

8985FSP/FS

SD/HD FRAME SYNC/PROC AMP

Release Notes

SOFTWARE VERSION 1.2.0

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8985FSP/FS Release Notes

Introduction

This document provides information on the latest release of the software for use with the 8985FSP and FS modules. The 8985PRC module is not included in this update.

Read this document completely before attempting to download the latest software.

This document details:

- Version 1.2.0 Software Release Features and Issues ([page 1](#)), and
- Acquiring and Installing software ([page 50](#)).

Version 1.2.0 Software Release

Version 1.2.0 provides the following new features for the module:

- The 8900GEN-SM submodule which previously could provide only a Local genlock reference to the host module, can now be configured to provide two frame bus references, a primary and a secondary (from host modules installed in slot 1 and slot 3) that can be distributed throughout the entire frame.

In addition, Genlock configuration and timing controls are now available on the Genlock web page for enabling the Genlock submodule, setting the frame rate for the input reference and adjusting external reference signal timing.

- Frame Sync features now include a Minimum Delay Mode that can be enabled to force the throughput delay to a minimum of 300 pixels. A Multi-Frame Delay control for adding up to 6 frames of delay has also been added. A Delay Wrap Position graphic is also now present on the Frame Sync web page.

The following issues should be noted for this release:

- After updating the software to version 1.2.0, factory defaults must be recalled for the Genlock submodule to operate properly. The current settings cannot be saved and recalled. Record your current settings by writing them down or taking screen shots of the setting on each web page before installing the new software.
- Front edge local controls are no longer operable on this module. Configuration of this module requires remote control with an 8900NET module in the GeckoFlex frame.
- The 8900NET module now required for monitoring and configuring this module must be running version 4.0.2 software to operate properly. Refer to [Acquiring 8900NET Software on page 50](#).
- When using the Primary and Secondary Redundant configuration with 8900GEN-SM submodules in slot 1 and slot 3, input timing references associated with 24 Hz will display a momentary disturbance in the output video when switching between the two references.
- The fiber optic inputs on the 8900GFR-R rear module are now rearranged from the previous version of software (v1.0.0) so the Fiber Video In/Out 1 is on the bottom and the Fiber In/Out 2 is on the top as shown in [Figure 1](#).

Figure 1. Fiber Optic Connectors

I/O Config

Model: 8985FSP+GEN Description: HD/SD FS Proc Amp
 Frame Location: QA - BAY9 , Slot: 5
 Input Video Standard: 1080i/59.94 Input Video: Coax Input : Present
 Output Timing Source: Local Split Screen: Disabled

Rear Connections

Signal Names	Reporting Enabled						Reporting Enabled	Signal Names
Ref Input	<input checked="" type="checkbox"/>	Genlock Ref In Loop	J1		J2	Audio Tracking Delay		
			J3		J4	Audio Tracking Delay		
		Output	J5		J6	Output		
		Output	J7		J8	Output		
Coax Input	<input checked="" type="checkbox"/>	COAX Video Input	J9					
						Fiber Video In/Out 2	<input checked="" type="checkbox"/>	Fiber 2
						Fiber Video In/Out 1	<input checked="" type="checkbox"/>	Fiber 1

Legend:
Present Not Present Not Monitored

Revised Fiber optic connector layout.

8900GEN-SM Enhancements

The release of version 1.2.0 software for the 8985FSP and FS modules allows enabling of two frame bus references to be configured when a compatible GeckoFlex module with an 8900GEN-SM submodule installed is present in slot 1 (Ref Bus 1) and/or in slot 3 (Ref Bus 2) of the frame. Jumpers on the host module circuit boards in slot 1 and slot 3 must be set for outputting these frame bus references.

The general installation, operation, and configuration of the Genlock submodule, as well as the newest functionality and applications described here, is described in the 8900GEN-SM Instruction Manual and the 8985FSP/FS/PRC v1.2.0 Instruction Manual available online in PDF format at this URL on the Thomson Grass Valley web site:

<http://www.thomsongrassvalley.com/docs/>

From this link, select **Broadcast Products**, then **Modular Products** from the Documentation table. Scroll down to the **GeckoFlex Flexible Frame Supporting Audio/Video Module** heading and locate the 8985FSP/FS/PRC and the 8900GEN-SM GeckoFlex Genlock submodule links.

New Genlock Submodule Functionality

Before installing the 8900GEN-SM submodule on the 8985FSP/FS module, it is important to understand the various ways that the 8900GEN-SM can be used and how genlock timing can be configured.

The 8900GEN-SM submodule can provide a local external genlock timing reference to the host module it is mounted on or it can be configured to transmit an external reference to the entire GeckoFlex frame on one of two frame buses.

When a GeckoFlex host module with an 8900GEN-SM submodule is installed in slot 1 it can be configured to transmit the external reference fed to the Genlock Loop BNCs on the rear module to Frame Bus 1. Frame Bus 1 is available to every slot in the GeckoFlex frame. Another GeckoFlex module in the frame must have frame sync capability and be configured to accept this frame reference.

Frame Bus 2 can be transmitted from the GeckoFlex host module with an 8900GEN-SM submodule when the host module is installed in slot 3 of the frame. This bus is also fed to every slot in the GeckoFlex frame. The choice of which frame reference to use is made on the System Config web page for each individual module in the frame. This allow two different references to be fed simultaneously to the entire frame.

This functionality allows for a Primary and Secondary redundant configuration. This application allows a house reference input to be designated as the Primary timing source while a backup Secondary house reference can be configured to automatically take the place of the Primary if it fails. When the Primary timing source recovers, the user can set the system to return to the Primary source automatically or to reset the Primary manually and can also set the amount of time before the restored Primary is switched back.

The configuration of Frame Bus 1 from slot 1 and Frame Bus 2 from slot 3 cannot be changed, so plan the placement of your GeckoFlex modules to take advantage of the versatility of this functionality. This section provides you with some ideas for taking advantage of the full potential of the Genlock function.

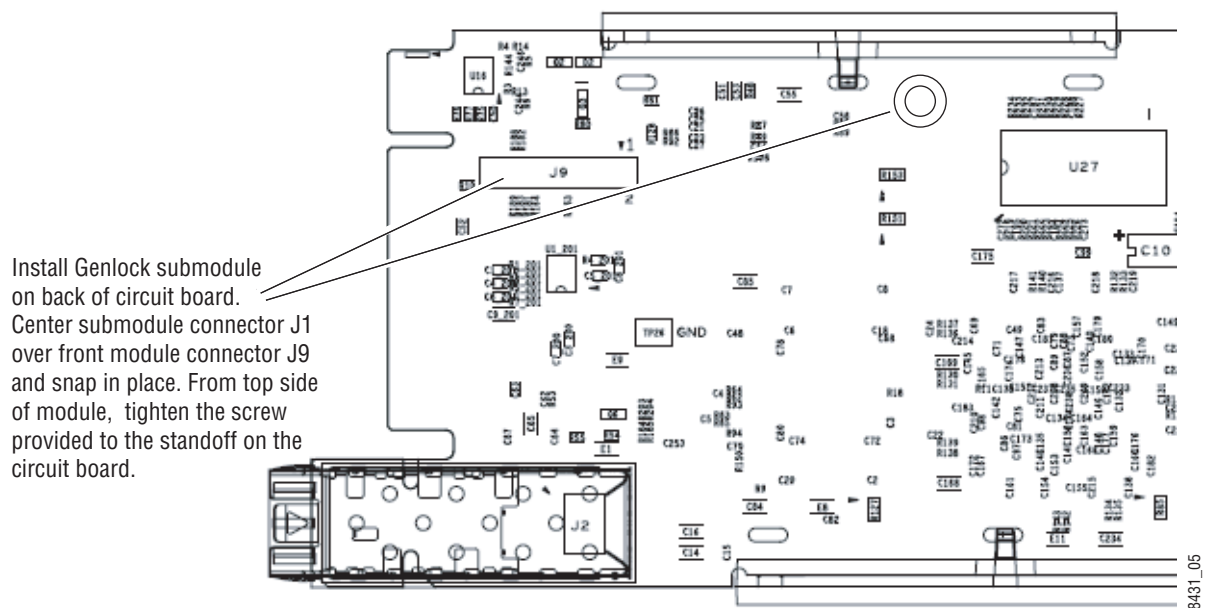
8900GEN-SM Submodule Installation

The Genlock submodule will ship separately and must be mounted on the 8985FSP or FS module. The positioning of the submodule on the module will depend on what type of reference timing configuration you are using. Read [8900GEN-SM Applications on page 20](#) to determine the desired application for using your 8900GEN-SM submodule(s).

To install a submodule onto the main circuit board, follow the instructions below:

1. Locate the Genlock connector J9, on the back side of the 8985FSP circuit board (Figure 2).
2. Line up the connector on the submodule, J1, with J9 on the front module and snap the submodule into place making sure the holes in each circuit board line up.
3. To hold the submodule in place, attach the screw provided from the top of the front module to the standoff on the front module circuit board.
4. To remove the submodule, loosen the screw and carefully pull the submodule off the circuit board.

Figure 2. Installing Genlock Submodule



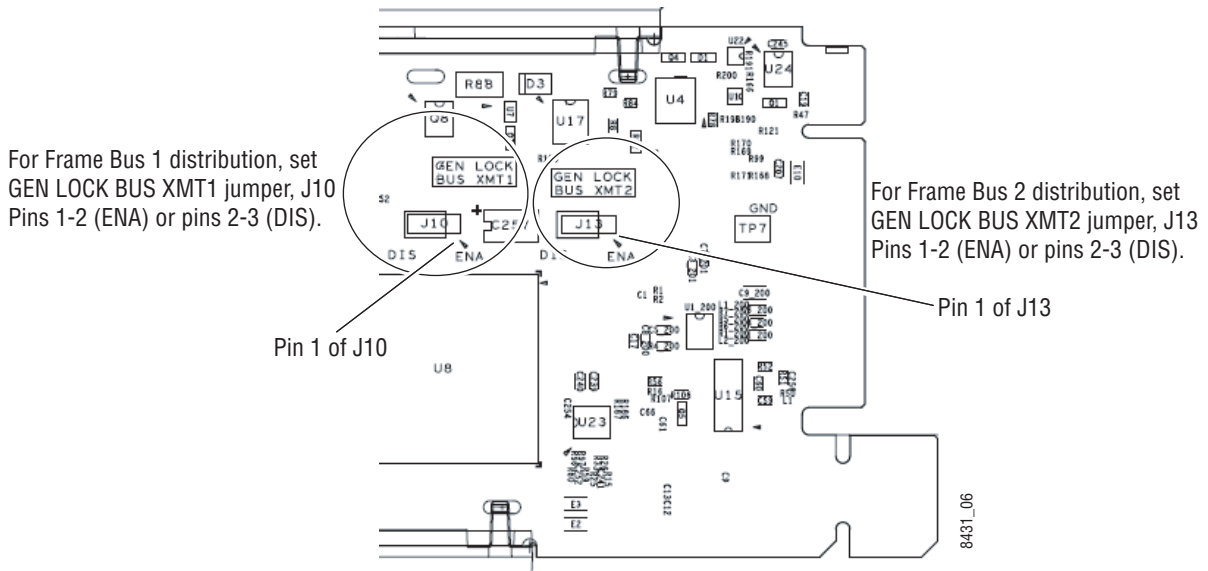
Frame Bus Jumpering

If you will be using the module in slot 1 or slot 3 to distribute Frame Bus 1 or Frame Bus 2, you must set a jumper on the 8985FSP or FS circuit board for this purpose before installing the module.

- Frame Bus 1 – to transmit the reference connected to the Genlock Loop BNC on the corresponding rear module on Frame Bus 1, set jumper J10 shown in [Figure 2](#) to **ENA** (pins 1-2). This module must be installed in Slot 1 of the frame and configured on the Genlock web page (see [Primary and Secondary Redundancy Configuration on page 22](#)) to drive **Ref Bus 1** in the Drive Frame Reference Bus pulldown.
- Frame Bus 2 – to transmit the reference connected to the Genlock Loop BNC on the corresponding rear module on Frame Bus 2, set jumper J13 to **ENA** (pins 1-2). This module must be installed in Slot 3 of the frame and configured on the Genlock web page (see [Primary and Secondary Redundancy Configuration on page 22](#)) to drive **Ref Bus 2** in the Drive Frame Reference Bus pulldown.

Note Both jumpers may be enabled. The module in slot 1 will only read the status of jumper, J10. The module in slot 3 will only read the status of jumper, J13.

