grass valley

8937/8937D

SDI/ASI RECLOCKING EQ SNMP DA MODULES

Instruction Manual

SOFTWARE VERSION 1.1.0

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Contents

Preface

About This Manual

This manual describes the features of the 8937 and 8937D modules in the GeckoFlex Signal Processing System family. As part of this module family, it is subject to Safety and Regulatory Compliance described in the *Gecko 8900 Frames Instruction Manual* and the *GeckoFlex Frames 8900FX/FF/FFN Signal Processing System Instruction Manual.*

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

www.thomsongrassvalley.com/docs/modular

8937 and 8937D SDI/ASI Reclocking EQ SNMP DAs

Introduction

The 8937 module is a 1 x 8 looping input, auto-reclocking, auto-cable equalizing DA with SNMP monitoring capability. The module is suited for medium to long distance signal distribution.

The 8937D (dual) module provides two separate SDI distribution amplifiers on a single card. It also has auto-reclocking, auto-cable equalizing with SNMP monitoring capability for both video channels. The module is ideal for environments where compact and high density capability is required such as mobile trucks.

The 8937 and 8937D feature:

- Jumper selectable Bypass/270Mb/Reclock mode with auto bypass,
- Auto detection and front panel indication of all SMPTE 259M signal data rates,
- Auto, Manual, or Bypass mode for input bit rate standard selection,
- Auto cable equalization for up to 300 meters of cable for SDI SMPTE signals up to 270 Mb/s and 200 meters for 360 Mb/s,
- Suitable for SMPTE 259M, DVB-ASI, SDI 270 Mb/s and other 800 mV data ranging from 50 Mb/s to 360 Mb/s with maximum P/N of 19/1,
- Signal presence indication with module specific SNMP trap generation, and
- Remote health monitoring interface.

This manual covers installation, configuration, and operation for both the 8937 and 8937D modules.

Installation

The 8937 and 8937D modules can be installed in either an 8900 Gecko or GeckoFlex frame. An 8900V-R rear module is required for use in the GeckoFlex frame.

Gecko 8900 Frame

Installation of an 8937 module in an 8900 Gecko frame is a process of:

1. Placing the module in the proper frame slot,
2. Setting jumper settings if using local configuration controls (see *Local On-Board Configuration* on page 22), and
3. Cabling signal ports.

The 8937 module can be plugged in and removed from an 8900 Series Video frame with power on. When power is applied to the module, LED indicators reflect the initialization process (see *Power Up* on page 17).

Frame Capacity

The 8937 and 8937D modules can be installed in all Gecko 8900 Series Video but with varying maximum quantities determined by frame cooling capacity. Table 1 provides the power capacity, cooling capacity, and maximum module count for each frame type.

Table 1. Power, Cooling, and Module Capacity of 8900 Video Frames

Capacity Calculated	8900TX-V Frame (no fan)	8900TF Frame	8900TFN Frame
Power (W)	100	100	100
Recommended Module Cooling (W)	30	100	100
8937 Modules	10	10	10
8937D Modules	10	10	10

Note Module capacity figures assume no other modules are in the frame.

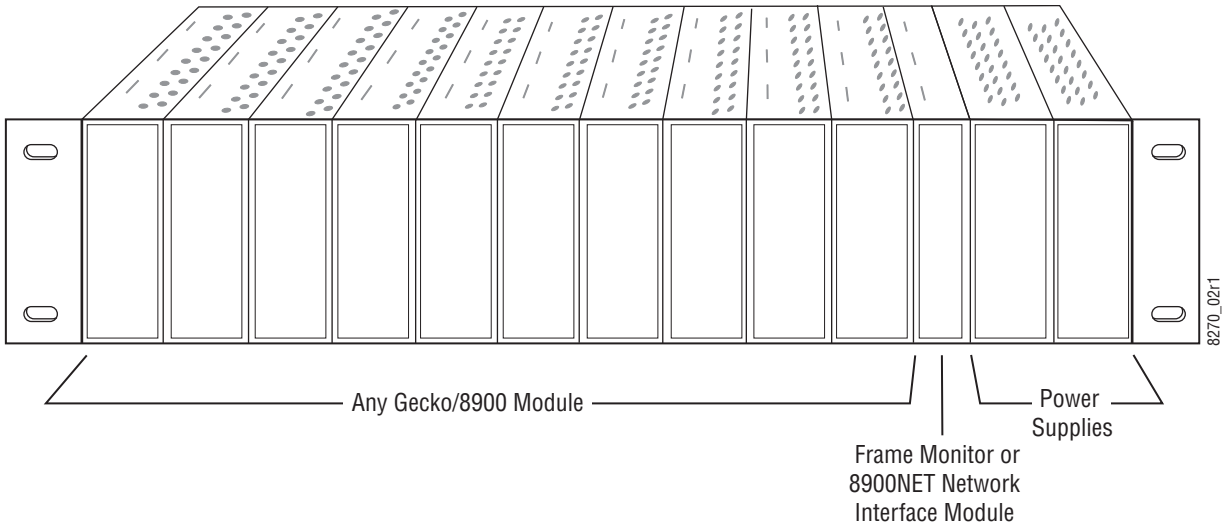
Module Placement in the 8900 Frame

There are ten slot locations in the video frame to accommodate modules. These are the left ten locations. Refer to Figure 1 on page 11.

The two slots on the right are allocated for the power supplies. For additional information concerning the Power Supply module, refer to the *8900 Frames Instruction Manual*.

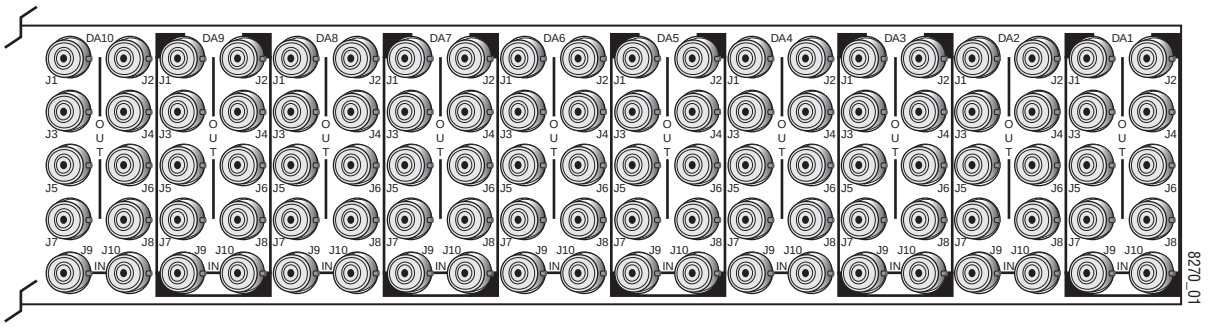
The third slot from the right is allocated for either a Frame Monitor Module or a 8900NET (Net Card) Network Interface Module. For additional information concerning the controller module options, refer to the *8900NET (Net Card) Network Interface Module Instruction Manual.*

Figure 1. 8900 Series Video Frame Slots



8900 module slots are interchangeable within the frame. There are 10 BNCs in each slot's I/O group. The functional assignment of each connector in a group is determined by the module that is placed in that slot. The maximum number of modules a Gecko 8900 video frame can accept is ten. Figure 2 illustrates the rear connector plate for a Gecko 8900 video frame.

Figure 2. Gecko 8900 Series Video Frame Rear Connector



To install a module in the frame:

1. Insert the module, connector end first, with the component side of the module facing to the right and the ejector tab to the top.
2. Verify that the module connector seats properly against the backplane.
3. Press in the ejector tab to seat the module.

GeckoFlex Frame

Installation of the 8937 and 8937D module in a GeckoFlex frame is a process of:

1. Installing the 8900V-R rear module into the rear of the frame,
2. Setting local jumper settings if configuring the module with on-board controls,
3. Placing the 8937 module in the corresponding front frame slot, and
4. Cabling and terminating signal ports.

Module Installation Precautions

Please read and follow the precautions listed below before installing the front and rear modules:

- Use standard anti-static procedures during installation. As modules can be installed or removed when the GeckoFlex frame is powered up, before removing the cover, please use an anti-static bracelet tied to a metal part of the frame.
- Install the rear module first, then the front module, then the optical sub-module option (if used).
- 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 (751- version frames only). For 650- version frames without the tool, use a 2 mm (5/64″) hex screwdriver. Please do not use an electric screw-driver.
- 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 rear retainer screw torque specification under **Mechanical** in Table 7 on page 41.

Rear Module Installation

To install a rear module into the frame, follow these steps:

Note Please read *Module Installation Precautions* on page 12 before installing the rear module.

1. Each 8900V-R rear module or blank rear adapter cover is held in place by two retainer clips as shown in Figure 3. Loosen (but do not remove completely) the two screws holding each retainer clip to the frame with a 2 mm (5/64″) hex screwdriver. Pull up on the retainer to remove it, leaving the screws in place.

