1. Mount the metal bracket to the submodule,
2. Mount the submodule and bracket on the front of the 8943RDA-DFR front module before it is installed in the frame, and
3. Install the jumper cable assembly to the submodule and the front module rear connectors.

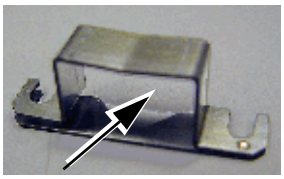
CAUTION The Fiber Optic submodule is static sensitive. Use static handling precautions when installing or removing the submodule.

Mount Metal Bracket to Submodule

Attach the mounting bracket to the SFP submodule as shown below.

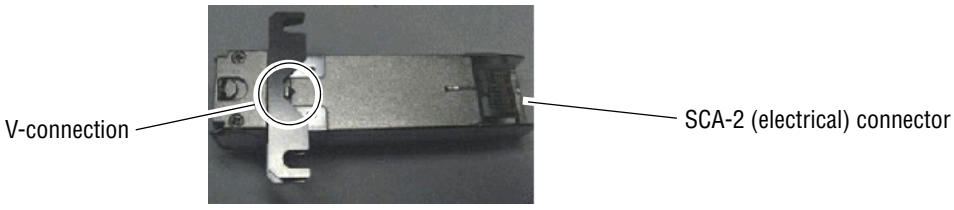
1. Insert the narrow end (SCA-2 connector) of the submodule into the mounting bracket, label side up with the open slots on the bracket pointing to the rear as shown by the direction of the arrow in Figure 3.

Figure 3. Mounting Bracket



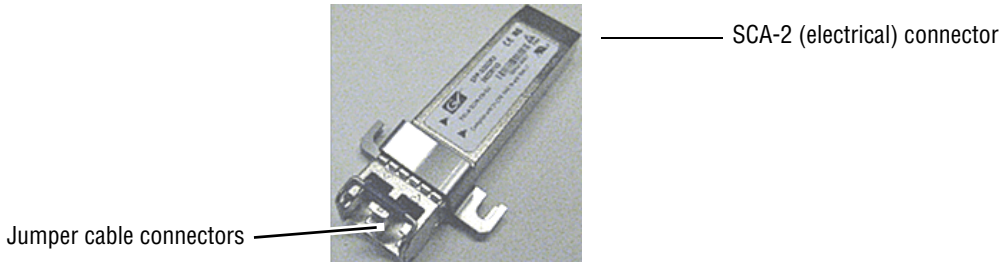
2. Attach the mounting bracket to the submodule by sliding the bottom part of the bracket as far as it will go (Figure 4) on the bottom side of the submodule to hold it in place without forcing it. Make sure the open bracket slots point towards the SCA-2 (electrical) connector on the submodule.

Figure 4. Attach Bottom of Bracket to Submodule



3. The finished installation should look like the example in Figure 5. The label will list the GV Model number, the GV part number, and the manufacturer's part number. Also note the two arrows on the label will indicate signal direction as shown in the dual receiver example in Figure 5 (arrows pointing in). A dual transmitter will have two arrows pointing out, and a transceiver will have one input and one output arrow.

Figure 5. Finished Bracket Mounting



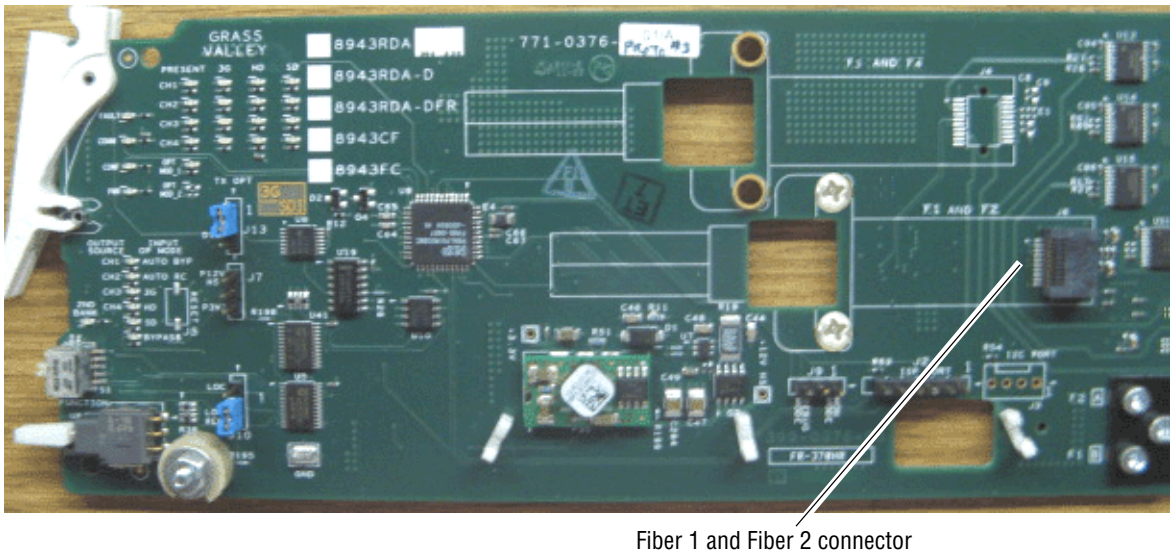
Installing SFP Submodule on Front Module

Refer to the instructions below for installing a single SFP fiber optic submodule for Fiber 1 and Fiber 2.

1. Remove any dust cover plugs from the submodule.
2. On the top (component) side of the front module circuit board, locate the two screws and the SCA-2 connector in the bottom connector where the submodule will be installed as shown in Figure 6.

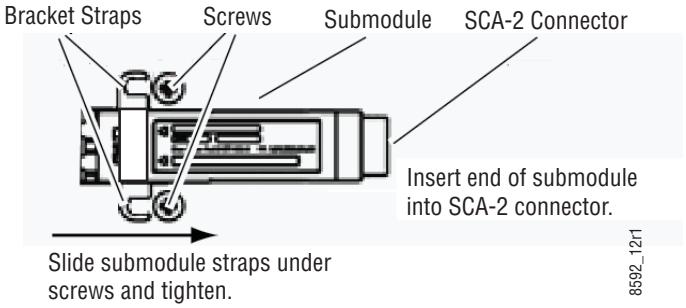
Note On some modules, this may be labeled F3 and F4.

Figure 6. Location of Fiber 1 and Fiber 2 SFP Submodule



3. Loosen the two screws on the printed circuit board slightly so you can slide the bracket straps underneath the screws and the SCA-2 connector end of the submodule slides over the SCA-2 connector as shown in the drawing in Figure 7.

Figure 7. Installing Strap-Mount SFP Submodule



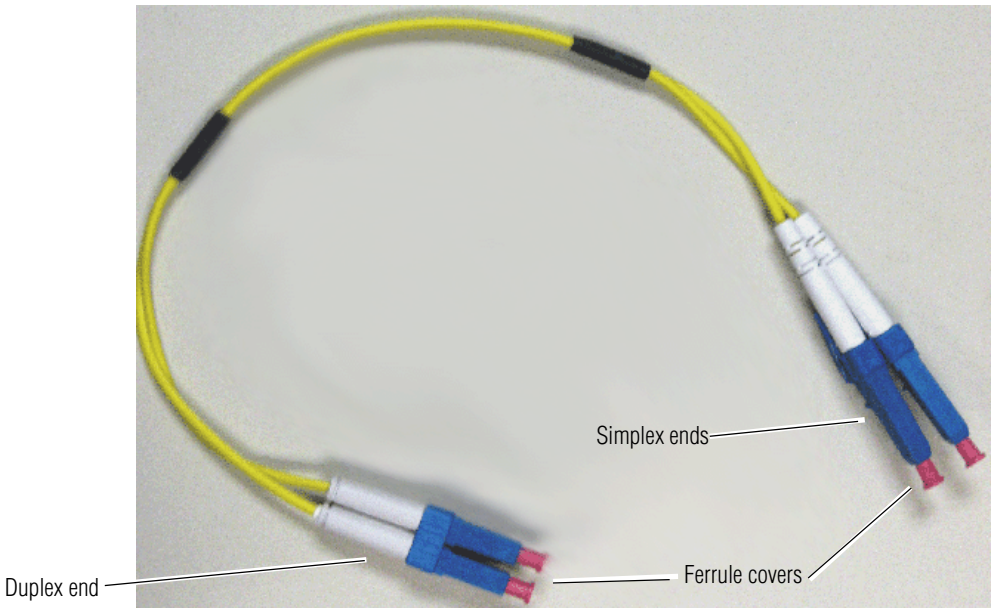
4. Once the submodule is seated into the SCA-2 connector and the straps are completely under the screws, tighten the screws to hold the submodule in place.

Installing Fiber Jumper Cable Assembly

Before installing the fiber jumper cable assembly (Figure 8), remove the protective ferrule covers and clean all fiber optic surfaces on the duplex and simplex ferrule ends of the 2-channel fiber jumper cable assembly and the submodule connector.

Use a standard fiber optic cleaning kit as described in *Fiber Optic Cleaning Requirement* on page 21.

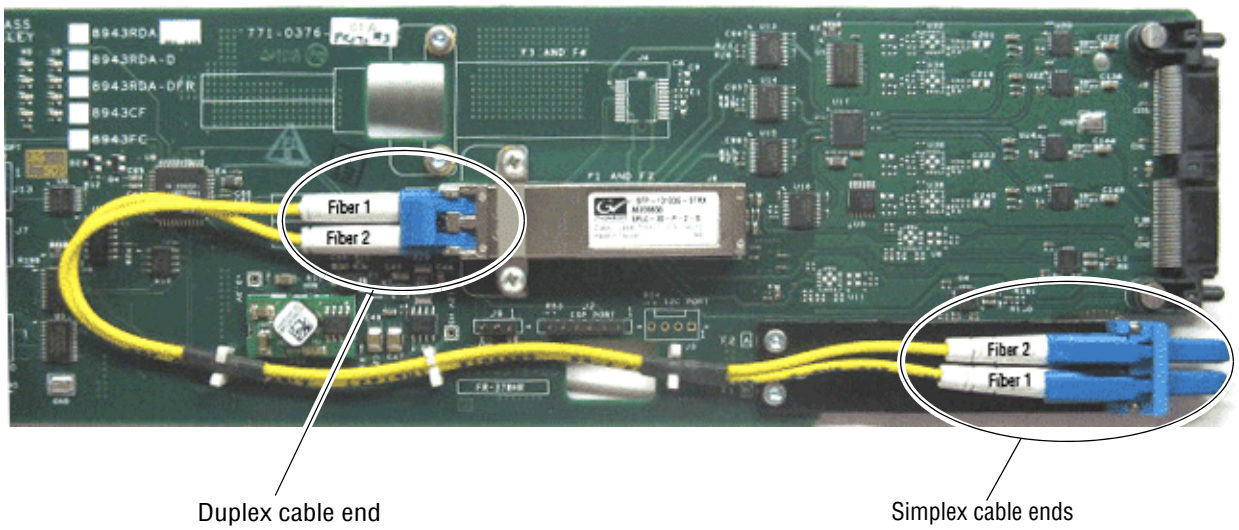
Figure 8. 2-Channel Fiber Jumper Cable Assembly



Refer to the drawing in Figure 9 for the following steps:

1. Carefully slide the duplex ferrule end of the 2-channel fiber jumper cable assembly into the end of the submodule until the duplex connector snaps into place.
2. Guide the two fiber jumper cables around towards the front of the board and slip them through the plastic cable guides to hold them in place.
3. Find the ferrule end of the simplex (single) fiber jumper cable that corresponds to the top duplex cable (labeled fiber 1 in the photo) and connect it to the bottom of the rear fiber connector (labeled Fiber 1 in the photo).
4. Find the ferrule end of the simplex (single) fiber jumper cable that corresponds to the bottom duplex cable (labeled Fiber 2 in the photo) and connect it to the bottom (labeled Fiber 2 in the photo) of the rear fiber connector.
5. Also refer to Figure 13 on page 24 for an illustration of the fiber connector on the rear module.

Figure 9. Installing Fiber Jumper Cables

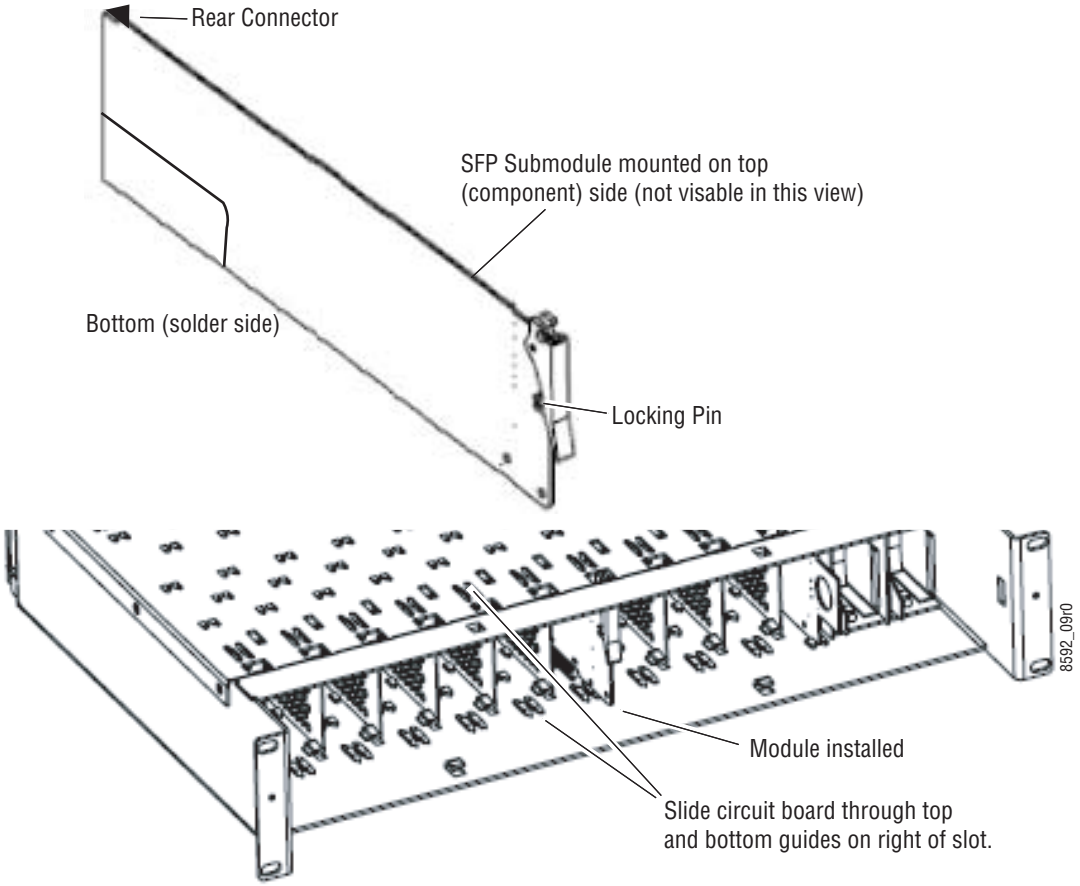


Front Module Installation

After installing the rear module and the fiber optic submodule option if being used, install the front module as follows:

1. On the top of the front module, locate the LOC and LOC/REM jumper, J10, shown in Figure 19 on page 42.
2. Set jumper J10 to LOC (pins 1-2) to lock out remote control, or LOC/REM (pins 2-3), the default, for both local and remote control.
3. For 8943RDA-DFR modules using Dual Transmitter or Transceiver fiber optic submodules: If you have installed an optional dual fiber transmitter or transceiver submodule on your 8943RDA-DFR front module, you must enable the transmitter output(s) by setting jumper, J13 on the circuit board to pins 1-2, as shown in Figure 15 on page 33.
4. Locate the front slot corresponding to the rear module already installed.
5. Insert the front module so that the circuit board slides through the guides on the right side the slot (Figure 10 on page 20).
6. Carefully slide the module into the rear connector, making sure the fiber optic connector fits into the rear module properly.
7. Lock the front module ejector tab into the locking pin.
8. Replace the frame front cover during operation to maintain optimum cooling conditions.

Figure 10. Front Module Installation (8943RDA-DFR Shown)



Cabling

Cabling to the 8943RDA and 8943RDA-D is done on the BNCs on the 89003E-R rear module. Cabling for the 8943RDA-DFR module is done on the BNCs and optional fiber inputs and outputs as described in these sections:

Fiber Optic Cleaning Requirement

Before making any fiber optic cable mating connections (including submodule 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.

Video Input(s)

The 8943RDA modules will accept any of the SD/HD/3G- SDI video and DVB ASI standards listed in the input specifications in Table 10 on page 82.

For the 8943RDA-DFR, the video input(s) to the module can be selected from the following four sources, depending on the presence and type of fiber optic submodule option installed:

- Electrical BNC J10 and BNC J8 (BNC J8 8943RDA-DFR only),
- Fiber RX 2 (when dual receiver or transceiver submodule is installed), or
- Fiber Input RX 1 or RX 2 (with dual receiver submodule installed).

All input sources can be connected and active at the same time. Each active input must be mapped to the desired output pair(s). Video input to video output pair mapping is done in configuration using the local onboard controls, Settings web page, or Newton control panel (page 28).

Video Outputs

The 8943RDA model outputs conform to the video standards listed in the output specifications in Table 10 on page 82. The electrical video outputs are available in four pairs, J1/J2, J3/J4, J5/J6, J7/J8 (J7 only for the 8943RDA-DFR). Fiber optic outputs available (Fiber 1 and Fiber 2) depend on the type of fiber optic submodule installed. Two Fiber optic outputs are available when a dual transmitter fiber optic submodule is installed and one fiber optic output (TX1) is available when a transceiver is installed.

Video input to video output pair(s) mapping is done in configuration using the local onboard controls, Settings web page, or Newton control panel (page 28).

Electrical outputs are always enabled. Fiber optic outputs on the 8943RDA-DFR module must be enabled in configuration using the local onboard controls, Settings web page, or Newton control panel (page 28).

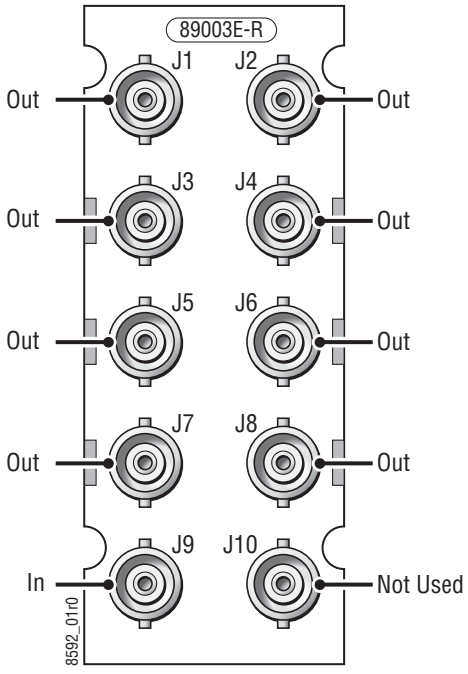
8943RDA Module Cabling

The 8943RDA front module requires the 89003E-R rear module. This module has one electrical input to eight electrical BNC outputs. Refer to Table 2 and Figure 11 for 89003E-R cabling information.

Table 2. Cabling Inputs and Outputs for 8943RDA Module

Signal Input	Outputs Available
J9 BNC	BNC Pairs: J1/J2, J3/J4, J5/J6, J7/J8:

Figure 11. 8943RDA Cabling on 89003E-R Module



8943RDA-D Module Cabling

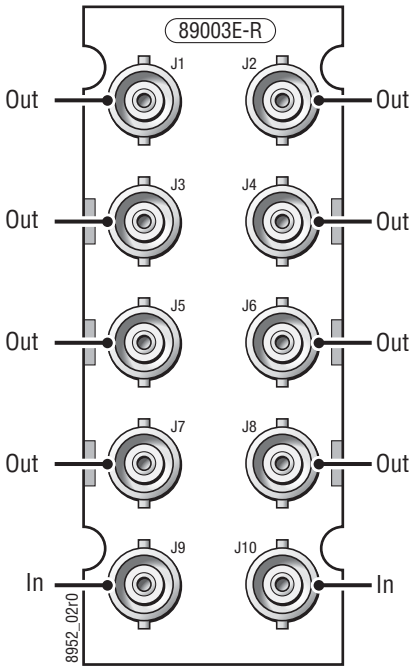
The 8943RDA-D front module requires the 89003E-R rear module. Two electrical inputs are available and each may be assigned to any of the four output pairs in configuration. An output pair may only have one input assigned.

For example, BNC J9 can be assigned (mapped) to output pairs J1/J2 and J3/J4 and BNC J8 can be assigned to output pairs J5/J6 and J7/J8. Video input to video output pair(s) mapping is done in configuration using the local onboard controls, Settings web page, or Newton control panel (page 28). Refer to Table 3 and Figure 12 for 89003E-R cabling information.

Table 3. Cabling Inputs and Outputs for 8943RDA-D Module

Signal Inputs	Outputs Available
J9 BNC and J10 BNC	BNC pairs: J1/J2, J3/J4, J5/J6, J7/J8

Figure 12. 8943RDA-D Cabling on 89003E-R Module



8943RDA-DFR Module Cabling

The 8943RDA-DFR requires the 89003FR-R rear module with electrical inputs and outputs and a fiber optic connector for connection of fiber inputs and outputs depending on the type of fiber optic option submodule installed.

If using an optional fiber optic submodule, it must be installed on the front of the 8943RDA-DFR front module. Fiber optic submodule types available are listed with installation instructions in *Fiber Optics Submodule Installation (8943RDA-DFR only)* on page 14.