Figure 3. Setting Frame Bus Jumpers – 8985FSP Module



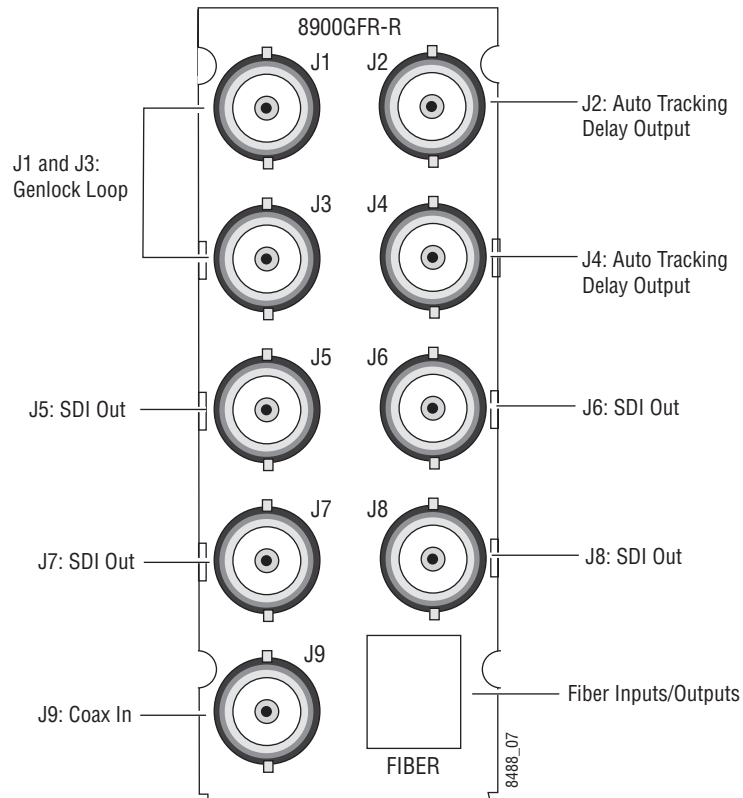
Cabling

The 8900GEN-SM submodule mounts on any compatible GeckoFlex module in a GeckoFlex frame as described in [Frame Bus Jumpering on page 6](#). The genlock signals to be distributed as frame bus references or a local reference for the host module are connected to the Genlock Loop BNCs J1 or J3 of the host rear module.

Refer to the 8900GFR-R rear module example in [Figure 4](#) which illustrates the rear module used with the 8985FSP or FS module. Connect the desired genlock reference input to one of the BNCs, J1 or J3. Either loop the input to another destination or terminate the unused BNC in 75 ohms.

The video input to the module at BNC J9 must be the same frame rate (or one of the compatible frame rates listed in [Table 1 on page 8](#)) as the reference input if this reference is selected on the System Config web page.

Figure 4. Cabling the Genlock Loop Inputs



The external reference fed to the Genlock submodule must then be configured to one of the frame rates in the Input Standard Selection pulldown on the Genlock web page. [Table 1](#) lists the available frame rates in the pulldown and the compatible reference inputs that will report a locked condition on the Genlock web page.

Note If the Input Selection Standard selected on the Genlock web page does not match the reference input exactly, a warning will be generated. Refer to [Figure 12 on page 25](#).

Table 1. Reference Frame Rate Compatibility

Input Standard Selection (Genlock web page)	Reference Detected	Mismatch Warning
NTSC	NTSC	None
	1080i 59.94 TLS	Yes ¹
	720p 59.94	Yes ¹
PAL	PAL	None
	1080i 50 TLS	Yes ¹
	720p 50 TLS	Yes ¹
1080i 59.94 TLS	1080i 59.94 TLS	None
	NTSC	Yes ¹
	720p 59.94 TLS	Yes ¹
720p 59.94 TLS	720p 59.94 TLS	None
	NTSC	Yes ¹
	1080i 59.94 TLS	Yes ¹
1080i 50 TLS	1080i 50 TLS	None
	PAL	Yes ¹
	720p 50 TLS	Yes ¹
720p 50 TLS	720p 50 TLS	None
	PAL	Yes ¹
	1080i 50 TLS	Yes ¹
1080p 24 TLS	1080ip 24 TLS	None
	1080sf 24 TLS	Yes ¹
	PAL	Yes ¹
	1080i 50 TLS	Yes ¹
	720p 50 TLS	Yes ¹
1080sf 24 TLS	1080isf 24 TLS	None
	1080p 24 TLS	Yes ¹
	PAL	Yes ¹
	1080i 50 TLS	Yes ¹
AES 48K	720p 50 TLS	Yes ¹
	AES 48K	None
	AES 96K	Yes ¹
	Word Clock 48K	Yes ¹
	Work Clock 96K	Yes ¹

Table 1. Reference Frame Rate Compatibility

Input Standard Selection (Genlock web page)	Reference Detected	Mismatch Warning
AES 96K	AES 96K	None
	AES 48K	Yes ¹
	Word Clock 48K	Yes ¹
	Work Clock 96K	Yes ¹
Word Clock 48K	Word Clock 48K	None
	AES 48K	Yes ¹
	AES 96K	Yes ¹
	Work Clock 96	Yes ¹
Word Clock 96K	Word Clock 96K	None
	AES 48K	Yes ¹
	AES 96K	Yes ¹
	Work Clock 48K	Yes ¹

¹ This input standard will lock but will generate a Warning on both the Genlock and Status web pages but will not affect the locked condition.

Configuring the Genlock Submodule

Configuration and monitoring of the Genlock submodule is done primarily with the host module Status, System Config, and Genlock web pages. This section gives a general overview of the controls that pertain to the Genlock submodule. The examples used here are using an 8985FSP module.

Status Web Page

As shown in the example of the 8985FSP module in [Figure 5](#), the presence of a genlock submodule is reported in the top graphic portion of the host module Status web page. In this example no genlock module is detected on the host module in slot 1 of the frame.

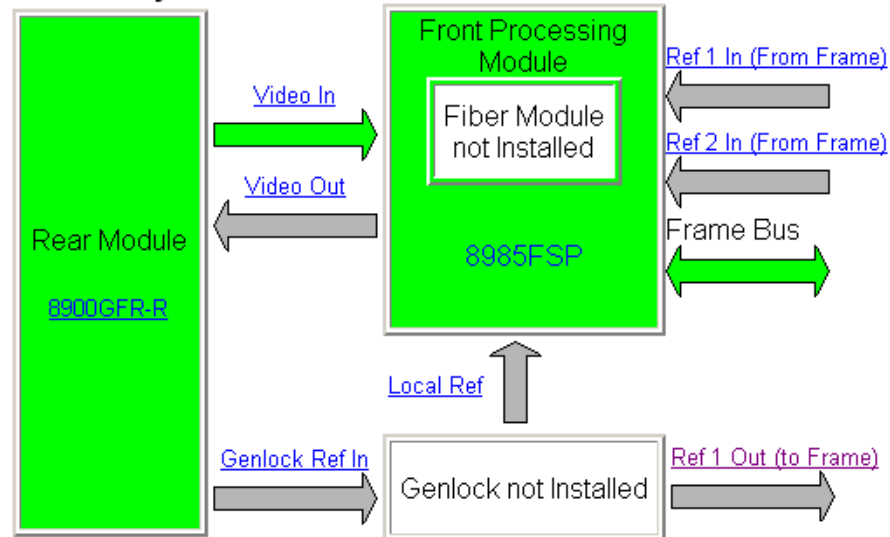
The Genlock Ref In, Local Ref, Ref 1 Out (to Frame), Ref 1 In (From Frame), and Ref 2 In (From Frame) indicator arrows are grayed out as no genlock is available and no functionality can be enabled. These are the main components related to the Genlock submodule on the Status web page.

Figure 5. No Genlock Module Installed



Status
 Model: [8985FSP](#) Description: [HD/SD FS Proc Amp](#)
 Frame Location: [QA Bay 2- test](#) , Slot: [1](#)
 Input Video Standard: [1080i/59.94](#) Input Video: : [Present](#)
 Output Timing Source: [Input Video](#) Split Screen: [Disabled](#)

Module Physical Structure



As shown in [Figure 6](#), a genlock submodule has been installed on the 8985FSP module and configured for full functionality. Note that the name of the host module (circled in the figure) now has a + GEN extension indicating the presence of a genlock module.

[1 8985FSP+GEN](#)

[Status](#)
[I/O Config](#)
[Video Input](#)
[System Config](#)
[Frame Sync](#)
[Color Correction](#)
[Video Proc](#)
[User Settings](#)
[Genlock](#)
[Video Out](#)
[Slot Config](#)

The web page links for the host GeckoFlex module, shown at left, will now also include a link to the Genlock web page.

The Genlock module graphic now indicates it is present. The colors of the graphic boxes and arrows indicate the following in general about the presence and status of the reference signal(s):

- Green – reference signal or bus is enabled, signal is present and locked, and video/reference input is compatible with reference input frame rate.
- Yellow – reference signal is missing, freerunning (invalid), or reference signal does not match selected genlock standard format.
- Gray – reference bus is not enabled or reference signal is not available or configured for use (no genlock installed).

Figure 6. Status Web Page of Host Module



Status

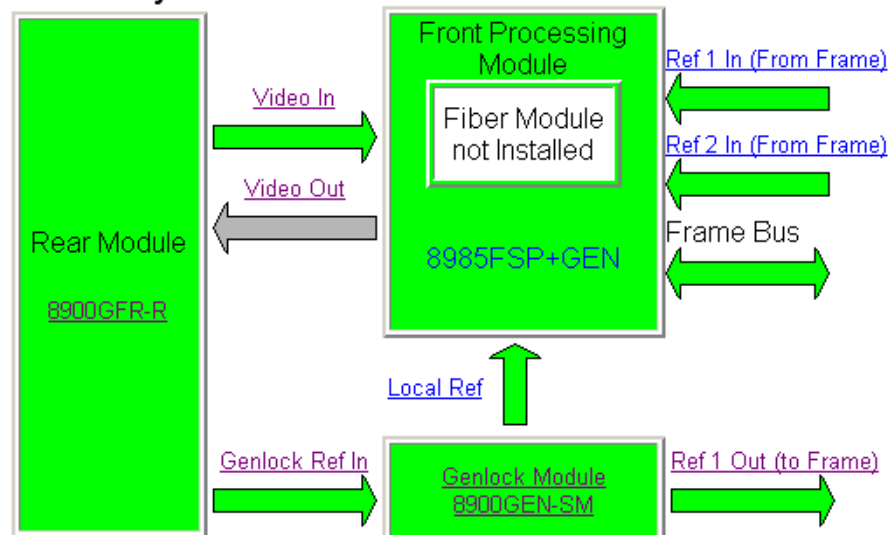
Model: **8985FSP+GEN** Description: HD/SD FS Proc Amp

Frame Location: QA Bay 2- test , Slot: 1

Input Video Standard: 1080i/59.94 Input Video: : Present

Output Timing Source: Ref Bus 1 Split Screen: Disabled

Module Physical Structure



The arrows referring to the reference signal in the upper graphic portion of the Status web page represent the following:

- Genlock Ref In – this arrow indicates a genlock reference is connected to the Genlock Loop on the host rear module. Clicking on this link will open the host module I/O Config web page where a signal name can be assigned to this input.
- Genlock Module 8900GEN-SM – clicking on this link will bring up the Genlock web page where the configuration of the Genlock submodule can be performed. See [8900GEN-SM Applications on page 20](#).
- Local Ref – this arrow reports the presence and status of an input from the Genlock Loop. This signal is available to the host module as a Local reference processed on the Genlock submodule. Selecting this link opens the host module System Config web page where the desired output timing reference can be selected.
- Ref 1 Out (to Frame) – this arrow indicates the Ref 1 frame bus is available from this module. Only the host module with a Genlock submodule installed in slot 1 of the frame has this arrow. Selecting this link will bring up the host module I/O Config page.

Note A host module with a Genlock submodule installed in slot 3 of the frame will show this arrow as Ref 2 Out (to Frame).

- Ref 1 In (from Frame) – this arrow represents the status of the Ref 1 frame bus. Clicking this link will bring up the Genlock web page for the host module in slot 1 of the frame.
- Ref 2 In (from Frame) – this arrow represents the status Ref 2 frame bus. Clicking this link will bring up the Genlock web page for the host module in slot 3 of the frame.

