

ADX-1901

3G/HD/SD 8 Channel Analog Audio De-Embedder

Guide to Installation and Operation

M3005-9900-101

2015-04-29

Electromagnetic Compatibility



This equipment has been tested for verification of compliance with FCC Part 15, Subpart B requirements for Class A digital devices.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



This equipment has been tested and found to comply with the requirements of the EMC directive 2004/108/CE:

- EN 55022 Class A radiated and conducted emissions
- ENV 50204 Radiated EMF Immunity – RF 900 MHz Pulsed
- EN 61000-3-2 Harmonic current emission limits
- EN 61000-3-3 Voltage fluctuations and flicker limitations
- EN 61000-4-2 Electrostatic discharge immunity
- EN 61000-4-3 Radiated electromagnetic field immunity – radio frequencies
- EN 61000-4-4 Electrical fast transient immunity
- EN 61000-4-5 Surge transient immunity
- EN 61000-4-11 Voltage-dips, short-interruption and voltage variation immunity

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1 ADX-1901 3G/HD/SD 8 Channel Analog Audio De- Embedder

1.1 Introduction

The ADX-1901 is an advanced, high quality 24-bit 48 KHz analog audio de-embedder designed to extract eight analog audio signals from a 3G/HD/SD video signal. The ADX-1901 can process the 8 audio de-embedded channels with functions including level, channel shuffling and mixing.

The loudness measurement features allows the measurement and logging of up to 8 audio programs with iControl Loudness Monitoring software to analyze and report compliance with respect to various loudness legislation around the world. Furthermore, a delay of up to 2.7 seconds can be programmed independently per de-embedded audio channel to provide lip sync correction.

The ADX-1901 can de-embed Ancillary Time Code (ATC) in 3Gbps/HD, or DVITC in SD, to generate Linear Time Code (LTC). Up to two GPIO can be generated by extracting GPI events from the Time Code user bits in transport applications. Audio Metadata extraction from the VANC can be streamed to an external RS-422 output.

The ADX-1901 is designed for the Densité 2 frame, but will be compatible with the Densité 3 frame with the metal extender. Multiple rear connector panels are available according to your application needs and the chassis type used.

A fiber input/output cartridge is offered as an option on some rear modules. Once the cartridge is installed, the input or outputs are selectable through the control interface.

1.2 Features

Audio

- 8 analog audio outputs
- Audio silence output on loss of video input.
- Full audio shuffling and mixing on a channel output basis
- Individually adjustable audio output levels
- Audio 5.1 surround downmix to Lo/Ro
- Audio delay adjustments of up to 2.7 seconds to compensate for lip sync issues
- Built in test generator (audio).
- Monitoring and reporting of audio output Max/Min Level, Silence and Phase.
- Loudness measurement of up to 8 audio programs and logging with iControl Loudness Monitoring software
- Loudness compliant to EBU R128, ATSC A/85:2013 and ARIB TR-B32 (ITU-R BS.1770-3))

Video

- 3Gbps/HD/SD input with automatic equalization
- Supports 3Gbps level A (mapping 1) and level B
- Automatic detection of video input format
- Optional optical fiber SFP cartridge
- Black Detection monitoring

Metadata

- Linear Time Code (LTC) output translated from DVITC (SD) or ATC (3Gbps/HD)
- 2 GPI data output signals reconstructed from ANC TC user bits.
- RS-422 serial data output to carry Audio Metadata (SMPTE 2020-A) from the VANC.