Electrical and fiber video input to electrical video output pair and fiber output mapping is done in configuration using the local onboard controls, Settings web page, or Newton control panel (page 28).

Refer to Table 4 and Figure 13 for 89003FR-R cabling information.

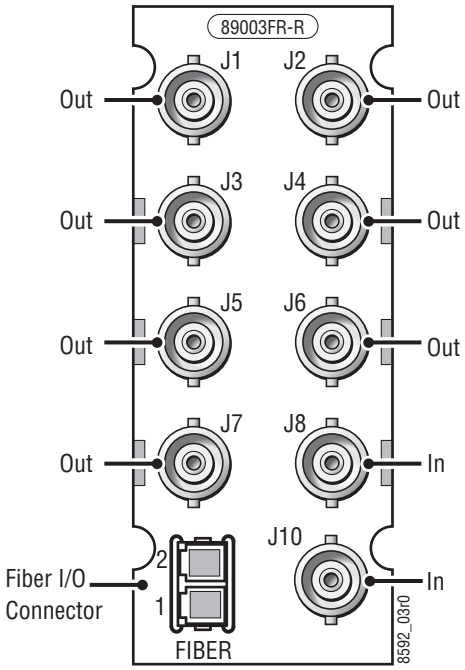
Table 4. 8943RDA-DFR Cabling for 89003FR-R and Fiber Optic Connections

Fiber Optic Submodule	Input(s) Available	Outputs Available
None	BNC J10, BNC J8	BNC pairs: J1/J2, J3/4, J5/J6, J7
Dual Fiber Receiver	BNC J10, BNC J8, Fiber 1, Fiber 2[1]	BNC pairs: J1/J2, J3/4, J5/J6, J7
Dual Fiber Transmitter	BNC J10, BNC J8	BNC pairs: J1/J2, J3/4, J5/J6, J7, Fiber Out 1, and Fiber Out 2 [2]
Fiber Transceiver	BNC J10, BNC J8, Fiber In 2[1]	BNC pairs: J1/J2, J3/4, J5/J6, J7, and Fiber Out 1[2]

[1] Input to output pair assignment is made on Settings web page where Fiber inputs must be enabled.

[2] Input to output pair assignment is made on Settings web page where Fiber outputs must be enabled.

Figure 13. 8943RDA-DFR Cabling on 89003FR-FR Rear Module



Power Up

Upon power-up, the green PWR LED should light and the CONFIG, FAULT and COMM LEDs should illuminate during the module initialization.

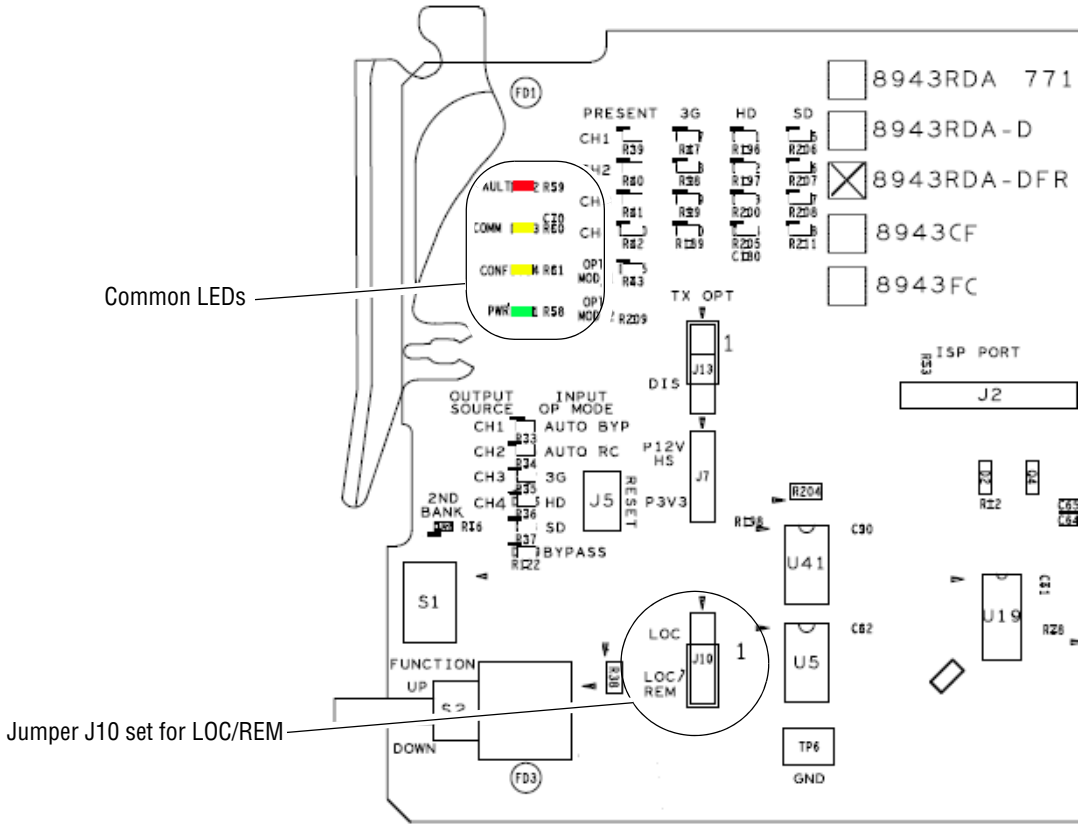
Note When a module is first plugged into a GeckoFlex frame, the 8900NET module (if present) may report a momentary fault. This will clear once the module has booted up.

Operation Indicator LEDs

The LEDs common to all modules (FAULT, COMM, CONFIG and PWR) are highlighted in Figure 14 and operate in the same manner for each module version.

Refer to Table 5 on page 26 to see a complete list of possible operating conditions and the resulting indicator status. A red FAULT LED indicates an error situation and, when noted with the other indicator LEDs, can indicate a specific problem area. The presence of some LEDs on the module depends on which model type you are using.

Figure 14. 8943RDA Front Module Indicator LEDs



Refer to Table 5 for a description of each front edge LED and how it operates. LEDs present on specific module are illustrated in the figures listed below.

Note Some LEDs, such as the FAULT LED, must report a collective state for all four channels. This collective state is outlined in Table 6 on page 27.

- 8943RDA (Figure 19 on page 42)
- 8943RDA-D (Figure 24 on page 52)
- 8943RDA-DFR (Figure 28 on page 61)

Table 5. Front Edge LED Indicators

LED	Indication	Condition
STATUS LEDS		
FAULT (red)	Off	Collective module state of pass
	On continuously	Collective state of internal fault
	Flashing	Collective state of warning
COMM (yellow)	Off	No activity on frame communication bus
	Double flash	Location Command received by the module from a remote control system
	Continuous short flash	Activity present on the frame communication bus
CONFIG (yellow)	Off	No configuration change is in process, initialization complete
	On	Module is initializing or changing operating modes
	Double flash	In unison with COMM LED, Location 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
CH 1-4 PRESENT (Green)	Off	No carrier
	On Continuously	Energized signal present
CH 1-4 3G (Blue)	Off	Signal present on CH 1-4 input is not detected as 3 Gb/s (carrier is way off frequency)
	Flashing	Occurs when the mode is set to manual bypass
	On Continuously	Signal present on CH 1-4 input is detected as 3 Gb/s
CH 1-4 HD (Yellow)	Off	Signal present on CH 1-4 input is not detected as 1.485 Gb/s (carrier is way off frequency)
	Flashing	Occurs when the mode is set to manual bypass
	On Continuously	Signal present on CH 1-4 input is detected as 1.485 Gb/s
CH 1-4 SD (Yellow)	Off	Signal present on CH 1-4 input is not 1.485 (carrier is way off in frequency)
	Flashing	Occurs when the mode is set to manual bypass
	On Continuously	Signal present on CH 1-4 input is detected as 270 Mb/s
OPT MOD_1 (Yellow) (8943RDA-DFR only)	Off	No SFP fiber optic submodule is installed or the SFP installed in the first SFP position has a fault as noted on Status web page
	On Continuously	A supported SFP submodule is installed in the top SFP position (see Table 1 on page 14) for supported types)
	Flashing	An unsupported SFP submodule is installed in the top SFP position
OPT MOD_2 (Yellow)	Off	Not used in this version
	On	

Table 5. Front Edge LED Indicators

LED	Indication	Condition
STATUS LEDS		
MODULE LOCAL CONFIGURATION LEDS		
CH 1-4 OUTPUT SOURCE (Yellow)	On or Off	Refer to *Local Onboard Configuration* on page 33
CH 1-4 INPUT OP MODE (Yellow)	On or Off	Refer to *Local Onboard Configuration* on page 33

Collective Module Status Reporting

Some status and fault reporting to the module level has only one status indicator, such as the Status LED on each web page. This status indicator must reflect the collective status of all four channels. Table 6 describes what the collective input status will be for each channel state given below.

Table 6. Collective Input Status

CH 1 Input Status	CH 2 Input Status	CH 3 Input Status	CH 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

Configuration

The 8943RDA modules can be configured locally using onboard switches or remotely using the 8900NET network interface GUI or a networked Newton Control Panel.

Refer to the following sections for a summary of configuration instructions:

- Configuration Summary (page 28)
- Local Onboard Module Configuration (page 33)
- Remote Control and Monitoring (page 38)

Operation of these control types is explained in detail in their respective sections of this manual.

Configuration Summary

The configuration of each 8943RDA DA establishes:

- Input signal status reporting at module level (remote control only),
- Local only or Remote/Local control (onboard jumper selection),
- Input to output mapping (8943RDA-D and 8943RDA-DFR only), and
- Input Operating Mode setup.

Table 14 on page 89 provides a summary in table format of all parameters and their ranges, default values, and remote, local, and control panel function names and locations for setting each value.

Input Operating Modes

The choices for input operating modes are described below. Refer to Table 7 on page 30 for an overview of the input status states in each of these modes.

Auto Reclock/Bypass

In this mode the electrical inputs are equalized and fed to the reclocker. The module will analyze the input to determine whether the bit rate is 270Mb/s, 1485Mb/s, or 2970Mb/s. If the input signal matches one of these rates, the signal is reclocked at the determined data rate and passed to the electrical output line drivers. If the signal is determined to not be one of these rates, the reclocker will be automatically bypassed and the signal passed directly to the electrical output line drivers.

Note When in Auto Reclock/Bypass mode, the electrical line driver outputs will be set to the last known good SD or HD slope (slew rate).

Auto Reclock/Mute

In this mode the electrical inputs are equalized and fed to the reclocker. The module will analyze the input to determine whether the bit rate is 270Mb/s (SD), 1485Mb/s (HD), or 2970Mb/s (3G). If the input signal matches one of these rates, the signal is reclocked at the determined data rate and passed to the electrical output line drivers. If the signal is determined to not be one of these rates, the electrical outputs of the reclocker will be muted and the outputs of the cable driver will be static.

3G 2970M

In this fixed reclock 3G mute mode, the inputs are equalized and fed to the reclocker. The module will analyze the input to determine if the bit rate is 2970Mb/s (3G). If it is, the module will reclock the signal at 2970Mb/s and feed it to the electrical output drivers. If the signal is determined not to be 2970Mb/s, the electrical outputs of the reclocker will be muted and the cable driver outputs will be static.

HD 1485M

In this fixed reclock HD mute mode, the inputs are equalized and fed to the reclocker. The module will analyses the input to determine if the bit rate is 1485Mb/s. (HD) If it is, the module will reclock the signal at 1485b/s and feed it to the electrical output drivers. If the signal is determined not to be 1485Mb/s, the electrical outputs of the reclocker will be muted and the cable driver outputs will be static.

SD 270M

In this fixed reclock SD mute mode, the inputs are equalized and fed to the reclocker. The module will analyze the input to determine if the bit rate is 270Mb/s (SD). If it is, the module will reclock the signal at 270Mb/s and feed it to the electrical output drivers. If the signal is determined not to be 270Mb/s, the electrical outputs of the reclocker will be muted and the cable driver outputs will be static.

Manual Bypass HD/3G

In this mode, the inputs are equalized and the reclocker is always bypassed. This selection should be made when using a 1485Mb/s or 2970Mb/s data rate or data so that the output drivers will be set to the proper slew rate (slope) for HD signals.

Manual Bypass SD

In this mode, the inputs are equalized and the reclocker is always bypassed. This selection should be made when using a 270Mb/s data rate or to pass data so that the output drivers will be set to the proper slew rate (slope) for SD signals.

Table 7 gives an overall summary of the conditions of the signal output states, the status reporting LEDs on the module circuit board, and status messages on the web pages that will result when the input signal is **Present**, **Not Present**, or **Unknown** in each of the operating modes. The conditions are the same for Channels 1-4 and will be reported separately for each channel.

Table 7. Reported Input Status Summary

Operating Mode	Rate Detected	PRESENT LED	3G LED	HD LED	SD LED	Output Signal	Output Slope	Reporting Enabled	Signal State
Auto Reclock/Bypass	Not Present	Off	Off	Off	Off	Muted (Noise)	See Note 1	No	Not Monitored
								Yes	Signal Not Present
Auto Reclock/Bypass	Unknown (not 270M, 1485M, or 2970M)	Green	Off	Off	Off	Input Signal		No	Not Monitored
								Yes	Signal Present
Auto Reclock/Bypass	2970M	Green	Blue	Off	Off	Reclocked 2970M		No	Not Monitored
								Yes	Signal Present
Auto Reclock/Bypass	1485M	Green	Off	Yellow	Off	Reclocked 1485M		No	Not Monitored
								Yes	Signal Present
Auto Reclock/Bypass	270M	Green	Off	Off	Yellow	Reclocked 270M		No	Not Monitored
								Yes	Signal Present
Auto Reclock/Mute	Not Present	Off	Off	Off	Off	Muted	N/A	No	Not Monitored
								Yes	Signal Not Present
Auto Reclock/Mute	Unknown (not 270M, 1485M, or 2970M)	Green	Off	Off	Off	Muted	N/A	No	Not Monitored
								Yes	Signal Not Present
Auto Reclock/Mute	2970M	Green	Blue	Off	Off	Reclocked 2970M	HD	No	Not Monitored
								Yes	Signal Present
Auto Reclock/Mute	1485M	Green	Off	Yellow	Off	Reclocked 1485M	HD	No	Not Monitored
								Yes	Signal Present
Auto Reclock/Mute	270M	Green	Off	Off	Yellow	Reclocked 270M	SD	No	Not Monitored
								Yes	Signal Present
3G 2970M	Not Present	Off	Off	Off	Off	Muted	HD	No	Not Monitored
								Yes	Signal Not Present
3G 2970M	Not 2970M	Green	Off	Off	Off	Muted	HD	No	Not Monitored
								Yes	Signal Not Present
3G 2970M	2970M	Green	Blue	Off	Off	Reclocked 2970M	HD	No	Not Monitored
								Yes	Signal Present
HD 1485M	Not Present	Off	Off	Off	Off	Muted	HD	No	Not Monitored
								Yes	Signal Not Present
HD 1485M	Not 1485M	Green	Off	Off	Off	Muted	HD	No	Not Monitored
								Yes	Signal Not Present
HD 1485M	1485M	Green	Off	Yellow	Off	Reclocked 1485M	HD	No	Not Monitored
								Yes	Signal Present
SD 270M	Not Present	Off	Off	Off	Off	Muted	SD	No	Not Monitored
								Yes	Not Present
SD 270M	Not 270M	Green	Off	Off	Off	Muted	SD	No	Not Monitored
								Yes	Signal Not Present

Table 7. Reported Input Status Summary

Operating Mode	Rate Detected	PRESENT LED	3G LED	HD LED	SD LED	Output Signal	Output Slope	Reporting Enabled	Signal State
SD 270M	SD 270M	Green	Off	Off	Yellow	Reclocked 270M	SD	No	Not Monitored
								Yes	Signal Present
Manual Bypass HD/3G	Not Present	Off	Off	Off	Off	N/A	HD	No	Not Monitored
								Yes	Signal Not Present
Manual Bypass HD/3G	2970M or 1485M	Green	Flash	Flash	Off	Input Signal	HD	No	Not Monitored
								Yes	Signal Present
Manual Bypass HD/3G	Not 2970M or 1485M	Green	Off	Off	Off	Input Signal (with data)	HD	No	Not Monitored
								Yes	Signal Present
Manual Bypass SD	Not Present	Off	Off	Off	Off	N/A	SD	No	Not Monitored
								Yes	Signal Not Present
Manual Bypass SD	270M	Green	Off	Off	Flash	Input Signal	SD	No	Not Monitored
								Yes	Signal Present
Manual Bypass SD	Not 270M	Green	Off	Off	Off	Input Signal (with data)	SD	No	Not Monitored
								Yes	Signal Present

[1] When in Auto/Reclock/Bypass mode, the electrical line driver outputs will be set to the last known good SD or HD slope (slew rate).

Input to Output Mapping

Another configuration parameter available with the 8943RDA-D and the 8943RDA-DFR is the input to output mapping capability. Any available input channel can be routed (mapped in configuration) to any available output through the internal crosspoint structure. This crosspoint mapping configuration allows flexibility in choosing what input channels feed what output pairs.

The 8943RDA-D input channel sources, CH1 (Coax J9) and CH2 (Coax J10) can be mapped to any of the four coaxial output pairs, J1/J2, J3/J4, J5/J6, and J7/J8. For example, the input source on CH1 can be mapped to feed output pair J1/J2 and the input source on CH2 can be mapped to feed output pairs J3/J4, J5/J6, and J7/J8.

In the case of the 8943RDA-DFR, input channel sources are CH1 (Coax J10), CH2 (Coax J8), CH3 (Fiber 1), and CH4 (Fiber 2). Fiber input channels and outputs are available depending on the type of SFP fiber optic submodule option installed. Fiber inputs and outputs must be enabled in configuration. Refer to Table 1 on page 14 for a list of the fiber optic submodule option models available.

8943RDA-DFR input to output mapping with the available SFP fiber optic submodules is summarized in Table 8. Also refer to the block diagrams starting on page 86 for an illustration of each 8943RDA-DFR configuration.

Table 8. 8943RDA-DFR Input to Output Mapping

Fiber Optic Submodule	Input(s) Available	Outputs Available
None	CH1 (BNC J10)	BNC pairs: J1/J2, J3/4, J5/J6, J7 (single output)
	CH2 (BNC J8)	
Dual Fiber Receiver	CH1 (BNC J10)	BNC pairs: J1/J2, J3/4, J5/J6, J7 (single output)
	CH2 (BNC J8)	
	CH3 (Fiber 1)[1]	
	CH4 (Fiber 2)[1]	
Dual Fiber Transmitter	CH1 (BNC J10)	BNC pairs: J1/J2, J3/4, J5/J6, J7 (single output), Fiber Out 1, and Fiber Out 2 [2]
	CH2 (BNC J8)	
Transceiver	CH1 (BNC J10)	BNC pairs: J1/J2, J3/4, J5/J6, J7 (single output), and Fiber Out 1 [2]
	CH2 (BNC J8)	
	CH 3 (Fiber In 2[1]	

[1] Input to output pair assignment is made on Settings web page where Fiber inputs must be enabled.

[2] Input to output pair assignment is made on Settings web page where Fiber outputs must be enabled.

Local Onboard Configuration

Local onboard configuration can be done for the following:

- **CH1-4 OUTPUT OP MODE** – set the output operating mode for each available channel (*Set INPUT OP MODE* on page 35), and
- **CH1-4 OUTPUT SOURCE** – set input source to each available output (*Set OUTPUT SOURCE* on page 36).
- **Enable TX Outputs (8943RDA-DFR only)** – when a dual transmitter or transceiver fiber optic submodule is installed on the 8943RDA-DFR, the output(s) must be enabled by setting jumper J13, TX OPT, to pins 1-2. Setting jumper J13 to pins 2-3 disables the transmitter outputs.

Local onboard controls include two switches: the FUNCTION rotary switch, S1, and the paddle switch, S2, on the front edge of the module. These are used in conjunction with the OUTPUT SOURCE and INPUT OP MODE LEDs shown on the right of Figure 15.

The parameters coordinating to the FUNCTION switch settings are silkscreened on the back of the module as shown on the left of Figure 15.

Use the figure below and the settings in Table 9 on page 34 to set each of the module parameters.

