grass valley

8950ADC

COMPONENT VIDEO A-T0-D CONVERTER

Instruction Manual

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Preface

About This Manual

This manual describes the features of a specific module of the Gecko 8900 Signal Processing System. As part of this module family, it is subject to Safety and Regulatory Compliance described in the Gecko 8900 Series frame and power supply documentation (see the *8900TX/8900TF/8900TFN Frames Instruction Manual*).

Contents

8950ADC Analog to Component Digital Converter

Introduction

The 8950ADC converts an analog Color Difference or GBR video signal to a SMPTE 259M (270 Mb/s) D1 serial component digital signal.

The 8950ADC is compact and fits in the 8900 frame, which holds up to 10 modules in 2 RU.

Key features include the following:

- 10-bit analog to digital conversion,
- Four times oversampling for outstanding resolution,
- EDH (Error Detection and Handling) embedded in the output signal,
- Two lines of output delay adjustment,
- Supports all popular Component Analog Video (CAV) formats,
- Part of the 8900 family of audio and video modules, and
- With 8900NET module installed, provides support for:
  - SNMP monitoring,
  - Remote web browser, and
  - Newton Control Panel interface..

Installation

Installation of the 8950ADC module is a simple process of:

- Placing the module in the proper Gecko video frame slot, and
- Cabling and terminating signal ports.

The 8950ADC module can be plugged in and removed from a Gecko 8900 Series video frame with power on. When power is applied to the module, LED indicators reflect the initialization process (see *8950ADC Input/Output Connectors* on page 10).

Frame Capacity

The maximum number of 8900 modules allowed in a frame is determined by frame cooling capacity. Table 1 provides the power capacity, cooling capacity, and maximum 8950ADC module count for each frame type.

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

Capacity Calculated	8900T2 Frame	8900T2-F Frame	8900TX Frame	8900TF Frame	8900TFN Frame
Power (W)	60	60	100	100	100
Recommended Module Cooling (W)	30	60	30	90	90
8950ADC Modules	4	8	4	10	10

Note Module capacity figures assume no other modules are in the frame. If the maximum number of modules a frame can handle is less than ten, provide as much space between the modules as possible.

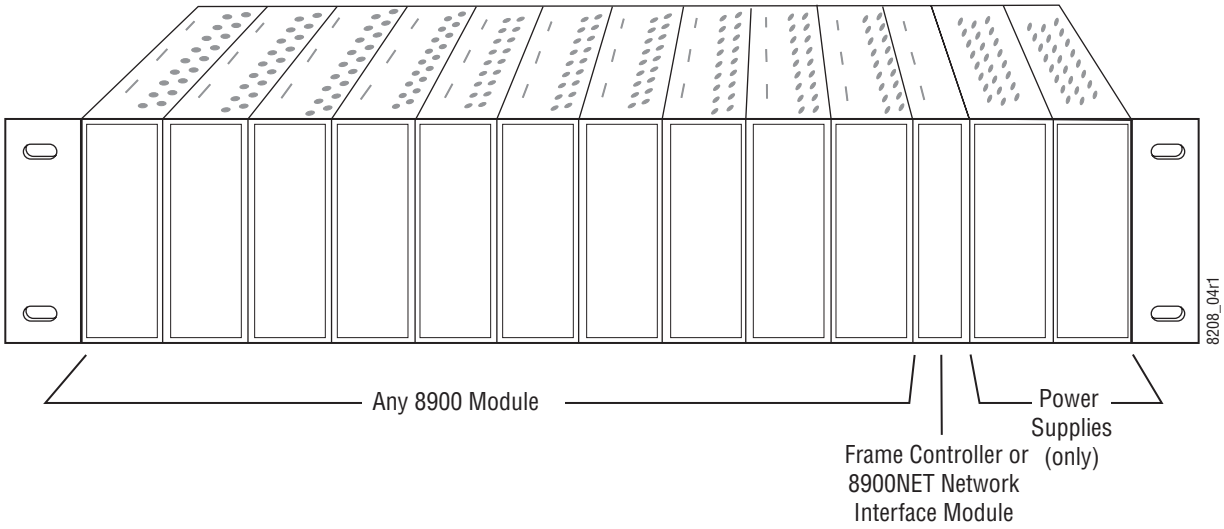
Module Placement in the Gecko 8900 Frame

There are ten slot locations in the video frame to accommodate either analog or digital modules. These are the left ten locations. Refer to Figure 1 on page 9.

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

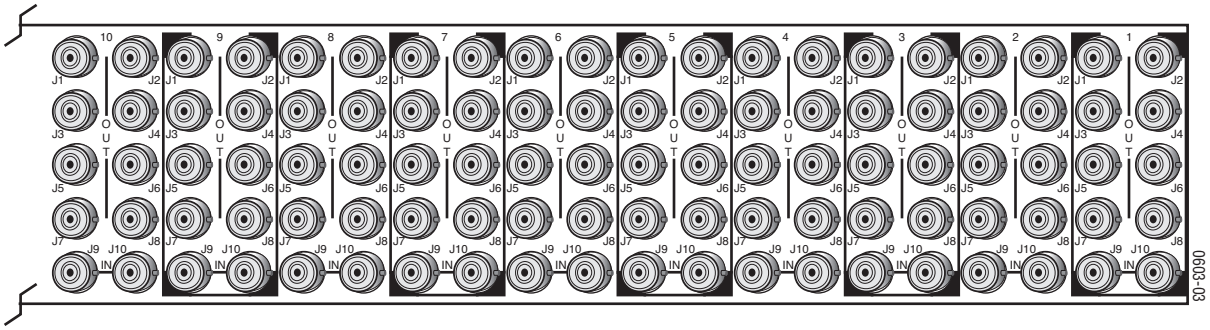
The third slot from the right is allocated for the Frame Monitor or 8900NET Network Interface module. These module provide the interface for SMPTE 269M fault reporting (health alarm). For additional information concerning the 8900NET module, refer to the 8900NET Instruction Manual.

Figure 1. Gecko 8900 Series Frame



8900 module slots are interchangeable within the frame. There are 10 BNC connectors 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 frame can accept is ten. Figure 2 illustrates the rear connector plate for a Gecko 8900 frame.

Figure 2. Gecko 8900 Series Frame Rear Connectors



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 the ejector tab in to seat the module in place.

Cabling

Note At the back of every hard copy manual are die-cut overlay cards that can be placed over the rear BNCs to identify specific 8950ADC connector functions.

Analog Video Inputs

Connect analog component video inputs to input connectors J3, J5 and J7 (see Figure 3). The 8950ADC accepts Y, (B-Y), (R-Y) or GBR analog input, with or without sync on the Y/G channel. For specific input signal types, refer the Analog Inputs listed in the *Specifications* on page 33.

Loop-through External Sync Input

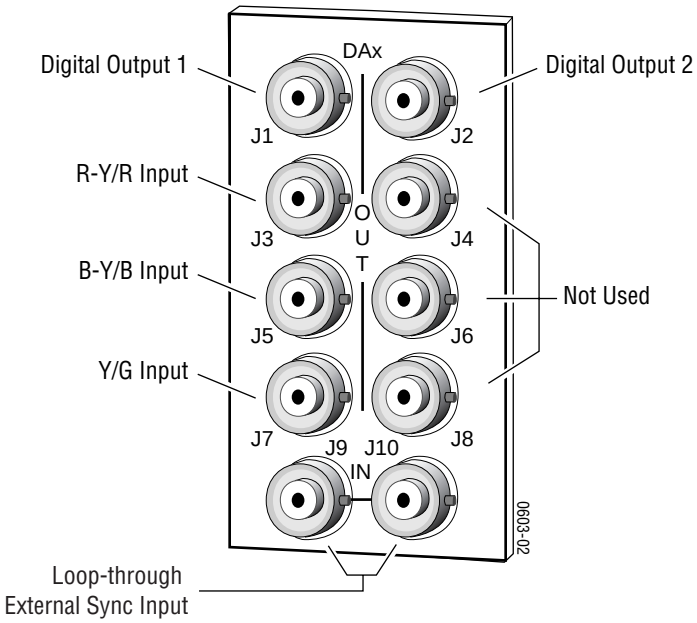
The External Sync Input is used to provide external sync for Y/G channel inputs that do not have a sync component. There are horizontal and vertical phase timing requirements for the Y/G and Sync input signals (see *Using External Sync* on page 14 for timing considerations).

Connect a sync input source to one of the loop-through input connectors, J9 or J10 (see Figure 3). The 8950ADC External Sync input accepts color black or composite sync reference signal input. Terminate the unused connector into 75 Ω if the signal is not looped to other equipment.

Digital Video Outputs

SMPTE 259M digital are output on BNC J1 and J2 from the Y, (B-Y), (R-Y) or GBR analog component signal. Destination equipment should have a 75 Ω input impedance or loop through inputs that are terminated into 75 Ω.