Genlock Web Page

[1 8985FSP+GEN](#)

[Status](#)

[I/O Config](#)

[Video Input](#)

[System Config](#)

[Frame Sync](#)

[Color Correction](#)

[Video Proc](#)

[User Settings](#)

[Genlock](#)

[Video Out](#)

[Slot Config](#)

The Genlock web page ([Figure 7 on page 14](#)) provides reporting status for the following genlock status items:

- Genlock – reports status of Genlock function as **Enabled** or **Freerun**.
- Status – reports whether the reference input is **Locked** or **Invalid**.
- Firmware Version – reports the firmware version of the 8900GEN-SM submodule installed on this host module.
- Hardware Version – reports the hardware version of the 8900GEN-SM submodule installed on this host module. (See [Figure 8 on page 15](#) if a hardware message appears on the Genlock web page>)
- Ref Input Standard – reports the reference input standard recognized by the 8900GEN-SM submodule that is connected to the Genlock Loop on the host rear module.
- Ref Input Frame Rate – reports the frame rate of the reference input as recognized by the submodule.
- Output Bus Frame Rate – reports the frame rate being output on the frame bus.
- Output Bus – reports the reference bus (Ref Bus 1 or Ref Bus 2) being output from the submodule.

Genlock Control

The following controls are available for configuring the Genlock submodule:

- **Enable** or **Freerun** – select one of the radio buttons to enable the Genlock submodule or allow the reference to freerun.
- **Input Standard Selection** – use this control to set the input standard needed for the reference input. Refer to [Table 1 on page 8](#) for compatible rates.
- **Loop Bandwidth** – set this control for either fast locking (**Fast Lock**) to the reference or for the lowest jitter performance (**Low Jitter**) depending on the stability of the reference signal being used. For example, if Low Jitter is selected and the Status is still **Invalid** after one minute has passed, the input reference has excessive wander that cannot be tracked in Low Jitter mode. Switch to **Fast Lock** and verify Status is **Locked** after about 10 seconds.

Genlock Timing

Use the following controls to adjust the output timing of the genlock reference signal from this submodule:

- **Line Offset** – adjust the reference timing stream by standard definition line steps up to one full frame.
- **Coarse Offset** – provides coarse adjustment of the reference timing stream by 37 ns steps up to one line.
- **Fine Offset** – provides fine adjustment of the reference timing stream by steps up to 37 ns.

Figure 7. Genlock Web Page

Genlock

Model: 8900GEN-SM Description: GeckoFlex Genlock Submodule
 Genlock: Enabled Ref Input Standard: 1080i 59.94
 Status: Locked Ref Input Frame Rate: 29.97
 Firmware Version: 6 Output Bus Frame Rate: 29.97
 Hardware Revision: 1 Output Bus: Ref2

Genlock Control

Genlock: Enable Freerun

Input Standard Selection: 1080i 59.94

Loop Bandwidth: Low Jitter Fast Lock

Genlock Bus Timing

Line Offset	Coarse Offset (37ns)
<< < 0 * > >> < >	<< < 0 * > >> < >
Fine Offset (37ns/256)	
<< < 0 * > >> < >	

Drive Frame Reference Bus: Auto

Defaults

If the message “AES Ref Input Selection requires Hardware Version 1 or greater” appears under the header information (Figure 8), the submodule has an earlier firmware and hardware version. This version hardware will not work with the AES frame rates. If you need to use AES, contact Customer Service for how to update this submodule.

Note Reference frame bus functionality is not affected by this older version submodule, only recognition of AES reference frame rates.

Figure 8. Genlock Submodule Hardware Message



Model: 8900GEN-SM Description: GeckoFlex Genlock Submodule
 Genlock: Enabled Ref Input Standard: 1080i 59.94
 Status: Locked Ref Input Frame Rate: 29.97
 Firmware Version: 4 Output Bus Frame Rate: 29.97
 Hardware Revision: 0 Output Bus: Ref2

AES Ref Input Selection requires Hardware Revision 1 or greater

Genlock Control

Genlock: <input checked="" type="radio"/> Enable <input type="radio"/> Freerun
Input Standard Selection: 1080i 59.94
Loop Bandwidth: <input type="radio"/> Low Jitter <input checked="" type="radio"/> Fast Lock

Genlock Bus Timing

<p>Line Offset</p> <p><< < 0 * > >></p> <p> < > </p>	<p>Coarse Offset (37ns)</p> <p><< < 0 * > >></p> <p> < > </p>
<p>Fine Offset (37ns/256)</p> <p><< < 0 * > >></p> <p> < > </p>	

System Config Web Page

[1 8985FSP+GEN](#)

[Status](#)

[I/O Config](#)

[Video Input](#)

[System Config](#)

[Frame Sync](#)

[Color Correction](#)

[Video Proc](#)

[User Settings](#)

[Genlock](#)

[Video Out](#)

[Slot Config](#)

The System Config web page ([Figure 9 on page 17](#)) is used to set the Video Input type and rate and to set up the Output Timing configuration. This section gives a general overview of the controls that pertain to Genlock operation on this host module web page. Refer to [8900GEN-SM Applications on page 20](#) for more specific information on setting up each different type of configuration.

Input Video

Use the following controls to set the video input type and rate.

Note The input video must be set to the same frame rate (or compatible frame rate as listed in [Table 2 on page 18](#)) as the reference input when the input video is associated with the reference input in the Output Timing controls for proper genlocking.

- **Input Type** – select the radio button corresponding to the desired input type.
- **Input Rate** – select the desired input rate from the pull-down.

Output Timing

Select the Primary and Secondary output timing source for the module as either **Local** (external reference from the 8900GEN-SM submodule mounted on this module), **Ref Bus 1** (8900GEN-SM submodule is mounted on module in slot 1 and jumpered for outputting a Ref 1 frame bus), **Ref Bus 2** (8900GEN-SM submodule is mounted on module in slot 3 and jumpered for outputting a Ref 2 frame bus), or **Input**, the reference is taken from the input video. The signal and genlock status of each reference source will be reported in the Status and Genlock columns.

When a Secondary reference source is selected that is different than the Primary, the module can be configured to switch automatically to the Secondary selected if the Primary is lost or becomes unlocked or invalid. If you do not want this action of switching to a secondary, set the Primary and Secondary sources to the same source.

Figure 9. System Config Web Page

System Config

Model: 8985FSP+GEN Description: HD/SD FS Proc Amp

Frame Location: QA Bay 2- test , Slot: 1

Input Video Standard: 1080i/59.94 Input Video: Coax Input : Present

Output Timing Source: Ref Bus 1 Split Screen: Disabled

Input Video		Output Timing				
Input Type	Input Rate	Source Selection	Primary	Secondary	Status	GenLock
<input checked="" type="radio"/> HD 59.94 <input type="radio"/> SD <input type="radio"/> HD 50 <input type="radio"/> HD 24	1080i/59.94	Local	<input type="radio"/>	<input type="radio"/>	Present	Locked
		Ref Bus 1	<input checked="" type="radio"/>	<input type="radio"/>	Present	Locked
		Ref Bus 2	<input type="radio"/>	<input checked="" type="radio"/>	Present	Locked
		Input Video	<input type="radio"/>	<input type="radio"/>	Present	NA

Test Output		Reference Restore	
Colorbars	<input type="checkbox"/> Enabled	Switch to Primary	Auto
		Reference Switchback Delay (Seconds)	
		<< < 30.00 * > >> < >	
		Primary - Secondary Phase Difference	

Split Screen	
Split	<input type="checkbox"/> Enabled
Orientation	Position (%)
<input checked="" type="radio"/> Vertical <input type="radio"/> Horizontal	<< < 50 * > >> < >

Defaults

Table 2. Input Video to Frame Reference Compatibility

Video Input Standard	Reference Detected	Mismatch Warning
480i	NTSC	None
	1080i 59.94 TLS	None
	720p 59.94	Yes ¹
576i	PAL	None
	1080i 50 TLS	None
	720p 50 TLS	Yes ¹
1080i 59.94	1080i 59.94 TLS	None
	NTSC	None
	720p 59.94 TLS	Yes ¹
720p 59.94	720p 59.94 TLS	None
	NTSC	None
	1080i 59.94 TLS	Yes ¹
1080i 50	1080i 50 TLS	None
	PAL	None
	720p 50 TLS	Yes ¹
720p 50	720p 50 TLS	None
	PAL	None
	1080i 50 TLS	Yes ¹
1080p 24	1080ip 24 TLS	None
	1080sf 24 TLS	None
	PAL	Yes ¹
	1080i 50 TLS	Yes ¹
	720p 50 TLS	Yes ¹
1080sf 24	1080isf 24 TLS	None
	1080p 24 TLS	None
	PAL	Yes ¹
	1080i 50 TLS	Yes ¹
	720p 50 TLS	Yes ¹

¹ A warning will be generated on both the Status and Genlock web pages when this condition occurs.

Reference Restore

When the Primary source has failed and the module has switched to the Secondary, the following controls allow you to set the module to switch back to the Primary automatically or manually when it is valid and locked. You may also set the amount of time before the Primary is restored.

- **Switch to Primary** – set this control to **Manual** if you wish to manually return to the Primary reference when it becomes valid and locked again or **Auto** to allow the module to switch back to the Primary reference.
- **Reference Switchback Delay** – when the control above is set for **Auto**, set the amount of time to allow between switching from the Secondary reference back to the restored Primary. The switchback time has a minimum recovery time of 30 seconds to assure that the Primary is locked and valid before the module switches back to this source.

Primary – Secondary Phase Difference

This graphic shows the total phase difference between the Primary and Secondary reference signals when they are set to different sources. When the bar is green and remains in the area before the horizontal indicator, the two references are in a range where switching between the two will show no measurable disturbance in the output video (about 72 ns of delay).

When the phase difference is larger than the recommended amount, the bar will indicate by showing a second red bar. This indicates that the phase difference is now such that switching between the two references will show a disturbance in the output video. This can be caused by a loss of one of the references or a mis-adjustment in the reference output delay of either reference. The total phase error shown in this graphic represents about 1 μ S.

If the red bar appears, check the System Config page for the presence and lock status of both the Primary and Secondary references. If there is a timing difference, use the Genlock web page timing controls to bring the two references into the green bar range. Refer to the [Primary and Secondary Redundancy on page 20](#) for a detailed description for using this function.

8900GEN-SM Applications

This section describes the most common applications for the 8900GEN-SM submodule and give instructions for configuring each application. Use this section as a guide to learning how to use the reference timing and some of the general rules that must be followed for a successful configuration.

These release notes describe three main configurations:

- Primary and Secondary redundancy ([page 20](#))
- Using two different Frame bus references ([page 36](#))
- Using Local and Multiple references together ([page 47](#))

Primary and Secondary Redundancy

One very powerful function for using the dual frame bus configuration is utilizing the 8900GEN-SM for Primary and Secondary redundancy. In this configuration, the host modules in slot 1 and slot 3 with an 8900GEN-SM installed, provide Primary and Secondary genlock timing references on two separate buses that are fed to all modules in the frame.

If a Primary and Secondary reference are selected in configuration and the Primary fails, the Secondary reference will take the place of the Primary. The user can select whether to automatically reinstate the Primary reference when it recovers or it can be reset manually, The user can also select the amount of time to allow before reinstating the Primary.

