

8920DMX

Video/Audio Demultiplexer Module

Instruction Manual

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Preface

About This Manual

This manual describes the features of a specific module in 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 *Gecko 8900 Series Frames Instruction Manual*).

8920DMX Video Audio Demultiplexer

Introduction

The 8920DMX is a Serial Digital (SD) Video/AES3 demultiplexer that extracts 20- or 24-bit AES/EBU audio streams from the ancillary data space of component 525 or 625 digital video. The demultiplexer identifies four audio groups in the ancillary data stream by a unique identification (ID). Each audio group (G1, G2, G3, or G4) can contain up to two AES/EBU audio streams of two channels each (four channels total). The 8920DMX can extract any one of these four groups.

The 8920DMX-110 module includes a BNC to terminal block adapter for accessing balanced 110 Ω audio outputs.

The 8920DUX module:

- Can be installed in any Gecko 8900TX-V, TF-V or TFN-V video frame (cannot be installed in a TX-A/TF-A or TFN-A audio frame),
- Is a hot-swappable module (can be removed and replaced in the frame with power on),
- Stores settings in non-volatile memory (if the power to the module is cycled, the module will maintain its settings),
- Outputs up to 2 stereo, AES/EBU audio digital streams,
- Handles synchronous 48K AES/EBU streams with selection of internal or external CRC/UVC generator, and
- Is able to pass or delete the audio group after extraction.

Installation

Installation of the 8920DMX module is a process of:

1. Placing the module in the proper video frame slot, and
2. Cabling and terminating signal ports.

The 8920DMX module can be plugged in and removed from an 8900 Series video frame with power on. When power is applied to the module, LED indicators reflect the initialization process (see [Power Up](#) on page 11).

Frame Capacity

The 8920DMX module can be installed in all 8900 Series video frames but with varying maximum quantities determined by frame cooling capacity. [Table 1](#) provides the power capacity, cooling capacity, and maximum module count for each frame type.

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

| Capacity Calculated | 8900TX-V Frame | 8900TF-V Frame | 8900TFN-V Frame |
|--------------------------------|----------------|----------------|-----------------|
| Power (W) | 100 | 100 | 100 |
| Recommended Module Cooling (W) | 30 | 90 | 90 |
| 8920DMX Modules | 6 | 10 | 10 |

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

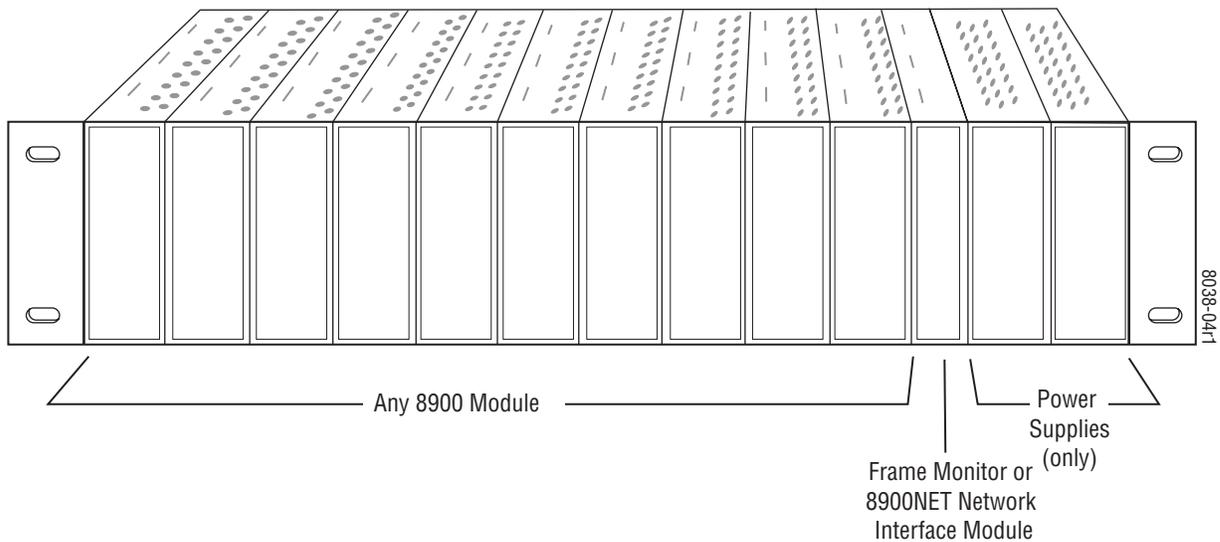
Module Placement in the 8900 Frame

There are ten slot locations in the 8900 Series video frame to accommodate either analog or digital video 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 *Gecko 8900 Series Frames Instruction Manual*.