Figure 3. 8950ADC Input/Output Connectors



Power Up

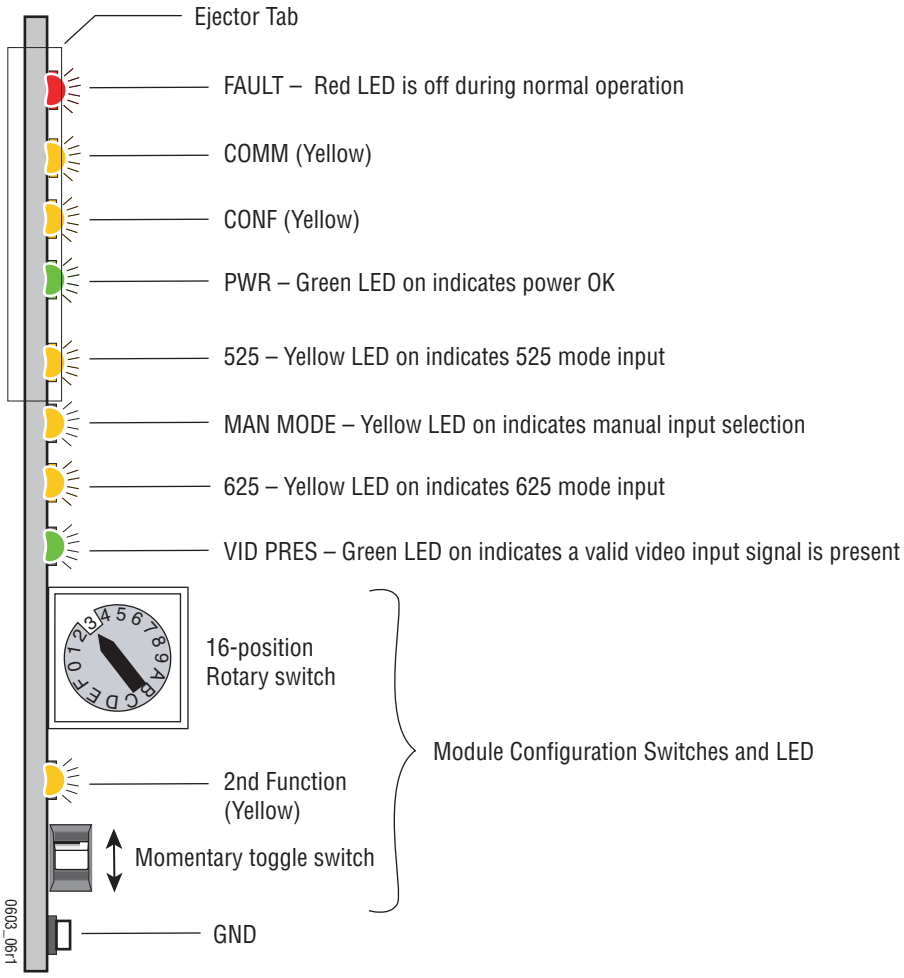
The front LED indicators and configuration switches are illustrated in Figure 4. On power-up the green PWR LED should light and the yellow CONF LED should illuminate for the duration of module initialization.

Operation Indicator LEDs

With factory default configuration and a valid input signal connected, the green PWR LED, and one of the yellow signal standard LEDs (525 or 625) should illuminate (refer to Table 2 on page 12 to see the possible operating indicator combinations).

Video input presence is indicated by an illuminated VID PRES LED and the appropriate 525 or 625 LED. The 525 or 625 LED will illuminate to indicate detection of a 525-line or 625-line input signal. The VID PRES LED indicates the presence of valid composite sync on the Y/G channel or reference input.

Figure 4. LEDs and Configuration Switches



A red FAULT LED indicates an error situation and, with the previously described LEDs, can indicate the operational conditions presented in Table 2. The table describes signal output and LED indications for various input/reference combinations and user settings.

Table 2. Indicator LEDs and Conditions Indicated

LED	Indication	Condition
FAULT (red)	Off	Normal operation.
	On continuously	Module has detected a CPU problem or FPGA programming problem.
	Flashing	Configuration problems. Check inputs and settings.
COMM (yellow)	Off	No activity on frame communication bus.
	Long flash	Location Command received by the module from a remote control system.
	Short flash	Activity present on the frame communication bus.
CONF (yellow)	Off	Module is in normal operating mode.
	On continuously	Module is initializing, changing operating modes or updating firmware.
	Flashing	Indicates rate of change of toggle switch controlled analog setting. The longer the switch is held, the more the flashing rate and the change-of-setting rate increases.
PWR (green)	Off	No power to module or module's DC/DC converter failed.
	On continuously	Normal operation, module is powered.
525[1] (yellow)	Off	No input signal is present, or 625 input is present.
	On continuously	Input signal is 525 standard.
	Flashing	525 standard input signal is manually selected, but actual signal is 625 standard.
MAN MODE (yellow)	Off	Module will automatically detect and accept either input signal format.
	On	Input is forced by configuration to accept one format, either 525 or 625.
625[1] (yellow)	Off	No input signal is present, or 525 input is present.
	On continuously	Input signal is 625 standard.
	Flashing	625 standard input signal is manually selected, but actual signal is 525 standard.
VID PRES (green)	Off	No valid input signal is present.
	On	A video input signal is present and there is valid composite sync on the Y/G channel or reference input.
2ND (yellow)	Off	First bank of rotary switch selected.
	On	Second bank of rotary switch selected.

[1] In Auto mode, this LED changes status depending on input signal.

Configuration

The 8950ADC can be configured locally using onboard switches or remotely using the 8900NET network interface GUI or a networked control panel.

Refer to the following sections for configuration instructions:

- Configuration Summary (page 13)
- Local Onboard Module Configuration (page 18)
- Remote Control and Monitoring (page 20)

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

Configuration Summary

This section provides a summary of all parameters that can be configured on the 8950ADC module. Table 4 on page 16 provides a summary in table format of all parameters and their ranges, default values, and remote, local, and control panel function names and locations for setting each value.

Format Selections

The 8950ADC converts any one of the following analog Color Difference or GBR video signals to a SMPTE 259M (270 Mb/s) D1 serial component digital signal:

- SMPTE
- GBR
- Beta (US/525)
- Beta (Japan/525)
- MII (US/525)
- MII (Japan/525)
- EBU N10 (625)

Once a format is selected, the default values for that format will be loaded to the module. The overall factory default for the module is GBR.

Level Adjustments

The factory (default) settings for signal processing functions are set to pass a calibrated broadcast quality signal at optimum levels. Signal video and black output adjustments are available to correct deficiencies in the input signal.

Once any video or black adjustments are made, it is recommended to save these settings on the User Settings web page (*User Settings Web Page* on page 29). If the format is reselected from the pulldown, the Level values will return to the factory defaults for that format.

Timing/Blanking Adjustments

The following adjustments can be made to the signal that affect timing and blanking:

- Horizontal delay – adjust the amount of horizontal delay in ns,
- SAV/EAV positions – set the position of SAV/EAV (start active video/end active video),
- Sync source – set the sync source of the module as Y/G Channel or External, refer to *Using External Sync* below, and
- Vertical blanking – set vertical blanking to Short (525 and 625 = 9 lines) or Wide (525 = 19 lines, 625 = 25 lines).

Using External Sync

The External Sync source is intended to provide sync when the Y/G component signal does not contain sync. The module is not intended to provide auto-timing or frame sync functions. Allowable horizontal and vertical phase differences between the Y/G signal and the external sync signal vary depending upon the presence of sync in the Y/G signal. Table 3 provides the phase difference tolerances. Exceeding these tolerances can produce an incorrect output signal.

Within the tolerances shown, phase adjustment can be made using the SAV/EAV (start active video/end active video) and output video delay line adjustment settings described in *Local On-board Module Configuration* on page 19. Function F5, 2nd bank, adjusts output horizontal phase by setting the position of active video in the digital output within a ± 400 ns window. Function F4, 2nd bank provides output line delay of up to 2.5 lines in 37 ns increments.

Table 3. Adjustable Phase Difference Between Y/G and External Sync

Y/G Input	H Phase Difference	V Phase Difference	When Out of Tolerance
With Y/G sync	< ± 400 ns	0	Select Y/G channel for Sync Source (F2, 2nd bank), compensate using Output delay (F4, 2nd bank)
No Y/G sync	< ± 5 µs	Up to two lines	N/A

Standard Recognition

The module can be set to for auto recognition of the input standard or set for manual 525 or 625.

Video Input Setup

For Beta and MII 525 signals, the input video setup can be passed through to the output or removed.