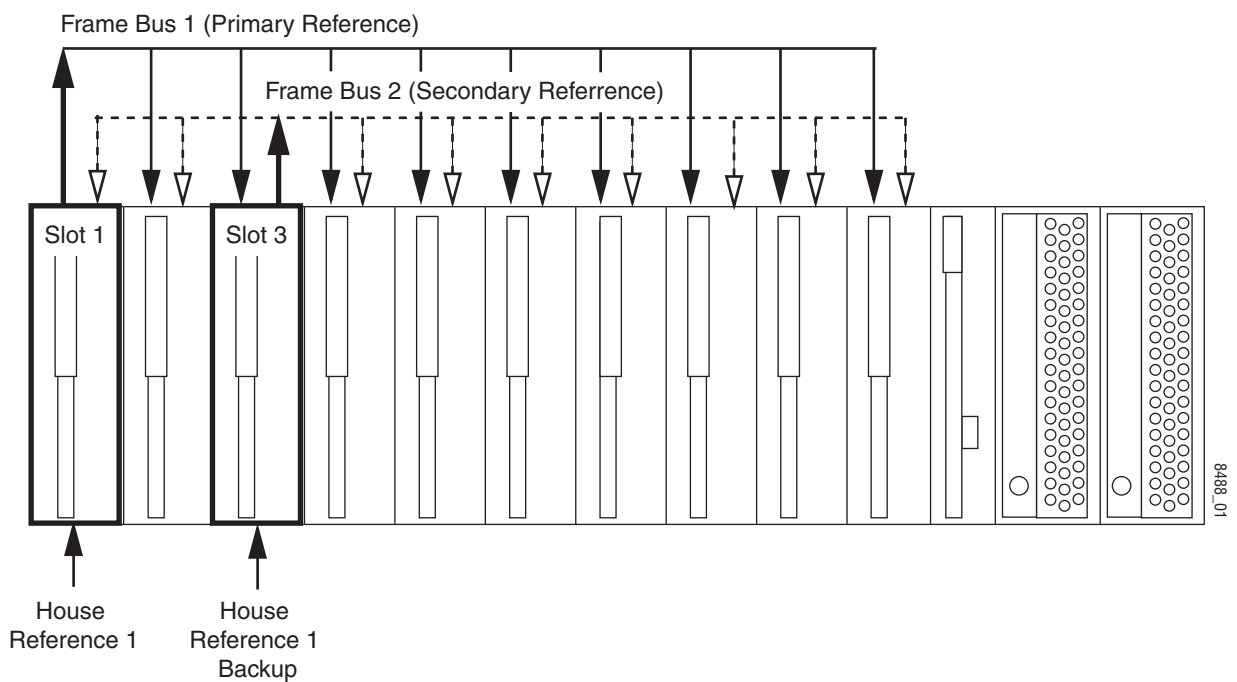
Module Placement and Cabling For Redundant Reference

As shown in the diagram in [Figure 10](#), a house reference is connected to the Genlock Loop of the host module in slot 1 with an 8900GEN-SM sub-module installed. The host module is jumpered for outputting Frame Bus 1.

A separate redundant backup of the house reference is connected to the Genlock Loop of the module with an 8900GEN-SM installed in slot 3. This module is jumpered to output Frame Bus 2. This slot configuration is fixed.

The other modules in the frame are configured for Primary and Secondary redundancy in system configuration. These modules do not require an 8900GEN-SM module to be installed and can accept the frame bus references.

Figure 10. Primary and Secondary Genlock Timing Sources



Primary and Secondary Redundancy Configuration

To use a Primary and Secondary redundancy configuration in your frame you must have the following hardware in place:

- A GeckoFlex module with an 8900GEN-SM submodule installed in slot 1 of the frame. Jumper J10 on the 8985FSP or FS module must be enabled to output Frame Bus 1 (Primary Reference) as described in [Frame Bus Jumpering on page 6](#).
- A GeckoFlex module with an 8900GEN-SM submodule installed in slot 3 of the frame. Jumper J13 on the host module must be enabled to output Frame Bus 2 (Secondary Reference).
- At least one other GeckoFlex module with frame sync capability in any of the other frame slots to set up and test the redundancy configuration. For this example, we will use an 8985FS module installed in slot 10.

Web Page Configuration

Follow the procedure below to set up a Primary and Secondary redundant configuration with the web page controls. Some controls are also available using the Newton control panel.

This example uses 8985FSP + GEN modules with software version 1.2.0. Other GeckoFlex modules with this capability will be very similar. Be sure to consult the host module instruction manual for other updated pertinent information and specific configuration information for that module.

Note For these initial steps, input video is not connected to the modules in slot 1 and slot 3. This can be done later when the redundancy is working correctly. See [Using the Redundant Reference Configuration on page 34](#).

Configure Primary Reference (Slot 1)

1 8985FSP+GEN

[Status](#)

[I/O Config](#)

[Video Input](#)

[System Config](#)

[Frame Sync](#)

[Color Correction](#)

[Video Proc](#)

[User Settings](#)

[Genlock](#)

[Video Out](#)

[Slot Config](#)

1. On the web page interface, locate the module in slot 1 and click on the link to that module. The 8985FSP + GEN links are shown at left.
2. Before beginning any type of configuration, select the link to the User Settings web page and select the **Set Factory Defaults** button to recall factory defaults to the host module and the 8900GEN-SM submodule.
3. Connect the reference signal intended for use as the Primary Frame Bus 1 reference to one of the Genlock Loop BNCs (J1 or J3) on the 8900GFR-R rear module in slot 1. Loop this signal to another location or terminate in 75 ohms.
4. Click on the Genlock web page link. This will bring up the Genlock web page for the module in slot 1, the Primary reference ([Figure 11](#)).

Figure 11. Primary Genlock Web Page



Genlock 

Model: [8900GEN-SM](#) Description: [GeckoFlex Genlock Submodule](#)

Genlock: [Enabled](#) Ref Input Standard: [1080i 59.94](#)

Status: [Locked](#) Ref Input Frame Rate: [29.97](#)

Firmware Version: [66](#) Output Bus Frame Rate: [29.97](#)

Hardware Revision: [1](#) Output Bus: [Ref1](#)

Genlock Control

Genlock: <input checked="" type="radio"/> Enable <input type="radio"/> Freerun
Input Standard Selection: <input type="text" value="1080i 59.94"/>
Loop Bandwidth: <input type="radio"/> Low Jitter <input checked="" type="radio"/> Fast Lock

Genlock Bus Timing

<p>Line Offset</p> <p><< < 0 * > >></p> <p> < > </p>	<p>Coarse Offset (37ns)</p> <p><< < 0 * > >></p> <p> < > </p>
<p>Fine Offset (37ns/256)</p> <p><< < 0 * > >></p> <p> < > </p>	
<p>Drive Frame Reference Bus: <input type="text" value="Auto"/></p>	
<p><input type="button" value="Defaults"/></p>	

5. Set the following parameters on the Genlock web page under Genlock Control:

- Genlock – **Enabled**
- Input Selection Standard – set the pulldown frame rate to match the reference input exactly if possible or set to one of the compatible frame rates given in [Table 1 on page 8](#).

Setting the pulldown to a frame rate that does not match the reference input exactly will produce a warning message as shown in [Figure 12 on page 25](#). The reference signal will still be locked as you will note in the Genlock web page header. This is still a valid condition.

This warning message will also appear on the Status web page for this host module as shown in [Figure 13 on page 26](#). The Genlock Ref In arrow from the host module and the Status LED on the top of the page will be yellow, indicating a warning condition exists. This will not affect the Locked condition.

- Loop Bandwidth – **Fast Lock**
6. Under Genlock Bus Timing, set all the timing controls (Line Offset, Coarse Offset (37ns), and Fine Offset) to 0 (zero).
 7. Set the Drive Frame Reference Bus to **Auto**.
 8. On the Genlock web page, verify that the header reports the Status as **Locked** and the Output Bus as **Ref 1**.

Figure 12. Warning Message on Genlock Web Page

Signal is still locked.

Genlock

Model: 8900GEN-SM	Description: GeckoFlex Genlock Submodule
Genlock: Enabled	Ref Input Standard: 1080i 59.94
Status: Locked	Ref Input Frame Rate: 29.97
Firmware Version: 66	Output Bus Frame Rate: 29.97
Hardware Revision: 1	Output Bus: Ref1

Warning: Reference signal does not match selected standard.

Genlock Control

Genlock: <input checked="" type="radio"/> Enable <input type="radio"/> Freerun
Input Standard Selection: <input type="text" value="NTSC"/>
Loop Bandwidth: <input type="radio"/> Low Jitter <input checked="" type="radio"/> Fast Lock

Genlock Bus Timing

<p>Line Offset</p> <p><< < 0 * > >></p> <p> < ></p>	<p>Coarse Offset (37ns)</p> <p><< < 0 * > >></p> <p> < ></p>
<p>Fine Offset (37ns/256)</p> <p><< < 0 * > >></p> <p> < ></p>	
<p>Drive Frame Reference Bus: <input type="text" value="Auto"/></p>	

Defaults

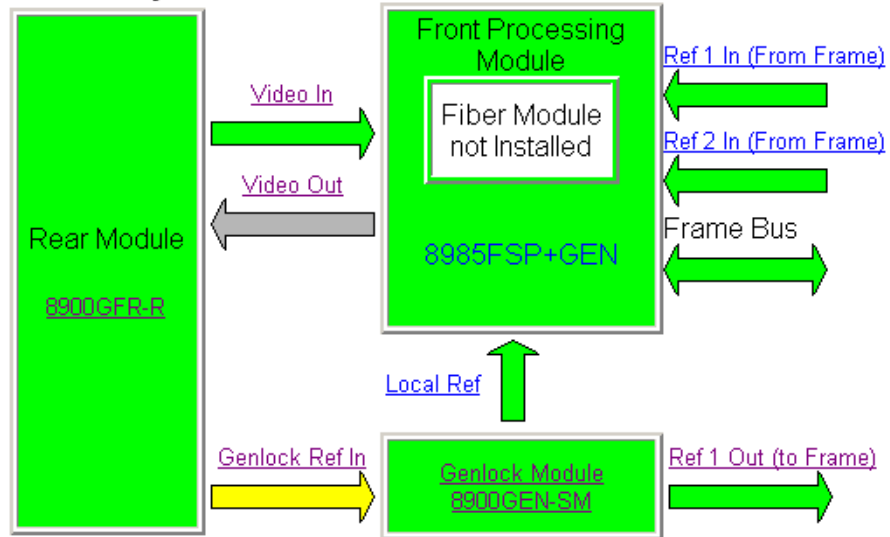
The Warning message will also appear on the Status web page of slot 1. Note that the Status LED is now yellow and the Genlock Ref In arrow is also indicating a warning condition. This will not affect the genlock operation.

Figure 13. Slot 1 Status Web Page with Warning



Model: [8985FSP+GEN](#) Description: [HD/SD FS Proc Amp](#)
 Frame Location: [QA Bay 2- test](#) , Slot: [1](#)
 Input Video Standard: [1080i/59.94](#) Input Video: [Coax Input : Present](#)
 Output Timing Source: [Ref Bus 1](#) Split Screen: [Disabled](#)

Module Physical Structure



Warning: Reference signal does not match selected reference standard.

Status:

Front Module: [PASS](#)
 Rear Module: [PASS](#)
 Genlock Module: [PASS](#)
 Fiber Module: [EMPTY](#)

Front Module:

Part Number: [671-6724----](#)
 Serial Number: [-----](#)
 Hardware Revision: [---](#)
 Firmware Image 1 Version: [1.1.13](#)
 Firmware Image 2 Version: [inactive](#)
 Firmware Image 3 Version: [inactive](#)
 Firmware Image 4 Version: [inactive](#)
 Software Version: [1.2.0](#)
 Boot Version: [1.0.3](#)
 Asset Tag:

Configure Secondary Reference (Slot 3)

[3 8985FSP+GEN](#)

[Status](#)

[I/O Config](#)

[Video Input](#)

[System Config](#)

[Frame Sync](#)

[Color Correction](#)

[Video Proc](#)

[User Settings](#)

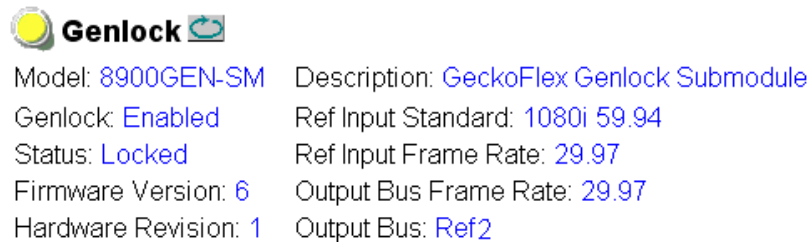
[Genlock](#)

[Video Out](#)

[Slot Config](#)

1. On the web page interface, locate the module in slot 3 and click on the link to that module. The 8985FSP + GEN links are shown at left.
2. Before beginning any type of configuration, select the link to the User Settings web page and select the **Set Factory Defaults** button to recall factory defaults to the host module and the 8900GEN-SM submodule.
3. Connect the reference signal intended to be used as the Secondary Frame Bus 2 reference to one of the Genlock Loop BNCs (J1 or J3) on the 8900GFR-R rear module in slot 3. Loop this signal to another location or terminate in 75 ohms.
4. Select the Genlock link on the left to bring up the Genlock web page for the module in slot 3 (Figure 14). This will be the Secondary reference.