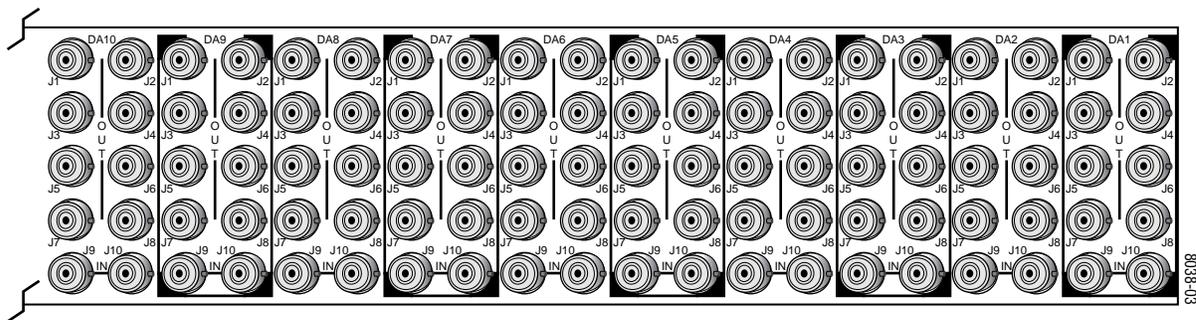
The third slot from the right is allocated for the Frame Monitor or 8900NET Network Interface module. These modules provide health monitoring and control options.

Figure 1. 8900 Series Frame



8900 modules are interchangeable within the module slots. 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 an 8900 video frame can accept is ten. Figure 2 illustrates the rear connector plate for an 8900 Series video frame.

Figure 2. 8900 Series Frame Rear Connector



To install a module in the frame:

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

Note At the back of this manual are overlay cards that can be placed over the rear connector BNCs to identify the specific 8920DMX connector functions.

Cabling

Input

The SD video stream is connected to the looping input BNC at J9 or J10. If not looping the signal to other equipment, terminate the unused connector into 75 Ω.

Outputs

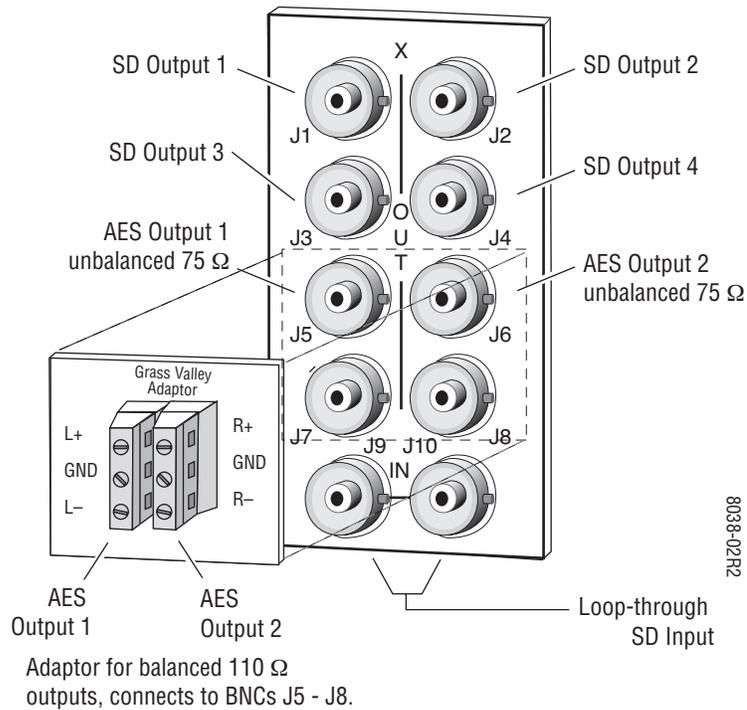
The 8920DMX provides four SD output streams—J1 through J4. The destination equipment should have a 75 Ω input impedance or loop through inputs that are terminated into 75 Ω.

For unbalanced AES/EBU audio outputs, connect cables to BNCs J5 and J6.

For applications requiring balanced audio outputs, use the terminal post adaptor shown in Figure 3 to connect up to two balanced AES/EBU output cables. The adapter mounts on the plus and minus BNC pairs J5/J7 and J6/J8. This adapter ships with the 8920DMX-110 model or can be ordered separately if required.

Note Jumpers JP12 – JP15 on the module circuit board must be set for the correct audio output impedance (balanced 110 Ω or unbalanced 75 Ω). Refer to [Audio Output Impedance on page 14](#).