Figure 15. Local Onboard Controls Rear Silkscreen and Front LEDs

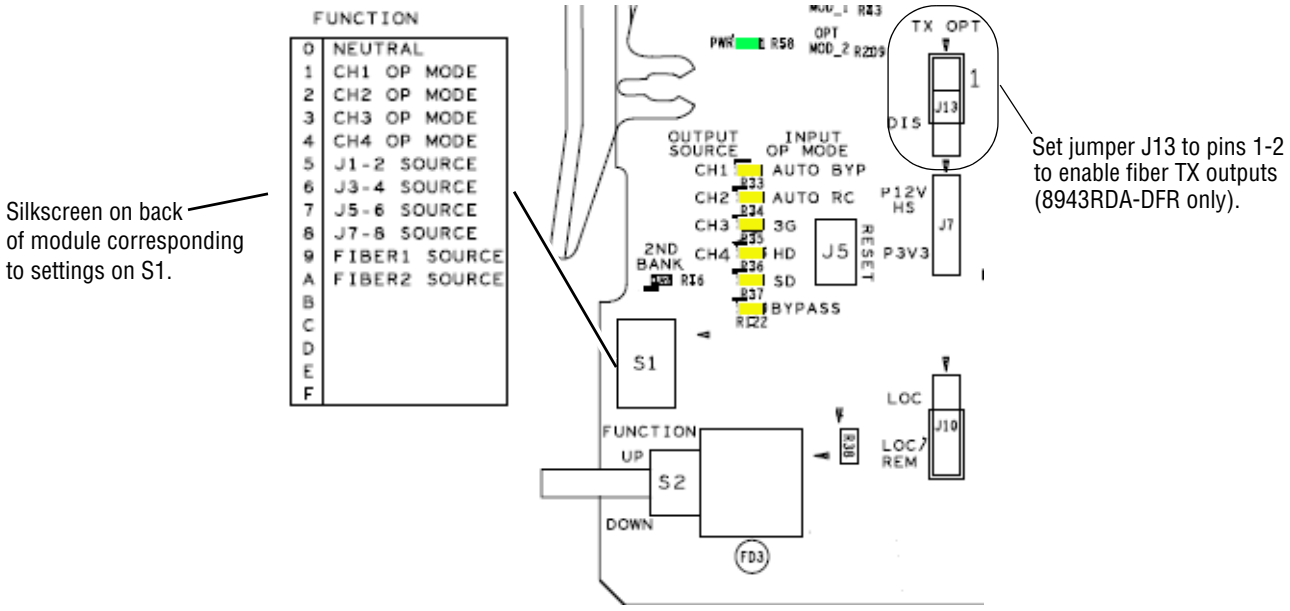


Table 9. Local Onboard Configuration Functions

Function Switch Position	Paddle Switch Up	Paddle Switch Down	Function Description
Input Op Mode			
0	–	–	Neutral position. Leave S1 in this position during normal operation.
1	AUTO BYP, AUTO RC, 3G, HD, SD, or BYPASS		Set Input Operation Mode for Channel 1
2			Set Input Operation Mode for Channel 2
3			Set Input Operation Mode for Channel 3 (8943RDA-DFR only)
4			Set Input Operation Mode for Channel 4 (8943RDA-DFR only)
Source Select			
5	CH1 (J9 for 8943RDA/-D and J10 for 8943RDA-DFR)), CH2 (J10 for 8943RDA-D or J8 for 8943RDA-DFR), CH3 (Fiber 1 input [1] 8943RDA-DFR only), or CH4 (Fiber 2 input [2] 8943RDA-DFR only)		Select input source to coax output pair J1/J2
6			Select input source to coax output pair J3/J4
7			Select input source to coax output pair J5/J6
8			Select input source to coax output pair J7/J8 (8943RDA-D) or select input source to single coax output J7 (8943RDA-DFR)
9			Select input source to Fiber 1 [3] TX output (8943RDA-DFR only)
A			Select input source to Fiber 2 [4] TX output (8943RDA-DFR only)
B	Enable	Disable	Channel 1 reporting
C	Enable	Disable	Channel 2 reporting
D	Enable	Disable	Channel 3 reporting
E	Enable	Disable	Channel 4 reporting
F	Recall		Recall Factory Defaults

[1] Presence of CH3 Fiber 1 input requires an optional Dual Receiver submodule.

[2] Presence of CH4 Fiber 2 input requires an optional Dual Receiver or Transceiver submodule.

[3] Presence of Fiber 1 TX output requires an optional Dual Transmitter submodule.

[4] Presence of Fiber 2 TX output requires an optional Dual Transmitter or Transceiver submodule.

Set INPUT OP MODE

To set the INPUT OP MODE for each available channel, do the following:

1. **CH1 OP MODE** (all models): Using a small flat blade screwdriver or an adjustment tool, move the FUNCTION rotary switch to position **1**. As shown in Table 9 on page 34, this is the position for setting the INPUT OP MODE for CH1.

   Use the paddle switch, S2, to move up and down through the following available INPUT OP MODE choices:

   - AUTO BYP
   - AUTO RC
   - 3G
   - HD
   - SD
   - BYPASS

   Each of these choices is described in detail in *Input Operating Modes* on page 28. As the paddle switch is pressed, the corresponding INPUT OP MODE yellow LED will light on the LED array, indicating which mode is currently selected. Stop on the LED corresponding to the mode you want.

2. **CH2 OP MODE** (8943RDA-D and 8943RDA-DFR) Set the Function rotary switch to **2** to select the CH2 OP MODE. Use the paddle switch, S2, to scroll through to one of the choices listed in Step 1 above.

3. **CH3 OP MODE** (8943RDA-DFR) Set the Function rotary switch to **3** to select the CH3 OP MODE. Use the paddle switch, S2, to scroll through to one of the choices listed in Step 1 above.

4. **CH4 OP MODE** (8943RDA-DFR) Set the Function rotary switch to **4** to select the CH4 OP MODE. Use the paddle switch, S2, to scroll through to one of the choices listed in Step 1 above.

Set OUTPUT SOURCE

Input to output mapping is done by choosing an input channel to feed an output coax pair or an optional fiber output (8943RDA-DFR only). This setting is only done on the 8943RDA-D and the 8943RDA-DFR models. Refer to Table 14 on page 89 for the factory default settings. The 8943RDA has only one input which is automatically mapped to all output pairs. Output mapping is summarized in *Input to Output Mapping* on page 32.

To assign a source to an output, do the following:

1. **J1-2 SOURCE**: Rotate the Function rotary switch to position **5** to select the input source to feed output coax pair J1/J2 from one of the following sources:
   - CH1 (Coax J9 for 8943RDA/-D or Coax J10 for 8943RDA-DFR)
   - CH2 (Coax J10 for 8943RDA-D or Coax J8 for 8943RDA-DFR)
   - CH3 (Fiber 1 input available when Dual Receiver SFP fiber optic option is installed on 8943RDA-DFR only)
   - CH4 (Fiber 2 input available when Dual Receiver or Transceiver SFP fiber optic option installed on 8943RDA-DFR only)

   Use the paddle switch to move between channel choices, the OUTPUT SOURCE LEDs will light indicating which channel is selected. Move through the channels until the LED is highlighted for the input source you want to feed J1-2 coax output pair.
2. **J3-4 SOURCE**: Set the Function rotary switch to **6** to select the input source to feed output coax pair J3-4 in the same manner as Step 1 above.
3. **J5-6 SOURCE**: Set the Function rotary switch to **7** to select the input source to feed output coax pair J5-6 in the same manner as Step 1 above.
4. **J7-8 SOURCE**: Set the Function rotary switch to **8** to select the input source to feed output coax pair J7-8 (8943RDA-D) or J7 (8943RDA-DFR only) in the same manner as Step 1 above.
5. **FIBER1 SOURCE (8943RDA-DFR only)**: Set the Function rotary switch to **9** to select the input source to feed the optional Fiber 1 output in the same manner as Step 1 above. For Fiber 1 output presence, an optional dual transmitter fiber submodule must be installed on the 8943RDA-DFR front module and jumper J13 must be set to enable the transmitter outputs (pins 2-3).
6. **FIBER2 SOURCE (8943RDA-DFR only)**: Set the Function rotary switch to **A** to select the input source to feed the optional Fiber 2 output (8943RDA-DFR only) in the same manner as Step 1 above. For Fiber 2 output presence, an optional dual transmitter fiber submodule or a transceiver fiber optic submodule (Fiber 1 input/Fiber 2 output) must be installed on the 8943RDA-DFR front module and jumper J13 must be set to enable the transmitter outputs (pins 2-3).

7. **CHANNEL 1 REPORTING:** Set the Function rotary switch to **B** and use the paddle switch to enable (paddle up) or disable (paddle down) Channel 1 reporting to the module level.

8. **CHANNEL 2 REPORTING:** Set the Function rotary switch to **C** and use the paddle switch to enable (paddle up) or disable (paddle down) Channel 2 reporting to the module level.

9. **CHANNEL 3 REPORTING (8943RDA-DFR only):** Set the Function rotary switch to **D** and use the paddle switch to enable (paddle up) or disable (paddle down) Channel 3 reporting to the module level.

10. **CHANNEL 4 REPORTING (8943RDA-DFR only):** Set the Function rotary switch to **E** and use the paddle switch to enable (paddle up) or disable (paddle down) Channel 4 reporting to the module level.

11. **RECALL FACTORY DEFAULTS:** Set the Function rotary switch to **F** and use the paddle switch to recall factory defaults (paddle up).

Remote Configuration

The 8943RDA configuration and monitoring can also be performed using a web browser GUI interface or a networked Newton Control Panel when the 8900NET (Net Card) Network Interface module is present in the GeckoFlex frame (8900FFN). Each of these interfaces is summarized 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 ftp and web sites.

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.

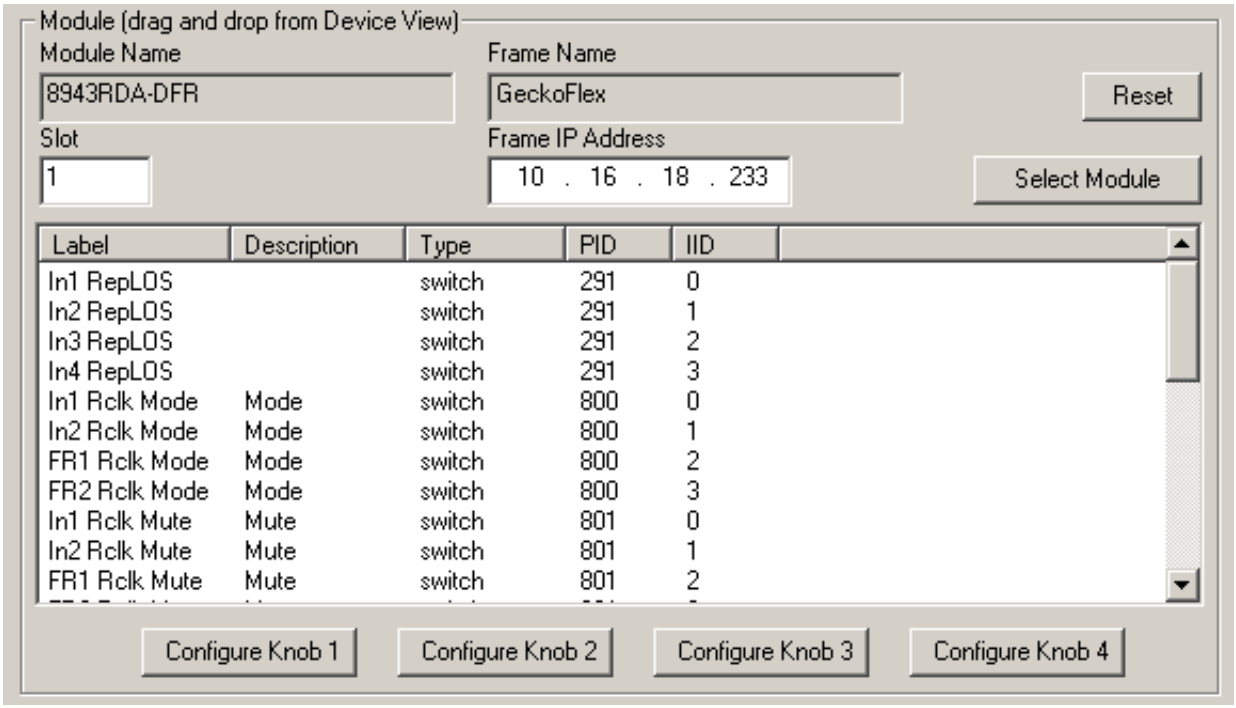
Control panel access offers the following considerations for module configuration and monitoring:

- 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.

An example of the Newton Configurator is shown in Figure 16. Newton control parameters are given in Table 14 on page 89.

Figure 16. 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.

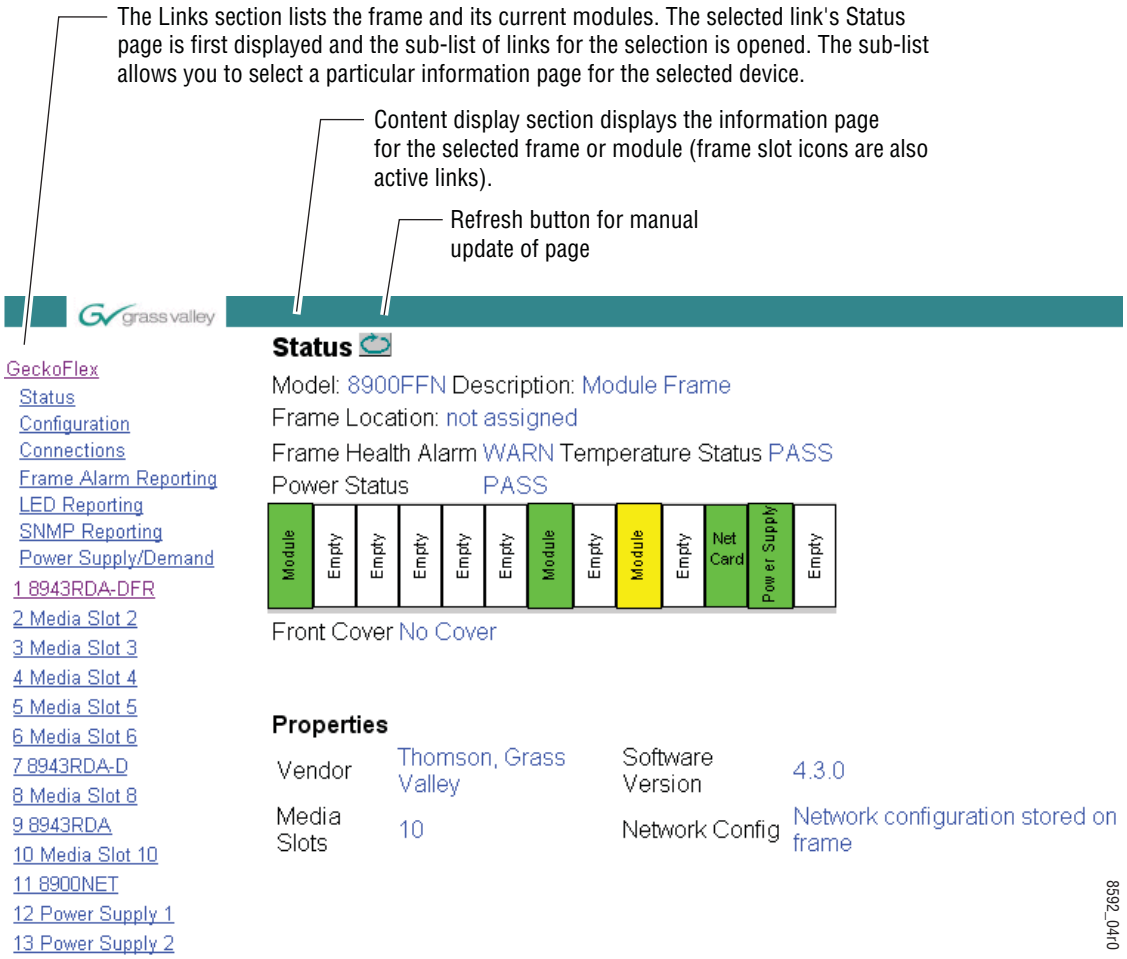
Refer to the Frame Status web page shown in Figure 17 on page 40. The 8900 modules can be addressed by clicking either on a specific module icon in the frame status display or on a module name or slot number in the link list on the left.

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 and fault monitoring and reporting shown on the module Status page, refer to *8943RDA Status Web Page* on page 44, the *8943RDA-D Status Web Page* on page 54, or the *8943RDA-DFR Status Web Page* on page 63.

Note Click on the **Refresh** button to update the web page after any changes.

Figure 17. Frame Status Web Page



8943RDA Module Links and Web Pages

The 8900 GUI provides the following links and web pages for the 8943RDA modules (Figure 18). The links are the same for all models.

- Status – reports input and output signals and frame bus communication status and module information including software version, hardware version, serial number, Asset Number (set on the Slot Config web page,
- I/O Config – shows the rear connections for the 89003E-R rear module (8943RDA and 8943RDA-D) and the 89003FR-R rear module (8943RDA-DFR), and allows naming of each input and enabling and disabling of input signal status reporting to the module level,
- Settings – allows the input to output mapping configuration of the 8943RDA-D and 8943RDA-DFR, and
- Slot Config – provides Locate Module and Slot Memory functions along with links to the SNMP, LED Reporting, and Frame Alarm configuration web pages.

The 8943RDA-DFR modules can use one of the various fiber optic submodules listed in *Fiber Optics Submodule Installation (8943RDA-DFR only)* on page 14.

Figure 18. 8943RDA/-D/-DFR Web Page Links

Refer to the following pages for detailed web page descriptions for each of the different model types listed below:

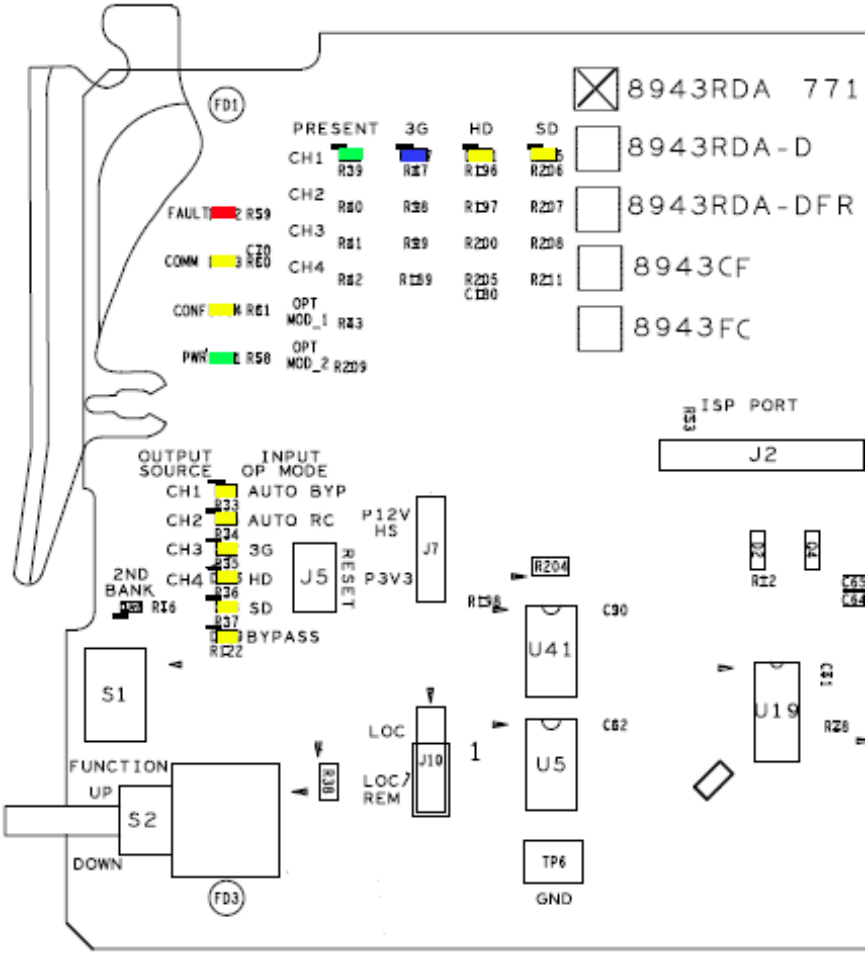
- 8943RDA (page 42)
- 8943RDA-D (page 52)
- 8943RDA-DFR (page 61)

8943RDA Module Configuration and Operation

The 8943RDA module uses the 89003E-F rear module and has one coax input at BNC J9 that feeds eight coax outputs. For cabling instructions, see *8943RDA Module Cabling* on page 22.

The status and configuration LEDs present on the 8943RDA module are shown in Figure 19. These LEDs operate as described in the LED summary in Table 5 on page 26.

Figure 19. 8943RDA Front Module Indicator LEDs



Configuration

The 8943RDA can be configured using the front edge onboard controls or using the remote controls available with a web browser or a networked Newton Control Panel.

The only configuration is setting the Input Operating mode for Channel 1 on the Settings web page (*8943RDA Settings Web Page* on page 48).

This module uses only one input channel (CH1) which feeds eight coax outputs. There is no input to output mapping required on this module.

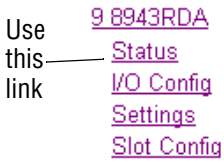
Local Configuration

For Local configuration, follow the summary of instructions given in *Local Onboard Configuration* on page 33 for using the front edge onboard switches for configuration.

Remote Configuration

The remote configuration is summarized in *Remote Configuration* on page 38.

Each of the available web pages for the 8943RDA are shown on the following pages:



- Status (page 44)
- I/O Config (page 46)
- Settings (page 48)
- Slot Config (page 49)

8943RDA Status Web Page

The Status web page (Figure 20 on page 45) for the 8943RDA shows the signal status of the input signal(s) and communication status with the frame bus. Color coding of the display indicates the signal status.

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.

Under the **Status** title are given the model description, the Frame location, and the slot location of the module in the frame.

The graphic shows the input and output signals available for the module. Only input signal status is reported by color in this graphic. Outputs are not monitored (always gray). The input signal status reporting for CH1 and CH 2 can be disabled on the I/O Config web page.