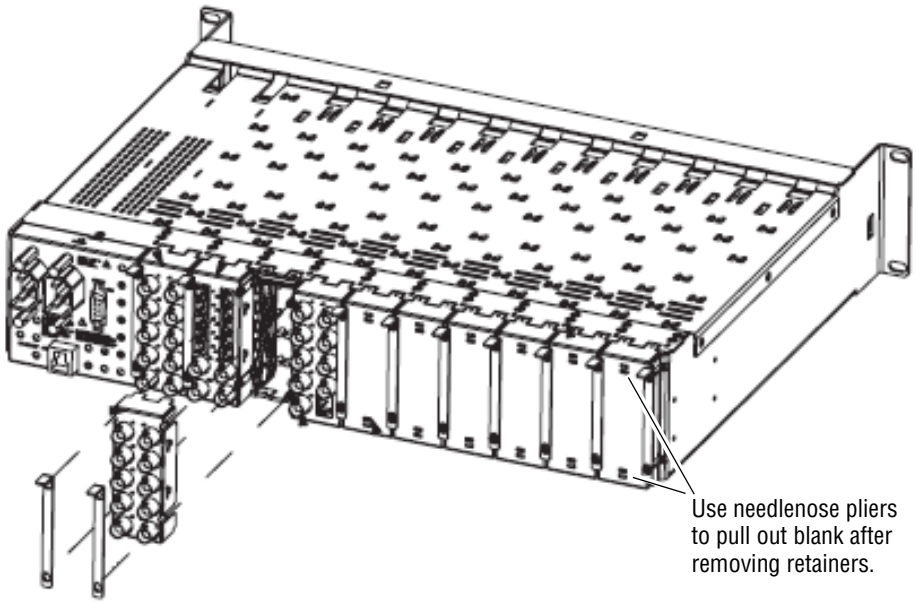
CAUTION Be careful to leave the screws in place as they can be easily lost or fall into equipment below the frame creating a shorting hazard.

2. Remove the blank rear adapter cover by inserting needlenose pliers into the slots in the top and bottom of the blank and pulling it off.

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

3. Insert the rear module into the empty slot.
4. Replace each retainer clip over the two screws on both sides of the module and push down to seat the retainer.
5. Tighten the screws for each retainer clip just until they are snug. Do not force or torque the screws too tightly. The retainer screw torque specification is 4-5 inch-lb/0.45-0.6Nm.

Figure 3. Installing Rear Module



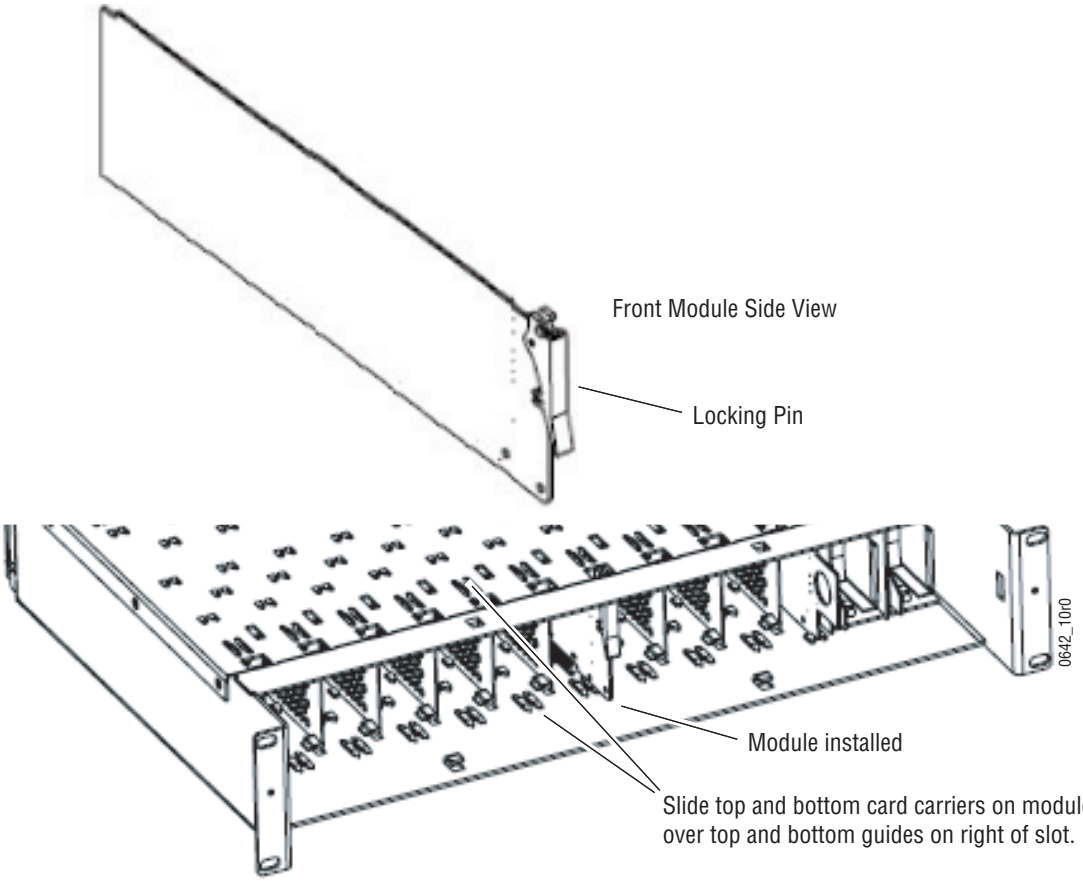
Front Module Installation

After installing the rear module, install the front module as follows:

Note If configuring the module using local on-board jumpers, set the jumpers according to the instructions in *Local On-Board Configuration* on page 22 before installing the front module.

1. Remove the front cover of the frame.
2. Locate the corresponding front slot.
3. Insert the front module so that the plastic card guides on the module top and bottom edges go over the upper and lower raised rail guides on the right of the top and bottom of the slot(Figure 4).
4. Carefully slide the module into the rear connector.
5. Lock the front module ejector tab into the locking pin.
6. Reinstall the front cover of the frame during normal operation.

Figure 4. Front Module Installation



Cabling

8937 Module

Refer to Figure 5 for cabling the 8937 module. Cabling to and from the module is done at the back of the Gecko 8900 video frame or on the corresponding 89000V-R rear module of the GeckoFlex frame as described below.

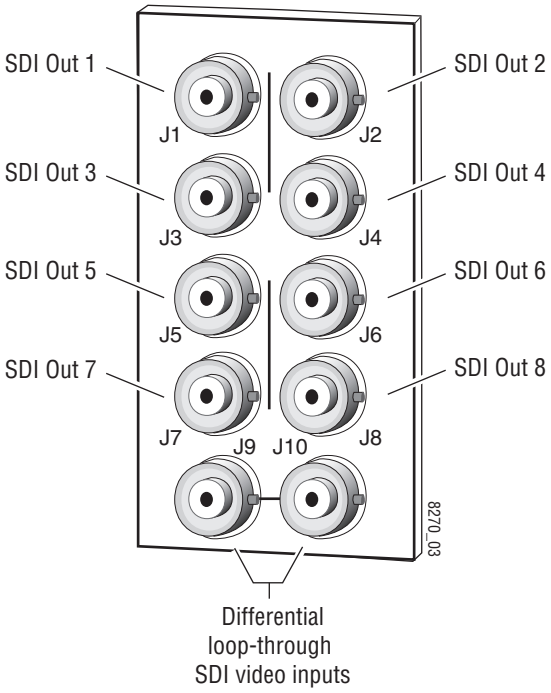
Loop-Through Input

One serial digital component input is provided at differential loop-through BNCs J9 and J10. If the unused input is not looped to another device, it should be terminated in 75 ohm.

Outputs

There are eight outputs for the 8937 module at BNCs J1 through J8. Output destination equipment should have an input impedance of 75 ohm unless it has loop-through inputs, in which case the loop-through inputs must be terminated into 75 ohm. All outputs are in phase with the input signal.

Figure 5. 8937 Rear Input/Output Connectors



8737D Module

Refer to Figure 6 for cabling the 8937D module. Cabling to and from the module is done at the back of the Gecko 8900 video frame or on the corresponding 8900V-R rear module on the GeckoFlex frame as described below.

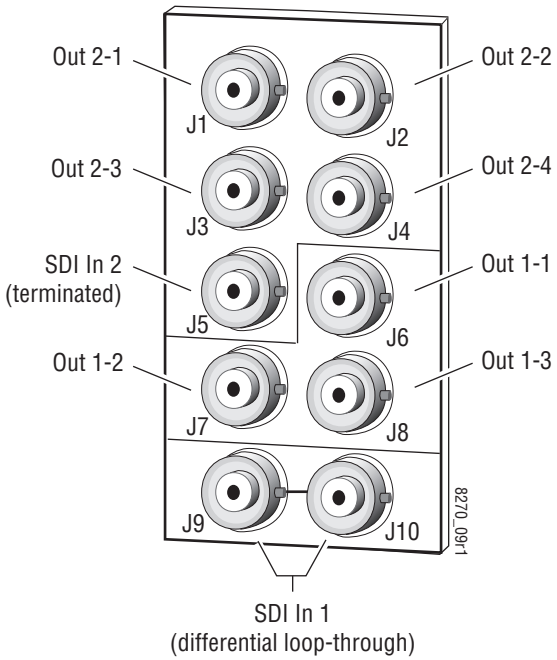
DA 1 Inputs and Outputs

DA 1 provides one serial digital component input at loop-through BNCs J9 and J10. If the unused input is not looped to another device, it should be terminated in 75 ohm. The three outputs for DA 1 are from BNCs J6, J7, and J8. All outputs are in phase with the input signal.