Figure 3. 8920DMX Input/Output Connectors



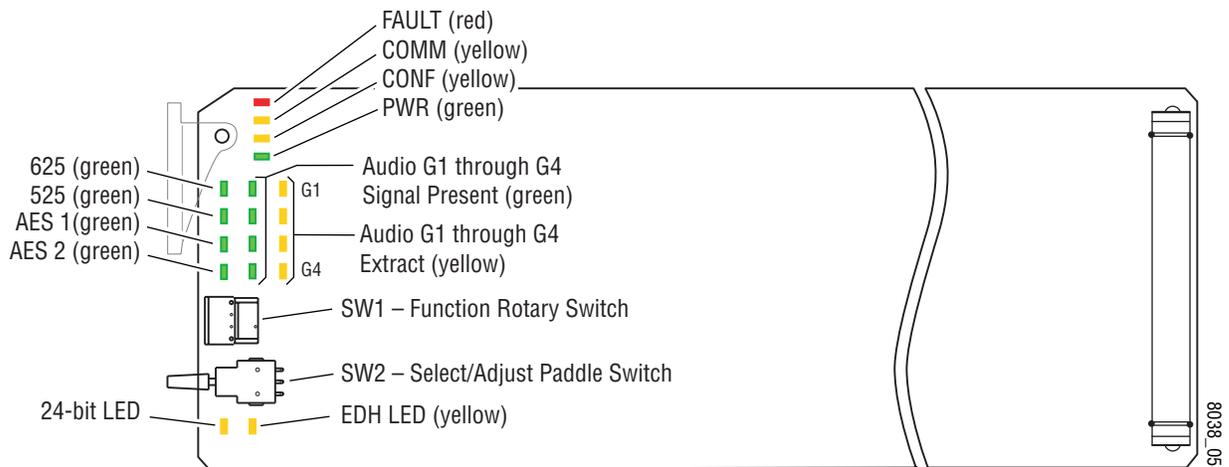
Power Up

The LED indicators and configuration switches are illustrated in [Figure 4](#). Upon power-up, the green PWR LED should light and the yellow CONF LED should light while the module initializes (less than 2 seconds).

Operation Indicator LEDs

With factory default configuration and a valid SD input containing AES/EBU audio groups, the green PWR LED, an SD format LED (either 525 or 625), one or more Signal Present LEDs should be on. The appropriate yellow Extract LED (G1 through G4) will indicate which audio group the module is configured to extract.

Figure 4. Operation Indicator LEDs



A red FAULT LED indicates an error situation and, with the other 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 an internal fault. (Refer to Service on page 25 .) |
| | Flashing | Configuration problems. Check inputs and settings. Missing video or group. |
| COMM (yellow) | Off | No activity on frame communication bus. |
| | 3 Quick Pulses | 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. |
| | 3 Quick Pulses | Location Command received by the module from a remote control system. |

Table 2. Indicator LEDs and Conditions Indicated - (continued)

| LED | Indication | Condition |
|---|-----------------|---|
| PWR (green) | Off | No power to module or module's DC/DC converter failed. |
| | On continuously | Normal operation, module is powered. |
| 625 (green) | Off | No video or standard is other than 625. |
| | On continuously | Valid 625 video signal is present. |
| 525 (green) | Off | No video or standard is other than 525. |
| | On continuously | Valid 525 video signal is present. |
| AES 1 (green) | Off | No valid AES 1 stream is present in selected group. |
| | On continuously | Valid 48 kHz AES 1 stream is present. |
| AES 2 (green) | Off | No valid AES 2 stream is present in selected group. |
| | On continuously | Valid 48 kHz AES 2 stream is present. |
| G1 Signal Present (green) | Off | No audio present in channel G1. |
| | On continuously | Audio present in channel G1 and passing through. |
| | Flashing | Audio present in channel G1 and is being deleted. |
| G2 Signal Present (green) | Off | No audio present in channel G2. |
| | On continuously | Audio present in channel G2 and passing through. |
| | Flashing | Audio present in channel G2 and is being deleted. |
| G3 Signal Present (green) | Off | No audio present in channel G3. |
| | On continuously | Audio present in channel G3 and passing through. |
| | Flashing | Audio present in channel G3 and is being deleted. |
| G4 Signal Present (green) | Off | No audio present in channel G4. |
| | On continuously | Audio present in channel G4 and passing through. |
| | Flashing | Audio present in channel G4 and is being deleted. |
| G1 Signal Extract (yellow) | Off | G1 audio will not be extracted. |
| | On continuously | G1 audio will be extracted. |
| | Flashing | G1 audio cannot be extracted because it does not exist in the input signal. |
| G2 Signal Extract (yellow) | Off | G2 audio will not be extracted. |
| | On continuously | G2 audio will be extracted. |
| | Flashing | G2 audio cannot be extracted because it does not exist in the input signal. |
| G3 Signal Extract (yellow) | Off | G3 audio will not be extracted. |
| | On continuously | G3 audio will be extracted. |
| | Flashing | G3 audio cannot be extracted because it does not exist in the input signal. |
| G4 Signal Extract (yellow) | Off | G4 audio will not be extracted. |
| | On continuously | G4 audio will be extracted. |
| | Flashing | G4 audio cannot be extracted because it does not exist in the input signal. |
| 24b (yellow) | Off | Encoding is 20-bit. |
| | On continuously | Encoding is 24-bit. |
| EDH (yellow) | Off | No error detected. |
| | On | EDH error has been detected. |

Configuration

The 8920DMX module can be configured locally using onboard switches or remotely using the 8900NET network interface.