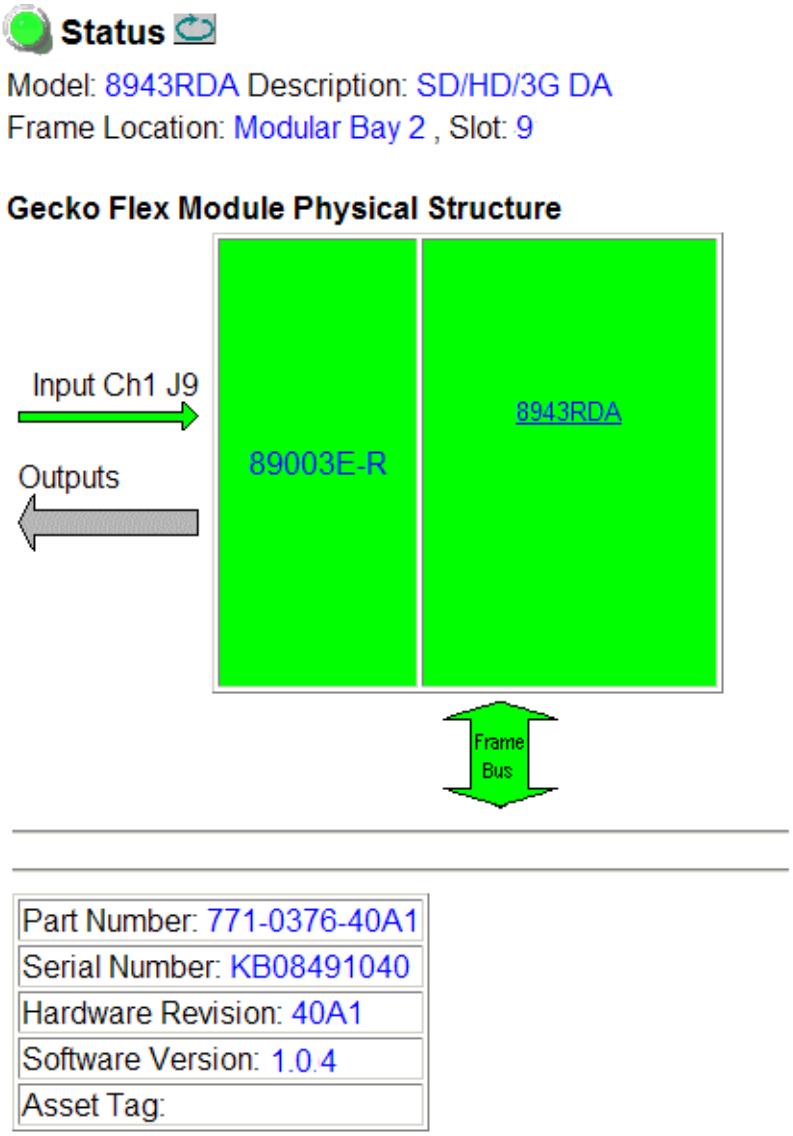
The Status LED on each web page will display the collective status of the module. Refer to *Collective Module Status Reporting* on page 27.

Also shown is the rear and front module status. Information about the module, such as Part Number, Serial Number, Hardware Revision, Software Version, and Asset Tag number (assigned on the Slot Config web page) are given in table format at the bottom of the Status web page.

The area inside the double bars below the graphic will report warning messages reported from the module.

Note The 8943RDA module software version can be either 1.0.4 or 1.1.0. The difference in software versions only affects the 8943RDA-DFR fiber optic submodule.

Figure 20. 8943RDA Status Web Page



8943RDA I/O Config Web Page

Use the I/O Config web page to see an illustration of the 89003E-R rear module as used with the 8943RDA, enable or disable module level status reporting, and naming inputs. Refer to Figure 21 on page 47 for an illustration of the 8943RDA Status web page.

Rear Module Configuration

All of the input and output connectors on the corresponding 89003E-R rear module are illustrated on the I/O Config web page.

The inputs can be configured with the following controls:

Reporting Enabled – the status reporting of the video input at Coax J9 can be enabled or disabled at the module level by selecting or de-selecting the corresponding checkbox in the **Reporting Enabled** column.

When the reporting is enabled, the input status can be also be monitored by color following the input status on the Status web page.

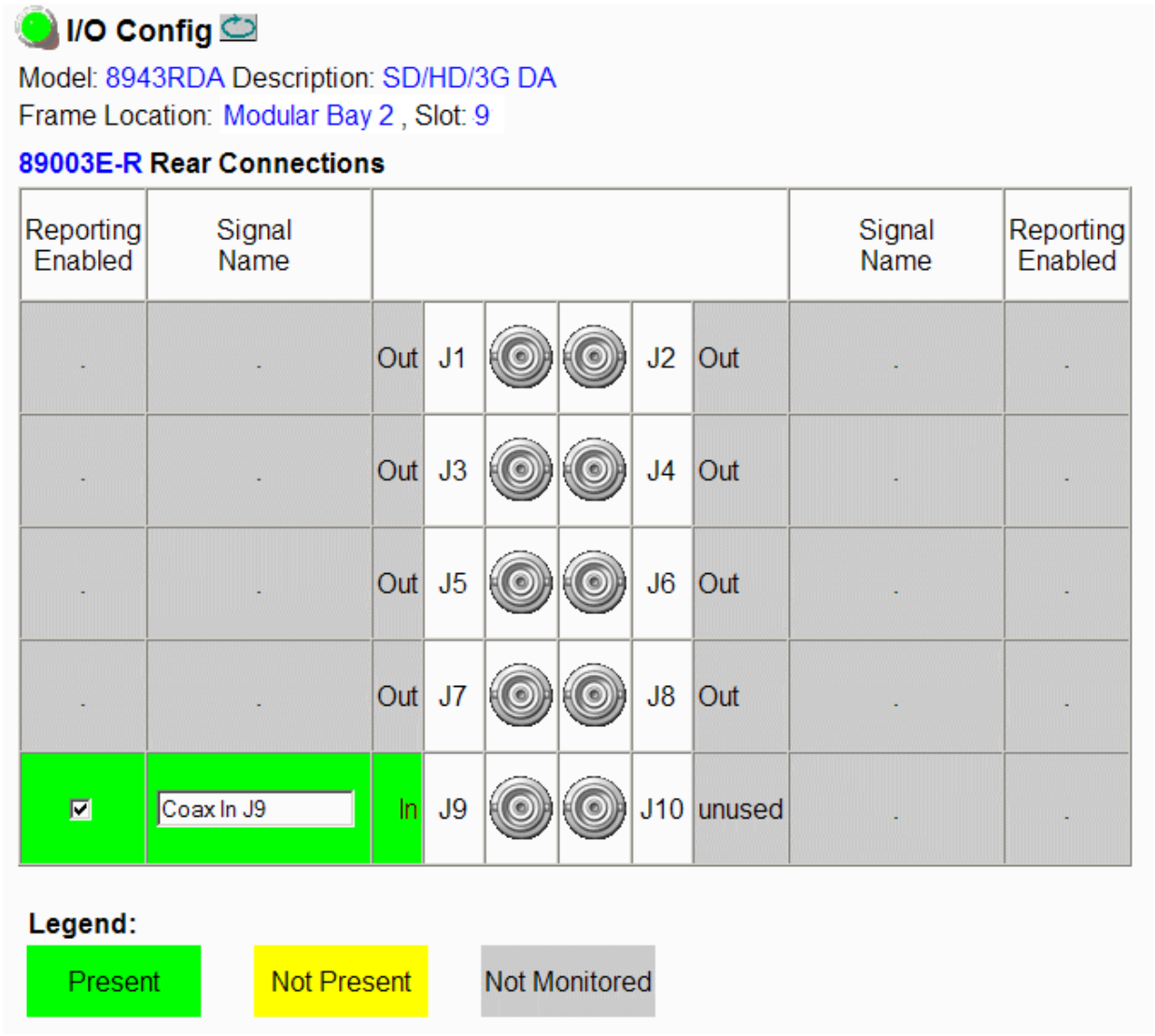
If monitoring is disabled, the area will appear in gray indicating it is not monitored.

Note Status of the video outputs is not monitored in this application.

The enabling or disabling of this reporting will not affect upper level reporting to the 8900NET (Net Card) or an SNMP monitoring system if used.

Naming Input – a name can be assigned to the input signal for Ch 1 at Coax J9. The name can be up to 15 characters.

Figure 21. I8943RDA with 89003E-R Rear Module – I/O Config Web Page



8943RDA Settings Web Page

The Settings web page for 8943RDA-D (Figure 22) provides selection of the input mode for BNC J9.

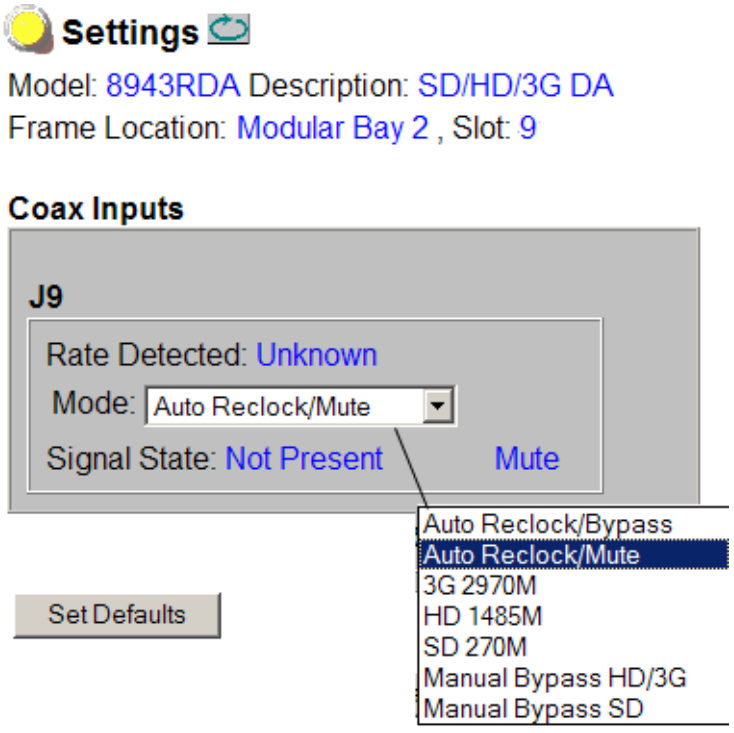
he input choices are as follows:

- Auto Reclock/Bypass,
- Auto Reclock/Mute,
- 3G 2970M,
- HD 1485M,
- SD 270M,
- Manual Bypass HD/3G, or
- Manual Bypass SD.

For a full description of each of these modes, refer to the Modes Summary *Input Operating Modes* on page 28.

The display will also report the **Rate Detected** and the **Signal State**. If the output signal is **Not Present** and has been muted (depending on the **Mode** selected), the display will also report **Mute**.

Figure 22. 8943RDA Settings Web Page



Slot Config Web Page (All Models)

Use the Slot Config web page shown in Figure 23 to perform the following functions on the modules:

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

The functionality of the Slot Config web page is the same for each model of the 8943RDA series. Each of these functions is described in detail below.

Figure 23. 8943RDA 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.

Frame Health Reporting

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

LED Reports 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 and other components (power supplies, fans) 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.

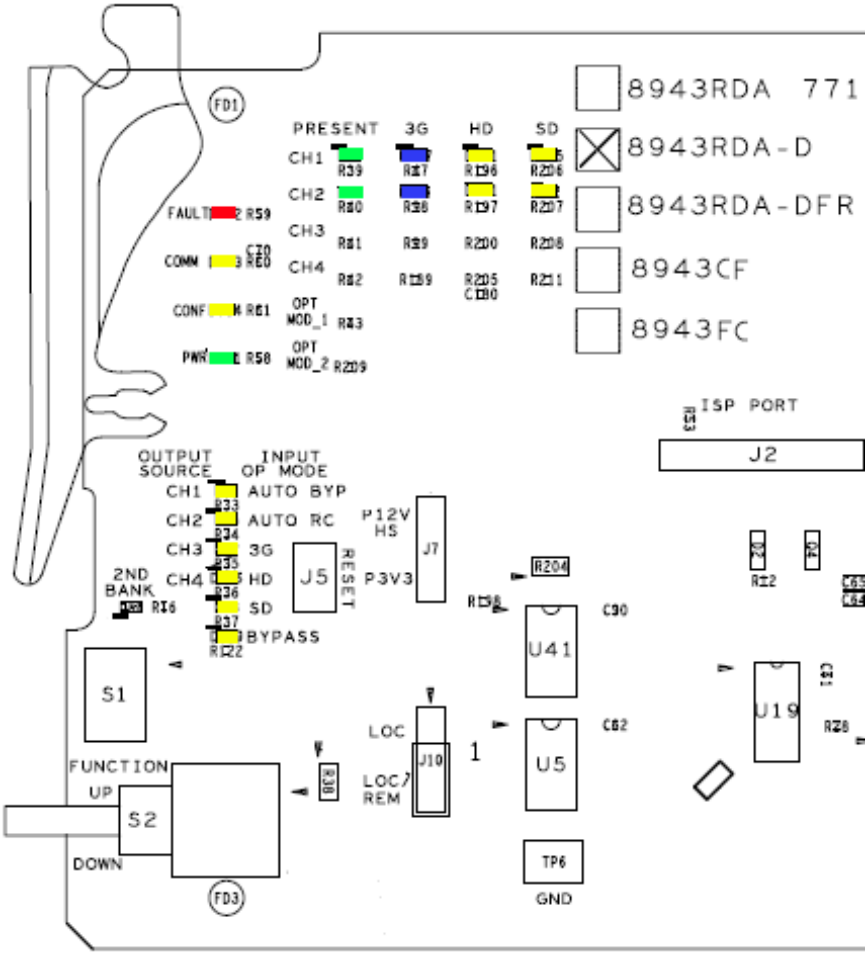
Refer to the *8900NET Instruction Manual* for complete details on using the 8900NET web pages.

8943RDA-D Module Configuration and Operation

The 8943RDA-D module uses the 89003E-F rear module and has two coax inputs at BNC J9 and BNC J10 and four pairs of coax pair outputs. For cabling instructions, see *8943RDA-D Module Cabling* on page 23.

The status and configuration LEDs present on the 8943RDA-D module are shown in Figure 24. These LEDs operate as described in the LED summary in Table 5 on page 26.

Figure 24. 8943RDA Front Module Indicator LEDs



Configuration

The 8943RDA-D can be configured using the front edge onboard controls or using the remote controls available with a web browser or a networked Newton Control Panel.

The Input Operating mode for Channel 1 and Channel 2 must be set on the Settings web page.

This module two coax inputs channel (CH 1 and CH 2) which four sets of output coax pairs. Inputs can be mapped to output pairs on the Settings web page.

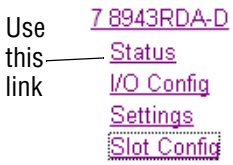
Local Configuration

For Local configuration, follow the summary of instructions given in *Local Onboard Configuration* on page 33 for using the front edge onboard switches for configuration.

Remote Configuration

The remote configuration is summarized in *Remote Configuration* on page 38.

For the 8943RDA-D module, each of the available web pages are shown on the following pages:



- Status (page 54)
- I/O Config (page 56)
- Settings (page 58)
- Slot Config (page 60)

8943RDA-D Status Web Page

The Status web page (Figure 20 on page 45) for the 8943RDA-D shows the signal status of the input signal(s) and communication status with the frame bus. Color coding of the display indicates the signal status.

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.

Under the **Status** title are given the model description, the Frame location, and the slot location of the module in the frame.

The graphic shows the input and output signals available for the module. Only input signal status is reported by color in this graphic. Outputs are not monitored (always gray). The input signal status reporting to the module level can be disabled on the I/O Config web page.

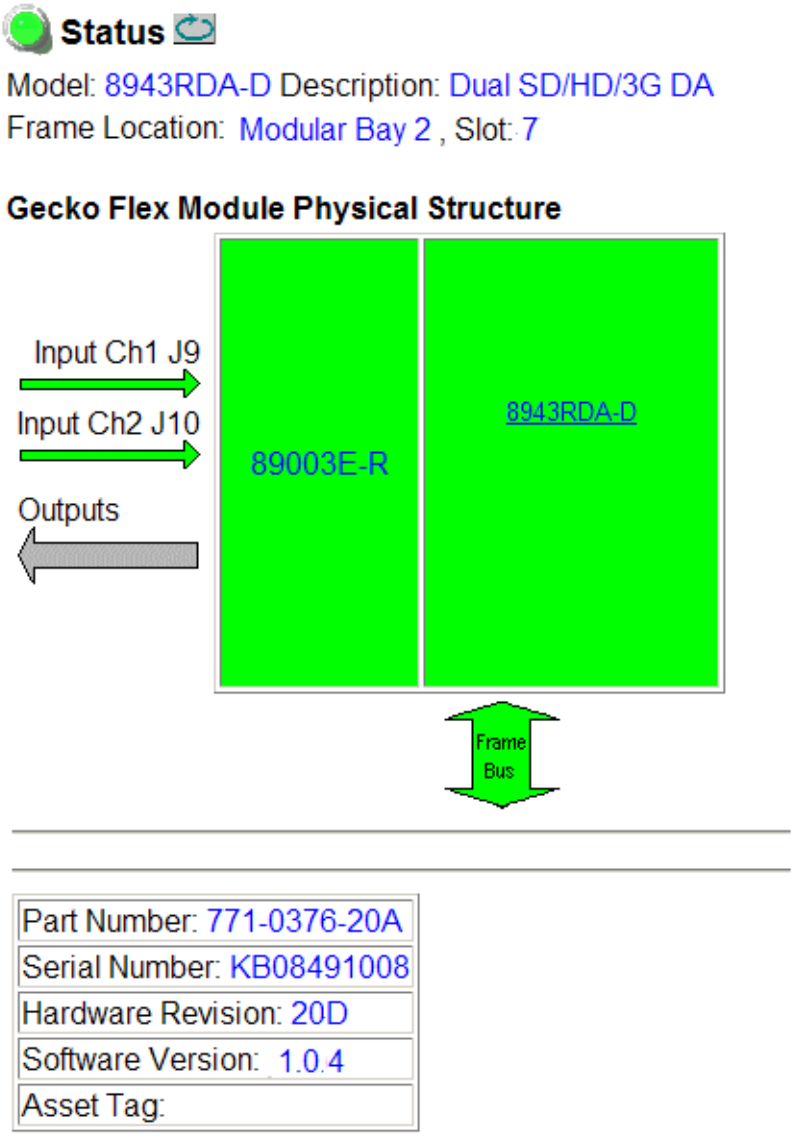
The Status LED on each web page and the module status in the frame graphic on the Status web page will display the collective status of the module. Refer to *Collective Module Status Reporting* on page 27.

Also shown is the rear and front module status. Information about the module, such as Part Number, Serial Number, Hardware Revision, Software Version, and Asset Tag number (assigned on the Slot Config web page) are given in table format at the bottom of the Status web page.

The area inside the double bars below the graphic will report warning messages from the module.

Note The 8943RDA-D module software version can be either 1.0.4 or 1.1.0. The difference in software versions only affects the 8943RDA-DFR fiber optic submodule.

Figure 25. 8943RDA-D Status Web Page



8943RDA-D I/O Config Web Page

Use the I/O Config web page to see an illustration of the 89003E-R rear module as used with the 8943RDA-D (Figure 26 on page 57).

Rear Module Configuration

All of the input and output connectors on the corresponding 89003E-R rear module are illustrated on the I/O Config web page.

The inputs can be configured with the following controls:

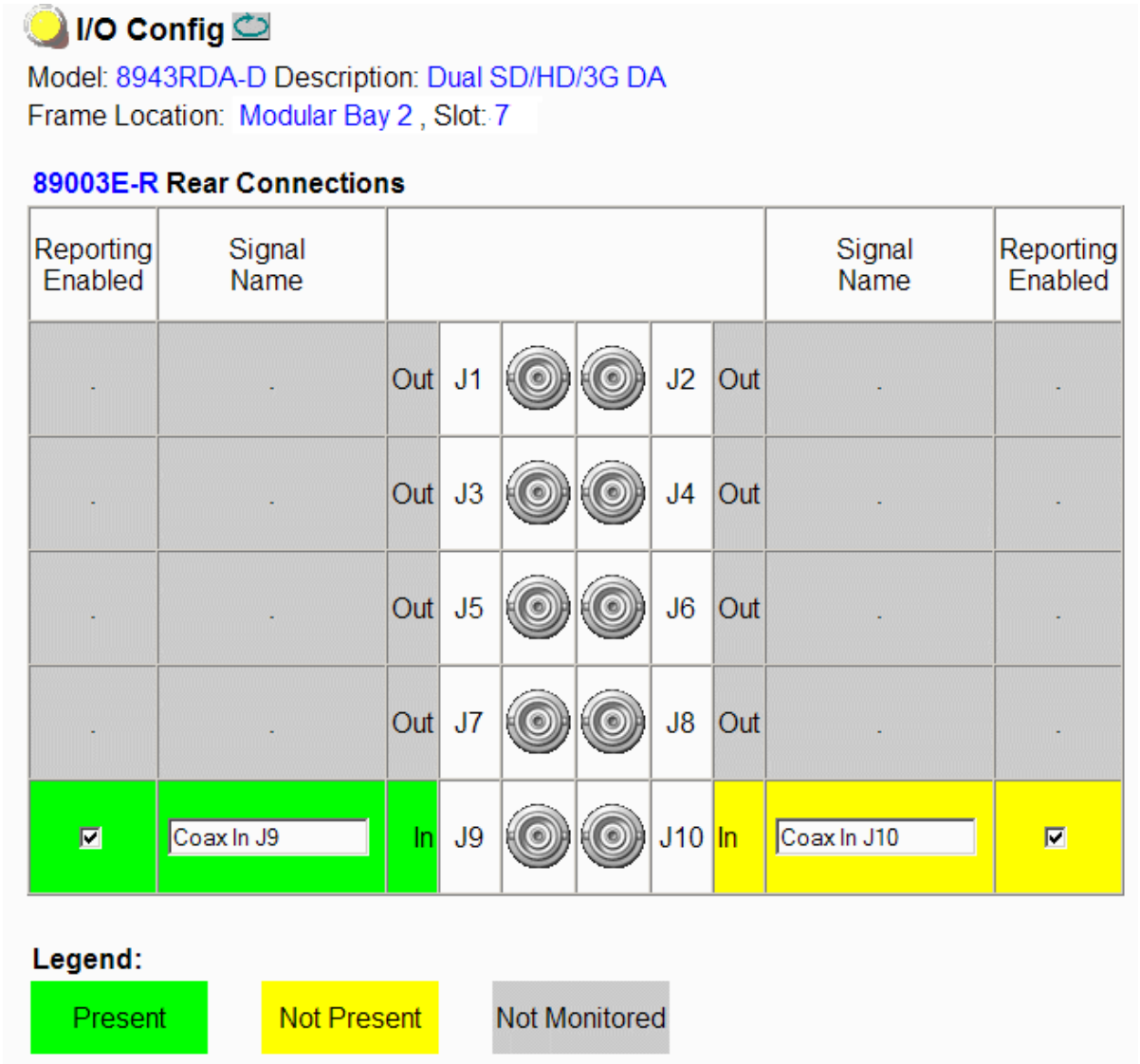
Reporting Enabled – the status reporting of the input can be enabled or disabled at the module level by selecting or deselecting the corresponding checkbox in the **Reporting** column for each input.