Figure 14. Secondary Genlock Web Page



Model: 8900GEN-SM	Description: GeckoFlex Genlock Submodule
Genlock: Enabled	Ref Input Standard: 1080i 59.94
Status: Locked	Ref Input Frame Rate: 29.97
Firmware Version: 6	Output Bus Frame Rate: 29.97
Hardware Revision: 1	Output Bus: Ref2

Genlock Control

Genlock: <input checked="" type="radio"/> Enable <input type="radio"/> Freerun
Input Standard Selection: <input type="text" value="1080i 59.94"/>
Loop Bandwidth: <input type="radio"/> Low Jitter <input checked="" type="radio"/> Fast Lock

Genlock Bus Timing

<p>Line Offset</p> <p><< < 0 * > >></p> <p> < > </p>	<p>Coarse Offset (37ns)</p> <p><< < 0 * > >></p> <p> < > </p>
<p>Fine Offset (37ns/256)</p> <p><< < 0 * > >></p> <p> < > </p>	

Drive Frame Reference Bus: <input type="text" value="Auto"/>
--

[Defaults](#)

5. Set the following parameters under Genlock Control on the Genlock web page for slot 3:
 - Genlock – **Enabled**
 - Input Selection Standard – set to match the reference input exactly if possible or set to one of the compatible rates given in [Table 1 on page 8](#).

Note Set this pulldown to the same frame rate as the pulldown on the slot 1 Genlock page.

- Loop Bandwidth – **Fast Lock**
6. Under Genlock Bus Timing, set all the timing controls (Line Offset, Coarse Offset (37ns), and Fine Offset) to 0 (zero).
 7. Set the Drive Frame Reference Bus to **Auto**.
 8. On the Genlock web page, verify that the header reports the Status as **Locked** and the Output Bus as **Ref 2**.

Configure GeckoFlex Module for Testing Redundancy

[10 8985FS](#)

[Status](#)

[I/O Config](#)

[Video Input](#)

[System Config](#)

[Frame Sync](#)

[User Settings](#)

[Video Out](#)


[Slot Config](#)

1. Connect an SDI video signal with a frame rate matching the frame rate of the reference input (or a compatible frame rate as given in [Table 1 on page 8](#)) to the video input (J10) of the corresponding rear module for the GeckoFlex module you are using to set up and test redundancy. For this example we are using an 8985FS module (with no Genlock submodule installed) in slot 10 of the frame.
2. Locate this module in the frame using your web browser and click on the System Config web page (8985FS links are shown at left).
3. On the System Config web page ([Figure 15 on page 30](#)), select the Input type to a video format matching that of the reference input signal.
4. Set Ref Bus 1 to be the Primary Output Timing source.
5. Set Ref Bus 2 to be the Secondary Output Timing source.
6. Refresh the web page with the control at the top of the page.
7. Verify that both Ref Bus 1 and Ref Bus 2 report **Present** and **Locked** in the Status and Genlock columns.
8. Verify that the Output Timing Source reported in the System Config web page header reports **Ref Bus 1**.
9. Set the Reference Restore Switch to Primary control to **Auto** and the Reference Switchback Delay (Seconds) to the minimum value of **30.00** seconds.
10. Verify that the Primary to Secondary Phase Difference bar in the graphic is green and does not extend to the right of the horizontal tick mark on the black scale bar as shown in [Figure 15 on page 30](#).

The full length of the scale bar represents delay differences greater than 1 microsecond. The tick mark represents a delay difference of approximately 72 nanoseconds. This is the amount of delay difference (< 72 ns) that allows the Primary to switch to the Secondary with no noticeable disturbance in the output video.

11. If the Primary to Secondary Delay extends to the right of the tick mark, go back to the Genlock web page for the Secondary Ref Bus 2 in slot 3 and increase the Coarse Offset from 0 to 1 pixel (37 ns).
12. Return to the System Config web page and refresh the page. Note if the green bar has extended further to the right or has shifted to the left (reduced the difference). If this has shortened the green bar, use the controls on the slot 3 genlock web page to minimize the timing difference between the Primary and Secondary references until the green bar is similar to the one in [Figure 15 on page 30](#).

Figure 15. System Config Web Page

System Config 

Model: [8985FS](#) Description: [HD/SD Frame Sync](#)
 Frame Location: [QA Bay 2- test](#) , Slot: [10](#)
 Input Video Standard: [1080i/59.94](#) Input Video: : [Present](#)
 Output Timing Source: [Ref Bus 1](#) Split Screen: [Disabled](#)

Input Video

Input Type	Input Rate
<input checked="" type="radio"/> HD 59.94	1080i/59.94 ▾
<input type="radio"/> SD	
<input type="radio"/> HD 50	
<input type="radio"/> HD 24	
<input type="radio"/> HD 24	

Output Timing

Source Selection	Primary	Secondary	Status	GenLock
Local	<input type="radio"/>	<input type="radio"/>	Not Supported	-
Ref Bus 1	<input checked="" type="radio"/>	<input type="radio"/>	Present	Locked
Ref Bus 2	<input type="radio"/>	<input checked="" type="radio"/>	Present	Locked
Input Video	<input type="radio"/>	<input type="radio"/>	Present	NA

Test Output

Colorbars Enabled

Reference Restore

Switch to Primary Auto ▾

Reference Switchback Delay (Seconds)

<< < 30.00 * > >>
 |< _____ >|

Primary - Secondary Phase Difference

Split Screen

Split Enabled

Orientation	Position (%)
<input checked="" type="radio"/> Vertical	<< < 50 * > >> < >
<input type="radio"/> Horizontal	

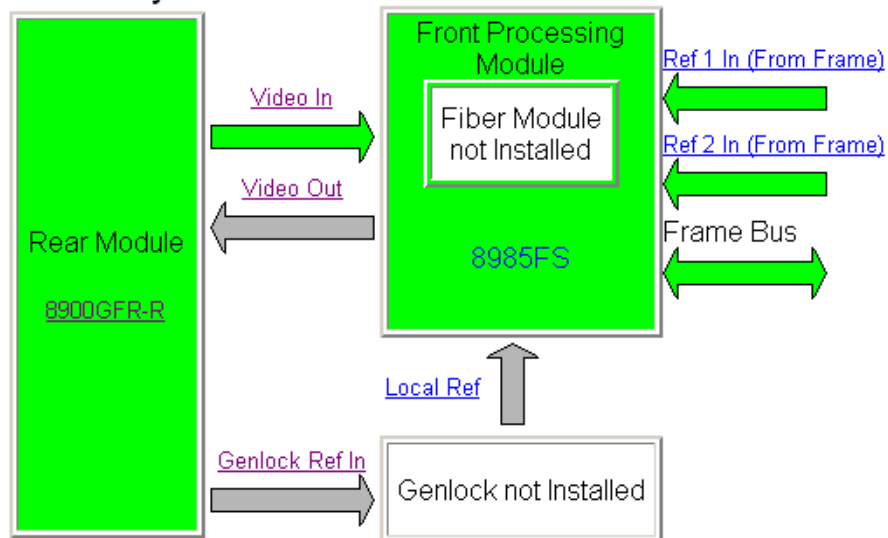
13. On the Test module in slot 10, select the link to the Status web page. Verify there are no warnings about the input video not matching the selected input type or that the input video does not match the frame rate of the selected genlock reference. Note that other messages may be present but do not affect the operation of this redundancy configuration.

Figure 16. Test Module Status Web Page



Model: [8985FS](#) Description: [HD/SD Frame Sync](#)
 Frame Location: [QA Bay 2- test](#) , Slot: [10](#)
 Input Video Standard: [1080i/59.94](#) Input Video: : [Present](#)
 Output Timing Source: [Ref Bus 1](#) Split Screen: [Disabled](#)

Module Physical Structure



[Genlock Module is not installed](#)

Status:

Front Module: [PASS](#)
 Rear Module: [PASS](#)
 Genlock Module: [EMPTY](#)
 Fiber Module: [EMPTY](#)

Front Module:

Part Number: [671-6724----](#)
 Serial Number: [-----](#)
 Hardware Revision: [---](#)
 Firmware Image 1 Version: [1.1.13](#)
 Firmware Image 2 Version: [inactive](#)
 Firmware Image 3 Version: [inactive](#)
 Firmware Image 4 Version: [inactive](#)
 Software Version: [1.2.0](#)
 Boot Version: [1.0.3](#)
 Asset Tag:

Testing Redundancy

To test the Primary to Secondary redundancy, use the procedure below.

1. Monitor the video output from the test module in slot 10 on a video or waveform monitor.
2. On the Genlock web page on the host module in slot 1, pull the module out of slot 1 or take off the reference input to the rear module. This will disable the Primary reference.
3. Go to the Status web page for the 8985FS module in slot 10 ([Figure 17 on page 33](#)) and note the warnings now present and whether the Output Bus Source reported in the header now reports Ref Bus 2. This shift should have occurred without causing any noticeable disturbance while monitoring the output video from the test module.

Note In 1080p/1080sf rates only, there will be a noticeable disturbance on the output video when switching Primary and Secondary references.

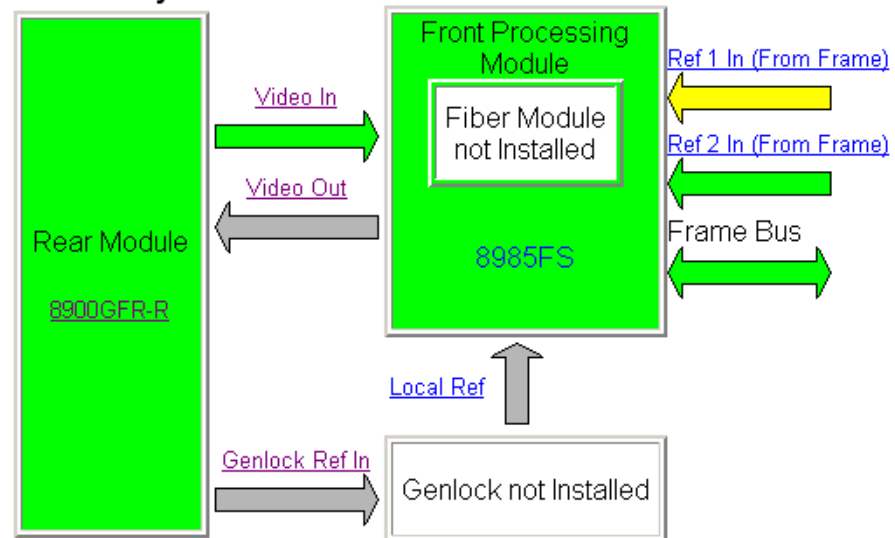
4. Return the host module to slot 1 or reconnect the reference signal to the rear genlock loop to reinstate the Primary reference.
5. Note whether the Output Timing Source returns to the Primary in the time set on the System Config page of the test module.
6. All conditions should be locked and present on the Status and System Config web pages.

Figure 17. Test Module with Primary Reference Missing



Model: 8985FS Description: HD/SD Frame Sync
 Frame Location: QA Bay 2- test , Slot: 10
 Input Video Standard: 1080i/59.94 Input Video: : Present
 Output Timing Source: Ref Bus 2 Split Screen: Disabled

Module Physical Structure



Warning: Ref 1 is Not Present

Genlock Module is not installed

Warning: Genlock Reference 1 is invalid

Status:

Front Module: PASS
 Rear Module: PASS
 Genlock Module: EMPTY
 Fiber Module: EMPTY

Front Module:

Part Number: 671-6724----
 Serial Number: -----
 Hardware Revision: ---
 Firmware Image 1 Version: 1.1.12
 Firmware Image 2 Version: inactive
 Firmware Image 3 Version: inactive
 Firmware Image 4 Version: inactive
 Software Version: 1.2.0
 Boot Version: 1.0.3
 Asset Tag:

Using the Redundant Reference Configuration

Now that the redundancy has been set up and tested, you may continue to populate this GeckoFlex frame and add video sources to the host modules in slot 1 and slot 3.

The 8900GEN-SM module is basically independent of its host module but the video input to the modules hosting an 8900GEN-SM submodule must match the frame rate connected to the host module rear reference input if this reference has been selected on the System Config web page. The host module is not required to use the redundant reference and it may use another reference as long as it matches the frame rate of the reference input or one of the frames listed in [Table 1 on page 8](#).