Configuration and adjustment items for the 8920DMX include:

- Remote control lockout (with onboard jumper JP10),
- AES balanced 110 Ω or unbalanced 75 Ω output (configured with onboard jumpers),
- Audio channel extraction/deletion,
- Source of CRC/UVC generation, and
- Setup save and recall.

Refer to the following sections for configuration instructions:

- Configuration Summary ([page 13](#))
- Onboard Module Configuration ([page 14](#))
- Remote Control and Monitoring ([page 16](#))

Configuration Summary

The 8920DMX module accepts an SD video input and can be configured by the user to extract and pass or delete any one of four audio groups present in the SD signal. This is done with the Audio Group Management controls.

The extracted audio group can be accessed at either AES balanced 110 Ω or unbalanced 75 Ω outputs (jumper selected) from the module.

Note The 8920DMX extracts and deletes only one audio group. To change more than one audio group in the SD stream, you can loop the input to multiple modules and configure each module to manipulate one of the four groups

The module also provides a control for selecting CRC/UVC generation. Normally, this control should be set to external. However, because of limitations in the module's hardware, if the AES 1 and AES 2 channels in an audio group are out of time (> 1 audio clock), the CRC/UVC on the AES 2 output gets corrupted. In this case, CRC/UVC generation should be set to internal. In this mode, the module strips the externally generated CRC from the two audio streams and inserts an internally generated CRC/UVC, avoiding possible CRC errors downstream.

Note With CRC/UVC generation set to internal, status bits on the AES output are set to 48 kHz Professional (synchronous) and user bits are set to zero.

Onboard Module Configuration

The 8920DMX module can be locally configured using the jumpers, the rotary switch, and the paddle switch shown in Figure 5. These components perform the following:

- Jumpers – set control mode for Local only or Remote and Local, and select audio output type and impedance.
- Function (rotary) switch – selects a desired configuration parameter (0 through 9, A through F), although not all positions are used.
- SW1 (paddle) switch – initiates a configuration parameter selection.
- CONF (configuring) LED – when on, indicates the module is initializing or processing configuration information.

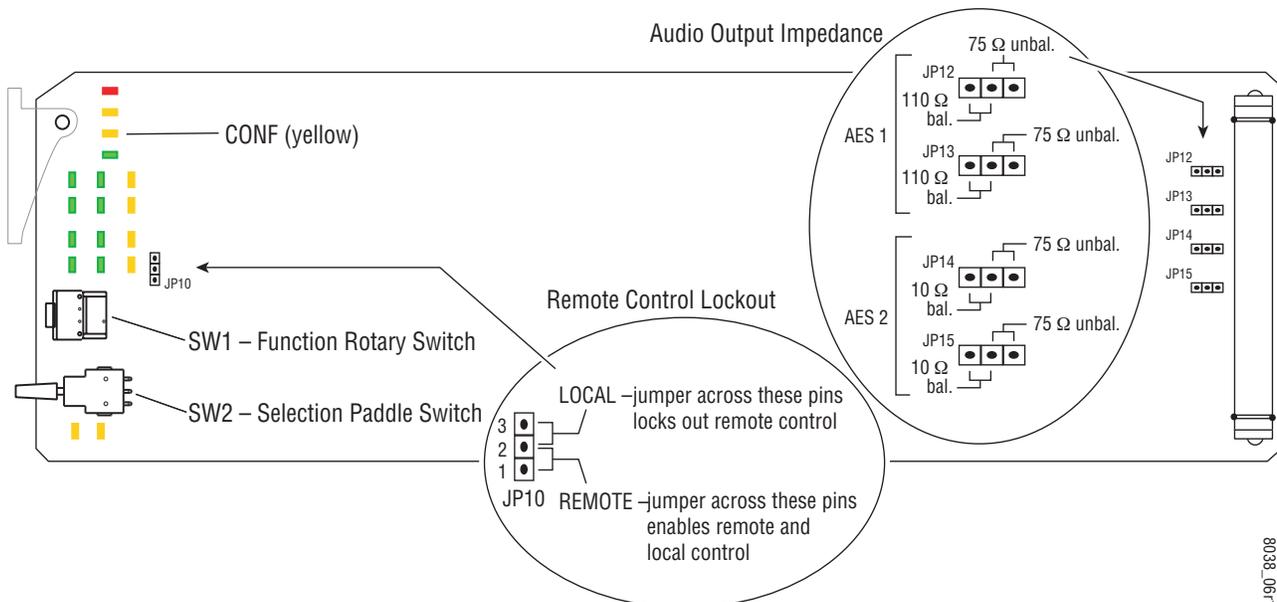
Remote Control Lockout

When a jumper is placed across pins 2 and 3 of jumper block JP10 (see Figure 5), module output mode settings are adjustable from the Local on-board switches only. To have both Local and Remote access, set the jumper across pins 1 and 2.