Kalypso 0:4:4 Mode

A special compressed chroma key mode (0:4:4) can be enabled for feeding an input to the Kalypso Production Center. This format is a special non-standard mode implemented to support a high bandwidth color input to a Kalypso.

User Settings Save and Recall

A function is provided to save and recall the adjusted parameters for the selected standard. This function is useful for saving configured parameters because recalling a standard will return the values to the factory defaults for that specific standard.

Table 4 provides a complete summary of the 8950ADC processing functions and a comparison of the functionality available with each control type along with the ranges and default values for each parameter.

Table 4. Summary of 8950ADC Configuration Functions

Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	Rotary Switch Bank/Setting	Newton Control Panel	Notes/ Conditions
Format/Standard	GBR	SMPTE	Levels/ Format/Standard pulldown	1:6	RCSD	Selecting format recalls factory defaults for that standard.
		GBR		1:7		
		Beta (US/525)		1:3		
		Beta (Japan/525)		1:4		
		MII (US/525)		1:1		
		MII (Japan/525)		1:2		
		EBU N10 (625)		1:5		
Levels control action	Independent	Independent or Locked	Levels/ Control Action pulldown	1:8	CNAC	Adjust each video level separately or tie controls together. All formats.
Y/G video level	100%	50 to 126.4%[1] (0.8% steps)	Levels/ Y/G Video (%) control	1:A	YGCI	
Cb/B video level	100%	48 to 126.4%[1] (0.8% steps)	Levels/ Cb/B Video (%) control	1:B	CBCI	
Cr/R video level	100%	51.2 to 126.4%[1] (0.8% steps)	Levels/ Cb/B Video (%) control	1:C	CRCI	
Adjust all black levels together	–	–	Levels/ Control Action set to Locked	1:9	–	Use any black control
Y/G Black level	100%	84.3 to 158%[1] (0.29% steps)	Levels/ Y/G Black (%) control	1:D	YGBI	All formats
Cr/R Black level	100%	41.4 to 104.9% (0.29% steps)	Levels/ Cr/R Black (%) control	1:E	CBBI	SMPTE, MII (US/525), MII (Japan/625) EBU N10 (625)
Cb/B Black level	100%	40.8 to 103.7% (0.29% steps)	Levels/ Cb/B Black (%) control	1:F	CRBI	
Cr/R Black Beta level	100%	41.4 to 105% (0.29% steps)	Levels/ Cr/R Black Beta (%) control	1:E	CBLB	Beta (US/525) Beta (Japan/525)
Cb/B Black Beta level	100%	40.8 to 103.7% (0.29% steps)	Levels/ Cb/B Black Beta (%) control	1:F	RBLB	
Cr/R Black GBR level	100%	84.3 to 158.2% (0.29% steps)	Levels/ Cr/R Black GBR (%) control	1:E	BBLG	GBR format
Cb/B Black GBR level	100%	84.3 to 158.2% (0.29% steps)	Levels/ Cb/B Black GBR (%) control	1:F	RBLG	
Horizontal delay adjust	0 ns	0 to 148000 ns (37 ns steps)	Timing/Blanking/ Horizontal Delay (ns) control	2:4	HDZI	See *Timing/Blanking Adjustments* on page 14
Set SAV/EAV position	29	0 to 255 (1 unit steps)	Timing/Blanking/ EAV/SAV Position control	2:5	ESVI	
Sync Source	Y/G Channel	Y/G Channel or External	Timing/Blanking/ Sync Source pulldown	2:2	SSRC	
Vertical Blanking	Short	Short or Wide	Timing/Blanking/ Vertical Blanking pulldown	2:6	VBLK	See *Timing/Blanking Adjustments* on page 14

Table 4. Summary of 8950ADC Configuration Functions

Function Type	Default	Range/Choices Resolution	Web Page/ Function Name	Rotary Switch Bank/Setting	Newton Control Panel	Notes/ Conditions
Standard Recognition	Auto	Auto, Manual 525, or Manual 625	Standard Selection/ Standard Recognition pulldown	2:1 (Down 1X=Manual, Down 2X=525 Down 3X=625)	RCSD	
Input Video Setup	Remove Setup	Remove Setup or Pass Setup	Standard Selection/ Input Video Setup pulldown	2:3	OVSP	Beta and MII US/525 formats only
Kalypso 0:4:4 Mode	Off	On or Off	Standard Selection/ Kalypso 0:4:4 Mode pulldown	2:E	KALM	See *Kalypso 0:4:4 Mode* on page 15
Recall User Settings	–	–	User Settings/ **Recall User Settings** button	2:F	N/A	Save Levels settings after configuration
Save User Settings	–	–	User Settings/ **Save User Settings** button	2:F (press down 3X successively)	N/A	
Get Factory Defaults	GBR values	–	User Settings/ **Get Factory Default** button		N/A	Module factory default is GBR

[1] Value ranges include all formats and lower ranges will vary between formats.

Onboard Module Configuration Switches and LEDs

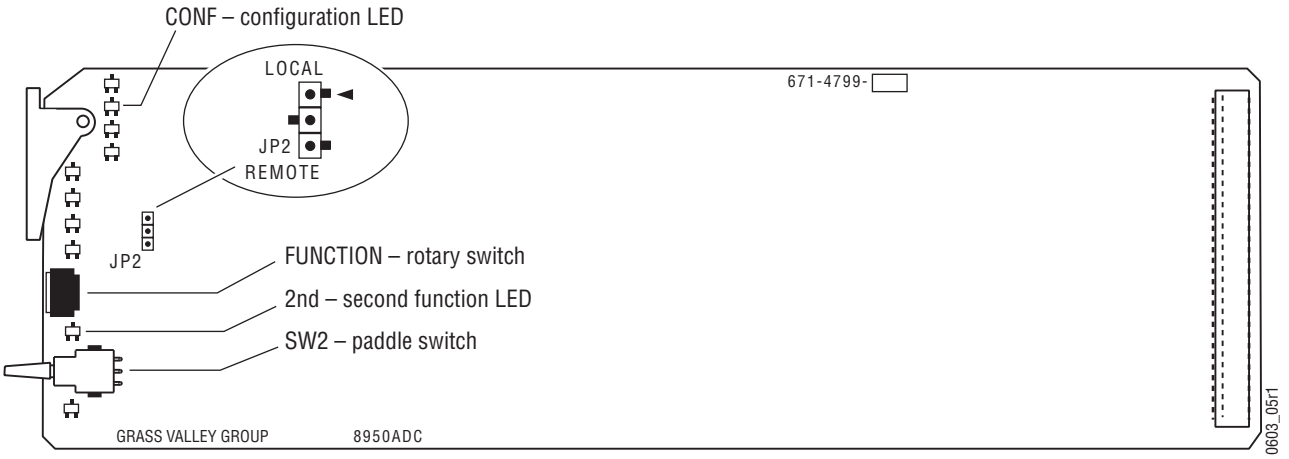
The 8950ADC module can be configured locally using the rotary and paddle switches shown in Figure 5 on page 18. The CONF and 2ND function LEDs are configuration status indicators. These four components perform the following:

- Function (rotary) switch — This switch is used to access a desired function for configuration. The switch addresses two banks of functions; each bank has 16 possible positions (0 through 9 and A through F). Not all positions are used (see Table 5 on page 19). The alternate bank of functions is accessed each time the Function Switch makes a complete revolution past zero: While in Bank 1, a complete revolution past zero accesses Bank 2; while in Bank 2, a complete revolution past zero accesses Bank 1. The 2ND LED indicates which bank is currently being accessed.

Note The Function switch should be kept in the position for the selected mode (1 through 7) or in position 0 when not in use to avoid any inadvertent change in configuration. 0 is an inactive position.

- SW2 (paddle) switch — Actuates or selects the desired setting for the selected function when the switch is held momentarily in either the up or down position.
- 2ND LED — When on, indicates that user is accessing the second bank of configuration parameters.
- CONF (configuring) LED — When on, indicates the module is initializing or processing configuration information.

Figure 5. Module Configuration Switches and LEDs



Local On-board Module Configuration

1. Rotate the Function Switch to the desired function (see Table 5). Also refer to Table 4 on page 16 for a summary in table format of all parameters and their ranges, and default values.

2. Move the paddle switch up or down to set the desired function parameter. Some parameters require that the paddle switch be moved more than once in succession.