DA 2 Inputs and Outputs

DA 2 provides one terminated serial digital component input at BNC J5. The four outputs for DA 2 are from BNCs J1, J2, J3, and J4. All outputs are in phase with the input signal.

Figure 6. 8937D Rear Input/Output Connectors



Looping Capabilities

The reclocked output signal from one 8937 or 8937D module may be looped to up to ten reclocked 8937 or 8937D modules in series for further distribution without degrading the signal.

The output signal from modules operating in Bypass mode (not reclocked to one of the standard rates) will begin to degrade by the third module in the series. This looping is not recommended.

Power Up

The front LED indicators and configuration switches are illustrated for the 8937 in Figure 7. The front LED indicators for the 8937D module has an additional row of identical LEDs labeled for DA 1 and DA 2 as shown in Figure 8. Upon power-up, the green PWR LED should light and the yellow CONF LED should illuminate for a few seconds for the duration of module initialization.

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

Figure 7. 8937 Front LEDs Indicators

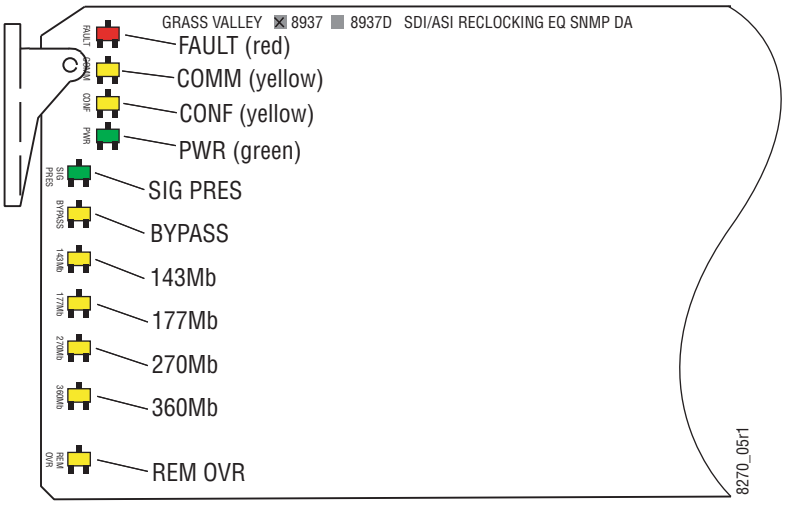
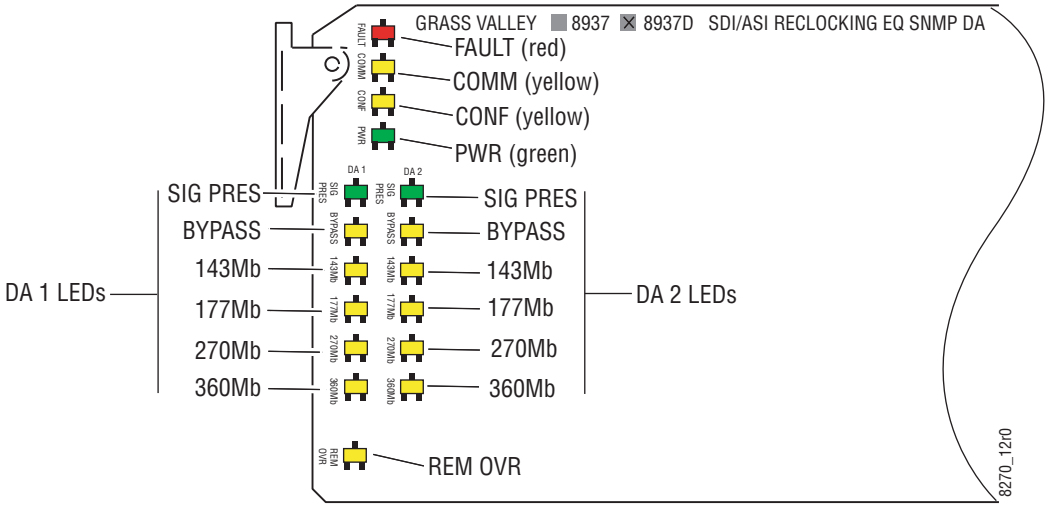


Figure 8. 8937D Front LED Indicators



Operation Indicator LEDs

Refer to Figure 7 on page 17 (8937) and Figure 8 on page 17 (8937D) and Table 2 for the name and meaning of each of the board edge LEDs on the front of the module circuit board. Refer also to Table 3 on page 19 for specific LED states and module conditions.

Table 2. Board Edge LED Names and Meaning

LED	8937	8937D		Condition
		DA 1	DA 2	
FAULT (red)	Off	Off	Off	Normal operation.
	On continuously	On	On	Module has detected an internal fault. (Refer to *Service* on page 42.)
	Long Flash	Long Flash	Long Flash	Input missing or input does not match bit rate set with manual mode.
COMM (yellow)	Off	Off	Off	No activity on frame communication bus.
	Steady flash	Steady flash	Steady flash	Locate Module command received by the module from a remote control system.
	Short flash	Short flash	Short flash	Activity present on the frame communication bus.
CONF (yellow)	Off	Off	Off	Module is in normal operating mode.
	On continuously	On	On	Module is initializing, changing operating modes or programming hardware.
PWR (green)	Off	Off	Off	No power to module or module's DC/DC converter failed.
	On	On	On	Normal operation, module is powered.
SIG PRES (green)	Off	Off	Off	No signal input detected or input signal does not match bit rate set with Manual mode
	On	On	On	In Auto or Bypass mode input signal is present or input signal matches bit rate set with Manual mode.
BYPASS (yellow)	Off	Off	Off	Reclocking is enabled and auto-rate detection mode is active
	On	On	On	Bypass mode is selected (input signal will not be reclocked); Auto mode is selected and input signal is not present or input signal is not 143 Mb, 177 Mb, 270 Mb, or 360 Mb.
143 Mb (yellow)	Off	Off	Off	No 143 Mb speed signal present.
	On	On	On	Auto Mode: Input signal is locked at 143 Mb, Manual Mode: 143 Mb is present and locked.
177 Mb (yellow)	Off	Off	Off	No 177 Mb speed signal present.
	On	On	On	Auto Mode: Input signal is locked at 177 Mb, Manual Mode: 177 Mb is present and locked.
270 Mb (yellow)	Off	Off	Off	No 270 Mb speed signal present.
	On	On	On	Auto Mode: Input signal is locked at 270 Mb, Manual Mode: 270 Mb is present and locked
360 Mb (yellow)	Off	Off	Off	No 360 Mb speed signal present.
	On	On	On	Auto Mode: Input signal is locked at 360 Mb, Manual Mode: 360 Mb is present and locked
REM OVR (yellow)	Off	Off		Module setting match those set on module switches and jumpers.
	On	On		Remote control is overriding on-board jumper setting on last web page change on either DA 1 or DA 2 made on module. [1]

[1] If the module has recognized a remote override on one DA, removing the module and changing a jumper on the other DA and reinserting the module does not change the status of the REM OVR LED.

Table 3 gives an overall summary of the LED indicator and reported input signal state for all possible mode conditions in Bypass, Auto, and Manual.

Table 3. Reported Input Status Summary

Operating Mode	Input Carrier Detect	SIG PRES LED	143 Mb LED	177 Mb LED	270 Mb LED	360 Mb LED	BYPASS LED	Output	Input Reporting	Reported Input State
Bypass	Not Present	Off	Off	Off	Off	Off	Yellow	Muted	No	Not Monitored
									Yes	Signal Not Present
Bypass	Present	Green	Off	Off	Off	Off	Yellow	Input Signal	No	Not Monitored
									Yes	Signal Present
Auto	Not Present	Off	Off	Off	Off	Off	Yellow	Muted	No	Not Monitored
									Yes	Signal Not Present
Auto	Present, (Not 143, 177, 270 or 360 Mb)	Green	Off	Off	Off	Off	Yellow	Input Signal	No	Not Monitored
									Yes	Signal Present
Auto	Present (143 Mb Locked)	Green	Yellow	Off	Off	Off	Off	Reclocked 143 Mb	No	Not Monitored
									Yes	Signal Present
Auto	Present (177 Mb Locked)	Green	Off	Yellow	Off	Off	Off	Reclocked 177 Mb	No	Not Monitored
									Yes	Signal Present
Auto	Present (270 Mb Locked)	Green	Off	Off	Yellow	Off	Off	Reclocked 270 Mb	No	Not Monitored
									Yes	Signal Present
Auto	Present (360 Mb Locked)	Green	Off	Off	Off	Yellow	Off	Reclocked 360 Mb	No	Not Monitored
									Yes	Signal Present
Manual 143 Mb	Not Present	Off	Off	Off	Off	Off	Off	Muted	No	Not Monitored
									Yes	Signal Not Present
Manual 143 Mb	Present (Not 143 Mb)	Off	Off	Off	Off	Off	Off	Muted	No	Not Monitored
									Yes	Not Present
Manual 143 Mb	Present (143 Mb Locked)	Green	Yellow	Off	Off	Off	Off	Reclocked 143 Mb	Disabled	Not Monitored
									Enabled	Not Present
Manual 177 Mb	Not Present	Off	Off	Off	Off	Off	Off	Muted	No	Not Monitored
									Yes	Signal Not Present
Manual 177 Mb	Present (Not 177 Mb)	Off	Off	Off	Off	Off	Off	Muted	No	Not Monitored
									Yes	Not Present
Manual 177 Mb	Present (177Mb Locked)	Green	Off	Off	Yellow	Off	Off	Reclocked 177 Mb	Disabled	Not Monitored
									Enabled	Signal Present
Manual 270 Mb	Not Present	Off	Off	Off	Off	Off	Off	Muted	No	Not Monitored
									Yes	Not Present
Manual 270 Mb	Present (Not 270 Mb)	Off	Off	Off	Off	Off	Off	Muted	No	Not Monitored
									Yes	Signal Not Present
Manual 270 Mb	Present (270 Mb Locked)	Green	Off	Off	Yellow	Off	Off	Reclocked 270 Mb	Disabled	Not Monitored
									Enabled	Signal Present