When the reporting is enabled as shown below, the input status can be also be monitored by color following the input status on the Status web page.

If monitoring is disabled, the area will appear in gray indicating it is not monitored.

Note Status of the video outputs is not monitored in this application.

Figure 26. 8943RDA-D with 89003E-R Rear Module – I/O Config Web Page



8943RDA-D Settings Web Page

The Settings web page for the 8943RDA-D (Figure 27) provides selection of the input operating mode for Ch 1 and Ch 2 and the input source to output pair mapping.

Coax Inputs – select the operating mode for **Ch 1 - J9** and **Ch 2 - J10**. The operating mode choices are listed below:

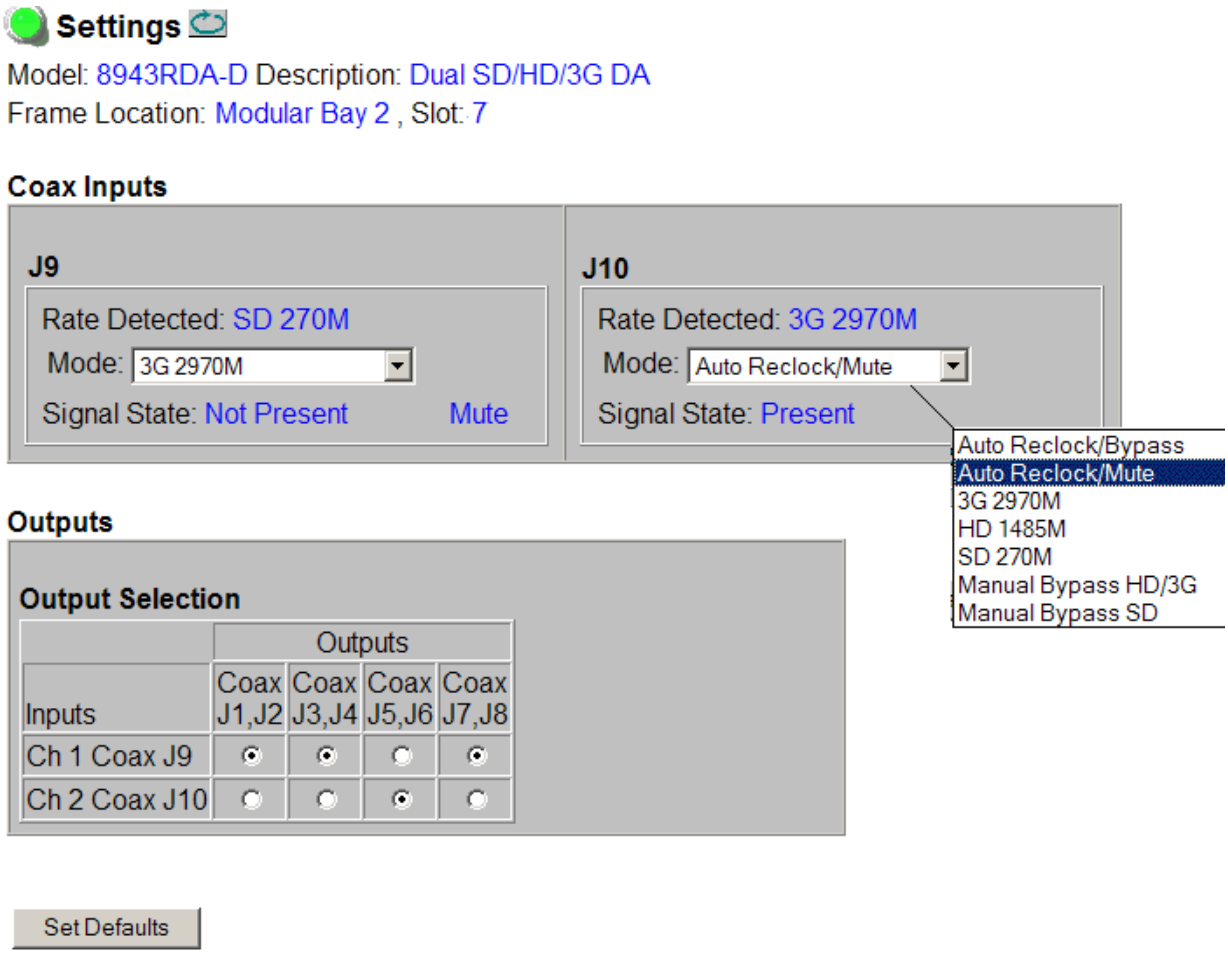
- Auto Reclock/Bypass,
- Auto Reclock/Mute,
- 3G 2970M,
- HD 1485M,
- SD 270M,
- Manual Bypass HD/3G, or
- Manual Bypass SD.

For a full description of each of these modes, refer to the Modes summary in *Input Operating Modes* on page 28.

The Coax Inputs display will also report the **Rate Detected** and the **Signal State**. If the output signal is **Not Present** and has been muted, the display will also report **Mute** as shown in the setting for CH1 in Figure 41 on page 86.

Outputs – set the input to output mapping for the module with the radio buttons in the Output Selection controls. Refer to *Input to Output Mapping* on page 32 for an explanation of input to output mapping.

Figure 27. 8943RDA-D Settings Web Page



8943RDA-D Slot Config Web Page

Use the Slot Config web page shown in Figure 23 on page 49 to perform the following functions on the modules:

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

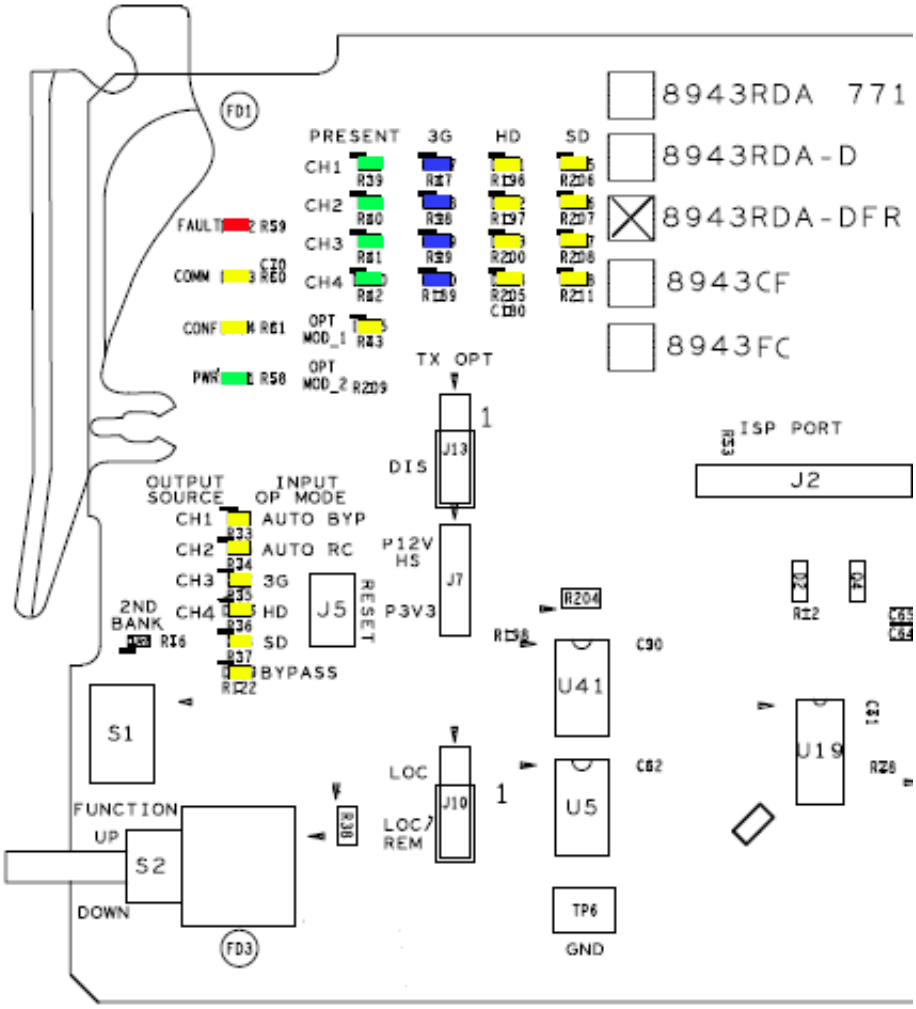
The functionality of the Slot Config web page is the same for each model of the 8943RDA series. Refer to *Slot Config Web Page (All Models)* on page 49 for an overview of using this web page.

8943RDA-DFR Module Configuration and Operation

The 8943RDA-DFR module uses the 89003FR-R rear module and has two coax inputs at BNC J9 and BNC J8 and four pairs of coax outputs. This module may also be fitted with one optional fiber optic submodules that can provide two fiber outputs (Dual Transmitter), two fiber inputs (Dual Receiver), or one fiber input and one fiber output (Transceiver). For option models available, refer to *Fiber Optics Submodule Installation (8943RDA-DFR only)* on page 14. For cabling instructions, see *8943RDA-DFR Module Cabling* on page 24.

The status and configuration LEDs present on the 8943RDA-D module are shown in Figure 28. These LEDs operate as described in the LED summary in Table 5 on page 26.

Figure 28. 8943RDA-DFR Front Module Indicator LEDs



Configuration

The 8943RDA-DFR can be configured using the front edge onboard controls or using the remote controls available with a web browser or a networked Newton Control Panel.

The Input Operating mode for all available inputs, Coax inputs J10 and J8, and Fiber RX 1 input (with Dual Receiver SFP option installed) and Fiber RX 2 (with Dual Receiver or Transceiver SFP option installed) must be configured. All inputs can be active at the same time.

Each of the four possible input channels (Coax 10, Coax 8, Fiber RX 1, and Fiber RX 2) can be assigned (mapped) to any one output pair or fiber output as desired. The number of outputs depends on the type of SFP fiber optic submodule installed. Outputs include Coax pairs J1/J2, J3/J4, J5/J6 and J7 (always active) and Fiber TX 1 (with Dual Transmitter or Transceiver option installed) or Fiber TX 2 (with Dual Transmitter SFP option installed).

Note Fiber optic Tx1 and Tx2 outputs must be enabled by setting Jumper J13 on the module circuit board. Refer to Figure 15 on page 33.

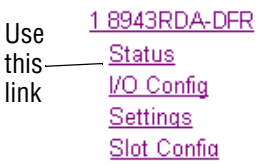
Local Configuration

For Local configuration, follow the summary of instructions given in *Local Onboard Configuration* on page 33 for using the front edge onboard switches for configuration.

Remote Configuration

Remote configuration methods are summarized in *Remote Configuration* on page 38.

For the 8943RDA-DFR module, each of the available web pages with and without the SFP fiber optic options are shown on the following pages:



- Status (page 63)
- I/O Config (page 68)
- Settings (page 73)
- Slot Config (page 78)

8943RDA-DFR Status Web Page

The Status web page for the 8943RDA-DFR shows the signal status of the input signal(s) and communication status with the frame bus. Color coding of the display indicates the signal status.

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.

The graphic shows the input and output signals available for the module. Only input signal status is reported by color in this graphic. Outputs are not monitored (always gray). The input signal status reporting to the module level can be disabled on the I/O Config web page.

The Status LED on each web page will display the collective status of the module. Refer to *Collective Module Status Reporting* on page 27.

Also shown is the rear and front module status. Information about the module, such as Part Number, Serial Number, Hardware Revision, Software Version, and Asset Tag number (assigned on the Slot Config web page) are given in table format at the bottom of the Status web page.

The area inside the double bars below the graphic will report warning messages from the module.

Also shown is the rear and front module status and the status of any optional SFP fiber optic submodules installed. A list of available 3G SFP fiber optic submodules is given in Table 1 on page 14.

The Status web pages for the 8943RDA-DFR with each of the different types of submodule are shown in the following figures:

- 8943RDA-DFR without SFP fiber optic submodule option (page 63)
- 8943RDA-DFR with Dual Transmitter fiber submodule (page 65)
- 8943RDA-DFR with Dual Receiver fiber submodule (page 66)
- 8943RDA-DFR with Transceiver fiber submodule (page 67)