Table 5. 8950ADC Local On-board Configuration Functions

	Function Switch	Paddle Switch Up	Paddle Switch Down	Function Description
Bank 1	0	--	--	Inactive position
	1	MII (US/525)	--	Recalls default parameters for MII (US/525) standard.
	2	MII (Japan/525)	--	Recalls default parameters for MII (Japan/525) standard.
	3	BETA (US/525)	--	Recalls default parameters for BETA (US/525) standard.
	4	BETA (Japan/525)	--	Recalls default parameters for BETA (Japan/525) standard.
	5	EBU N10 (625)	--	Recalls default parameters for EBU N10 625 standard.
	6	SMPTE	--	Recalls default parameters for SMPTE standard.
	7	GBR	--	Recalls default parameters for GBR standard.
	8	Increase	Decrease	Input video level adjustment for all channels (Y, Cb/B, Cr/R) together.
	9	Increase	Decrease	Input black level adjustment for all channels (Y, Cb/B, Cr/R) together.
	A	Increase	Decrease	Y/G input video level adjustment.
	B	Increase	Decrease	Cb/B input video level adjustment.
	C	Increase	Decrease	Cr/R input video level adjustment.
	D	Increase	Decrease	Y/G input black level adjustment.
	E	Increase	Decrease	Cb/B input black level adjustment.
	F	Increase	Decrease	Cr/R input black level adjustment.
Bank 2	0	--	--	Inactive position
	1	Auto	Manual	Standard recognition – Paddle switch up enables automatic input standard recognition. First press down enables manual selection; second press selects 525 standard, and third press selects 625 standard.
			Down x 2	Manually sets 525 line standard.
			Down x 3[1]	Manually sets 625 line standard.
	2	Sync on G/Y	Ext Ref In	Sync mode selection determines the sync source.
	3	Pass	Remove	Pass or remove setup level from 525 Beta or MII only.
	4	Increase	Decrease	Horizontal video delay line adjustment in 37 ns steps to maximum 2.5 lines.
	5	Increase	Decrease	SAV/EAV (start active video/end active video) delay adjustment. The default value is correct for the sync source on the Y/G channel.
	6	Short	Wide	Vertical blanking.
	7 thru D	Currently not used		
	E	Off	On	Turn 0:4:4 Kalypso mode On or Off.
	F	Recall	Save (Down x 3)	Recall previously saved configuration or Save current configuration settings by pressing paddle down 3 X. Recycling module power restores the most recent state.

[1] Subsequent presses toggle between 525 and 625.

Remote Configuration and Monitoring

8950ADC configuration and monitoring can be performed using a web browser GUI interface or a networked Newton Control Panel when the 8900NET Network Interface module is present in the video frame (Gecko 8900TFN-V frame). Each of these interfaces is described below.

Note For remote access, make sure the jumper block on the module is set for both Local and Remote access (Figure 5 on page 18).

8900NET Module Information

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

Note The 8900NET module in the frame must be running software version 3.2.0 or higher for proper remote and control panel operation. Upgrade software and instructions for the 8900NET can be downloaded from the Grass Valley web site.

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.

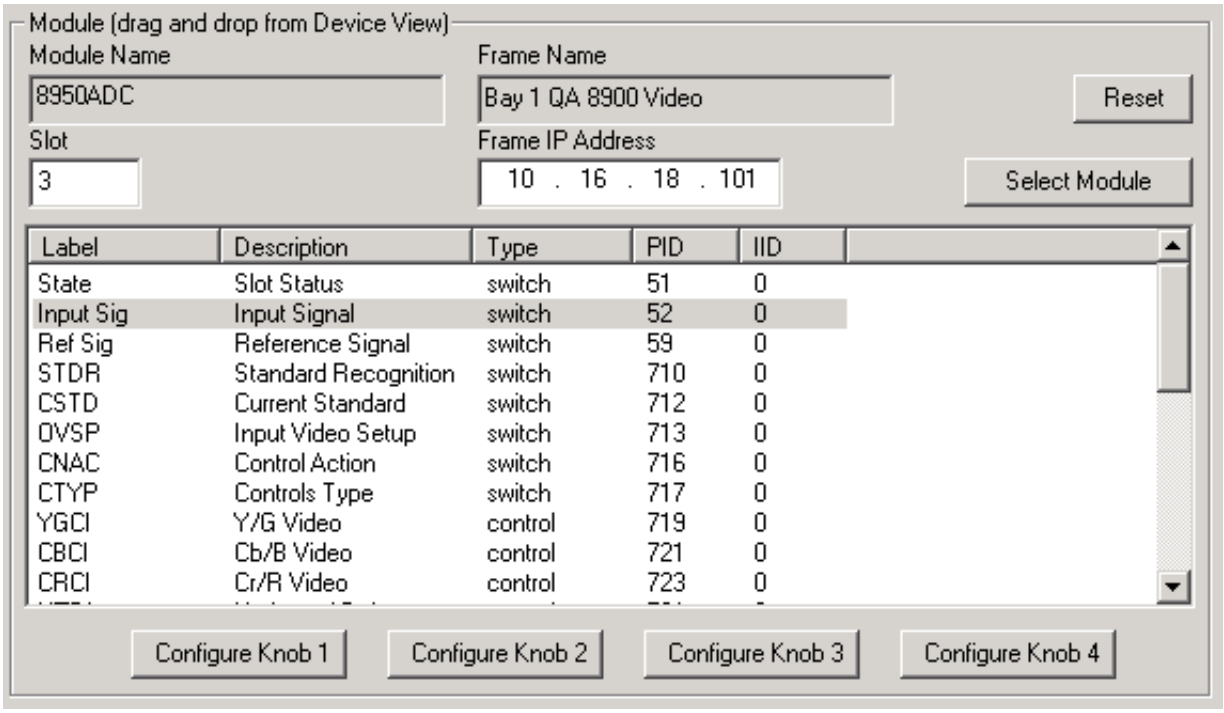
Control panel access offers the following considerations for module configuration and monitoring:

- 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 E-MEM and factory default recalls. The available control panel controls for the 8950ADC module are listed in Table 4 on page 16.

An example of the Newton Configurator is shown in Figure 6 on page 21.

Figure 6. 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:

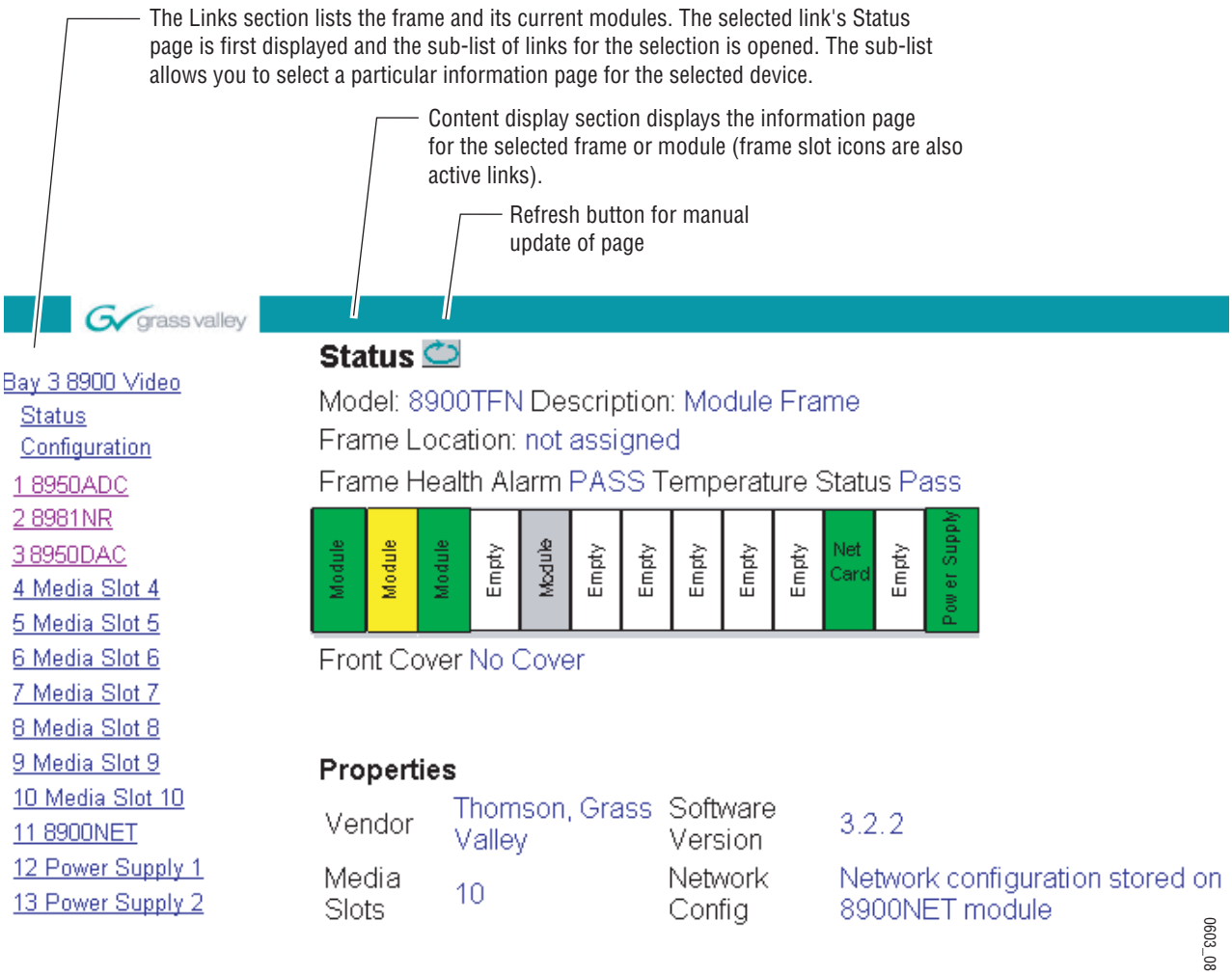
- Provides complete access to all module status and configuration functions, including naming of inputs and outputs, factory parameter and name default recalls, E-MEM functions, slot configuration, and SNMP monitoring controls.
- Web access will require some normal network time delays for processing 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 7 on page 22. 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 menu displays on the web pages shown in this manual represent the use of a particular platform, browser and version of 8900NET module software. They are provided for reference only. Displays will differ depending on the type of platform and browser you are using and the version of the 8900NET software installed in your system. This manual reflects 8900NET software version 3.2.2.