Table 3. Reported Input Status Summary

Operating Mode	Input Carrier Detect	SIG PRES LED	143 Mb LED	177 Mb LED	270 Mb LED	360 Mb LED	BYPASS LED	Output	Input Reporting	Reported Input State
Manual 360 Mb	Not Present	Off	Off	Off	Off	Off	Off	Muted	No	Not Monitored
									Yes	Signal Not Present
Manual 360 Mb	Present (Not 360 Mb)	Off	Off	Off	Off	Off	Off	Muted	No	Not Monitored
									Yes	Signal Not Present
Manual 360 Mb	Present (360 Mb Locked)	Green	Off	Off	Off	Yellow	Off	Reclocked 360 Mb	No	Not Monitored
									Yes	Signal Present

Configuration

Configuration and monitoring can be performed using local jumper controls, a web browser GUI interface, or a networked Newton Control Panel. This section provides an overview of each of these controls along with the configuration parameters available with each type of control device.

Refer to the following sections for configuration information:

- Configuration Summary Table (page 21)
- Local On-board Controls (page 22)
- Remote Configuration and Monitoring (page 24)

Configuration Summary

The configuration parameters and monitoring functions available with the local on-board jumpers, web browser interface, and the Newton Control Panel are summarized in Table 4. The parameter defaults, choices, ranges, and resolution are provided for each function.

Table 4. Summary of 8937/8937D Configuration Functions

Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	On-Board Jumper Setting	Newton Control Panel
Report Loss of Signal 1	Yes	Yes or No	Standard Selections/ Report Loss of Signal 1 pulldown	N/A	RepLOS1
Input signal DA 1 status	–	Signal Present Signal Not Present Not Monitored	Standard Selections/ Input Signal 1	–	Input Sig1
Mode 1	Auto	Auto, Manual Bypass	Standard Selections/ Mode 1 pulldown	DA 1 J6: pins 1-2 – Auto pin 2 only – 270 Mb pins 2-3 – Bypass	Mode1
Current Bit Rate 1	–	–	Standard Selections/ Current Bit Rate 1	–	CurRt1
Standard Select 1 (Manual Mode)	143 Mb	143 Mb 177 Mb 270 Mb 360 Mb	Standard Selections/ Mode 1: Manual Standard Selection 1 pulldown	N/A	StdSel1
Report Loss of Signal 2	Yes	Yes or No	Standard Selections/ Report Loss of Signal 2 pulldown	N/A	RepLOS2
Input signal DA 2 status	–	Signal Present Signal Not Present Not Monitored	Standard Selections/ Input Signal 2	–	Input Sig2
Mode 2	Auto	Auto Manual Bypass	Standard Selections/ Mode2 pulldown	DA 2 J5: pins 1-2 – Auto pin 2 only – 270 Mb pins 2-3 – Bypass	Mode2
Current Bit Rate 2	–	–	Standard Selections/ Current Bit Rate 2	–	CurRt2
Standard Select 2 (Manual Mode)	143 Mb	143 Mb 177 Mb 270 Mb 360 Mb	Standard Selections/ Mode 2: Manual Standard Selection 2 pulldown	N/A	StdSel2

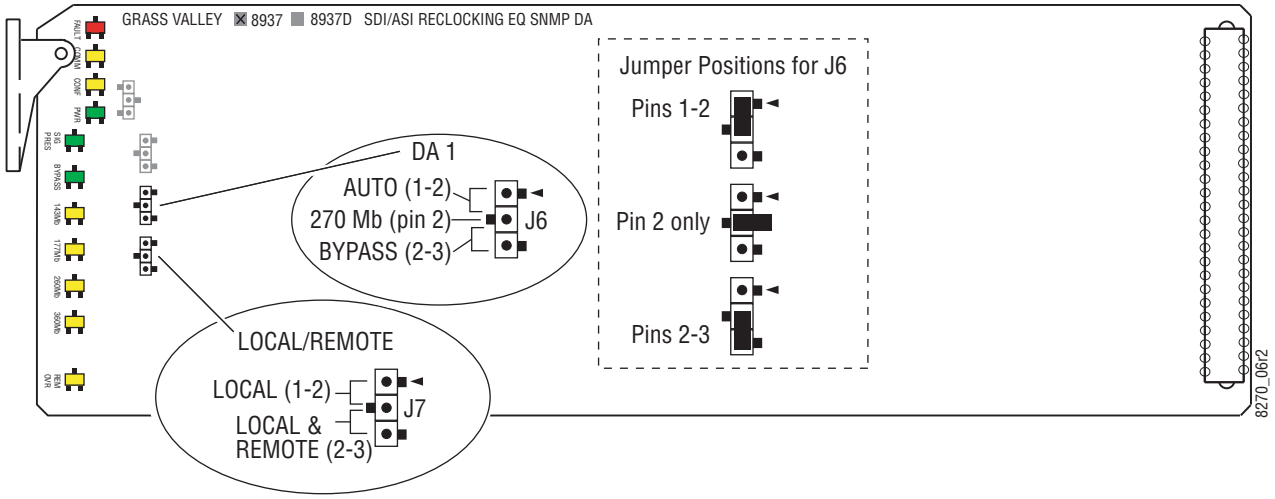
Local On-Board Configuration

8937 Module

Two on-board jumpers are present on the 8937 module to configure module formatting if not using the remote controls. Refer to Figure 9 for jumper locations on the module circuit board.

- DA 1 – set jumper J6 for AUTO (pins 1-2) to enable auto reclocking (for signal data rates of 143, 177, 270, and 360 Mb/s), 270 Mb only (jumper pin 2 only), or BYPASS (pins 2-3) to bypass reclocking (for signals with data rates of 50 Mb/s to 360 Mb/s). This setting can be overridden by remote controls.
- Local/Remote – set jumper J7 to LOCAL (pins 1-2) to lock out remote control or LOCAL & REMOTE (pins 2-3) for access to remote control. This setting cannot be overridden by remote controls.

Figure 9. 8937 On-Board Jumper Locations

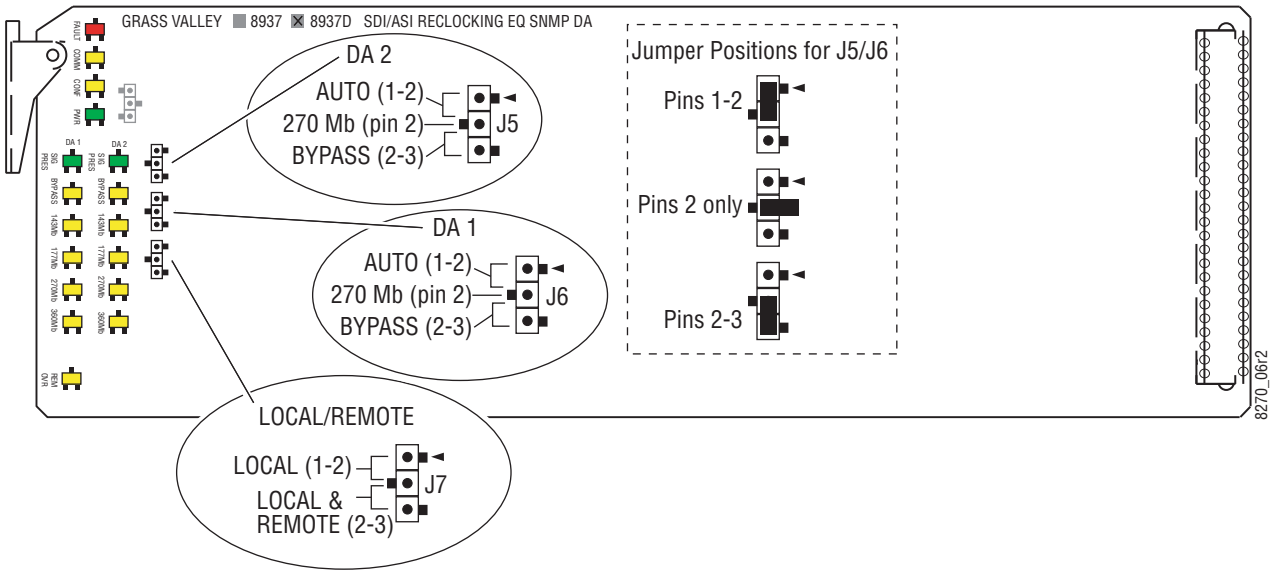


8937D Module

Three onboard jumpers are present on the 8937D to configure module formatting. Refer to Figure 10 for jumper locations on the circuit board.