Audio Output Impedance

The desired audio type and output impedance must be selected as balanced 110 Ω or unbalanced 75 Ω with jumpers JP12 and JP13 (AES 1) and JP13 and JP15 (AES 2) shown in Figure 5.

Figure 5. Module Configuration Switches and LEDs



Local Onboard Configuration Settings

The 8920DMX can be configured using the rotary switch shown in [Figure 5 on page 14](#) to access the configuration items shown in [Table 3](#). To make a configuration setting, rotate the switch to the desired configuration parameter. Use the paddle switch to select either the switch Up or switch Down setting.

Table 3. 8950DAC Configuration Functions

| Function Switch | Paddle Switch Up | Paddle Switch Down | Function Description |
|-----------------|------------------------------|--------------------------|--|
| 0 | -- | -- | Inactive position |
| 1 | -- | -- | Not Used |
| 2 | St 1/2 from G1 and pass G1 | N/A | Extracts and passes AES1 and AES2 from Group 1, if signals are present |
| 3 | St 1/2 from G2 and pass G2 | N/A | Extracts and passes AES1 and AES2 from Group 2, if signals are present |
| 4 | St 1/2 from G3 and pass G3 | N/A | Extracts and passes AES1 and AES2 from Group 3, if signals are present |
| 5 | St 1/2 from G4 and pass G4 | N/A | Extracts and passes AES1 and AES2 from Group 4, if signals are present |
| 6 | St 1/2 from G1 and delete G1 | Same as Setting 2/Up | Extracts and removes or passes G1 AES/EBU in the D1 output stream |
| 7 | St 1/2 from G2 and delete G2 | Same as Setting 3/Up | Extracts and removes or passes G2 AES/EBU in the D1 output stream |
| 8 | St 1/2 from G3 and delete G3 | Same as Setting 4/Up | Extracts and removes or passes G3 AES/EBU in the D1 output stream |
| 9 | St 1/2 from G4 and delete G4 | Same as Setting 5/Up | Extracts and removes or passes G4 AES/EBU in the D1 output stream |
| A-D | -- | -- | Not used |
| E | CRC from input signal | CRC internally generated | Select source of CRC and UVC generation. Internal inserts internally generated CRC/UVC into both streams |
| F | Recall | Store | Store or recall user settings |

Note Currently, when an audio group is extracted and deleted from the SD output, the demultiplexing chip does not revise the CRC checksum included in the output signal. As a result, a CRC error may be reported by downstream devices.

[Table 4](#) provides the possible input conditions and the output condition that result when the rotary switch is set to extract and pass G1 (position 2), G2 (position 3), G3 (position 4) or G4 (position 5) or extract and delete the selected group.

Table 4. Possible Operating Conditions

| SD Video Input Condition | AES/EBU Audio Input Condition | Output Condition |
|--------------------------|-------------------------------|---|
| Present | Present | If G(n) exists in incoming video, AES1 and AES2 will be extracted, and unchanged video will be passed. If G(n) does not exist in the incoming video, the AES output will be digital silence. |
| Present | Not Present | If no audio group exists in incoming video, AES output will be digital silence. |
| Not Present | Not Present | If no video or audio input, video output will be random noise and audio output will be digital silence. |
| Present | Present | If extracted group has been selected to be deleted (rotary switch settings 6 – 9), extracted audio group will be deleted from incoming video stream. (See Note above concerning CRC errors.) |

Remote Configuration and Monitoring

8920DMX configuration and monitoring can be performed remotely using the 8900NET interface in 8900TF or TFN frames (see Figure 6). This section describes the GUI access to the module configuration functions. Refer to the *8900NET Network Interface Module Instruction Manual* for information on setting up and operating the 8900 frame network.

For remote access, make sure the jumper block on the module is set for both Local and Remote access (Figure 5 on page 14).

Note The physical appearance of the menu displays 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.

Figure 6. 8900NET GUI

The Links section lists the frame and its current modules. The selected link's Status page is first displayed and the sub-list of links for the selection is opened. The sub-list allows you to select a particular information page for the selected device.

Content display section displays the information page for the selected frame or module (frame slot icons are also active links).

Refresh button for manual update of page

Online Manual Link

Modular QA Bay 1

- [Status](#)
- [Configuration](#)
- [1 Media Slot 1](#)
- [2 8960DEC](#)
- [3 Media Slot 3](#)
- [4 8920DMX](#)
- [5 Media Slot 5](#)
- [6 Media Slot 6](#)
- [7 Media Slot 7](#)
- [8 Media Slot 8](#)
- [9 Media Slot 9](#)
- [10 Media Slot 10](#)
- [11 8900NET](#)
- [12 Power Supply 1](#)
- [13 Power Supply 2](#)

Status

Model: 8900TFN Description: [Module Frame](#)

Frame Location: 8900: QA Bay 1

Temperature Status [Pass](#)

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

Front Cover [No Cover](#)

Properties

| | | | |
|-------------|-----------------------|------------------|--|
| Vendor | Thomson, Grass Valley | Software Version | 3.0 |
| Media Slots | 10 | Network Config | Network configuration stored on 8900NET module |

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The 8900 modules can be addressed by clicking 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.