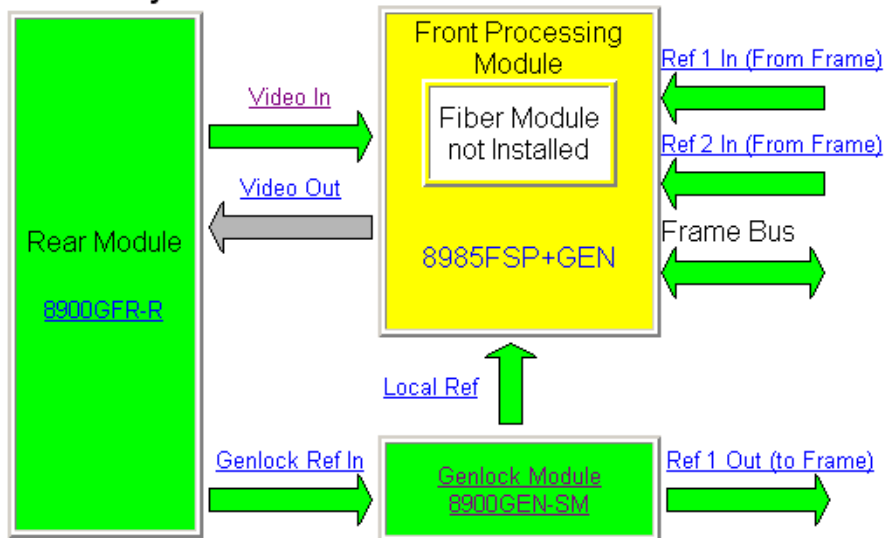
If the input video does not match the frame reference connected to the host module a warning message will be reported and the front module graphic will be yellow. The Status web page will appear similar to the one shown in [Figure 18 on page 35](#).

Figure 18. Input Video Frame Rate MisMatch to Reference Input



Model: [8985FSP+GEN](#) Description: [HD/SD FS Proc Amp](#)
 Frame Location: [QA Bay 2- test](#) , Slot: [1](#)
 Input Video Standard: [1080i/59.94](#) Input Video: [Coax Input : Present](#)
 Output Timing Source: [Ref Bus 2](#) Split Screen: [Disabled](#)

Module Physical Structure



Configuration Error: Selected video standard is incompatible with the selected reference standard.

Status:

Front Module: [WARN](#)
 Rear Module: [PASS](#)
 Genlock Module: [PASS](#)
 Fiber Module: [EMPTY](#)

Front Module:

Part Number: [671-6724----](#)
 Serial Number: [-----](#)
 Hardware Revision: [---](#)
 Firmware Image 1 Version: [1.1.13](#)
 Firmware Image 2 Version: [inactive](#)
 Firmware Image 3 Version: [inactive](#)
 Firmware Image 4 Version: [inactive](#)
 Software Version: [1.2.0](#)
 Boot Version: [1.0.3](#)
 Asset Tag:

Using Independent Frame Bus References

As shown in [Figure 19](#), another use for utilizing the dual frame bus function is to distribute two completely different references on independent frame buses. The Primary Ref Bus 1 could be an NTSC Color Black and the Secondary Ref Bus 2, an HD standard such as 1080i 59.94, where a more precise reference is needed to time the HD signals.

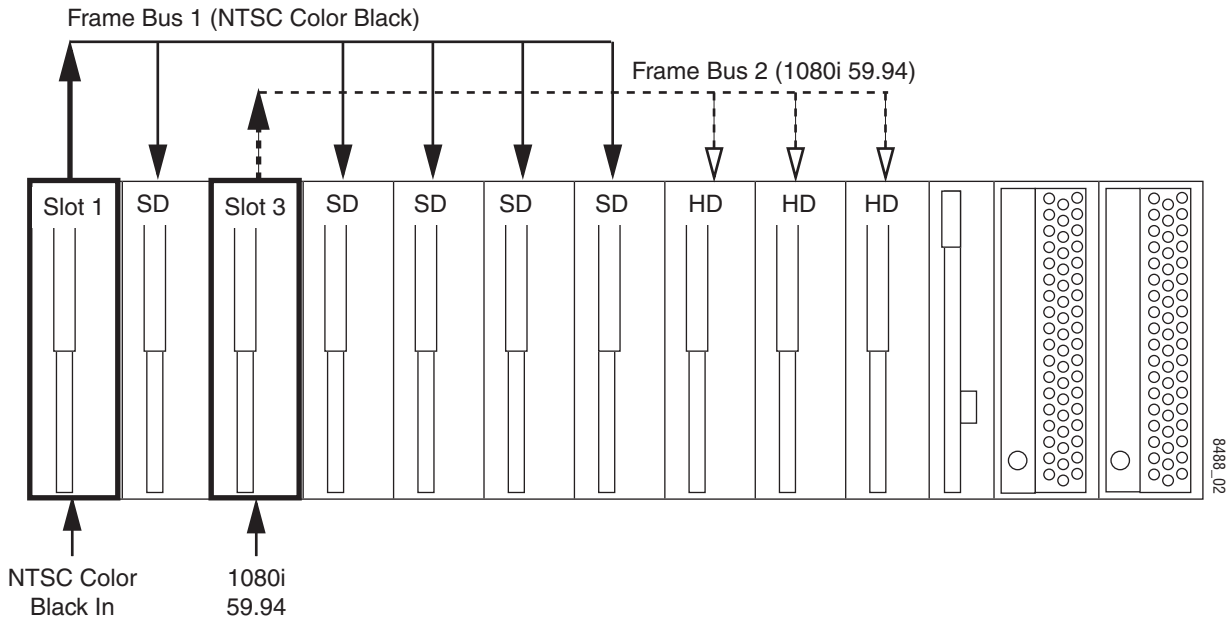
Module Placement and Cabling For Independent Frame Buses

One reference type, such as NTSC Color Black, is connected to the corresponding rear Genlock Loop of a host module with an 8900GEN-SM submodule in slot 1. A different reference such as a 1080i 59.95 frame rate, is connected to the rear Genlock Loop of a host module with an 8900GEN-SM submodule in slot 3. The host module circuit boards must be jumpered with to output the frame buses to the modules in the frame.

On modules in the frame with NTSC input signals that require the NTSC timing reference, the Ref 1 (Primary) selection would be selected as the Output Timing source on each module's System Config web page. On modules requiring HD 1080i 59.94, Ref 2 (Secondary) would be selected as the Output Timing source on each module's System Config web page.

In this case, redundant operation is not needed as switching to the other reference would cause major timing errors. For this configuration, the Primary and Secondary sources on the System Config web pages should be set as the same.

Figure 19. Independent Frame Bus Genlock Timing Sources



Independent Frame Bus Configuration

To use a Primary and Secondary independent frame bus configuration in your frame you must have the following hardware in place:

- A GeckoFlex module with an 8900GEN-SM submodule installed in Slot 1 of the frame. Jumper J10 on the host module must be enabled to output Frame Bus 1 (Primary Reference).
- A GeckoFlex module with an 8900GEN-SM submodule installed in Slot 3 of the frame. Jumper J13 on the host module must be enabled to output Frame Bus 2 (Secondary Reference).
- One other GeckoFlex module with frame sync capability in any of the other frame slots to set up and test the Frame Bus 1 NTSC reference configuration. For this example, we will use an 8985FS module installed in slot 10.
- One other GeckoFlex module with frame sync capability in any of the other frame slots to set up and test the Frame Bus 2 1080i 59.94 reference configuration. For this example, we will use an 8985FS module installed in slot 8.

Web Page Configuration

Follow the procedure below to set up a Primary and Secondary independent configuration with the web page controls. Some controls are also available using the Newton control panel.

This example uses 8985FSP + GEN modules with software version 1.2.0. Other GeckoFlex modules with this capability will be very similar. Be sure to consult the host module Instruction Manual for other pertinent information and specific configuration information for that module.

Note For these initial steps, input video is not connected to the modules in slot 1 and slot 3. This can be done later when the redundancy is working correctly. See [Using the Redundant Reference Configuration on page 34](#).

[1 8985FSP+GEN](#)

- [Status](#)
- [I/O Config](#)
- [Video Input](#)
- [System Config](#)
- [Frame Sync](#)
- [Color Correction](#)
- [Video Proc](#)
- [User Settings](#)
- [Genlock](#)
- [Video Out](#)
- [Slot Config](#)

Configure Primary Independent Reference (Slot 1)

1. On the web page interface, locate the module in slot 1 and click on the link to that module. The 8985FSP + GEN links are shown at left.
2. Before beginning any type of configuration, select the link to the User Settings web page and select the **Set Factory Defaults** button to recall factory defaults to the host module and the 8900GEN-SM submodule.
3. Connect the reference signal intended for use as the NTSC Primary Frame Bus 1 reference to one of the Genlock Loop BNCs (J1 or J3) on the host rear module in slot 1. Loop this signal to another location or terminate in 75 ohms.
4. Click on the Genlock web page link. This will bring up the Genlock web page for the module in slot 1 (Figure 20).

Figure 20. Primary Genlock Web Page

Genlock

Model: 8900GEN-SM	Description: GeckoFlex Genlock Submodule
Genlock: Enabled	Ref Input Standard: NTSC
Status: Locked	Ref Input Frame Rate: 29.97
Firmware Version: 66	Output Bus Frame Rate: 29.97
Hardware Revision: 1	Output Bus: Ref1

Genlock Control

Genlock: <input checked="" type="radio"/> Enable <input type="radio"/> Freerun
Input Standard Selection: NTSC
Loop Bandwidth: <input type="radio"/> Low Jitter <input checked="" type="radio"/> Fast Lock

Genlock Bus Timing

<p style="text-align: center;">Line Offset</p> <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;"> << < 0 * > >> </div> <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;"> < > </div>	<p style="text-align: center;">Coarse Offset (37ns)</p> <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;"> << < 0 * > >> </div> <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;"> < > </div>
<p style="text-align: center;">Fine Offset (37ns/256)</p> <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;"> << < 0 * > >> </div> <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;"> < > </div>	

Drive Frame Reference Bus: Auto

Defaults

5. Set the following parameters on the Genlock web page under Genlock Control:
 - Genlock – **Enabled**
 - Input Selection Standard – set the pulldown frame rate to **NTSC**.
 - Loop Bandwidth – **Fast Lock**
6. Under Genlock Bus Timing, set all the timing controls (Line Offset, Coarse Offset (37ns), and Fine Offset) to 0 (zero).
7. Set the Drive Frame Reference Bus to **Auto**.
8. On the Genlock web page, verify that the header reports the Status as **Locked** and the Output Bus as **Ref 1**.

[3 8985FSP+GEN](#)

[Status](#)

[I/O Config](#)

[Video Input](#)

[System Config](#)

[Frame Sync](#)

[Color Correction](#)

[Video Proc](#)

[User Settings](#)

[Genlock](#)

[Video Out](#)

[Slot Config](#)

Configure Secondary Independent Reference (Slot 3)

1. On the web page interface, locate the module in slot 3 and click on the link to that module. The 8985FSP + GEN links are shown at left.
2. Before beginning any type of configuration, select the link to the User Settings web page and select the **Set Factory Defaults** button to recall factory defaults to the host module and the 8900GEN-SM submodule.
3. Connect the reference signal intended to be used as the 1080i 59.94 Secondary Frame Bus 2 reference to one of the Genlock Loop BNCs (J1 or J3) on the host rear module in slot 3. Loop this signal to another location or terminate in 75 ohms.
4. Select the Genlock link on the left to bring up the Genlock web page for the module in slot 3 (Figure 21).

Figure 21. Secondary Genlock Web Page



Model: [8900GEN-SM](#) Description: [GeckoFlex Genlock Submodule](#)
 Genlock: [Enabled](#) Ref Input Standard: [1080i 59.94](#)
 Status: [Locked](#) Ref Input Frame Rate: [29.97](#)
 Firmware Version: [6](#) Output Bus Frame Rate: [29.97](#)
 Hardware Revision: [1](#) Output Bus: [Ref2](#)

Genlock Control

Genlock: <input checked="" type="radio"/> Enable <input type="radio"/> Freerun
Input Standard Selection: <input type="text" value="1080i 59.94"/>
Loop Bandwidth: <input type="radio"/> Low Jitter <input checked="" type="radio"/> Fast Lock

Genlock Bus Timing

<p>Line Offset</p> <p><< < 0 * > >></p> <p> < > </p>	<p>Coarse Offset (37ns)</p> <p><< < 0 * > >></p> <p> < > </p>
<p>Fine Offset (37ns/256)</p> <p><< < 0 * > >></p> <p> < > </p>	

Drive Frame Reference Bus:

5. Set the following parameters under Genlock Control on the Genlock web page for slot 3:
 - Genlock – **Enabled**
 - Input Selection Standard – set the pulldown to **1080i 59.94**.
 - Loop Bandwidth – **Fast Lock**
6. Under Genlock Bus Timing, set all the timing controls (Line Offset, Coarse Offset (37ns), and Fine Offset) to 0 (zero).
7. Set the Drive Frame Reference Bus to **Auto**.
8. On the Genlock web page, verify that the header reports the Status as **Locked** and the Output Bus as **Ref 2**.