- DA 2 BYPASS/270 Mb/AUTO – for DA 2, set jumper J5 for AUTO (pins 1-2) to enable auto reclocking (for signal data rates of 143, 177, 270, and 360 Mb/s), 270 Mb only (jumper pin 2 only), or BYPASS (pins 2-3) to bypass reclocking (for signals with data rates of 50 Mb/s to 360 Mb/s). This jumper setting can be overridden by remote controls.
- DA 1 BYPASS/270 Mb/AUTO – for DA 1, set jumper J6 for AUTO (pins 1-2) to enable auto reclocking (for signal data rates of 143, 177, 270, and 360 Mb/s), 270 Mb only (jumper pin 2 only), or BYPASS (pins 2-3) to bypass reclocking (for signals with data rates of 50 Mb/s to 360 Mb/s). This jumper setting can be overridden by remote controls.
- Local/Remote – set jumper J7 to LOCAL (pins 1-2) to lock out remote control or LOCAL & REMOTE (pins 2-3) for access to remote control. This jumper setting cannot be overridden by remote controls.

Figure 10. 8937D On-Board Jumper Locations



Remote Configuration and Monitoring

8937/8937D configuration and monitoring can 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 video frame (Gecko 8900TFN-V frame). Each of these interfaces are described below.

Note For remote access, make sure the jumper block on the module is set for both Local and Remote access (Figure 9 on page 22 and Figure 10 on page 23).

8900NET Module Information

Refer to the *8900NET (Net Card) Network Interface Module Instruction Manual* for information on the 8900NET Network Interface module and setting up and operating the Gecko 8900 frame network.

Note The 8900NET module in the frame must be running software version 4.2.0 or higher for proper remote control panel operation. Upgrade software and instructions for the 8900NET can be downloaded from the Grass Valley ftp site at ftp://ftp.thomsongrassvalley.com/modular/8900net.

Newton Control Panel Configuration

A Newton Control Panel (hard or soft version) can be interfaced to the Gecko 8900 Series frame over the local network. Refer to the documentation that accompanies the Newton Modular Control System for installation, configuration, and operation information.

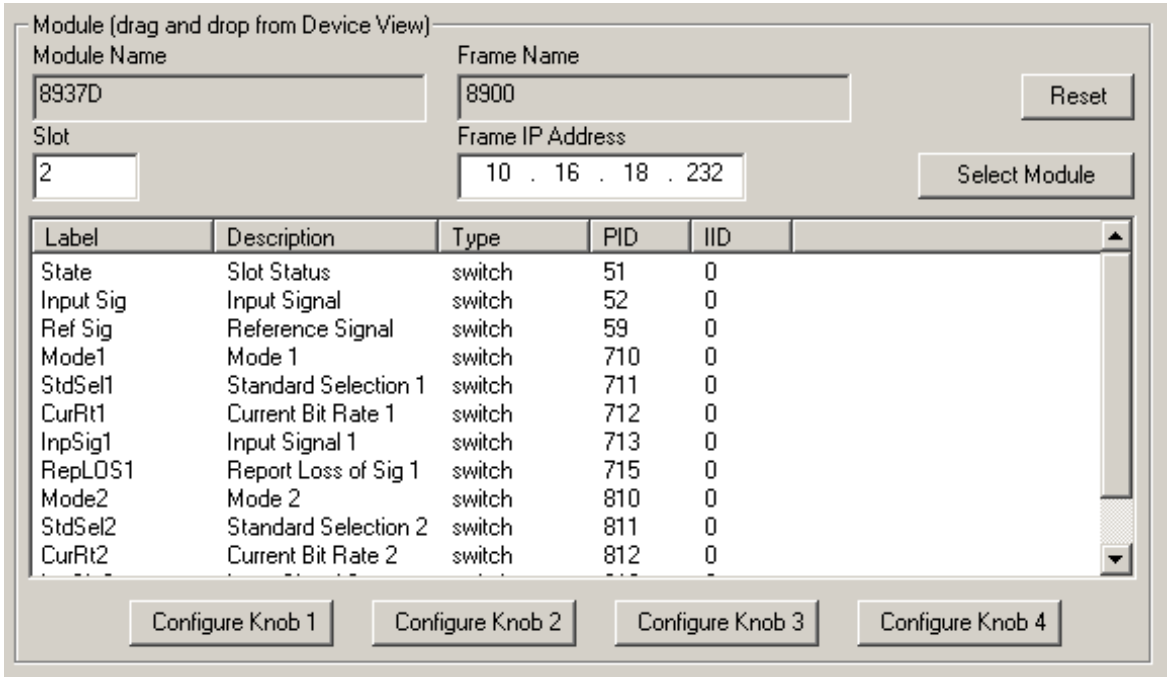
Control panel access offers the following considerations for module configuration and monitoring:

- 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. The available control panel controls for the module are listed in Table 4 on page 21.

An example of the Newton Configurator is shown in Figure 11.

Figure 11. 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:

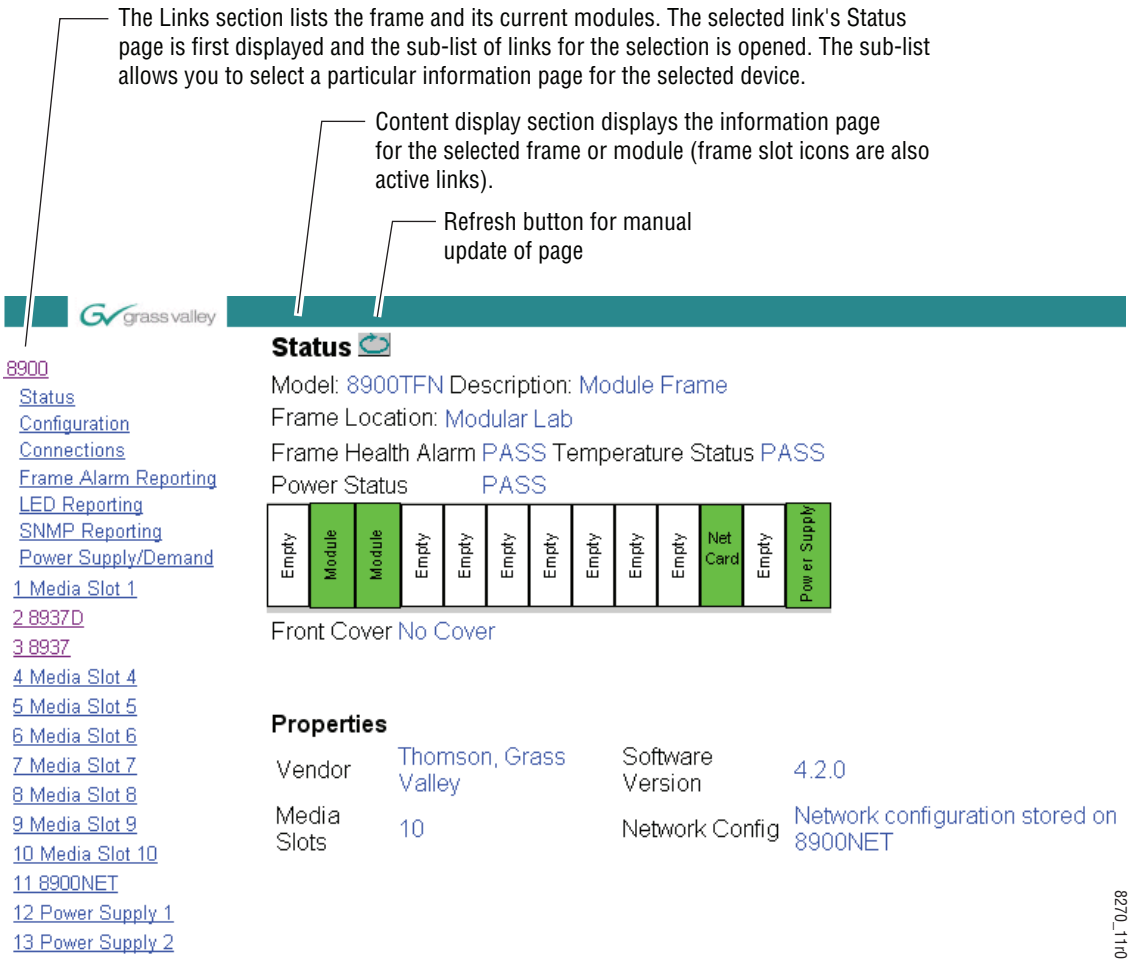
- Provides complete access to all module status and configuration functions, including naming of inputs and outputs, factory parameter and name default recalls, E-MEM functions, slot configuration, and SNMP monitoring controls.
- Web access will require some normal network time delays for processing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

Refer to the Frame Status page shown in Figure 12 on page 26. The 8900 modules can be addressed by clicking either on a specific module icon in the frame status display or on a module name or slot number in the link list on the left.

Note The physical appearance of the graphics on the web pages shown in this manual represent the use of a particular platform, browser and version of 8900NET (Net Card) 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 8900NET software version 4.2.0 required for this module.

For information on status and fault monitoring and reporting shown on the Status page, refer to *Status Monitoring* on page 38.

Figure 12. Frame Status Page



8937 and 8937D Links and Web Pages

The 8900 GUI provides the following links and web pages for the 8937 and 8937D modules (Figure 13):

- Status – reports input signal and frame bus communication status and module information (page 28),
- Standard Selections –allows enabling and disabling of signal loss reporting and selection of the standard selections and modes (page 30),
- Recall Factory Defaults – provides factory default recall (page 34), and
- Slot Config – provides a Locate Module function, Slot Identification fields, and Slot Memory controls, and links to the 8900NET Frame Reporting, LED Reporting, and SNMP web pages (page 35).