For information on status and fault monitoring and reporting shown on the Status page, refer to *Status Monitoring* on page 36.

Figure 7. Gecko 8900 Frame Status Page

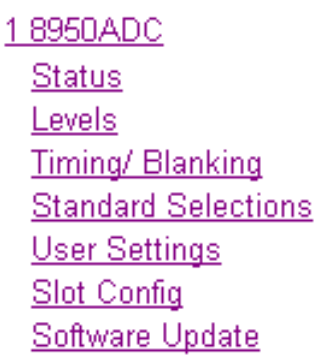


8950ADC Links and Web Pages

The 8900 GUI provides the following links and web pages for the 8950ADC module (Figure 8):

- Status – reports input and reference signal status and module information (page 24),
- Levels – select operating format for module and adjust video and black levels (page 25),
- Timing/Blanking – adjust horizontal timing, select SAV/EAV, sync source, and vertical blanking width (page 27),
- Standard Selections – select standard recognition method, add or remove output video setup, and turn Kalypso 0:4:4 compressed chroma key signal on or off (page 28),
- User Settings – Save or recall user settings, select factory defaults (page 29),
- Slot Config – provides a Locate Module function and Slot Memory and SNMP reporting status information (page 30), and
- Software Update – provides information on software updating (page 32).

Figure 8. 8950ADC Web Page Links



Refer to Table 4 on page 16 for a summary in table format of all parameters and their ranges, and default values.

Status Web Page

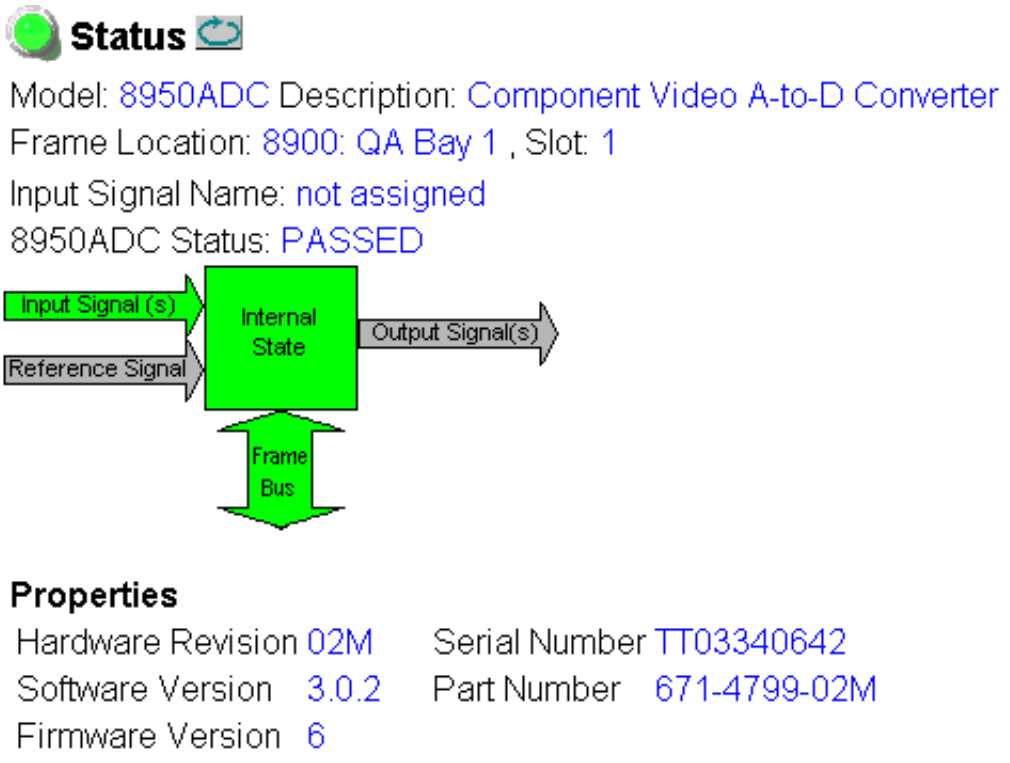
Use this link

1 8950ADC
Status
Levels
Timing/ Blanking
Standard Selections
User Settings
Slot Config
Software Update

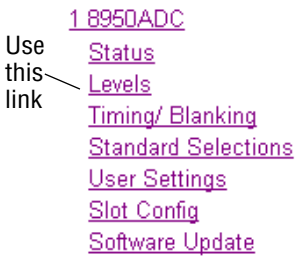
The Status web page (Figure 9) shows the input signal status of the component analog video input. Color coding of the display indicated the signal status. Refer to *Status Monitoring* on page 36 for an explanation of the color coding.

Information about the module, such as part number, serial number, hardware revision and software and firmware versions are given in a read-only section at the bottom of the display.

Figure 9. 8950ADC Status Web Page



Levels Web Page

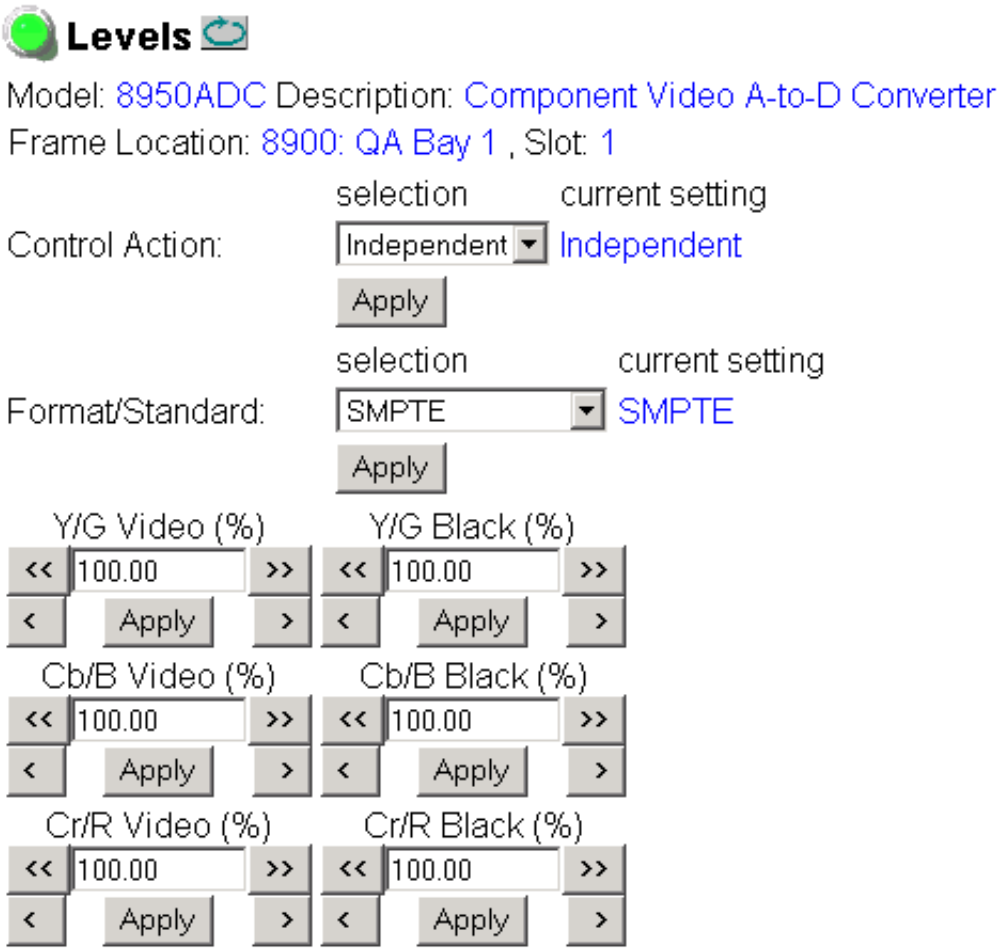


The Levels web page (Figure 10) provides adjustment for the following module parameters:

- Format and standard selection,
- Video levels (all channels together or individually), and
- Black levels (all channels together or individually).