Use the **Refresh** button to update the display (available with 8900NET software version 3.0 and later).

The **Online Manual Link** button can be set up to link to the documentation in pdf format. Link configuration is done on the Frame Configuration page.

For information on status and fault monitoring and reporting shown on the Status page, refer to *Status Monitoring on page 22*.

Module Links and Displays

The 8900 GUI provides the following links and displays for the 8920DMX module (refer to [Figure 7](#)):

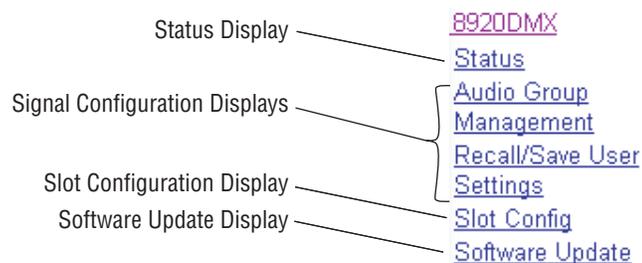
- Status – reports module operational status and properties (part and version numbers),
- Signal configuration displays for setting up module parameters,
- Slot Config – module configuration information (location and user assigned names), and
- Software Update – allows software download via the 8900NET module when available.

Note Refer to the latest Release Notes for this module on the Grass Valley website at <http://www.thomsongrassvalley.com> for complete details on updating software.

The Status, Slot Config, and Software Update displays are described in detail in the 8900NET manual. Some functions listed may not be supported by a particular module. These will be indicated as not supported.

Refer to *Signal Configuration Displays* in the next section for complete details on setting the module parameters.

Figure 7. 8920MUX Module Configuration Display Links



Signal Configuration Displays

This section discusses in detail the signal configuration displays used to setup the 8920DMX module output configuration.

Use
This
Link

- [8920DMX](#)
- [Status](#)
- [Audio Group Management](#)
- [Recall/Save User Settings](#)
- [Slot Config](#)
- [Software Update](#)

Audio Group Management

The Audio Group Management display (see [Figure 8](#)) allows you to perform the following functions:

- Select the Output action for the module (Extract and pass or delete one of four audio groups to the SD output),
- Choose the source of CRC/UVC generation from **External** (CRC/UVC is generated from input signal) or **Internal** (CRC/UVC is generated internally), and
- Enable or disable SD input reporting for applications where this reporting is not desirable or required. When set to Disabled, the SD Input graphic on the Status page will be gray, showing this signal as not monitored. See [Status Monitoring on page 22](#).

Click the **Apply** button to activate a selection.

The status reporting section of the display provides monitoring of:

- Audio groups present in the SD input,
- Status of the group extract/pass/delete action, and
- Audio groups present in the SD output.

CAUTION When monitoring the status of the signal configuration, be aware that this page is a static display and requires manual refresh. Changing SD input upstream can cause changes to the 8920DMX output that will not be reported until status refresh is activated. To refresh the status information click on the page link or **Refresh** button (8900NET software version 3.0 and later).

Figure 8. Audio Group Management Display

 **Audio Group Management** 

Model: 8920DMX Description: SDI/AES Demultiplexer

Frame Location: 8900: QA Bay 1 , Slot: 4

Video Standard: 525

| | Group 1 : | Group 2 : | Group 3 : | Group 4 : |
|------------|-----------|-----------|-----------|----------------------|
| SD Input: | Empty | Empty | Empty | Present(AES1 & AES2) |
| Action: | None | None | None | Extract |
| SD Output: | Empty | Empty | Empty | Present(AES1 & AES2) |

Outputs AES1: Present AES2: Not Present

Bits per Sample: 20 Bits

| | | | |
|---------------------|---|-----------------|--|
| Output action: | selection | current setting | <input type="text" value="G3Ext+Del"/> |
| | <input type="text" value="G4Ext+Pass"/> | G4Ext+Pass |  |
| | <input type="button" value="Apply"/> | | |
| CRC/UVC Generation: | selection | current setting | |
| | <input type="text" value="External"/> | External | |
| | <input type="button" value="Apply"/> | | |
| SD Input Reporting: | selection | current setting | |
| | <input type="text" value="Enabled"/> | Enabled | |
| | <input type="button" value="Apply"/> | | |

- [8920DMX](#)
- [Status](#)
- [Audio Group Management](#)
- Use This Link [Recall/Save User Settings](#)
- [Slot Config](#)
- [Software Update](#)

Save/Recall User Settings

The Recall/Save User Settings display (see Figure 9) allows you to set the following parameters:

- Recall the saved User Settings (**Recall User Setup**),
- Save the currently selected settings for the entire module as User Settings (**Save User Settings**), or
- Recall factory default settings (**Recall Fact Defaults**).