Figure 13. 8937 and 8937D Web Page Links

Refer to Table 4 on page 21 for a complete summary of web page control parameter defaults, choices, ranges, and resolutions.

Status Web Page

Use this link

Status
Standard Selections
Recall Factory Defaults
Slot Config

The Status web page (Figure 14 on page 29 for 8937 and Figure 15 on page 29 for the 8937D) shows the signal status of the input signal(s) and communication with the frame bus. Color coding of the display indicates the signal status. In general, graphics and text colors used for status indication are 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.

Note Always refresh the page first with the **Refresh** button at the top of the page (shown at left) to update the current status of the web page.

On the Status web page for the 8937D module, signal status of both input signals is represented by a single input signal arrow. Signal reporting to this status indicator can be disabled at the module level for either or both DA 1 and DA 2 on the Standard Selection web page. When input signal status reporting is enabled for both DAs, if the status of either input signal changes, it will be reflected in the color status of the arrow and the Status LED on the module web pages. To determine which signal has been affected, refer to the Standards Selection web page or the on-board front edge LEDs.

The collective input state for the 8937D input signal arrow is summarized in Table 3. In the table under DA 1 and DA 2, **Not Monitored** indicates the **Report Loss of Signal** control for that DA has been disabled on the Standard Selection web page. For SNMP reporting, the reporting is separate for each DA. Refer to *SNMP Trap Reports* on page 37.

Table 5. 8937D Collective Status State for Input Signal

DA 1 Input Status	DA 2 input Status	Collective Input Status	Input Signal Arrow Color
Not Monitored	Not Monitored	Not Monitored	Gray[1]
Signal Not Present	N/A	Signal Not Present	Yellow
N/A	Signal Not Present	Signal Not Present	Yellow
Signal Present	Not Monitored	Signal Present	Green
Not Monitored	Signal Present	Signal Present	Green
Signal Present	Signal Present	Signal Present	Green

[1] When signal loss reporting for both DAs is disabled, the Status LED on each web page will continue to monitor module status but will not respond to signal status changes.

Information about the module, such as part number, serial number, hardware revision, software version, and Asset Tag number are given in a **Properties** section at the bottom of the Status page display.

Figure 14. 8937 Status Web Page

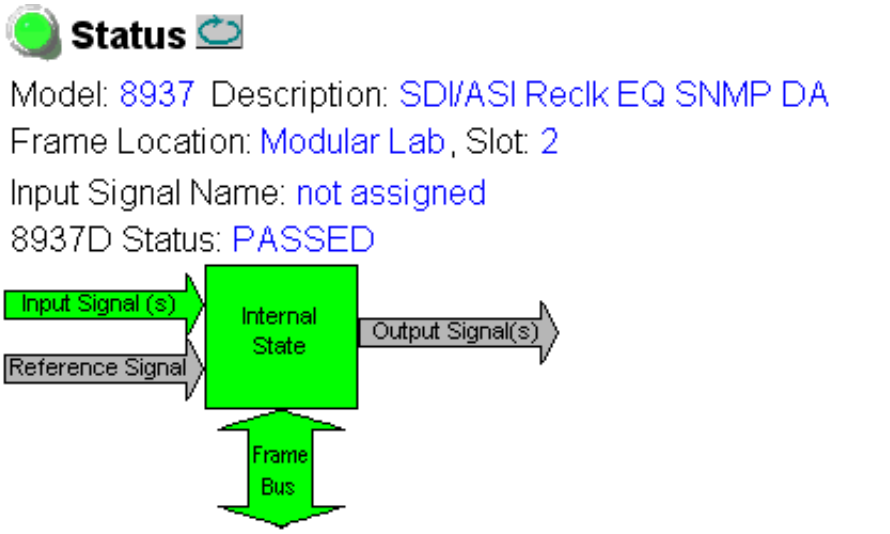
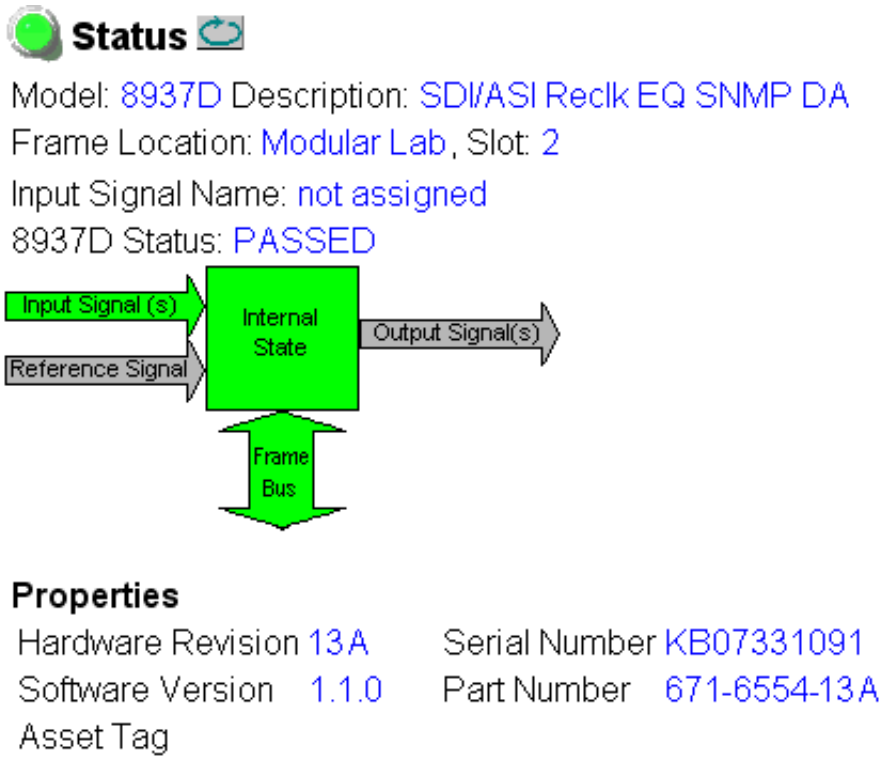


Figure 15. 8937D Status Web Page



Standard Selections Web Page

Use this link — Status, Standard Selections, Recall Factory Defaults, Slot Config

The Standard Selections web page allows you to set loss of signal reporting and the operating mode for the 8937 and 8937D modules. Refer to the specific 8937 or 8937D heading below.

8937 Module

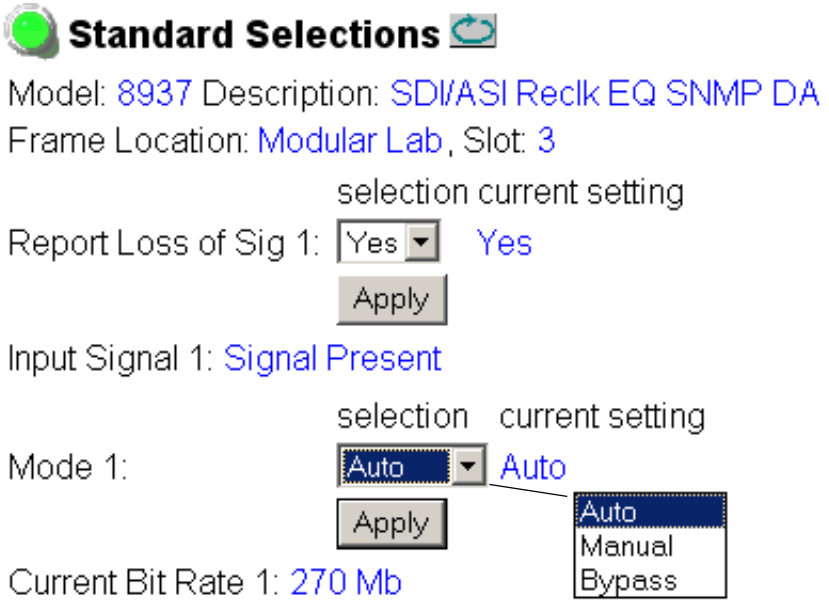
Refer to Figure 16 for the Standard Selections web page for the 8937.

Select the **Apply** button after making each selection.

Set the following parameters on this web page:

- Set the Report Loss of Sig 1 input presence reporting to **Yes** or **No**. Disabling this control will gray out the Input Signal(s) arrow on the Status web page graphic shown in Figure 14 on page 29.
- The Input Signal 1 field will report the status of the input signal as one of the following:
  - **Signal Present**,
  - **Signal Not Present**, or
  - **Not Monitored** (**Report Loss of Sig 1** set to **No**)
- When the Mode 1 control is set to **Auto**, the input bit rate standard is detected by module and displayed in the **Current Bit Rate1** field.
- When **Bypass** is set for Mode 1, **Bypass** will be displayed in the **Current Bit Rate1** field.

Figure 16. 8937 Standards Selections Web Page



When Manual mode is selected in the Mode 1 pulldown and the **Apply** button is selected, a Standard Selection 1 pulldown will appear as shown in Figure 17 to allow setting a specific bit rate.