Press the **Apply** button when required after a selection to enter the value.

Figure 10. Levels Web Page for SMPTE, M II, and EBU N10



Format/Standard Selection

Select a component standard from the pulldown choices. The default parameters for that standard will be recalled to the module.

Video and Black Levels

If required, Video and Black levels for each channel can be adjusted as needed after the selected format defaults have been loaded.

Levels can be set in **Independent** mode (Y/G, Cb/B, and Cr/R individually) or in **Locked** mode (all channels at once with any of the three controls). Use the **Control Action** pulldown to select either **Independent** or **Locked**.

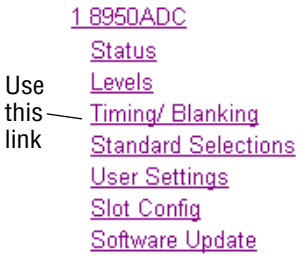
Make Level adjustments with the controls provided. You may use the arrow controls or enter a number with the keyboard.

If you have made level changes, save these if desired with the Save User Settings function (see *User Settings Web Page* on page 29).

Horizontal delay, sync source, and vertical blanking are not changed by this reset so these user adjustments are retained. This differs from the **Get Factory Defaults** function which returns these values to factory calibration.

The Level web pages differ slightly between formats. The Black controls will be labeled differently for the specific formats.

Timing/Blanking Web Page

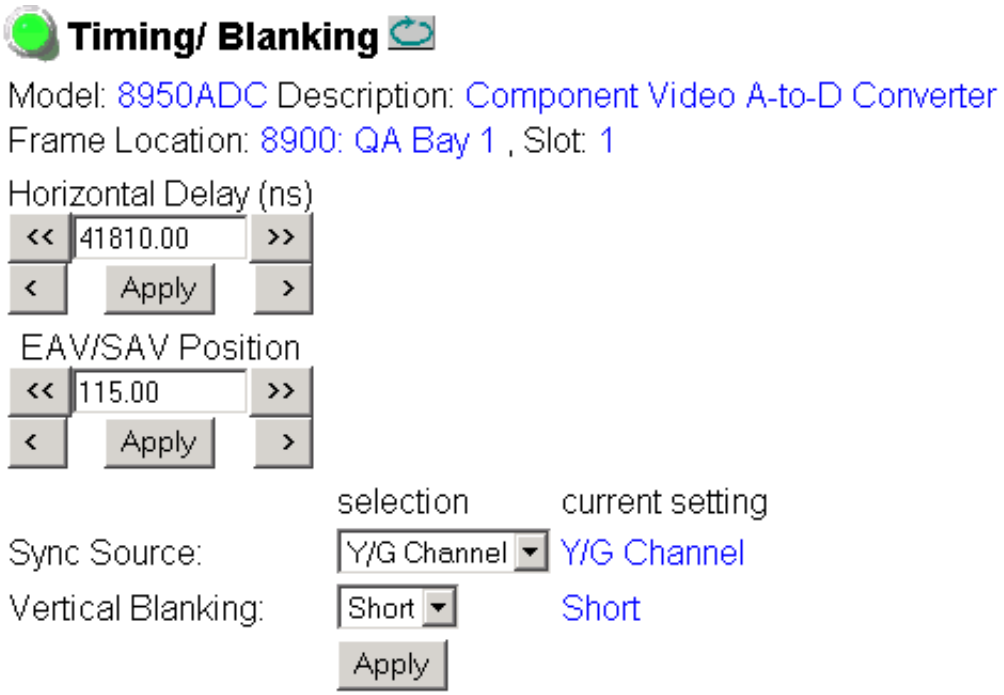


Set the following parameters on the Timing/Blanking web page:

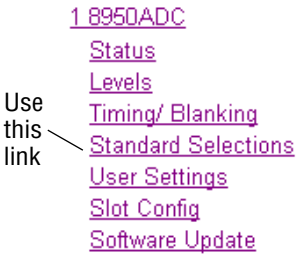
- Amount of Horizontal Delay in ns,
- Position of EAV/SAV (end active video/start active video),
- Sync source (Y/G Channel or External), and
- Short or Wide vertical blanking.

The Timing/Blanking web page is shown in Figure 11.

Figure 11. Timing/Blanking Web Page



Standard Selections Web Page



The Standards Selection web page shown in Figure 12 (for a 525 standard) is used to select the following module parameters:

- Standard Recognition (auto or manual,)
- If **Manual** is selected, set signal standard (525 or 625),
- Output video setup add or remove (in 525 line rate only), this control is grayed out in a 625 standard as shown in Figure 13, and
- Enable Kalypso 0:4:4 Mode (compressed chroma key input mode for Thomson Grass Valley Kalypso Video Production Center).

Figure 12. Standard Selection Web Page – 525 Signal

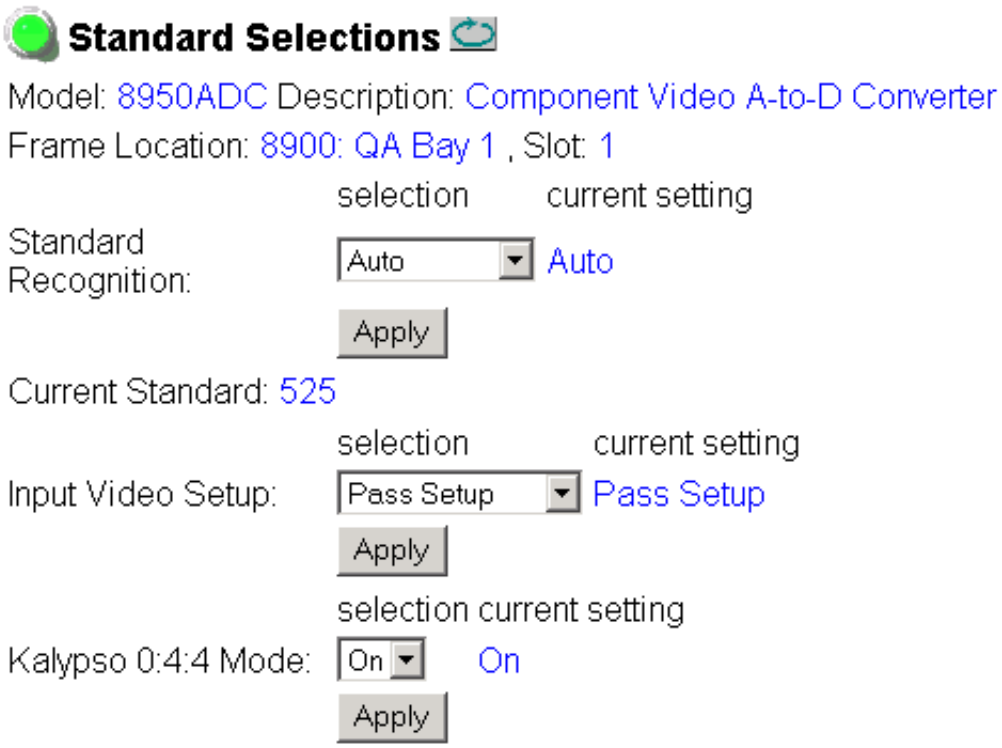
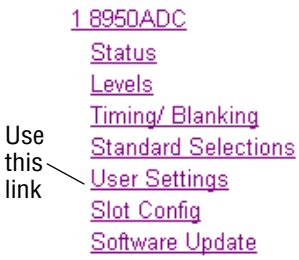


Figure 13. Standard Selection – 625 Signal

User Settings Web Page

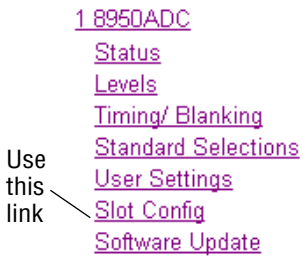


The User Settings web page (Figure 14) allows you to set the following parameters:

- Recall previously user setting with **Recall User Settings** button,
- Save the currently selected settings for the entire module by selecting the **Save User Settings** button, and
- Recall the GBR factory default video levels and timing settings on the module using the **Get Factory Defaults** button.