Figure 9. User Settings Display



Specifications

Table 5. 8920ADC Specifications

| Parameter | Value |
|------------------------------------|--|
| SDI Input | |
| Number of inputs | 1 loop-through |
| Connector type | BNC |
| Input impedance | High impedance |
| Signal type | SMPTE 259M serial 10-bit 4:2:2 component video, 525 or 625 |
| Signal level | SDI |
| Return loss | >15 dB, 5 to 270 MHz |
| Cable equalization | Automatic for <984 ft (300 m) |
| SDI Output | |
| Number of outputs | 4 |
| Signal type | SMPTE 259M |
| Return loss | >15 dB, 5 to 270 MHz |
| Output impedance | 75 Ω |
| Connector type | BNC |
| Error checking | EDH embedded |
| Digital Audio Output | |
| Number of outputs | 2 (AES1, AES2) |
| Signal type | AES/EBU |
| Connector type | One 75 Ω BNC per output Using adapter, one 110 Ω terminal block per output |
| Output impedance | 75 Ω or 110 Ω , jumper selected |
| Sampling rate | 48 kHz sample rate 20- or 24-bit |
| Signal level | 1 V peak to peak |
| Signal Processing Functions | |
| Electrical length | 4.2 μ s |
| Audio format | 48 kHz synchronous audio formatted per proposed SMPTE standard "Formatting AES/EBU audio and auxiliary data into digital video ancillary data space." |
| Interchannel crosstalk | \leq 100 dB, 20 Hz - 20 kHz |
| Environmental | |
| Frame temperature range | 0 to 40 degrees C |
| Operating humidity range | 0 to 90% non-condensing |
| Non-operating temperature | -10 to 70 degrees C |
| Mechanical | |
| Frame type | Gecko 8900 BNC/Video frame |
| Power Requirements | |
| Supply voltage | \pm 12 V |
| Power consumption | < 4.5 Watts |

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 page – reports overall frame and module status in graphical and text formats.
- Module Status 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 page where warnings and faults are displayed (8900NET version 3.0 or later).

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

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

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

SNMP Reporting

The 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 page for the Frame, the 8900NET module, and each module slot. Refer to the *8900NET Network Interface Instruction Manual* for installation instructions.

Service

The 8920DMX 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 by Customer Service.

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

- Check frame and module power and signal present LEDs. If module power is not present, check fuse F1 (see [Figure 10](#)).
- Check for presence and quality of input signals.
- Verify that source equipment is operating correctly.
- Check cable connections.
- Check output connections for correct I/O mapping (correct input connector is used for the corresponding channel output).
- If the red FAULT LED is on, reseal module to reset. If FAULT does not go out, module has internal problem and will need to be replaced.

Refer to [Figure 4](#) for the location of PWR LED and [Table 2 on page 11](#) 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 Support Information number.