Figure 29. 8943RDA-DFR Status Web Page without SFP Fiber Submodule

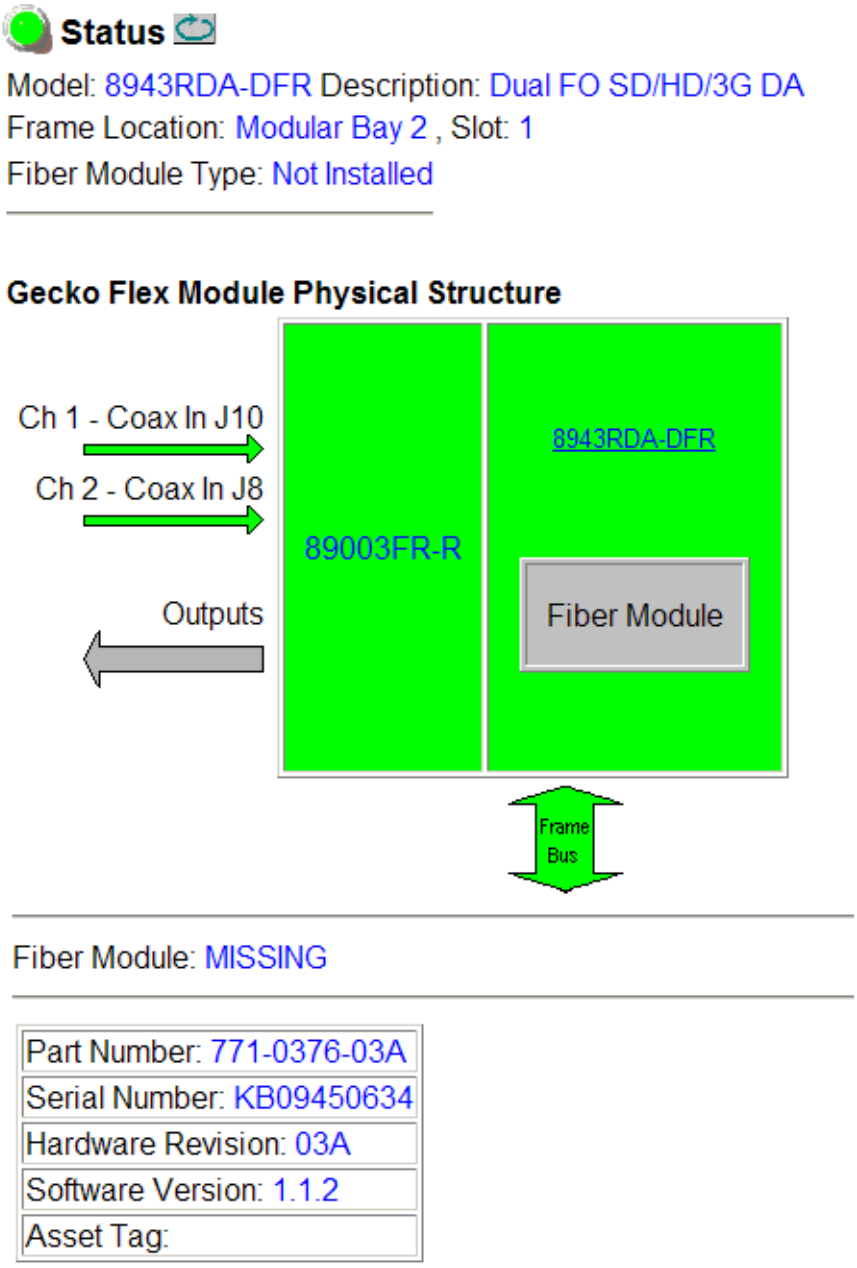


Figure 30. 8943RDA-DFR Status Web Page with Dual Transmitter SFP Fiber Submodule

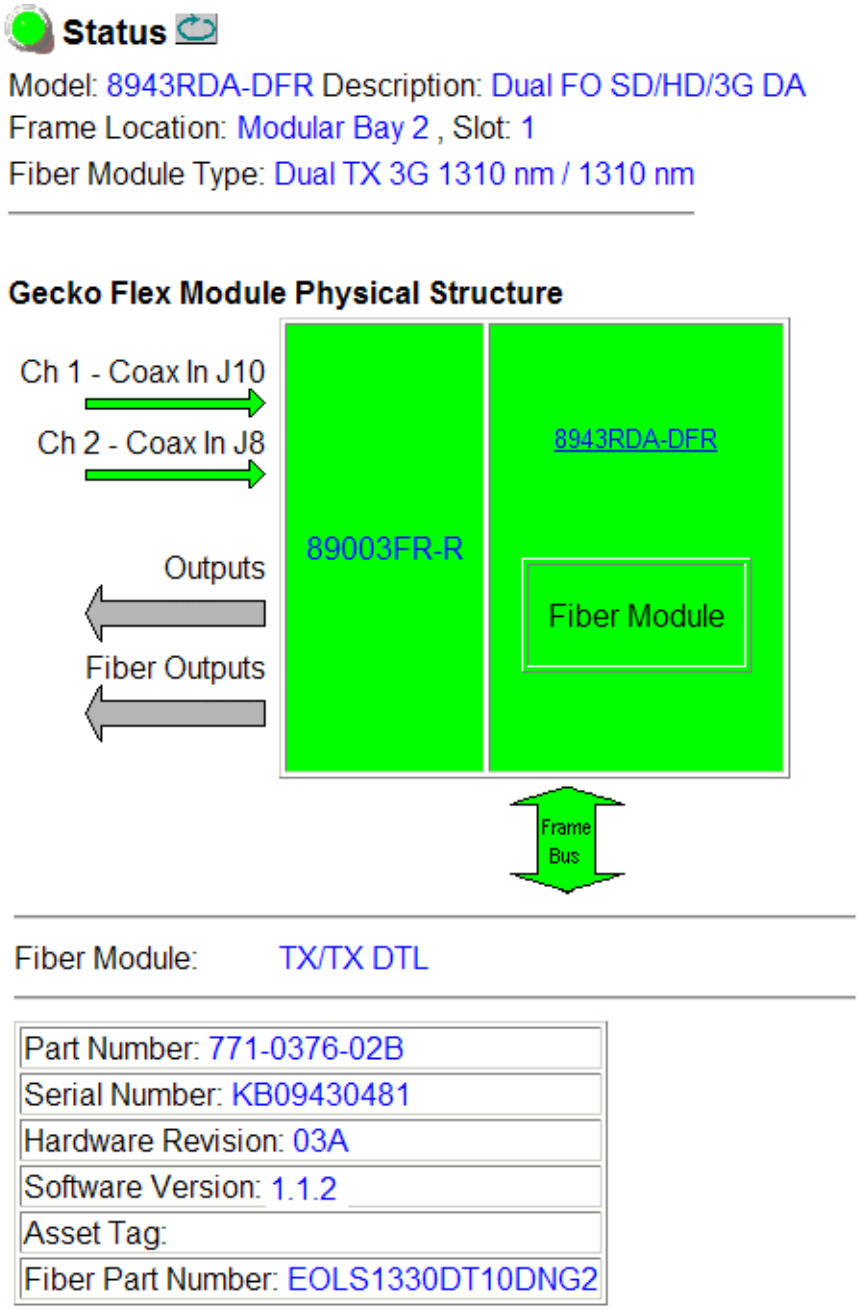


Figure 31. 8943RDA-DFR Status Web Page with Dual Receiver SFP Fiber Submodule

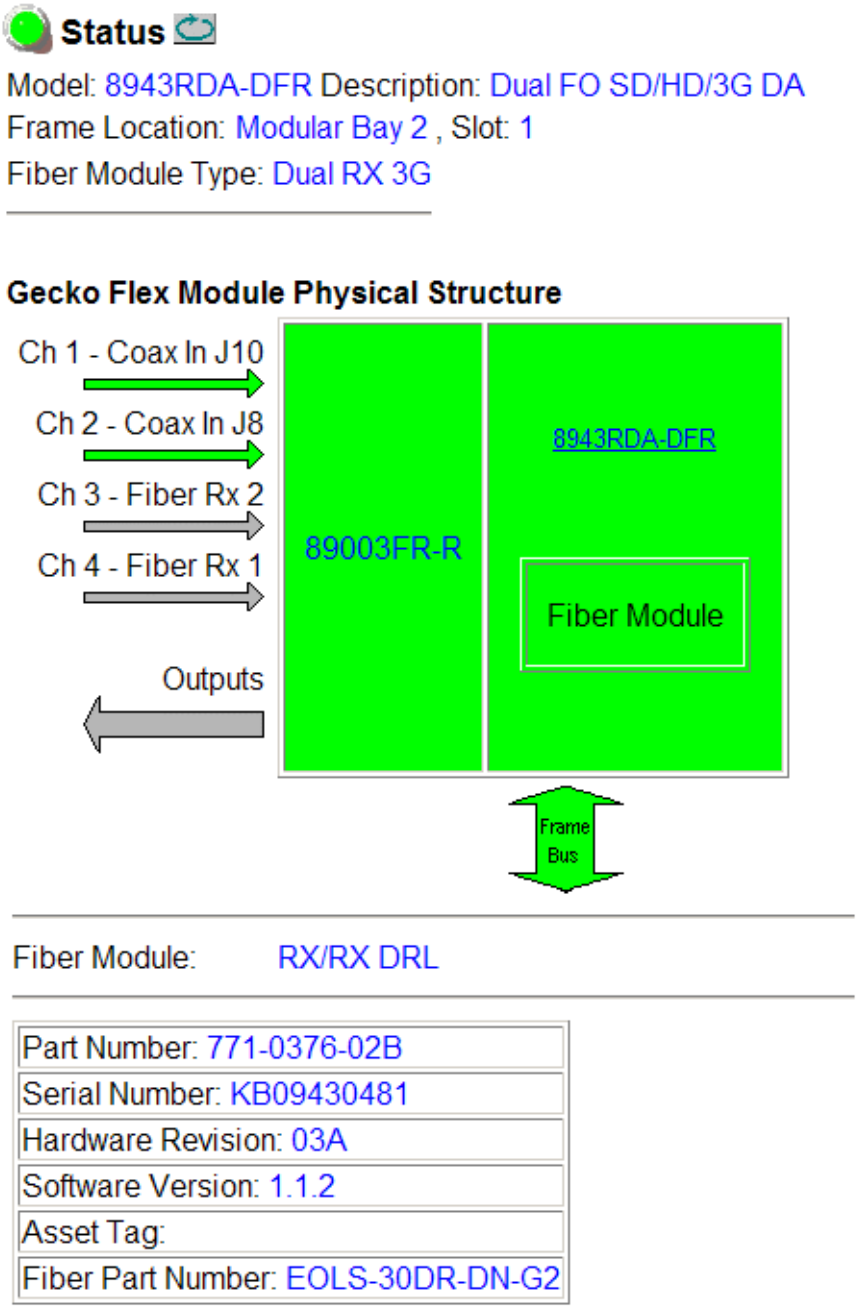
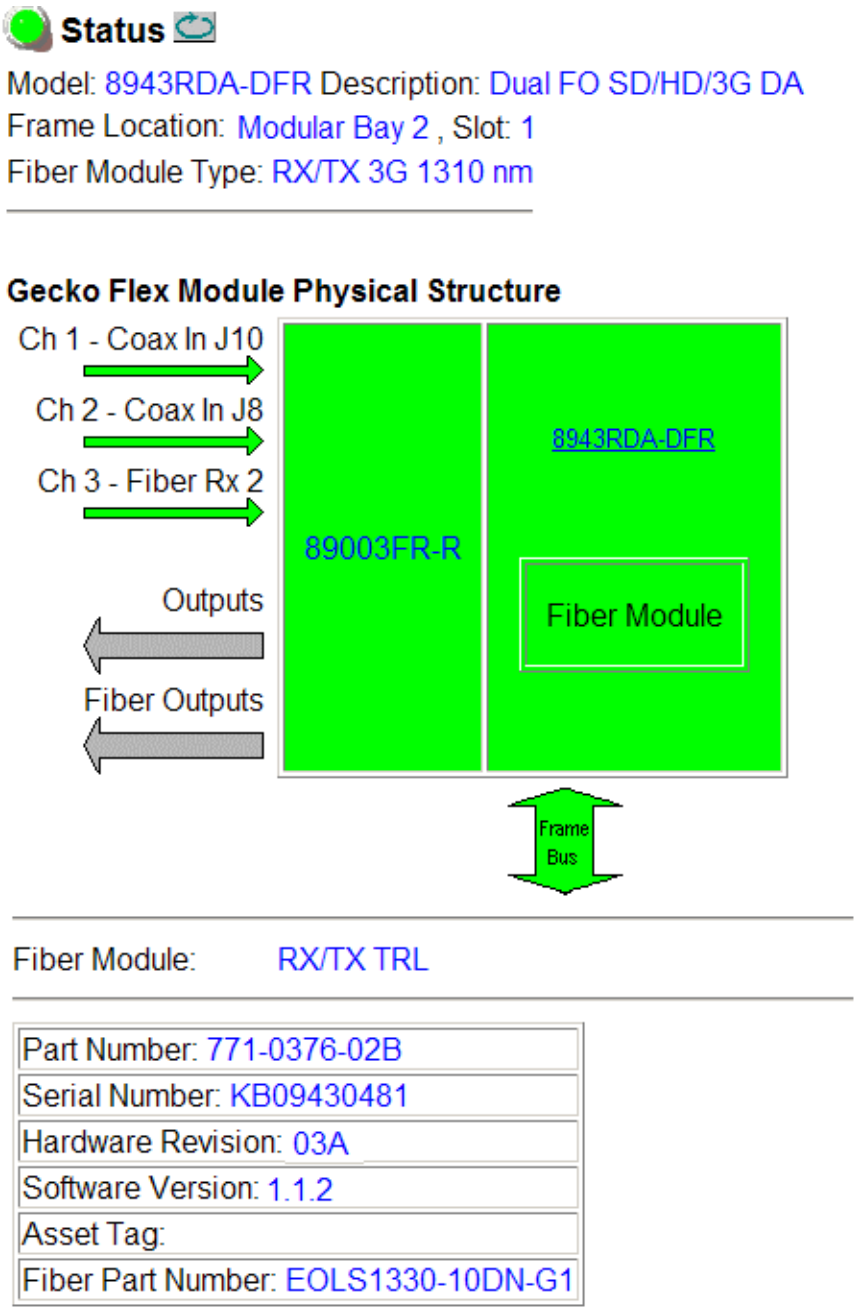


Figure 32. 8943RDA-DFR Status Web Page with Transceiver Fiber Submodule



8943RDA-DFR I/O Config Web Page

Use the I/O Config web page to see illustrations of the 89003FR-R rear module as used with the 8943RDA-DFR in the following figures:

- 89003FR-R without optional fiber submodule (Figure 33 on page 69)
- 89003FR-R with optional Dual Transmitter fiber submodule (Figure 34 on page 70)
- 89003FR-R with optional Dual Receiver fiber submodule (Figure 35 on page 71)
- 89003FR-R with optional Transceiver fiber submodule (Figure 36 on page 72)

Rear Module Configuration

All of the input and output connectors on the corresponding 89003FR-R rear module are illustrated on the I/O Config web page.

The inputs can be configured with the following controls:

Reporting Enabled – the status reporting of the input can be enabled or disabled at the module level by selecting or deselecting the corresponding checkbox in the **Reporting** column for each input.

When the reporting is enabled, the input status can be also be monitored by color following the input status on the Status web page.

If monitoring is disabled, the area will appear in gray indicating it is not monitored.

Note Status of the video outputs is not monitored in this application.

Figure 33. 8943RDA-DFR I/O Config Web Page without SFP Fiber Submodule

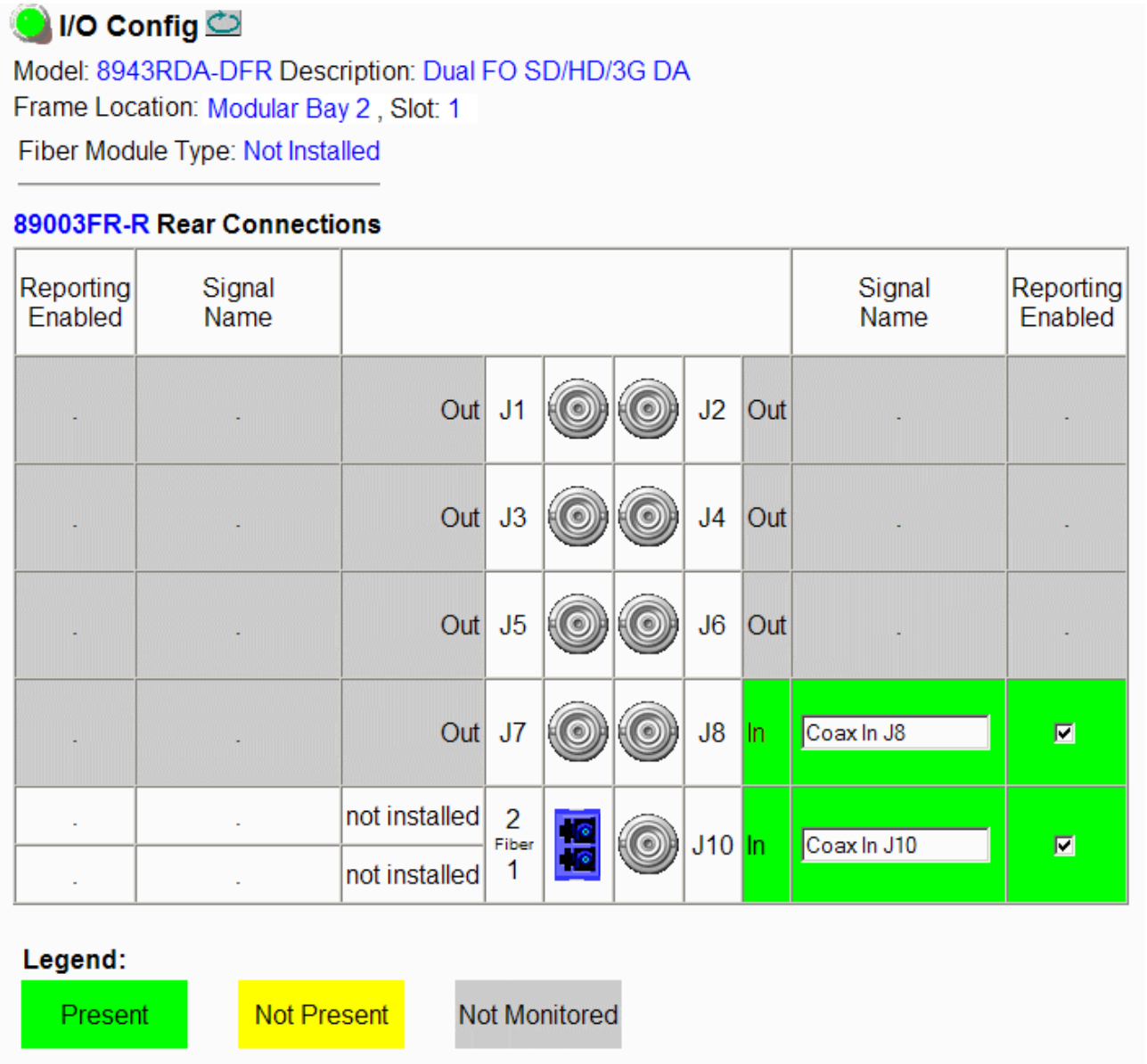


Figure 34. 8943RDA-DFR I/O Config Web Page with Dual Transmitter Fiber Submodule

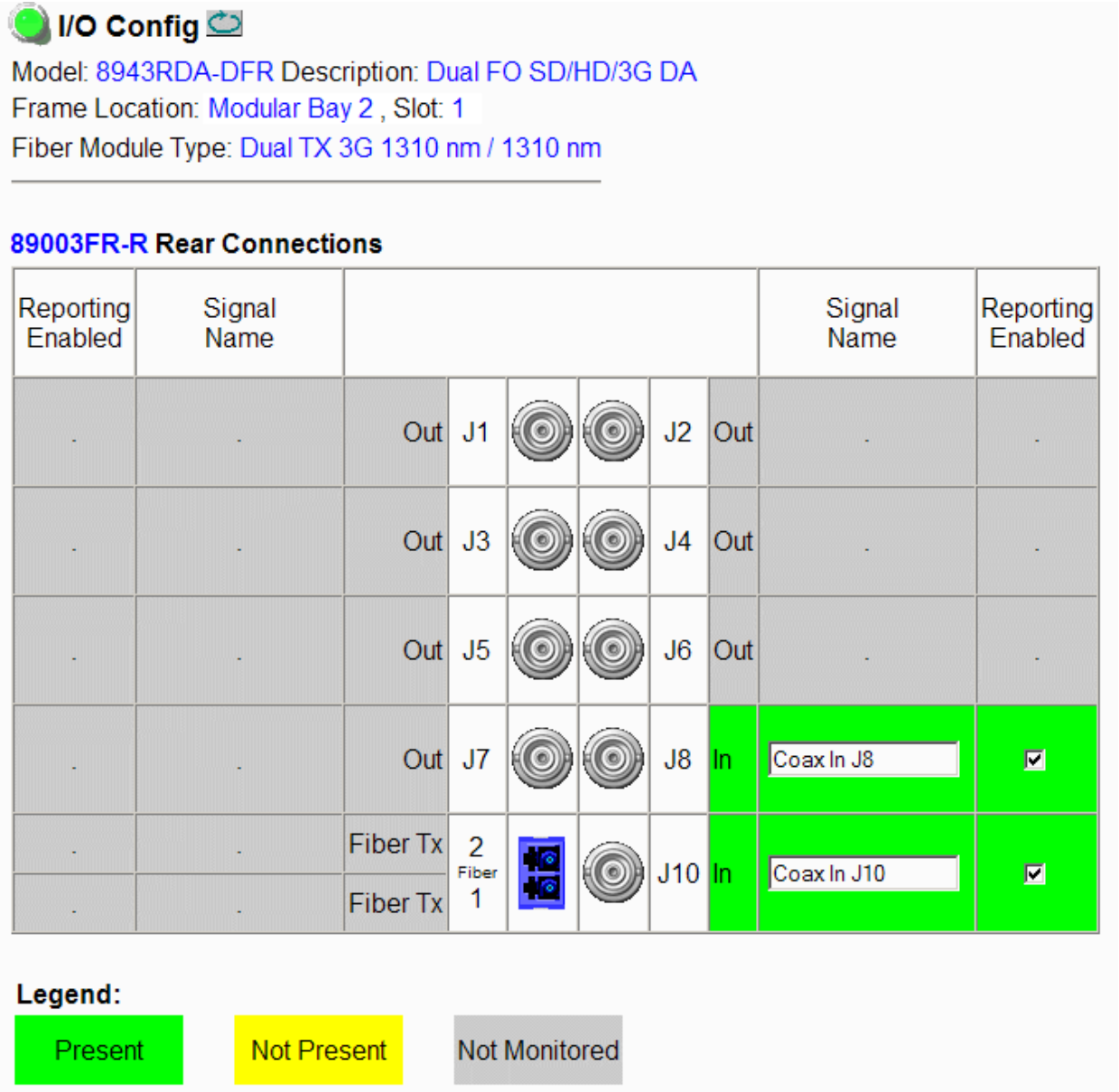


Figure 35. 8943RDA-DFR I/O Config Web Page with Dual Receiver Fiber Submodule

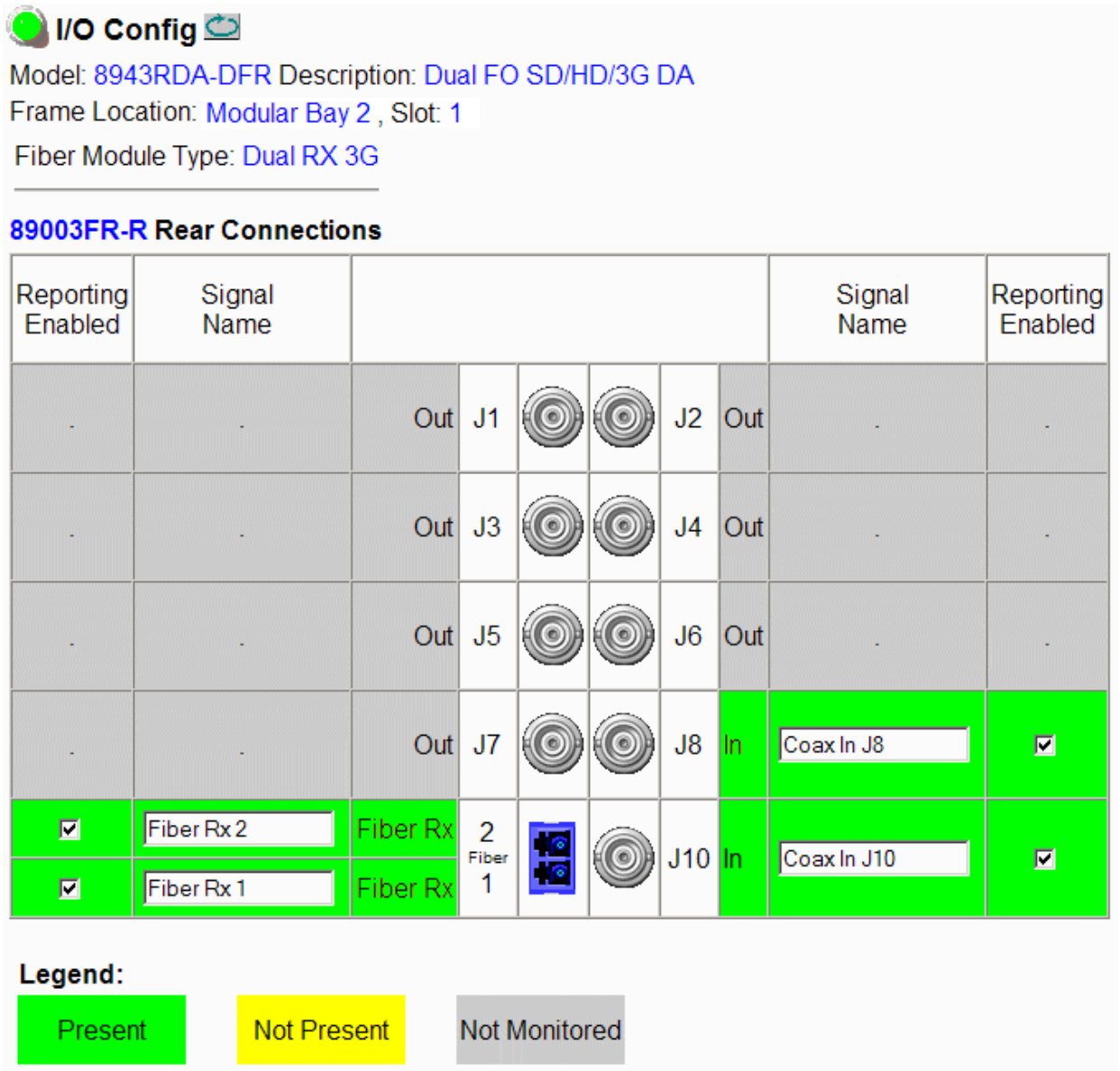
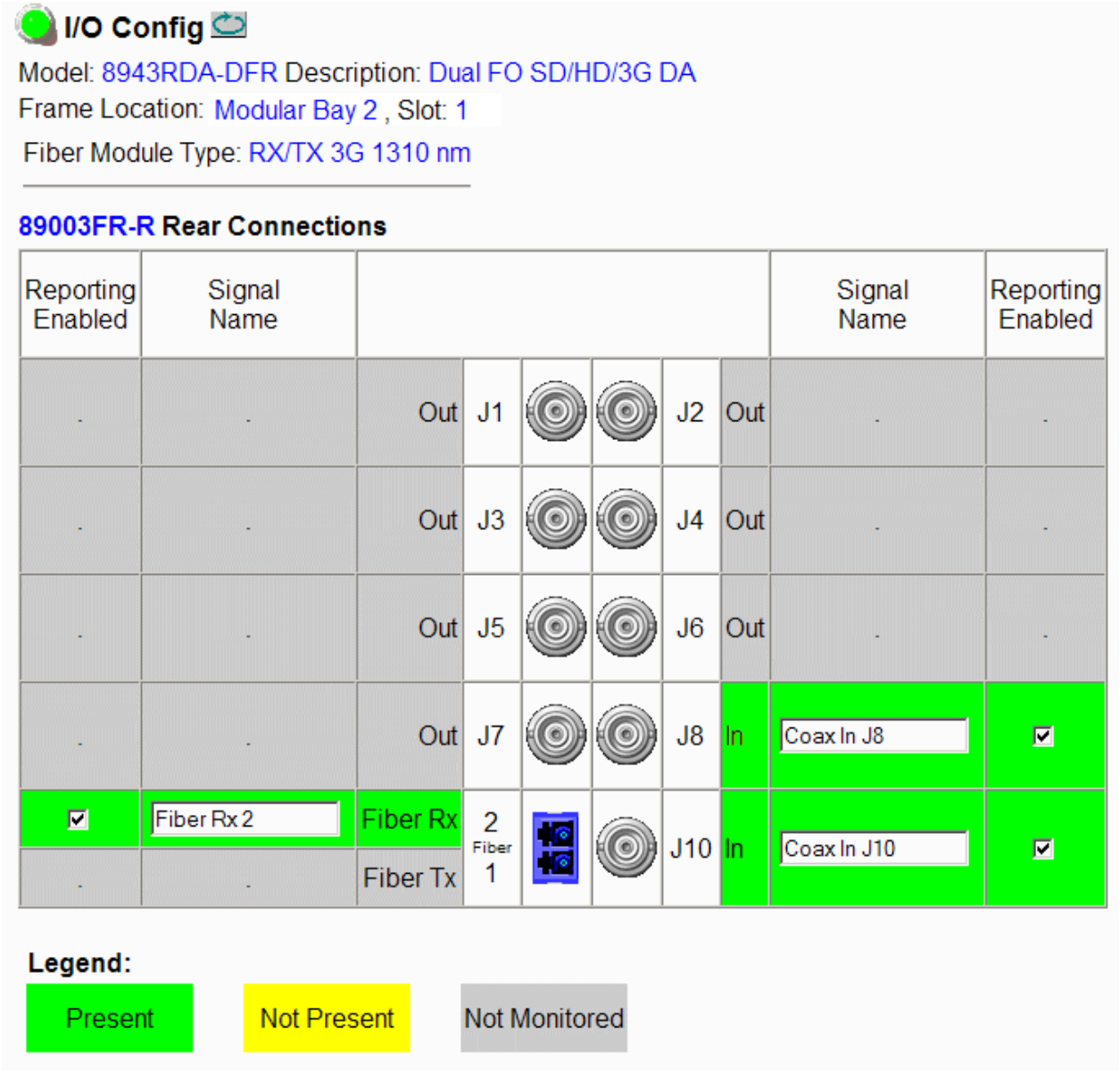


Figure 36. 8943RDA-DFR I/O Config Web Page with Transceiver Fiber Submodule



8943RDA-DFR Settings Web Page

The Settings web page provides selection of the input operating mode for CH1 (BNC J10), CH2, (BNC J8), CH3 (Fiber 1 input if present), and CH4 (Fiber 2 input if present).