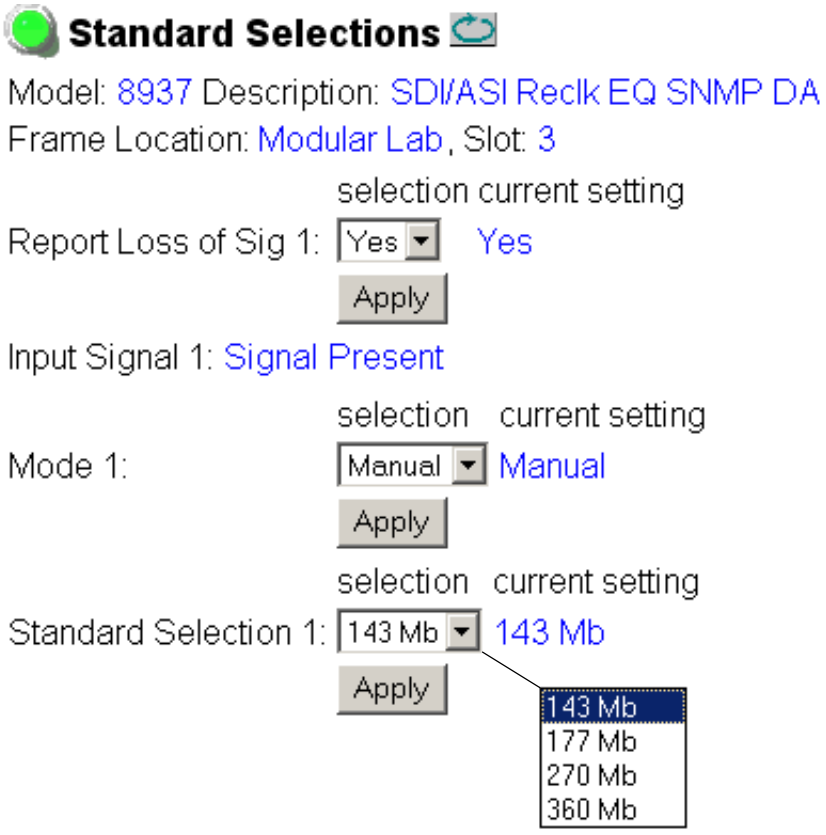
Select a bit rate from the Standard Selection 1 pulldown from one of the following:

- **143 Mb**,
- **177 Mb**,
- **270 Mb**, or
- **360 Mb**

The currently selected manual rate will be shown next to the pulldown.

Note In Manual mode, if the input signal does not match the selected standard, **Signal Not Present** will be reported in the Input Signal description.

Figure 17. 8937 Operating Mode Set to Manual



8937D Module

The Standard Selections page for the 8937D (Figure 18 on page 33) provides separate controls for DA 1 and DA 2 signal loss reporting and standard selection.

Note Each DA has a separate Report Loss of Signal control. On the Status web page, input signal status reporting is collective as described in *Status Web Page* on page 28. SNMP reporting is separate as described in *SNMP Trap Reports* on page 37.

Click the **Apply** button to enter all values.

For DA 1:

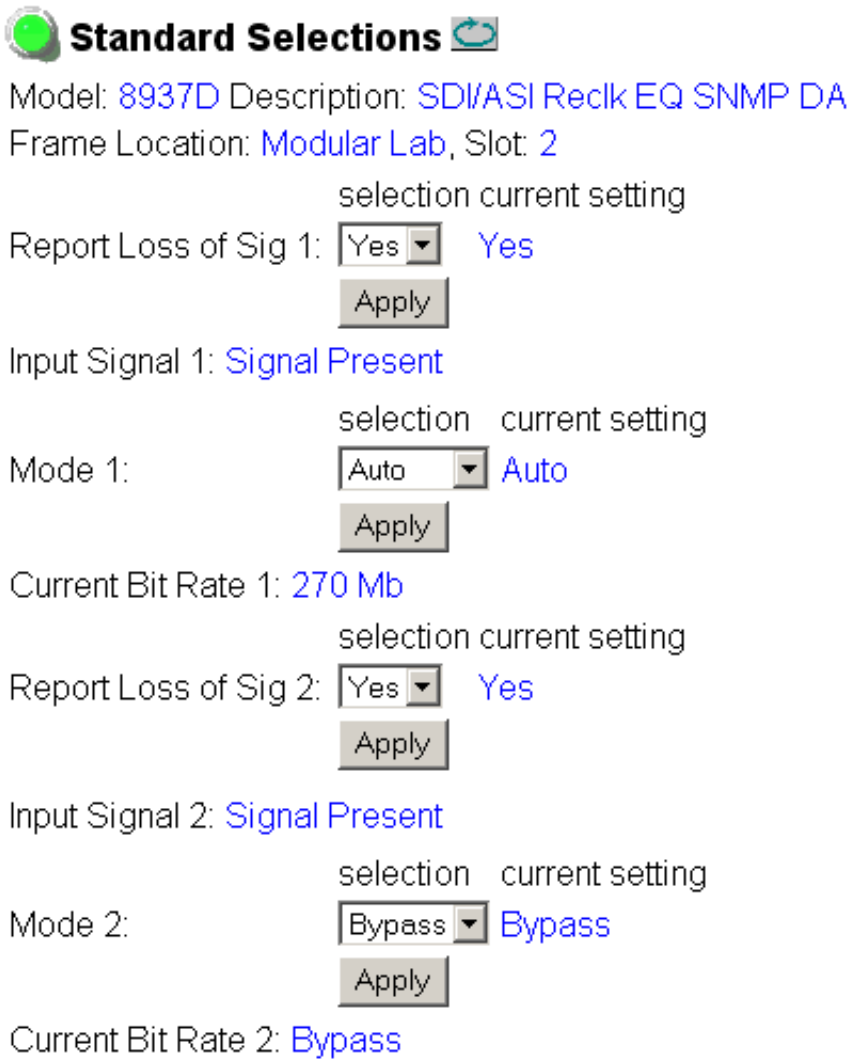
- Set Report Loss of Sig 1 as **Yes** or **No**. See Note above.
- Set the Mode 1 control for DA 1 to **Auto** (input bit rate standard detected by module), **Manual** (input bit rate standard selected manually), or **Bypass** (input bypasses reclocking circuitry).
- The Input Signal 1 field will report the status of the DA 1 input signal.
- When **Auto** mode is selected, the bit rate currently detected by the module will be displayed in the Current Bit Rate 1 field as shown in the example in Figure 18 on page 33.
- When **Bypass** mode is selected, **Bypass** will be displayed in the Current Bit Rate 1 field.
- When **Manual** mode is selected, a Standard Selection 1 pulldown will appear similar to the one shown previously in the 8937 DA 1 illustration in Figure 17 on page 31. Select the bit rate from the Standard Selection 1 pulldown (**143 Mb**, **177 Mb**, **270 Mb**, or **360 Mb**) as desired. The currently selected manual rate will be shown next to the pulldown.

For DA 2:

- Set Report Loss of Sig 2 as **Yes** or **No**. See Note above.
- Set the Mode 2 control for DA 2 to **Auto** (input bit rate standard detected by module), **Manual** (input bit rate standard selected manually), or **Bypass** (input bypasses reclocking circuitry).
- The Input Signal 2 field will report the status of the DA 2 input signal.
- When **Auto** mode is selected, the bit rate currently detected by the module will be displayed in the Current Bit Rate 2 field.
- When **Bypass** mode is selected, **Bypass** will be displayed in the Current Bit Rate 1 field as shown in the example in DA 2 in Figure 18 on page 33.
- When **Manual** mode is selected, a Standard Selection 2 pulldown will appear. Select the bit rate from the Standard Selection 2 pulldown (**143 Mb**, **177 Mb**, **270 Mb**, or **360 Mb**) as desired. The currently selected manual rate will be shown next to the pulldown.

Note In Manual mode, if the input signal does not match the selected standard, **Signal Not Present** will be reported in the Input Signal 2 description.

Figure 18. 8937D Standard Selection Web Page



Recall Factory Defaults Web Page

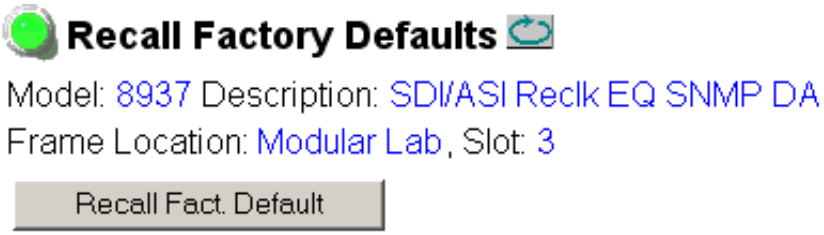
Use this link

Status
Standard Selections
Recall Factory Defaults
Slot Config

Use the Recall Factory Defaults web page (Figure 19) to recall preset factory defaults as listed in Table 4 on page 21.

Note For the 8937D module, this will recall factory defaults for both DAs.

Figure 19. 8937 and 8937D Recall Factory Defaults Web Page



Slot Config Web Page

Use the Slot Config web page (Figure 20 on page 36) to perform the following functions on the module:

Locate Module

Selecting the **Flash** button flashes the yellow COMM and CONFIG LEDs in unison 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 up to 31 characters. This will appear on the module Status web page and in the NetConfig PC application inventory report.

Slot Memory

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.