Figure 14. User Settings Web Page

Slot Config Web Page



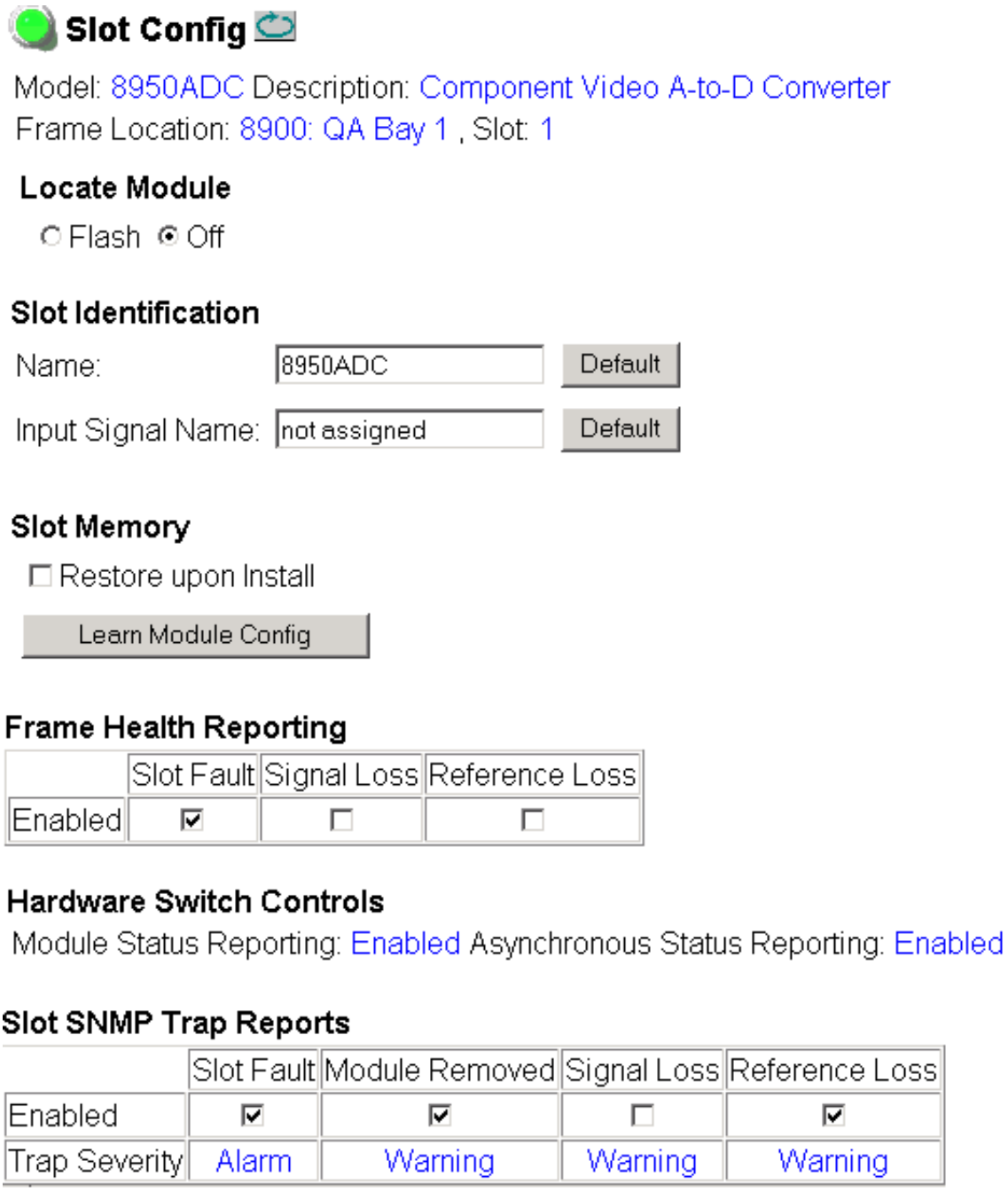
Use the Slot Config web page (Figure 15 on page 31) to perform the following functions on the 8950ADC module:

- **Locate Module** – selecting the **Flash** radio button flashes the yellow COMM and CONF LEDs on the front of the module so it can be located in the frame.
- **Slot Identification** – you may identify the module by typing a specific name in the **Name** field. The assigned name is stored on the 8900NET module and travels with the 8900NET module if it is moved to another frame. Select **Default** to enter the factory default module name.
- **Slot Memory** – the slot configuration for each media module is automatically saved periodically (once an hour) to the 8900NET module in that frame. You may also select the **Learn Module Config** button at any time to save the current configuration for this slot. The configuration is saved on the 8900NET module. If the 8900NET module is removed or powered down, the stored configurations are not saved.

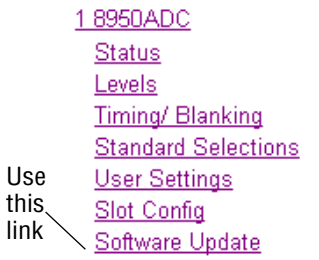
  When the **Restore upon Install** box has been checked, the current configuration saved to this slot is saved as slot memory. When the current module is removed and another module of the same type is installed, the configuration saved to the 8900NET module will be downloaded to the new module. The box must be checked before the current module with the saved configuration is removed.
- **Frame Heath Reporting** – this function is not active with the latest version of the 8900NET module that controls this page.
- **Hardware Switch Controls** – a read-only status report of 8900NET module switch settings for Module Status Reporting and Asynchronous Status Reporting. These functions must be enabled for the following Slot SNMP Trap Reports to function.
- **Slot SNMP Trap Reports** – displayed only when the SNMP Agent software has been installed on the 8900NET module. Slot SNMP traps can be enabled only when the hardware switches for Module Fault reporting and Asynchronous Status reporting are in enabled on the 8900NET module (dipswitch S1 segment 5 and dipswitch S2 segment 1).

  The enabled SNMP traps will be reported to any SNMP manager that is identified as an SNMP Report Destination in 8900NET configuration. Trap severity is read-only hard-coded information that is interpreted and responded to by the SNMP Manager software configuration.

Figure 15. 8950ADC Slot Config Web Page



Software Update Web Page



The Software Update page (Figure 16) indicates that module software updates via the web or using the NetConfig networking application are not supported. For instructions on updating to the latest software, refer first to the 8950ADC Release Notes that accompany the software update for complete details.

Currently, the only recommended method of software updating is done with a software kit (8900-FLOAD-CBL) that includes a CD-ROM with the current software files and a serial cable assembly available from Grass Valley.

Refer to the 8900-FLOAD-CBL Software Upgrade Instruction Manual in PDF format on the CD-ROM for complete updating instructions and the required software files for the module.

Figure 16. 8950ADC Software Update Web Page

Specifications

Table 6. 8950ADC Specifications

Parameter	Value
Analog Component Input	
Signal type	SMPTE, GBR, EBU N10, Beta (US), Beta (Japan), MII (US), MII (Japan)
Number of inputs	3: Y, (B-Y), (R-Y) or G, B, R
Connector type	75 Ω BNC
Signal level	1 Vpp +15% max (Y or G channel) 0.7Vpp +15% [(B-Y), (R-Y) or B, R channels]
Return loss	> 40 db to 5.5 MHz
External Sync Input	
Signal type	Color black: 140 mV to 560 mV / Composite sync: 600 mV to 3 V
Number of inputs	1 loop-through
Connector type	75 Ω BNC
Impedance	Hi Z (> 10k)
Return loss	> 40 db to 5.5 MHz
Digital Outputs	
Number of outputs	2
Connector type	75 Ω BNC
Signal formats	SMPTE 259M
Return loss	> 18 dB, 5 MHz - 270 MHz
Error handling	EDH embedded
Performance	
Standards	Input: 525 or 625 (auto or manual)
Sampling	4 times over-sampling
Input A/D	10 bits
Frequency response	Y,G,B,R: ±0.1 dB (10 Hz to 5.5 MHz) (R-Y), (B-Y): ±0.1 dB (10 Hz to 2.75 MHz)
Group delay error	Y: < 5 ns peak to peak (10 Hz to 5.5 MHz) (R-Y), (B-Y): < 5 ns peak to peak (10 Hz to 2.75 MHz)
Propagation delay	2.5 µs GBR input; 2.1 µs Y(B-Y) (R-Y) input
Delay control (user)	Up to 2.5 line (37 ns increments)
Relative timing of CAV outputs	Y to B-Y and R-Y within 2 ns
K-factor 2T pulse	K < 0.4%
Vertical blanking	525: Narrow (short) – 9 lines Wide – 19 lines 625: Narrow (short) – 9 lines Wide – 25 lines
Input gain control	± 50% ± 20%
Black level setup	Manual, all channels (±15%)
Signal-to-noise ratio	≥ 60 dB

Table 6. 8950ADC Specifications - (continued)

Parameter	Value
Environmental	
Frame temperature range	See Gecko 8900 Frame specifications
Operating humidity range	0 to 90% non-condensing
Non-operating temperature	-10 to 70 ° C
Mechanical	
Frame type	Gecko 8900 Series
Size	2 RU
Power Requirements	
Supply voltage	+12 V
Power consumption	≤ 7.2 Watts ±5%