1.3 Functional Block Diagram

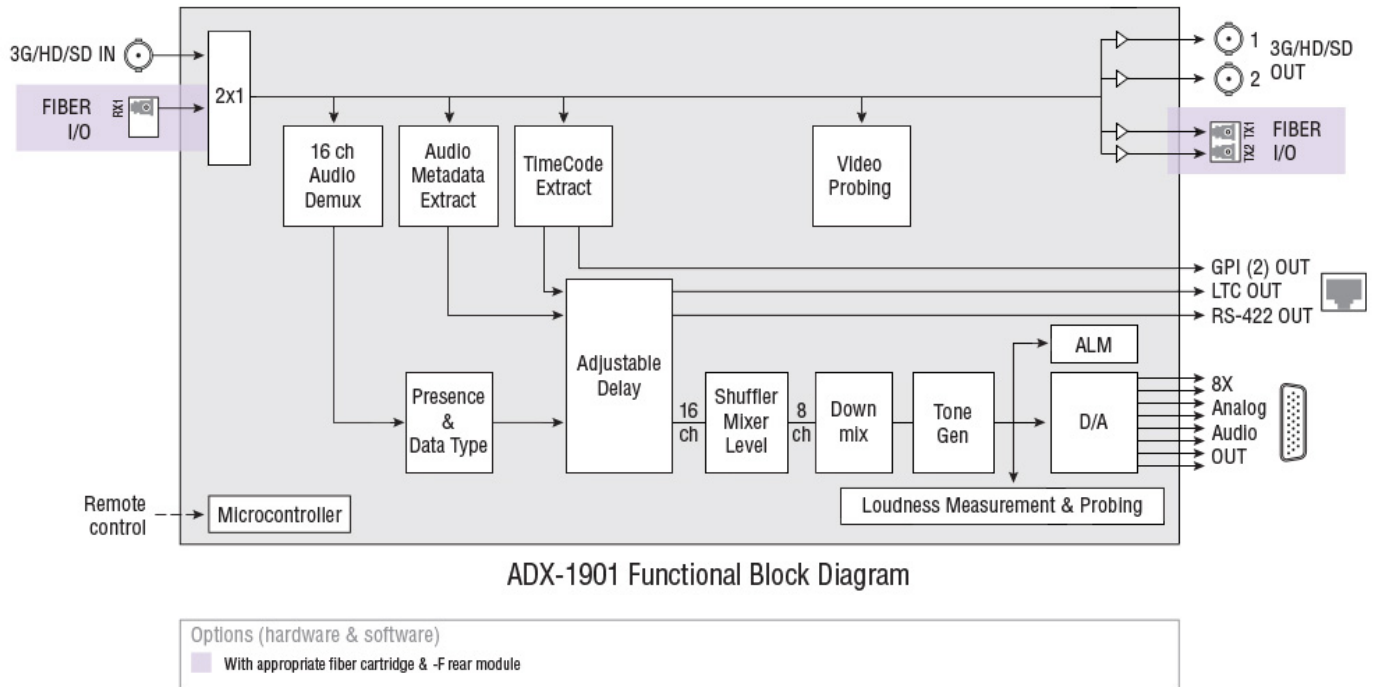


Figure 1.1 ADX-1901 Functional Block Diagram

1.4 Front Card-edge Interface

The front card-edge of the ADX-1901 incorporates two elements:

- [Status LED](#) (see section 3.2)
- [Select Button](#) (see section 4)

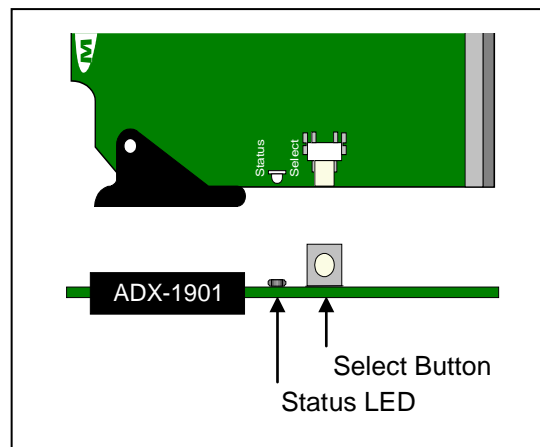


Figure 1.2 Front card-edge layout

2 Installation

2.1 Installation of Rear Connector Panels

Grass Valley Densité-series cards are each associated with a rear connector panel, which must be installed in the Densité frame before the card can be inserted.