Configure GeckoFlex Module to Verify NTSC Ref Bus 1

1. Connect an SDI video signal with an NTSC frame rate such as 480i 59.94 to the video input (J10) of the corresponding rear module for the GeckoFlex module you are using to verify the NTSC reference.
2. Locate this module in the frame using your web browser and click on the System Config web page link.
3. On the System Config web page ([Figure 22 on page 42](#)), set the Input type to SD 480i.
4. Set Ref Bus 1 to be both the Primary and Secondary Output Timing sources.
5. Verify that Ref Bus 1 reports **Present** and **Locked** in the Status and Genlock column.
6. Verify that the Input Video reports **Present**.
7. Verify that the Output Timing Source reported in the System Config web page header reports **Ref Bus 1**.

Figure 22. System Config Web Page

System Config

Model: 8985FS Description: HD/SD Frame Sync
 Frame Location: QA Bay 2- test , Slot: 10
 Input Video Standard: 480i/59.94 Input Video: Coax Input : Present
 Output Timing Source: Ref Bus 1 Split Screen: Disabled Set Primary and Secondary to Ref Bus 1

Input Video

Input Type	Input Rate
<input type="radio"/> HD 59.94	480i
<input checked="" type="radio"/> SD	
<input type="radio"/> HD 50	
<input type="radio"/> HD 24	

Output Timing

Source Selection	Primary	Secondary	Status	GenLock
Local	<input type="radio"/>	<input type="radio"/>	Not Present	-
Ref Bus 1	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Present	Locked
Ref Bus 2	<input type="radio"/>	<input type="radio"/>	Present	Locked
Input Video	<input type="radio"/>	<input type="radio"/>	Present	NA

Test Output

Colorbars Enabled

Reference Restore

Switch to Primary

Reference Switchback Delay (Seconds)

Primary - Secondary Phase Difference

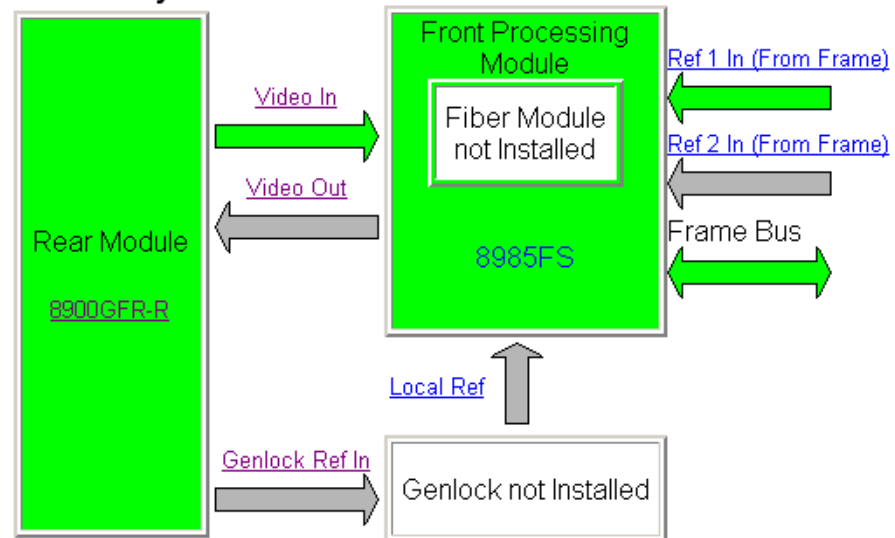
8. Now select the link to the Status web page for the module in slot 10 and verify there are no warnings about the input video matching the selected input type or that the input video does not match the frame rate of the selected genlock reference. The Status page should look similar to the one in [Figure 23 on page 43](#). The Ref 1 arrow should be green and the Front Processing Module should also be green. The Ref 2 arrow should be grayed out.

Figure 23. NTSC Test Module Status Web Page



Model: [8985FS](#) Description: [HD/SD Frame Sync](#)
 Frame Location: [QA Bay 2- test](#) , Slot: [10](#)
 Input Video Standard: [480i/59.94](#) Input Video: : [Present](#)
 Output Timing Source: [Ref Bus 1](#) Split Screen: [Disabled](#)

Module Physical Structure



[Genlock Module is not installed](#)

Status:

Front Module: [PASS](#)
 Rear Module: [PASS](#)
 Genlock Module: [EMPTY](#)
 Fiber Module: [EMPTY](#)

Front Module:

Part Number: [671-6724----](#)
 Serial Number: [-----](#)
 Hardware Revision: [---](#)
 Firmware Image 1 Version: [1.1.12](#)
 Firmware Image 2 Version: [inactive](#)
 Firmware Image 3 Version: [inactive](#)
 Firmware Image 4 Version: [inactive](#)
 Software Version: [1.2.0](#)
 Boot Version: [1.0.3](#)
 Asset Tag:

Configure GeckoFlex Module to Verify 1080i Ref Bus 2

1. Connect an SDI video signal with an HD frame rate of 1080i 59.94 to the video input (J9) of the corresponding rear module for the GeckoFlex module you are using to verify the 1080i reference. This example uses an 8985FS module in slot 8.
2. Locate this module in the frame using your web browser and click on the System Config web page link.
3. On the System Config web page ([Figure 24 on page 45](#)), set the Input type to **HD 59.94** and the Input Rate to **1080i/59.94**.
4. Set Ref Bus 2 to be both the Primary and Secondary Output Timing sources.
5. Verify that Ref Bus 2 reports **Present** and **Locked** in the Status and Genlock column.
6. Verify that the Input Video reports **Present**.
7. Verify that the Output Timing Source reported in the System Config web page header reports **Ref Bus 2**.

Figure 24. 1080i System Config Web Page

System Config

Model: 8985FS Description: HD/SD Frame Sync
 Frame Location: QA Bay 2- test , Slot: 8
 Input Video Standard: 1080i/59.94 Input Video: : Present
 Output Timing Source: Ref Bus 2 Split Screen: Disabled Set Primary and Secondary to Ref Bus 2

Input Video		Output Timing				
Input Type	Input Rate	Source Selection	Primary	Secondary	Status	GenLock
<input checked="" type="radio"/> HD 59.94 <input type="radio"/> SD <input type="radio"/> HD 50 <input type="radio"/> HD 24	1080i/59.94	Local	<input type="radio"/>	<input type="radio"/>	Not Present	-
		Ref Bus 1	<input type="radio"/>	<input type="radio"/>	Present	Locked
		Ref Bus 2	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Present	Locked
		Input Video	<input type="radio"/>	<input type="radio"/>	Present	NA

Test Output
 Colorbars Enabled

Reference Restore
 Switch to Primary

Reference Switchback Delay (Seconds)
 << < 30.00 * > >>
 |< >|

Primary - Secondary Phase Difference

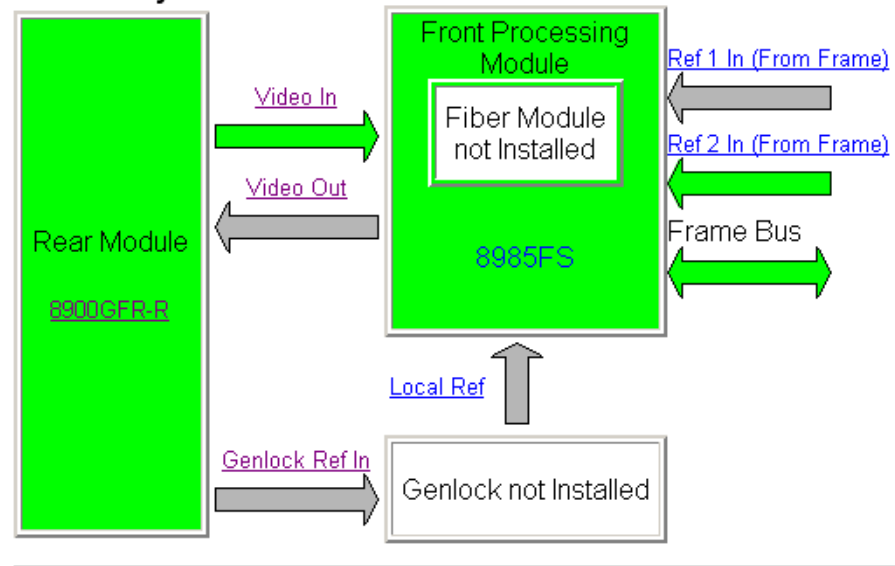
- Now select the link to the Status web page for the module in slot 8 and verify there are no warnings about the input video matching the selected input type or that the input video does not match the frame rate of the selected genlock reference. The Status page should look similar to the one in [Figure 25 on page 46](#). The Ref 2 arrow should be green and the Front Processing Module should also be green. The Ref 1 arrow should be grayed out.

Figure 25. 1080i Test Module Status Web Page

Status

Model: [8985FS](#) Description: [HD/SD Frame Sync](#)
 Frame Location: [QA Bay 2- test](#) , Slot: [8](#)
 Input Video Standard: [1080i/59.94](#) Input Video: : [Present](#)
 Output Timing Source: [Ref Bus 2](#) Split Screen: [Disabled](#)

Module Physical Structure



Genlock Module is not installed

Status:

Front Module: [PASS](#)
 Rear Module: [PASS](#)
 Genlock Module: [EMPTY](#)
 Fiber Module: [EMPTY](#)

Front Module:

Part Number: [671-6724----](#)
 Serial Number: [-----](#)
 Hardware Revision: [---](#)
 Firmware Image 1 Version: [1.1.13](#)
 Firmware Image 2 Version: [inactive](#)
 Firmware Image 3 Version: [inactive](#)
 Firmware Image 4 Version: [inactive](#)
 Software Version: [1.2.0](#)
 Boot Version: [1.0.3](#)
 Asset Tag:

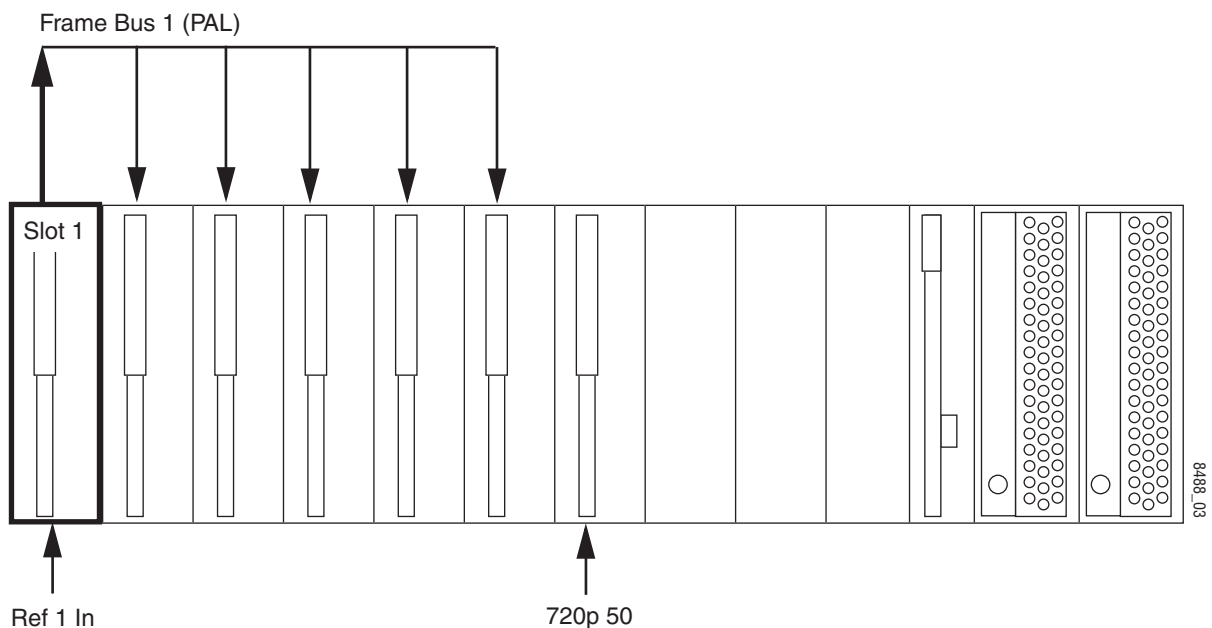
Using Local and Frame Bus References

In addition to the reference redundancy and independent frame bus capability, any GeckoFlex module that can host an 8900GEN-SM can be used to input a reference to the host module. When frame buses are required, the modules in slot 1 and slot 3 must always act as the host for driving Frame Bus 1 and Frame Bus 2.