Service

The 8950ADC 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:

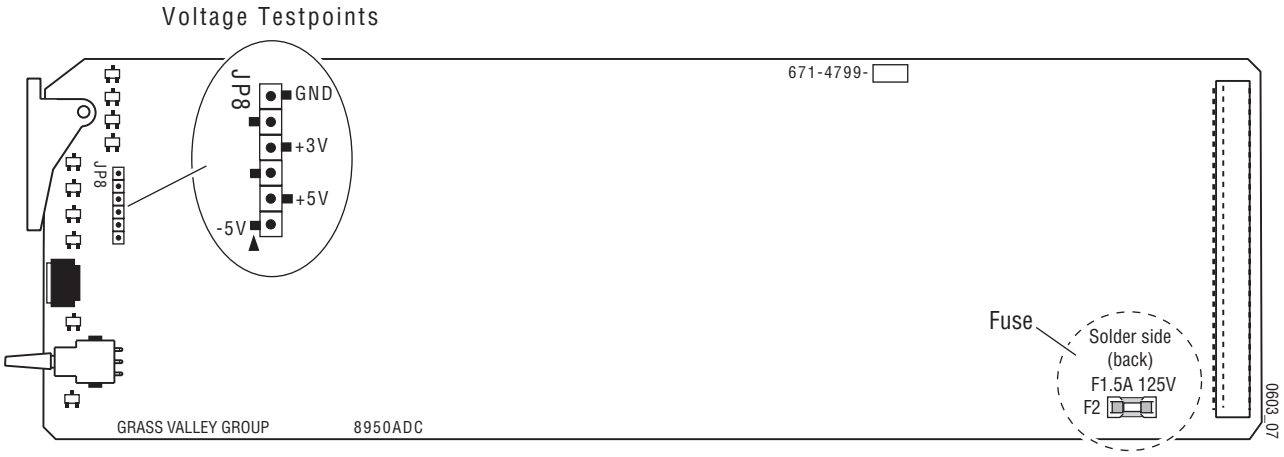
- Check frame and module power and signal present LEDs.
- Verify power at the voltage testpoints (Figure 17) and check Fuse F2 (on the back of the module circuit board) if no voltage is detected.
- Check for presence and quality of input signals.
- Verify that source equipment is operating correctly.
- Check cable connections.

Refer to Figure 4 for the location of PWR LED and Table 2 on page 12 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* at the front of this document for the Grass Valley Customer Service Information number.

Figure 17. 8950ADC Fuse and Voltage Testpoint Locations



Status Monitoring

This section provides a summary of status monitoring and reporting for a Gecko 8900 Series system. It also summarizes what status items are reported and how to enable/disable reporting of each item. There are a number of ways to monitor status of modules, power supplies, fans and other status items depending on the method of monitoring being used.

8900 Frame status will report the following items:

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

Module health status will report the following items:

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

LEDs

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

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

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

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

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

Status LEDs for this module are described in *Operation Indicator LEDs* on page 11. LEDs for the 8900NET module are described in the *8900NET Network Interface Instruction Manual*.

Frame Alarm

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

Web Browser Interface

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

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

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

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

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

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.

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

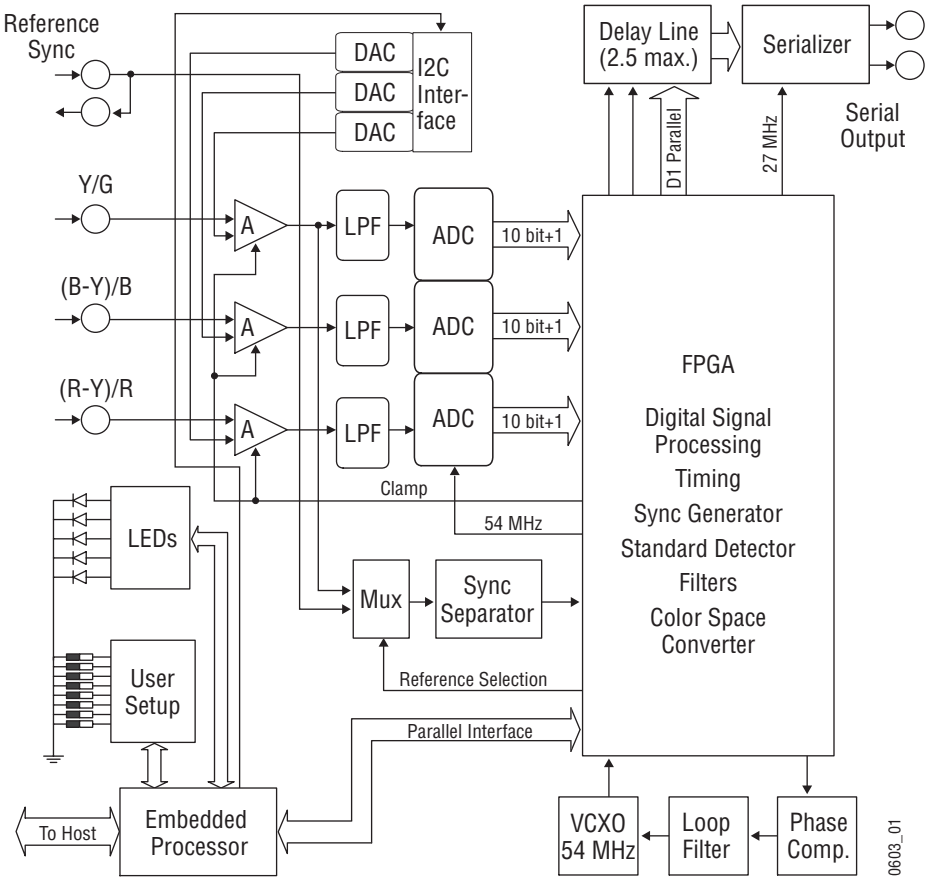
Functional Description

The 8950ADC converts an analog CAV or GBR video signal to the SMPTE 259M (270Mb/s) D1 serial component digital signal. The major functional blocks are:

- Input buffers, amplifiers and low pass filters (LPF)
- Analog to digital converters (ADC)
- Digital Signal Processing (DSP) Field Programmable Gate Array (FPGA)
- Digital to Analog Converters
- Input Phase Lock Loop (PLL) and 54 MHz clock generator
- Serializer
- Delay line
- Embedded processor

Refer to the block diagram in Figure 18 while reading the following functional description.

Figure 18. 8950ADC Block Diagram



Input Buffers/Amplifiers/Low Pass Filters

Three-channel input Clamping Video Amplifiers support the professional studio TV standard with 20 MHz bandwidth and > 60dB signal to noise ratio. Black level voltage is under CPU control (DC feedback D/A converters). Signals are passed from the amplifiers to three identical Low Pass Filters (LPF), where all spectral components above 15 MHz are removed from incoming signals.

Analog to Digital Converters

The three 10-bit ADCs have a 54 MHz sampling rate, and perform high speed analog to digital conversion on the signals received from the LPFs.

Digital Signal Processor FPGA

The DSP FPGA performs the following signal processing:

- Input Signal Processor

  After analog to digital conversion, the digitized video signal passes through the Digital Input Signal Processor. This controls the gain of all three input signals individually in the range of ± 15%. User input gain control is also available through Embedded Processor. The clipping circuit preludes overshooting errors in cases where either the input signal level or amplifier gain is too high.

- Color Space Converter

  The 8950ADC supports Y, (B-Y), (R-Y) or GBR input, and the Color Space Converter automatically connects to the appropriate signal path. The Color Space Converter converts an incoming GBR signal to Y, (B-Y), (R-Y) according to the D1 Color space matrix.

- Sync Processor

  The Sync Processor contains the H&V Extractor, Frame Pulse Extractor, Standard Detector, and PLL Phase Detector Input Signal. (The Analog Sync Separator and PLL Phase Detector are not part of the FPGA.)

- Filters and Decimators

  The DSP FPGA performs Low Pass filtering (6 MHz bandwidth) and decimation by 4 for all three channels. For the B-Y and R-Y channels the DSP FPGA performs additional Low Pass filtering and decimation by 2 (3 MHz bandwidth).

- Control

  The Control FPGA contains parallel communication blocks between the embedded processor and FPGA.

Input Phase Lock Loop (PLL) and 54 MHz clock generator

From the incoming composite sync, the PLL generates a 54 MHz clock for oversampling. This clock also servers as a free-running clock when no input signal is present.

Delay line

The on board delay line provides a maximum 2.5 line signal delay. The delay time is under user control in 37 ns increments.

Serializer

The Serializer is a standard D1, 10-bit, 270 MHz serializer with embedded Error Data Handling.

Embedded processor

The embedded processor provides the interface between the user and all the processing logic of the 8950ADC, as well as communication between the 8950ADC and a remote host processor.

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