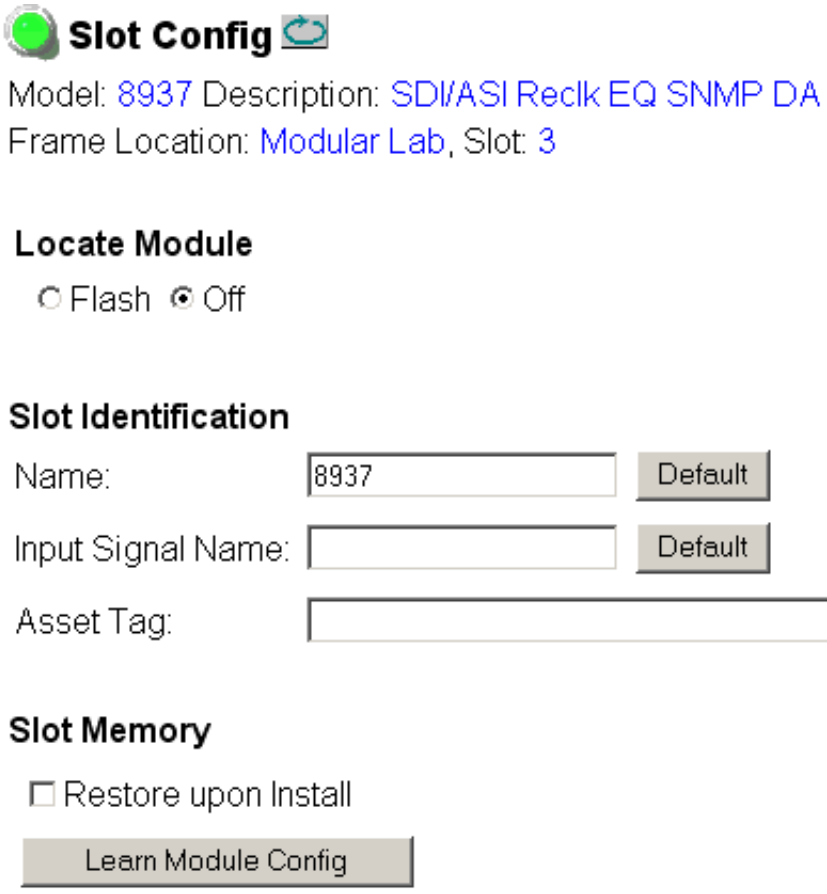
Note Make sure all modules of the same model type are running the same software version and have the same part number silk-screened on the printed circuit board. Downloading a configuration to a module with a different software version or part number can produce unexpected results.

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.

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

Figure 20. Slot Config Web Page



Frame Health Reporting

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

LED Reports

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

SNMP Trap Reports

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

This module has separate Module Specific SNMP traps for reporting the loss of signal for the 8937D for DA 1 and DA 2. The signal loss reporting for SNMP traps is not collective as it is for the Status web page signal input reporting as described in the *Status Web Page* on page 28.

The Module Specific Traps are defined in Table 6.

Table 6. Module Specific Signal Status Traps

Trap Type	Trap Source	Trap Severity	Trap Message
Generic	Input 1	Informational	In 1 is now Present
Generic	Input 1	Informational	In 1 is not Present
Generic	Input 1	Warning	In 1 is Not Monitored
Generic	Input 2	Informational	In 2 is now Present
Generic	Input 2	Informational	In 2 is not Present
Generic	Input 2	Warning	In 2 is Not Monitored

Refer to *8900NET (Net Card) Network Interface Module Instruction Manual* for more details on the links to the 8900NET module.

Software Updating

If a software update becomes available for this module, the software upgrade procedure will be described in the specific release notes posted on the Thomson Grass Valley ftp and web sites.

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:

http://www.thomsongrassvalley.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 Thomson 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 18. 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 12 on page 26 for an example.
- Module Status web page (Figure 14 on page 29) – shows specific input and reference signal configuration error status to the module along with module status and information (part number, serial number, hardware version, software/firmware/boot versions, and Asset number (as assigned on the Slot Config web page).
- A Status LED icon on each web page reflects the module status on the module Status web page where warnings and faults are displayed and is a link to the module Status web page.

SNMP Reporting

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

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

Specifications

Table 7. 8937 and 8937D Specifications

Parameter	Value
Serial Digital Component Inputs	
Number of inputs	8937: 2 BNC differential loop-through 8937D: DA 1 – 2 BNC loop-through 8937D: DA 2 – 1 terminated BNC
Input impedance	High Z
Signal type	Conforming SDI SMPTE 259M (143 Mb/s, 177 Mb/s, 270 Mb/s, 360 Mb/s), DVB-ASI (passing 50 Mb/s to 360 Mb/s with maximum P/N of 19/1)
Reclocked data rates	143 Mb/s, 177 Mb/s, 270 Mb/s, and 360 Mb/s
Supported data rates	50 Mb/s to 360 Mb/s with maximum P/N of 19/1
Signal level	SDI 800 mV p-p (± 10% maximum)
Return loss	> 15 dB, 4 MHz to 360 MHz
Automatic cable equalization (1694A cable)	Up to 300 meters for SDI SMPTE signals up to 270 Mb/s Up to 200 meters up to 360 Mb/s
Serial Digital Component Outputs	
Number of outputs	8937: 8 BNCs 8937D: DA 1 – 3 BNCs 8937D: DA 2 – 4 BNCs
Output impedance	75 ohm
Signal types	Conformed SDI SMPTE 259M (143 Mb/s, 177 Mb/s, 270 Mb/s, 360 Mb/s), DVB-ASI (passing 50 Mb/s to 360 Mb/s with maximum P/N of 19/1)
Signal level	SDI 800 mV p-p (± 10% maximum)
Return loss	> 15 dB 4 MHz to 360 MHz
Error checking	Transparent to embedded EDH
Electrical length	< 20 ns
Output polarity	Non-inverted
Rise and fall time	400 – 700 ps
Jitter	< 0.2 UI
Environmental	
Frame temperature range	Refer to frame specification
Operating humidity range	10 to 90% non-condensing
Non-operating temperature	–10 to + 70 degrees C
Mechanical	
Frame type	Gecko 8900 Video GeckoFlex with 8900V-R Rear Module Video/8800/8500 (with trace cut and with certain power and return loss limitations)
Rear retainer clip screw torque	4-5 inch-lb/0.45-0.6Nm
Power	
Power consumption	< 3 W

Service

The 8937 and 8937D 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 directed otherwise by Customer Service.

If your module is not operating correctly, proceed as follows:

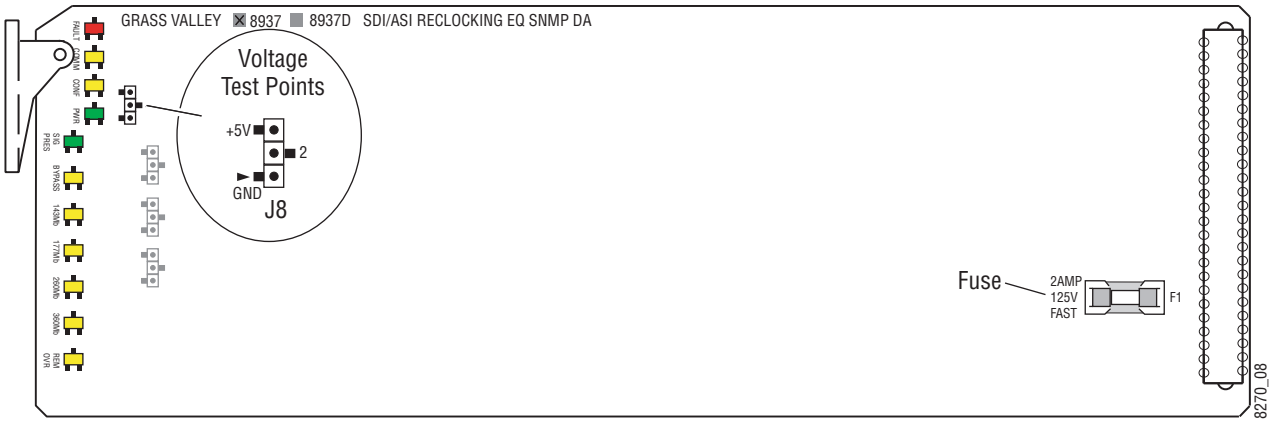
- Check frame and module power and signal present LEDs.
- Verify power at the voltage testpoints (see Figure 21) and check fuse if no voltage is detected.
- Check for presence and quality of input signals.
- Verify that source equipment is operating correctly.
- Check cable connections.

Refer to Figure 7 on page 17 for the location of the PWR LED and Table 2 on page 18 for proper LED indications.

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

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

Figure 21. 8937 and 8937D Fuse and Voltage Testpoint Locations



Functional Description

Input and Output Processing

The input section(s) receive SD (standard definition) video from the rear input BNCs and send it to signal equalizing and reclocking circuits. The input section can also bypass reclocking circuits to the output amplifiers. The output amplifiers drive eight equal-phase outputs on the rear backplane for the 8937 and one set of four outputs and one set of three outputs for the 8937D.

Note All outputs are in phase with the input signal.

Microprocessor and Input Selector

The primary purpose of the microprocessor is to provide remote control and monitoring capability for the module. It receives signal present, signal lock, and speed detection signals from the equalizer and reclocker circuits. Using this information, local jumper settings, and remote control commands, the microprocessor selects the internal signal path and gives feedback through the LEDs and remote control bus.

User-enabled video presence detection generates individual SNMP traps for each channel that can be sent to an SNMP manager via the microprocessor

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