In the example in [Figure 26](#), slot 1 is configured to output Frame Bus 1.

Any module with Genlock capability and a Genlock submodule installed can have an independent Local external reference (as shown in the example for the HD module). This is done by connecting an independent reference to the corresponding Genlock Loop input and setting the Output Timing to **Local** on the specific module's System Config web page.

Figure 26. Using Frame Bus and Local Output Timing



Set up Frame Bus 1 as detailed in [Configure Primary Independent Reference \(Slot 1\)](#) on page 38.

For a module requiring a different 720p reference as shown in the example, an 8900GEN-SM submodule can be installed on this host module. Connect a 720p reference to the corresponding rear module Genlock Loop and terminate the unused input with 75 ohms.

Set up the reference input on the host module Genlock web page as needed then set the host module System Config web page to use the Local reference.

Frame Sync Enhancements

The following new controls are now available on the Frame Sync web page ([Figure 27 on page 49](#)):

- **Minimum Delay Mode** – a minimum delay can now be enabled to bypass portions of the frame sync memory to allow an absolute minimum amount of delay through the module.
- **Multi-Frame Delay** – this control allows you to add up to 6 frames of delay. When the H and V Timing controls are set to maximum, the total delay of the module will be 8 frames (when Minimum Delay Mode is not selected).
- **Delay Wrap Position** – This indicator will display with a blue bar, the fraction of the final frame of actual video delay through the frame sync. It will not indicate if multiple frames have been selected with the Multi-Frame Delay control.

For example, with 1080i video and Minimum Delay Mode not selected, if 600 lines plus 5 frames of delay is entered by the user, that actual delay through the module will be anywhere from about 6 to 7 frames depending on the following conditions:

- a. If the module is in Delay (Input-Timed) Mode, the delay through the module will be about 6.5 frames, and the Delay Wrap Position will be at about 50% of full scale.
- b. If the module is in Frame Sync (Genlock) Mode, the delay through the module will be about 6.5 frames if the input video has zero delay with respect to the genlock reference frame position, and the Delay Wrap Position will be at about 50% of full scale. As this input video delay with respect to the genlock reference frame position is changed from -0.5 to +0.5 frame periods, the delay through the module will change from about 6 to 7 frame periods, with the Delay Wrap Position changing from about 0 to 100% of full scale.

In summary, the Electrical Length of the module can be estimated as the following:

- Electrical Length = 1 frame minus 5 lines (Minimum Delay Mode not selected), or
- 150 pixels (Minimum Delay Mode selected) + Multi-Frame Delay + Delay Wrap Position (% of full scale) X (1 frame period).

Figure 27. New Controls on Frame Sync Web Page

Frame Sync

Model: [8985FSP+GEN](#) Description: [HD/SD FS Proc Amp](#)
Frame Location: [QA Bay 2- test](#) , Slot: [1](#)
Input Video Standard: [480i/59.94](#) Input Video: [Coax Input](#) : [Present](#)
Output Timing Source: [Ref Bus 1](#) Split Screen: [Disabled](#)

Minimum Delay control — Minimum Delay Mode Enabled

Timing Adjustment

H Timing (pixels)
|<< < 0 * > >>|
|< |>|

V Timing (lines)
|<< < 600 * > >>|
|< |>|

Multi-Frame Delay control — Multi-Frame Delay (frames)
|<< < 0 * > >>|
|< |>|

Loss of Signal Operation
 Pass
 Auto Freeze
 Auto Blue

Manual Freeze Mode
 None
 Frame
 Field

Defaults

Delay Wrap Position indicator — **Delay Wrap Position**
|████████████████████|

Acquiring Software

NetConfig, a networking application option available from Grass Valley, must be used to update this software. Use the latest version of NetConfig, version 2.0.7 or later, available from the Grass Valley ftp site.

Note This update requires recalling factory defaults after the download is complete. If you have configured your module, make a note of the settings before doing this software update.

Acquiring NetConfig Software

If you do not have NetConfig or the latest version, you can download it from the Thomson Grass Valley ftp site at this URL:

<ftp://ftp.thomsongrassvalley.com/pub/router/NetConfig/Version 2.0.7/>

1. Right-click on the latest NetConfig link to download the zipped file to the C:\temp folder or other convenient location on your PC.
2. Extract the zipped files onto your local drive:
3. Double-click on the NetConfig.EXE file to install NetConfig.

Note Installing NetConfig into the default location given in the install script (C:\Programs\Grass Valley Group) is recommended for future NetConfig and module software updates.

Acquiring 8900NET Software

This version of 8985FSP software requires the use of an 8900NET module running software version 4.0.2. This version is available from the Thomson Grass Valley ftp site at the following URL:

`ftp://ftp.thomsongrassvalley.com/pub/modular/8900/8900NET`

To download the latest 8900NET software, do the following:

4. Select the 8900 Series link.
5. Select the link to the latest 8900NET Interface module software.
6. If you are updating from an earlier version than 3.2.0, use the .bin file and the FTP Server procedure described in detail in the *2000NET Instruction Manual* available on-line.
7. Use the NetConfig Networking Application option to update from version 3.2.2 to version 4.0.2 with the .fld file.

Acquiring 8985FSP Software

The latest software release for the 8985FSP module is available from the Thomson Grass Valley ftp site at the following URL:

```
ftp://ftp.thomsongrassvalley.com/pub/modular/8900/  
8985FSP
```

To download the latest software, do the following:

1. Select the 8900 link.
2. Select the link to the latest 8985FSP module software.
3. Right-click on all of the 8985FSP .fld and .sw2 files provided to download them to the C:\temp folder or other convenient location on your PC.

Updating Software With NetConfig

To update with NetConfig you must have the following:

- PC with NetConfig Networking application installed (version 2.0.7 latest),
- IP connection between the frame containing the 8900 modules and your PC, and
- 8900NET module in the Gecko Flex frame with software 4.0.0 or later.

Note After updating software you will need to recall factory defaults. Save your current settings into a user settings file to reload after the software update.

8985FSP and FS Upgrade Procedure

Begin the upgrade procedure by moving the 8985FS files you have downloaded from the ftp site into the correct NetConfig directories.

Note This update requires that factory defaults be recalled after the download is completed. This will return the module to the factory default settings. Be sure to note your current settings by writing them down or taking screen shots of each web page before doing this download.

1. Copy the 8985FS software download files into the main NetConfig directory on your PC. This is normally in the default location in C:\Program Files\Grass Valley Group\NetConfig.

If you have installed NetConfig in another location, find the location of the NetConfig directory by right-clicking on the NetConfig shortcut. Select **Properties** and note the location in the **Start In** field. Download the package to the NetConfig directory.

2. In the main NetConfig directory, locate a folder named **modular**. If this folder does not exist, create a folder called **modular** in the main NetConfig directory.
3. Move the .fld files you copied into the main NetConfig directory into this **modular** directory.
4. Verify that the .sw2 file is in the main NetConfig directory (not in the **modular** directory).

Note NetConfig reads each .sw2 file in its main directory and navigates to the directory given in these files to find the .fld files available. There may be a number of .sw2 and .fld files in your NetConfig directory for other modular products. These will not interfere with the update.

5. Open NetConfig by double clicking on the NetConfig icon.

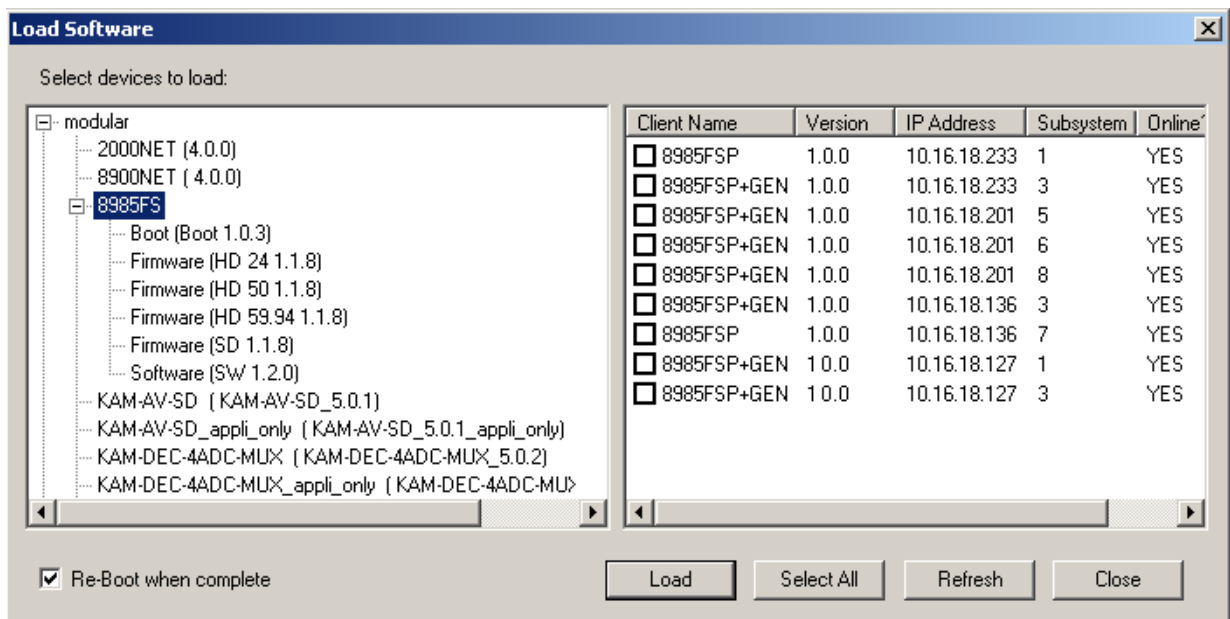
Note If you have not used NetConfig before, refer to the *NetConfig Instruction Manual* included during installation in the main NetConfig directory in PDF format (NetConfig.pdf).

6. Click on the **Load SW** button on the top of the NetConfig toolbar.
7. This will bring up the Load Software screen ([Figure 28 on page 53](#)). This screen shows NetConfig version 2.0.7, the latest version.
8. Open the modular directory by selecting the +.
9. Open the 8985FSP directory by selecting the +.

10. Highlight the **Boot (SW1.0.3)**, the first selection in the 8985FS list. All 8985 modules accessible on this subnet will be displayed in the window on the right with their current software version, frame IP Address, Subsystem, and Online status.
11. Find the 8985FSP and FS module(s) you are updating in the Client Name list. You may update all devices at once if desired by clicking on the **Select All** button. This will check all the modules. Or you may only check the corresponding checkbox next to the specific modules you wish to update.
12. Press the **Load** button to download this file to all selected modules.
13. After the boot code is downloaded, pull each module from the frame then plug each module back in to reset it.

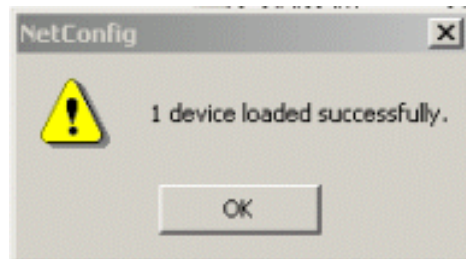
Note The **Re-Boot when complete** checkbox is not applicable for the boot code download.

Figure 28. NetConfig Load Software Screen – Boot Download



14. Select the file labeled, **SW (SW1.2.0)** under the 8985FS list and check the same Client name checkboxes you updated for the boot code (or use the **Select All** button if you are updating all modules).
15. Check the **Re-Boot when complete** checkbox in the lower left corner of the Load Software screen.
16. Press the **Load** button to download this file to all selected modules.
17. If the load has been successful, a popup will appear as shown in [Figure 29](#). Click the **OK** button.

Figure 29. Load Successful Popup



18. Repeat [Step 14](#) through [Step 17](#) for the remaining files under the 8985FS list listed below:
 - Firmware (HD 24 1.1.8)
 - Firmware (HD 50 1.1.8)
 - Firmware (HD 59.94 1.1.8)
 - Firmware (SD 1.1.8)
19. Allow each reboot to complete.
20. Check the software version is now at 1.2.0 on the Status web page.
21. Go to the User Setting web page and recall factory settings by selecting the **Set Factory Defaults** button to reset all parameters on the module.
22. Verify proper operation of the module.