The input choices are as follows:

- Auto Reclock/Bypass,
- Auto Reclock/Mute,
- 3G 2970M,
- HD 1485M,
- SD 270M,
- Manual Bypass HD/3G, or
- Manual Bypass SD.

For a full description of each of these modes, refer to the Modes summary in *Input Operating Modes* on page 28.

The Settings web page for the 8943RDA-DFR for all configurations are shown in the following figures:

- 8943RDA-DFR without optional fiber submodule (Figure 37 on page 74)
- 8943RDA-DFR with optional Dual Transmitter fiber submodule (Figure 38 on page 75)
- 8943RDA-DFR with optional Dual Receiver fiber submodule (Figure 39 on page 76)
- 8943RDA-DFR with optional Transceiver fiber submodule (Figure 40 on page 77)

Figure 37. 8943RDA-DFR Settings Web Page without Submodule

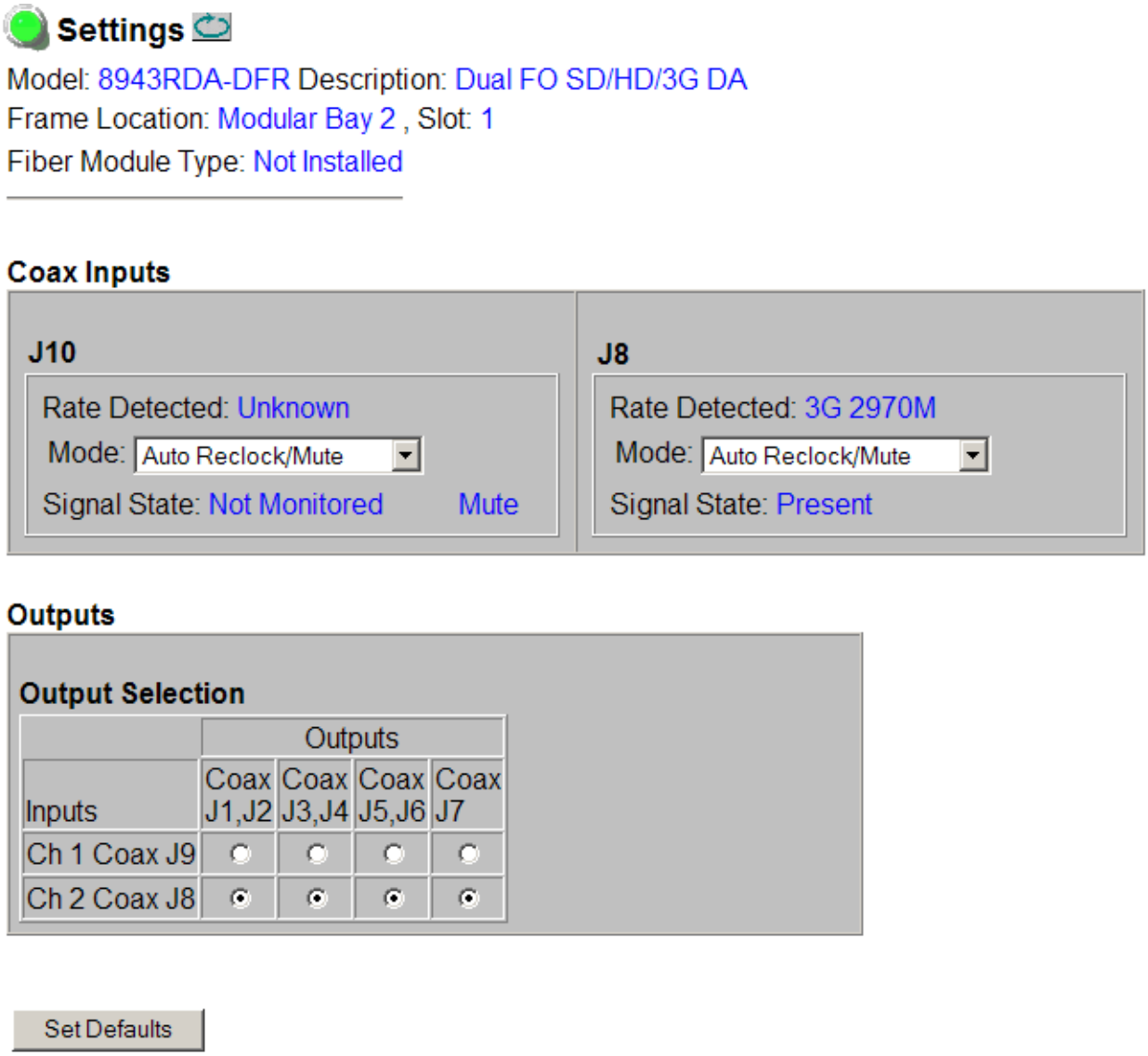


Figure 38. 8943RDA-DFR Settings Web Page with Dual Transmitter Fiber Submodule

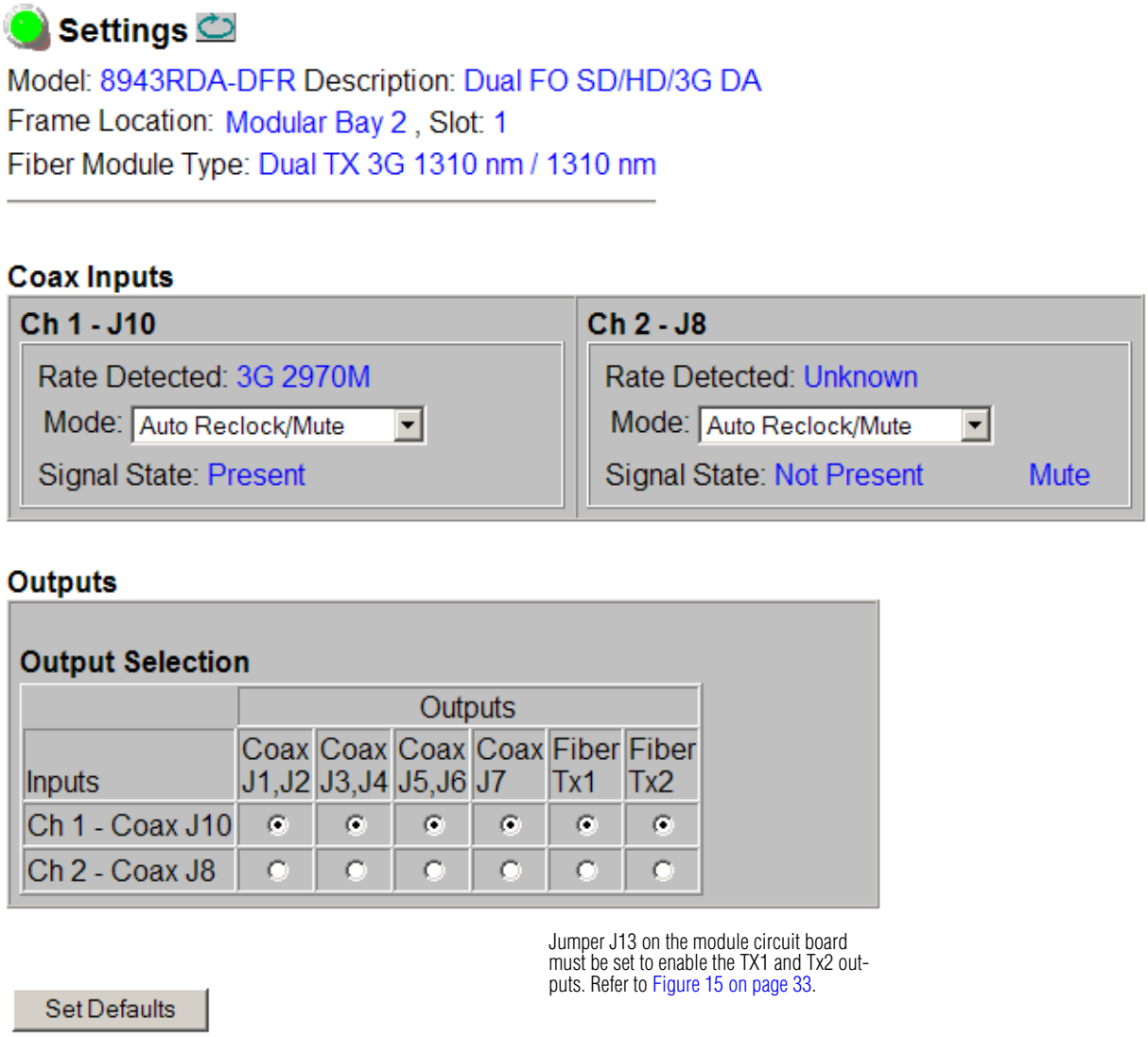


Figure 39. 8943RDA-DFR Settings Web Page with Dual Receiver Fiber Submodule

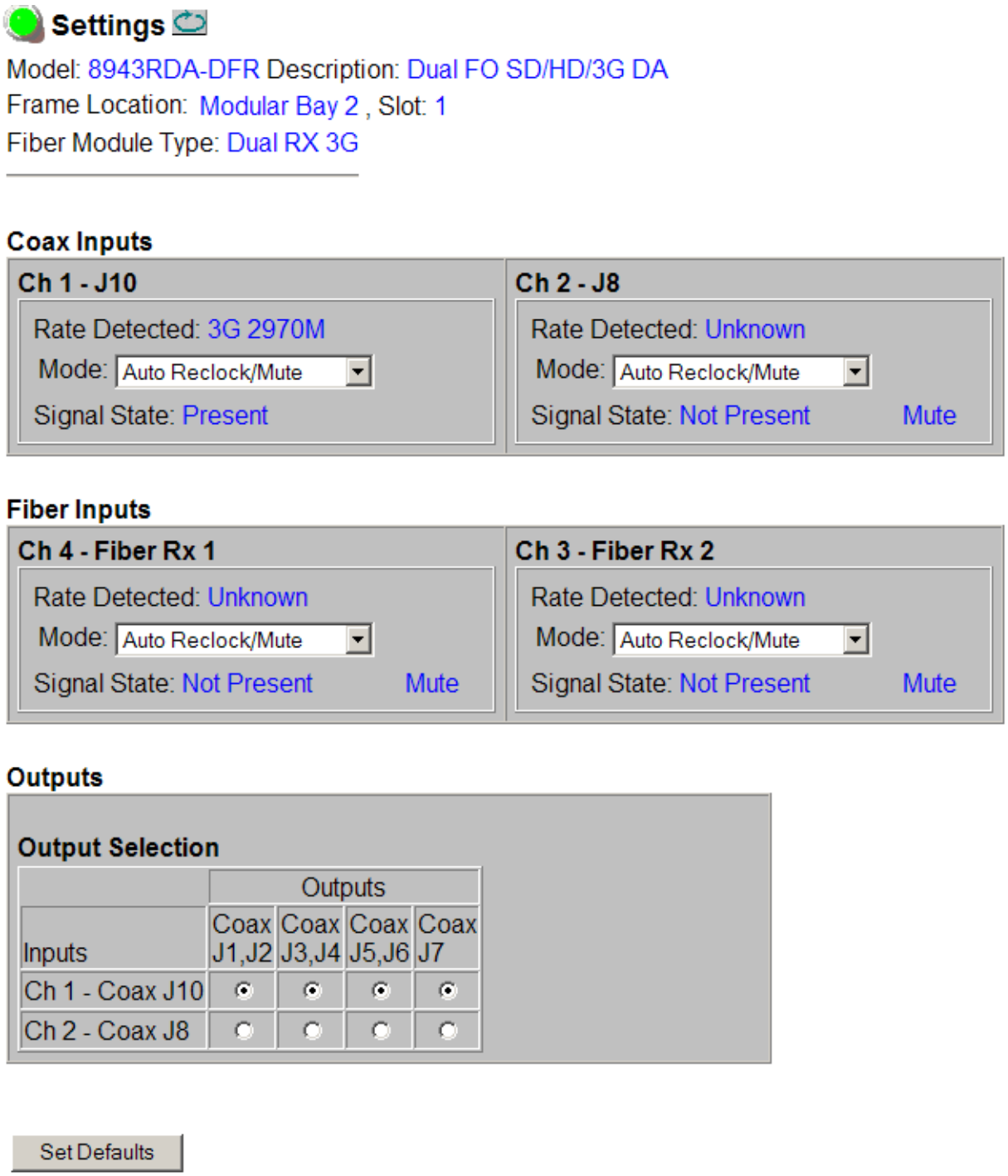
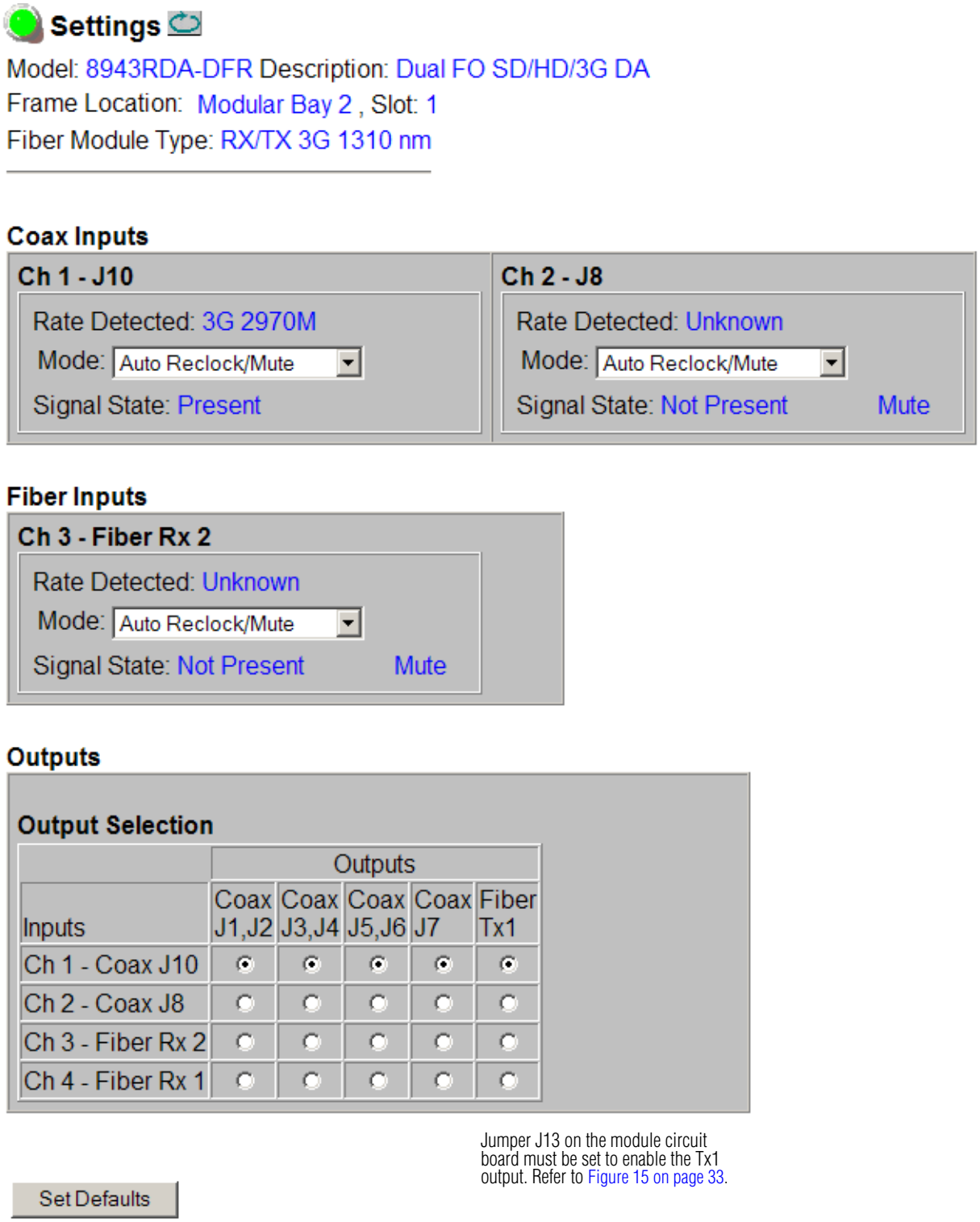


Figure 40. 8943RDA-DFR Settings Web Page with Transceiver Fiber Submodule



Jumper J13 on the module circuit board must be set to enable the Tx1 output. Refer to Figure 15 on page 33.

8943RDA-DFR Slot Config Web Page

Use the Slot Config web page shown in Figure 23 on page 49 to perform the following functions on the modules:

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

The functionality of the Slot Config web page is the same for each model of the 8943RDA series. Refer to *Slot Config Web Page (All Models)* on page 49 for an overview of using this web page.

Software Updating

Software updating any of the 8943RDA modules is done using the NetConfig Networking Application PC option. The NetConfig application is available free of charge from the Thomson Grass Valley web site.

The procedure for updating software is given in the specific 8943RDA Release Notes when software updates become available for field updating. Check the Thomson 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 Thomson Grass Valley web site at this link:

www.grassvalley.com/docs/modular

Status Monitoring

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

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

www.grassvalley.com/docs/modular

The main status monitoring methods include the following:

- External frame alarm output on the rear of the 8900 frame with reporting from the Module Health Bus and other frame status alarm reports,
- LEDs on the Frame, 8900NET module, and individual frame media modules,
- Web browser status reporting for each frame component, and
- SNMP traps, captured by Grass Valley's NetCentral or another SNMP Manager Application.

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

External Frame Alarm

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

- The Module Health bus is a separate line on the frame motherboard that provides a means for older or less capable modules (such as DAs with no microprocessor) that cannot communicate over the Frame (serial) bus to report warning and alarm conditions to the external Frame Alarm. All media modules in the frame report a voltage level to this line when a warning condition occurs on the module. The specific warning or module location is not reported, only an indication that an warning condition has occurred.
- Frame alarm reporting from other frame components can be enabled and disabled using DIP switches on the Frame Monitor and 8900NET module. For frames with an 8900NET module, the Frame Alarm Reporting web page allows configuration of the alarms and warnings that are reported to this external Frame Health Alarm.

LED Reporting

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

- LED reporting from the modules in the frame to the 8900NET module is configurable using the 8900NET LED Reporting web page.
- The Status LEDs for this module are described in *Operation Indicator LEDs* on page 25. LEDs for the 8900NET module are described in the *8900NET (Net Card) Network Interface Instruction Manual*.

Web Browser Interface

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

- Frame Status web page – reports overall frame and module status in colored graphical and text formats. Refer to Figure 17 on page 40 for an example.
- Module Status web page (Figure 20 on page 45) – 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 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.

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

Specifications for the 8943RDA, 8943RDA-D, and 8943RDA-DFR modules are given in Table 10.

Refer to Table 12 on page 84 for SFP fiber optic Transmitter/Transceiver submodule specifications and Table 13 on page 84 for SFP fiber optic Receiver/Transceiver specifications used on the 8943RDA-DFR model.