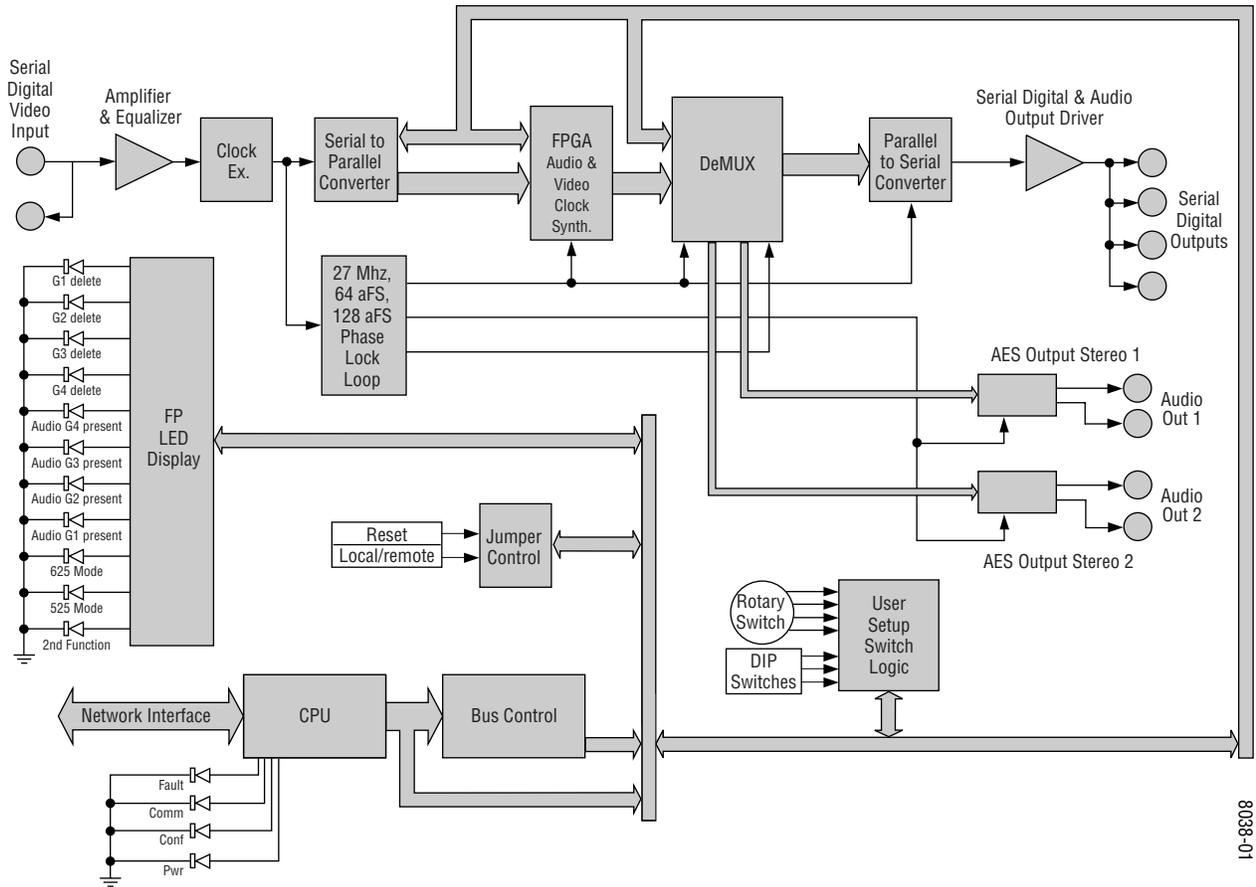
Figure 10. 8920DMX Module Fuse Location



Functional Description

The 8920DMX is able to extract one existing audio group from the ancillary data of a SD video stream by using the group's ID. The group can then be either passed or deleted from the SD output. Refer to the block diagram in Figure 11.

Figure 11. 8920DMX Block Diagram



Video Inputs

The serial input and deserializer are a standard chip set for receiving and converting a serial digital video stream into a 10-bit parallel 601 digital video signal.

Input Equalizing Amplifier

The equalizing amplifier senses the voltage through its differential inputs. It DC isolates the inputs and helps reduce the effect of stray capacitance which lowers the impedance of the termination as frequency increases. The differential input also improves the performance of the 8920DMX in the presence of common mode hum and noise.

Clock Regenerator

The reclock stage is used to set mode and display the data rate. The Phase Lock Loop circuit (PLL) uses a voltage controlled oscillator (VCO) to lock to the clock of the incoming data.

Serial to Parallel Converter and EDH/EDA Error Processor

The serial to Parallel converter converts serial data stream to the parallel data using the regenerated clock. Deserialized data passes through the EDH processor. The EDH processor checks for possible data or bit errors in the incoming data.

27Mhz PLL

From the incoming 27 MHz clock, the PLL generates the internal 27 MHz and an approximate 27 MHz free running clock used if no input signal is present.

Field Programmable Gate Array (FPGA)

The FPGA contains two independent blocks:

- 6.144 Mhz clock generator
- CPU interface

Using the DDS (Direct Digital Synthesis) method, the clock generator inside the FPGA, together with the D-to-A converter and fast comparator generates a 6.144 Mhz AES3 carrier clock from the incoming 27 Mhz.

The CPU interface provides connection between the board hardware and CPU. From the FPGA, the CPU reads out information about current board status and writes back user commands to the hardware.

Demultiplexer

The demultiplexer is a single chip solution for demultiplexing of digital audio channels out of digital video signals. It supports the demultiplexing of 20- or 24-bit synchronous audio data with a 48 kHz sample rate. The demultiplexer supports video standards with rates from 143 Mb/s to 540 Mb/s.

Parallel to Serial Converter

The 8920DMX uses a standard 10-bit 270 Mbs Serializer.

CPU Embedded Processor

The embedded processor provides the interface between the user and all the processing logic inside 8920DMX and communication between a host processor and the 8920DMX.

The CPU contains:

- FLASH memory (stores data for FPGA programming and configuration),
- Address decoder,
- Address Latch,
- Extended address register for FLASH memory,
- EEPROM (stores calibration and user setup data),
- Network interface, and
- ISP voltage regulator.

Power Supply

From the external source +12 V, the on-board supply provides +5 V, -5 V and +3.3 V for the 8920DMX. The power supply uses a monolithic switching power supply operating in Buck mode. Buck mode switching regulators are used to generate a lower voltage from higher voltage input. If the supply ever activates its protective crow bar diode, a high current will be developed and the input fuse, F1 will blow.

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