Table 10. 8943RDA/D/DFR Specifications

Parameter	Value
Coax Input(s)	
Number and type of inputs	
8943RDA	1 Non-isolated terminating BNC (J9)
8943RDA-D	2 Non-isolating terminating BNCs (J9 and J10)
8943RDA-DFR	2 Non-isolating terminating BNCs (J10 and J8) and 2 optional fiber optic inputs (2 with Dual Receiver option, 1 with Transceiver option)
Input impedance	75 ohm
Input signal Types (Reclocked)	
SD-SDI	480i @ 59.94 576i @ 50 SMPTE 259M-1997 with bit rate tolerance of ±0.5% for 270Mb/s
HD-SDI	1080p @ 59.94, 50, 24sf, 24f 1080i @ 59.94, 50 720p @ 59.94, 50 SMPTE 292M-1998 with tolerance of ±0.5% for 1.485Gb/s
3G-SDI	1080p @ 59.94, 50
DVB-ASI	ETSI TR 101 891V1.1.1 with bit rate tolerance of ±0.5% for 270Mb/s
Input signal Types (Bypassed)	
10Mb/s to 540Mb/s	NRZ PRBS pattern - $X^{23} + X^5+1$ Rise/Fall time (20% to 80%): 400 to 800 ps Signal level: 800mV p-p
AES 3ID-2001	32k to 96k sample rates, 0.8 to 1.2V p-p
GV Audio TDM interface	
MADI	
Auto equalization (with Belden 1694A cable)	
8943RDA, 8943RDA-D, 8943RDA-DFR	400m for 270Mb/s 140m for 1.5Gb/s 100m for 3Gb/s (Input 1) 90m for 3Gb/s (Input 2)
Input Return loss	> 15 dB 5MHz to 5GHz > 10 dB up to 3GHz
Input Signal Level	800 mV ±10%
Coax Outputs	
Number and type of outputs	
8943RDA	8 electrical BNCs
8943RDA-D	8 electrical outputs in four BNC pairs (J1/J2, J3/J4, J5/J6, J7/J8)
8943RDA-DFR	7 BNC (electrical) and 2 optional fiber optic outputs (2 with Dual Transmitter option, 1 with Transceiver option)
Output impedance	75 ohm
Output signal formats supported	See Coax Inputs

Table 10. 8943RDA/D/DFR Specifications

Parameter	Value
Signal level (HD/SD-SDI)	800 mV p-p ±10%
Return loss	> 15 dB 5MHz to 270MHz > 15 dB typical 270MHz to 1.5GHz > 10 dB up to 3 GHz
Signal polarity	Non-inverted, all outputs
Tolerated output jitter	<0.2UI >100kHz for 3G <0.2UI >100kHz for HD <1.0UI 10kHz to 100kHz for HD <0.2UI 10Hz and up for SD
Electrical Length (Latency in ns)	Refer to Table 11 on page 83
Fiber Optic Input/Output Connector (used on 8943RDA-DFR with 89003FR-R Rear Module only)	
Optical connector	LC
Fiber support	Single-mode fiber
Data rate	See Table 12 on page 84 for SFP transmitter and Table 13 on page 84 for SFP receiver specifications.
Power	
Maximum Input power	
8943RDA	2.7 W
8943RDA-D	3.8W
8943RDA-DFR	5.2W (no fiber submodule) 5.9W (with fiber submodule)
Mechanical	
Frame Type	GeckoFlex
Number of frame slots	Single slot
Rear module type	8943RDA or 8943RDA-D: 89003E-R
	8943RDA-DFR: 89003FR-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 11. Electrical Length (Latency in ns)

		3G		HD		SD	
Channel	**Input to Output**	**Reclock**	**Bypass**	**Reclock**	**Bypass**	**Reclock**	**Bypass**
CH1	J9 to J1 (8943RDA) J9 to J1 (8943RDA-D) J10 to J1 (8943RDA-DFR)	3.8 ns	3.55 ns	4.0 ns	3.6 ns	6.0 ns	4.0 ns
CH2	J10 to J1 (8943RDA-D) J8 to J1 (8943RDA-DFR)	4.0 ns	3.75 ns	4.1 ns	3.7 ns	6.2 ns	4.25 ns
CH3	F2 to F1 (8943RDA-DFR with SFP Transceiver)	6.0 ns	5.7 ns	6.0 ns	5.7 ns	11.25 ns	9.25 ns

Table 12. SFP Receiver/Transceiver Fiber Optic Submodule Specifications

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

Table 13. SFP Transmitter/Transceiver Fiber Optic Submodule Specifications

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

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

Service

The 8943RDA 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* on page 85).

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

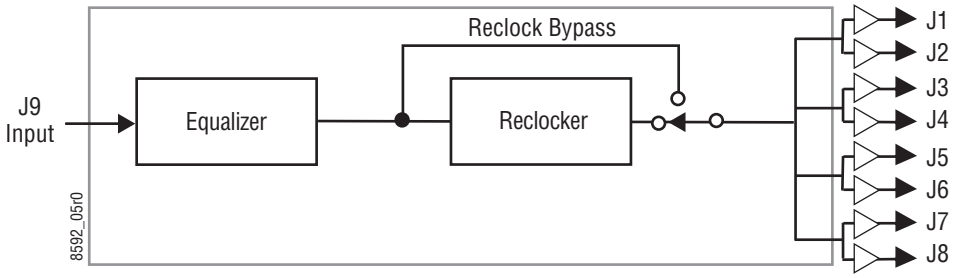
If the module is still not operating correctly, replace it with a known good spare and return the faulty module to a designated Grass Valley repair depot. Call your Grass Valley representative for depot location.

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

Block Diagrams

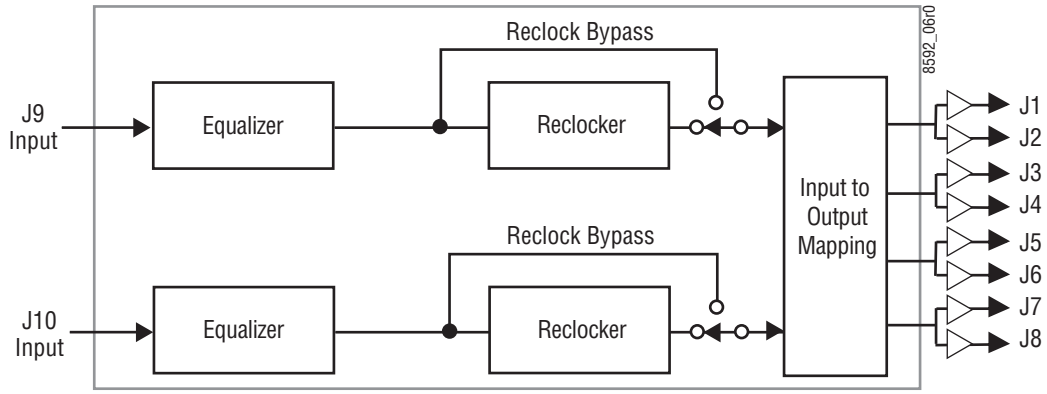
A block diagram of the 8943RDA is shown in Figure 41.

Figure 41. 8943RDA Block Diagram



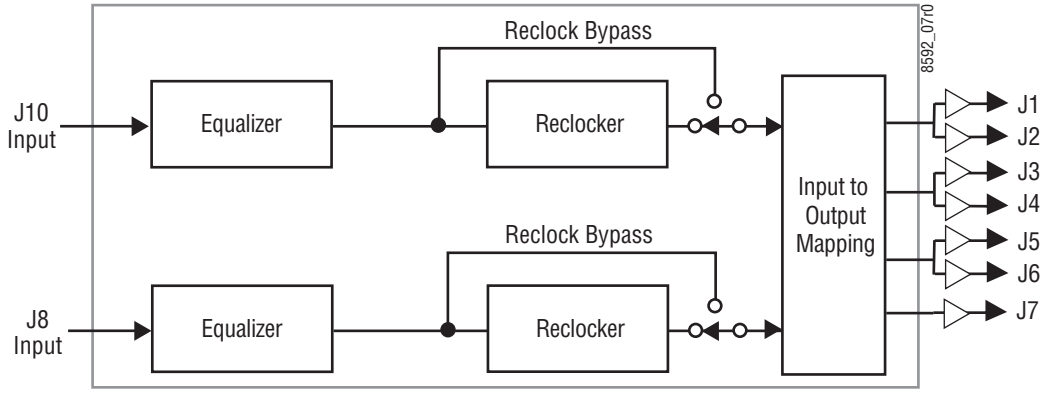
A block diagram of the 8943RDA-D is shown in Figure 42.

Figure 42. 8943RDA-D Block Diagram



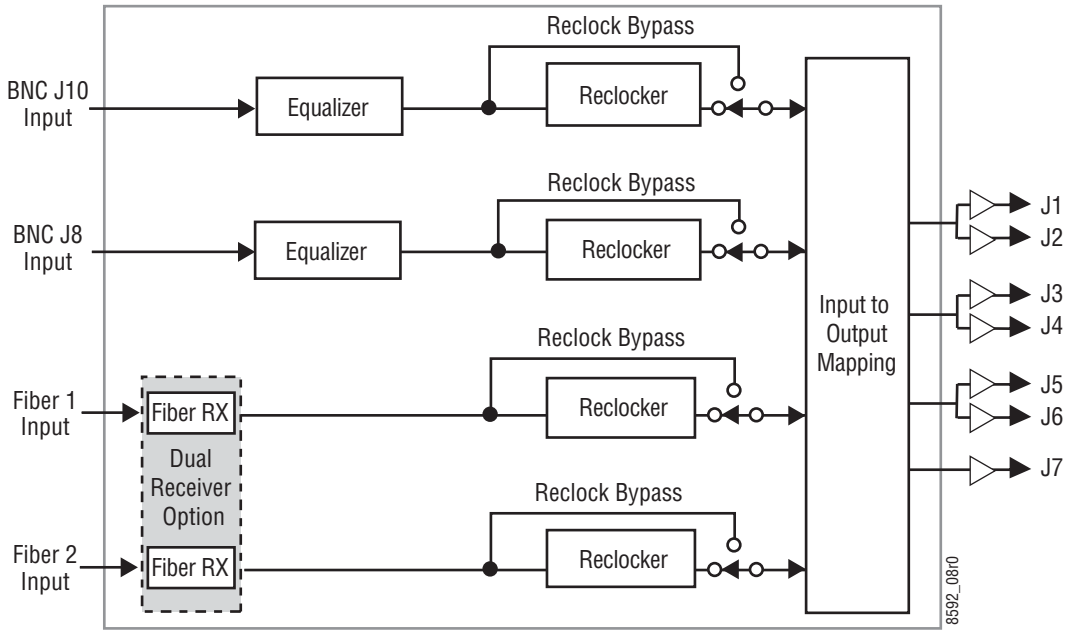
A block diagram of the 8943RDA-DFR without fiber optic submodule installed is shown in Figure 43.

Figure 43. 8943RDA-DFR Block Diagram – Without Fiber Optic Submodule



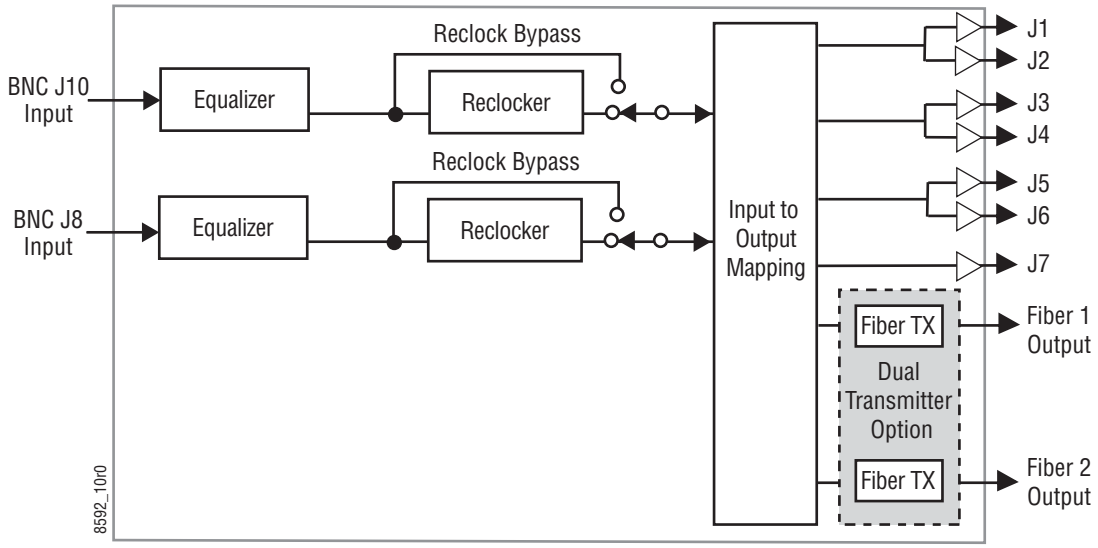
A block diagram of the 8943RDA-DFR with a dual receiver fiber optic submodule installed is shown in Figure 44.

Figure 44. 8943RDA-DFR Block Diagram – Dual Receiver Fiber Optic Submodule



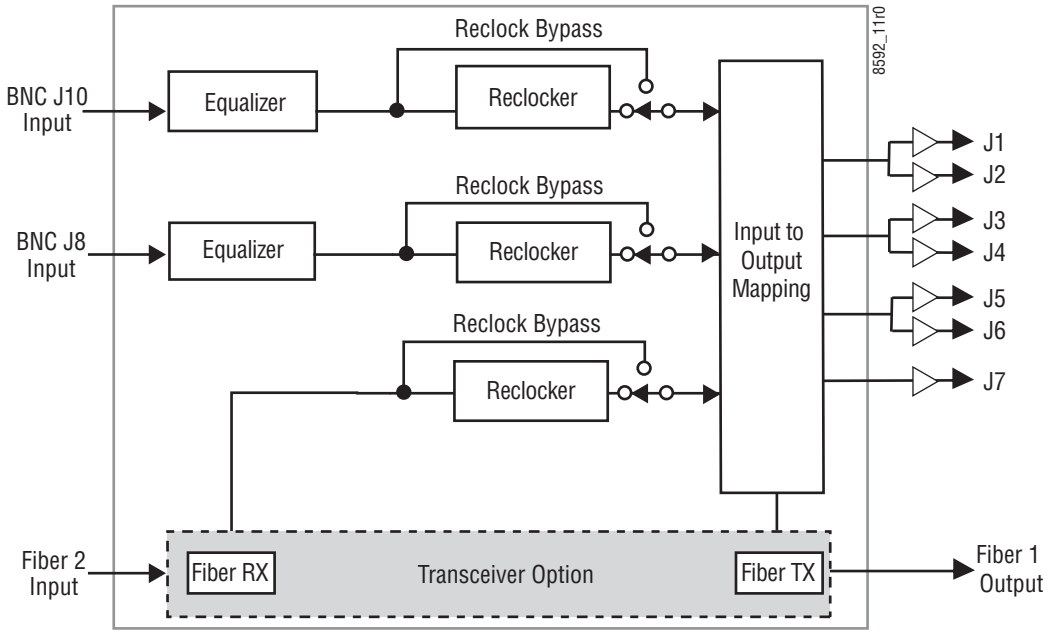
A block diagram of the 8943RDA-DFR with a dual transmitter fiber optic submodule installed is shown in Figure 45.

Figure 45. 8943RDA-DFR Block Diagram – Dual Receiver Fiber Optic Submodule



A block diagram of the 8943RDA-DFR with a transceiver fiber optic sub-module installed is shown in Figure 46.

Figure 46. 8943RDA-DFR Block Diagram – Transceiver Fiber Optic Submodule



Configuration Summary Table

Table 14 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 on each control.

Table 14. Summary of Configuration Functions

Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	Local OnBoard Control	Newton Control Panel
Coax input signal loss reporting for Ch1: 8943RDA: J9 8943RDA-D: J9 8943RDA-DFR: J10	Enable	Enable or Disable	I/O Config/ Coax Video Input Reporting Enabled checkbox	Function Switch S1: CH1: Setting B Paddle Switch S2: Up: Enable Down: Disable	In1 RepLOS
Coax input signal loss reporting for Ch2: 8943RDA-D: J10 8943RDA-DFR: J8	Enable	Enable or Disable	I/O Config/ Coax Video Input Reporting Enabled checkbox	Function Switch S1: CH2: Setting C Paddle Switch S2: Up: Enable Down: Disable	In2 RepLOS
8943RDA-DFR only: Fiber RX 1 input signal loss reporting (Dual Receiver or Transceiver fiber optic submodule option installed)	Enable	Enable or Disable	I/O Config/ Fiber RX1 Input Reporting Enabled checkbox	Function Switch S1: CH3: Setting D Paddle Switch S2: Up: Enable Down: Disable	In3 RepLOS
8943RDA-DFR only: Fiber RX 2 input signal loss reporting (Dual Receiver fiber optic submodule installed)	Enable	Enable or Disable	I/O Config/ Fiber RX 2 Input Reporting Enabled checkbox	Function Switch S1: CH4: Setting E Paddle Switch S2: Up: Enable Down: Disable	In4 RepLOS
Set Operating Mode for Ch1: 8943RDA: J9 8943RDA-D: J9 8943RDA-DFR: J10	Auto Reclock/ Mute	Auto Reclock/Bypass, Auto Reclock/Mute, 3G 2970M, HD 1485M, SD 270M, Manual Bypass HD/3G, or Manual Bypass SD.	Settings/ Coax Inputs J9 (8943RDA) Coax Inputs J9 (8943RDA-D) Coax Inputs J10 (8943RDA-DFR	Function Switch S1: CH1: Setting 1 Paddle Switch S2: Scroll to choice see *Set INPUT OP MODE* on page 35)	In1 RclMode
Set Operating Mode for Ch2: 8943RDA-D: J10 8943RDA-DFR: J8	Auto Reclock/ Mute	Auto Reclock/Bypass, Auto Reclock/Mute, 3G 2970M, HD 1485M, SD 270M, Manual Bypass HD/3G, or Manual Bypass SD.	Settings/ Coax Inputs J9 (8943RDA) Coax Inputs J9 (8943RDA-D) Coax Inputs J10 (8943RDA-DFR	Function Switch S1: CH2: Setting 2 Paddle Switch S2: Scroll to choice (see *Set INPUT OP MODE* on page 35)	In2 RclMode
8943RDA-DFR Set Operating Mode for Ch3: Fiber RX 1 input (Input available when Dual Receiver fiber optic submodule option is installed)	Auto Reclock/ Mute	Auto Reclock/Bypass, Auto Reclock/Mute, 3G 2970M, HD 1485M, SD 270M, Manual Bypass HD/3G, or Manual Bypass SD.	Settings/ Fiber Inputs Fiber RX 1	Function Switch S1: CH3: Setting 3 Paddle Switch S2: Scroll to choice see *Set INPUT OP MODE* on page 35)	FR1 RclMode

Table 14. Summary of Configuration Functions

Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	Local OnBoard Control	Newton Control Panel
8943RDA-DFR: Operating Mode for Ch4: Fiber RX 2 input (Input available when Dual Receiver fiber optic submodule is installed)	Auto Reclock/ Mute	Auto Reclock/Bypass, Auto Reclock/Mute, 3G 2970M, HD 1485M, SD 270M, Manual Bypass HD/3G, or Manual Bypass SD.	Settings/ Fiber Inputs Fiber RX 1	Function Switch S1: CH4: Setting 4 Paddle Switch S2: Scroll to choice (see *Set INPUT OP MODE* on page 35)	FR2 RclMode
8943RDA/-D: Configure input/output mapping for Coax output pair J1/J2	J9	Coax J9 or Coax J10.	Settings/ Outputs Output Selection	Function Switch S1: J1/J2: Setting 5 Paddle Switch S2: Scroll to choice (see *Set OUTPUT SOURCE* on page 36)	J1/J2InSel
8943RDA/-D: Configure input/output mapping for Coax output pair J3/J4	J9	Coax J9 or Coax J10.		Function Switch S1: J3/J4: Setting 6 Paddle Switch S2: Scroll to choice (see *Set OUTPUT SOURCE* on page 36)	J3/J4InSel
8943RDA/-D: Configure input/output mapping for Coax output pair J5/J6	J9	Coax J9 or Coax J10,		Function Switch S1: J5/J6: Setting 7 Paddle Switch S2: Scroll to choice (see *Set OUTPUT SOURCE* on page 36)	J5/J6InSel
8943RDA/-D: Configure input/output mapping for Coax output pair J7/J8	J9	Coax J9 or Coax J10.		Function Switch S1: J7/J8: Setting 8 Paddle Switch S2: Scroll to choice (see *Set OUTPUT SOURCE* on page 36)	J7/J8InSel

Table 14. Summary of Configuration Functions

Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	Local OnBoard Control	Newton Control Panel
8943RDA-DFR: Configure input/output mapping for Coax output pair J1/J2 (Input available when Dual Receiver fiber optic option installed)	J10	Coax J10, Coax J8, Fiber RX 1, or Fiber RX 2.	Settings/ Outputs Output Selection	Function Switch S1: J1/J2: Setting 5 Paddle Switch S2: Scroll to choice (see *Set OUTPUT SOURCE* on page 36)	J1/J2InSel
8943RDA-DFR: Configure input/output mapping for Coax output pair J3/J4 (Dual Receiver fiber optic option installed)	J10	Coax J10, Coax J8, Fiber RX 1, or Fiber RX 2.		Function Switch S1: J3/J4: Setting 6 Paddle Switch S2: Scroll to choice (see *Set OUTPUT SOURCE* on page 36)	J3/J4InSel
8943RDA-DFR: Configure output selection for Coax output pair J5/J6	J10	Coax J10, Coax J8, Fiber RX 1, or Fiber RX 2.		Function Switch S1: J3/J4: Setting 7 Paddle Switch S2: Scroll to choice (see *Set OUTPUT SOURCE* on page 36)	J5/J6InSel
8943RDA-DFR: Configure output selection for Coax output J7	J10	Coax J10, Coax J8, Fiber RX 1, or Fiber RX 2.		Function Switch S1: J7: Setting 8 Paddle Switch S2: Scroll to choice (see *Set OUTPUT SOURCE* on page 36)	J7InSel
8943RDA-DFR: Enable Fiber TX1 output (Dual transmitters or transceiver option required for Fiber TX1)	Disable	Enable or Disable	Video Output Fiber Video Output Fiber TX1 Enabled checkbox	Set jumper J13 to pins 1-2 (enable) or 2-3 (disable) (Note this setting will override remote controls)	FT1 OutEn
8943RDA-DFR: Enable Fiber TX2 output (Dual Transmitter option required for Fiber TX2)	Disable	Enable or Disable	Video Output Fiber Video Output Fiber TX2 Enabled checkbox		FT2 OutEn
Recall factory defaults	See column above	–	**Set Defaults** button on Settings web page	Function Switch S1: Setting 9 Paddle Switch S2 up to recall factory defaults	Defaults

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