The ADX-1901 card is designed to fit into Grass Valley's Densité-2 frame. Two different rear connector panels are available for this configuration. Due to connector space requirements, a double-slot-width rear panel is necessary:

- ADX-1901-DRP Double-slot-width panel for Densité-2
- ADX-1901-DRP-F Double-slot-width panel for Densité-2 with fiber I/O

With a factory-installed adapter mounted on the ADX-1901 card, it can be installed in a Densité-3 frame. In this case, only a single-slot-width panel is required. Two rear panels are available:

- ADX-1901-3SRP Single-slot-width panel for Densité-3
- ADX-1901-3SRP-F Single-slot-width panel for Densité-3 with fiber I/O

See [section 2.4](#) for details of the signal connections available on each of these panel types.

All cards and rear panels can be installed with the frame power on. The card has connectors which plug into a mid-frame mother board for distribution of power and for connection to the controller card, and a second connector which plugs directly into the rear connector panel for input and output.



The rear connector panel must be installed with the card out of the frame.

- To remove an existing card from the slot, tilt up the swivel handle on the front of the card to lever the connectors apart, then use the handle to pull the card straight out of the slot.

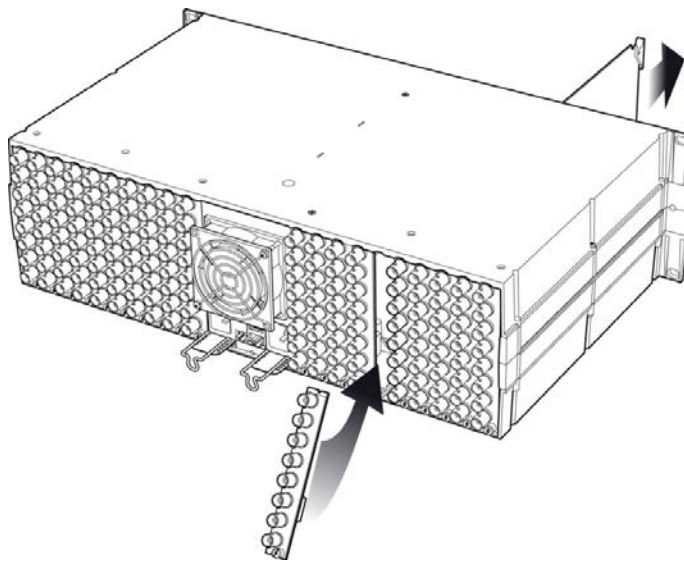


Figure 2.1 Densité-3 frame – rear panel installation

To install the connector panel:

Note – the procedure is the same for both Densité-2 and Densité-3 frames.

1. If a card is installed in the slot whose rear panel is being changed, remove it as described above.
2. Remove the existing panel (either blank or belonging to an existing card that is being changed) by releasing the captive screw(s) at the bottom.
3. Position the new panel and secure it in place with the captive screw(s) at the bottom.

2.2 ADX-1901 Card Installation

Note – The card itself (ADX-1901) is designed to fit the Densité-2 frame. If it was ordered for the Densité-3 frame (ADX-1901-3RU), it will be delivered with an installed adapter that allows it to fit into the taller frame. The adapter can be ordered separately and user-installed if required.

Once a matching rear connector panel is in place, install the ADX-1901 card as follows:

1. Open the front panel of the frame.
2. Slide the ADX-1901 card into the slot and push gently on the handle to seat the connectors.

When using the double-slot-width rear panel in a Densité-2 frame, the card should be inserted into the right-most of the two slots. Inserting the card into the wrong slot will not damage the card, and will be flagged by the on-card status LED flashing red to indicate that there is no connection to the rear panel.

3. Close the front panel of the frame.

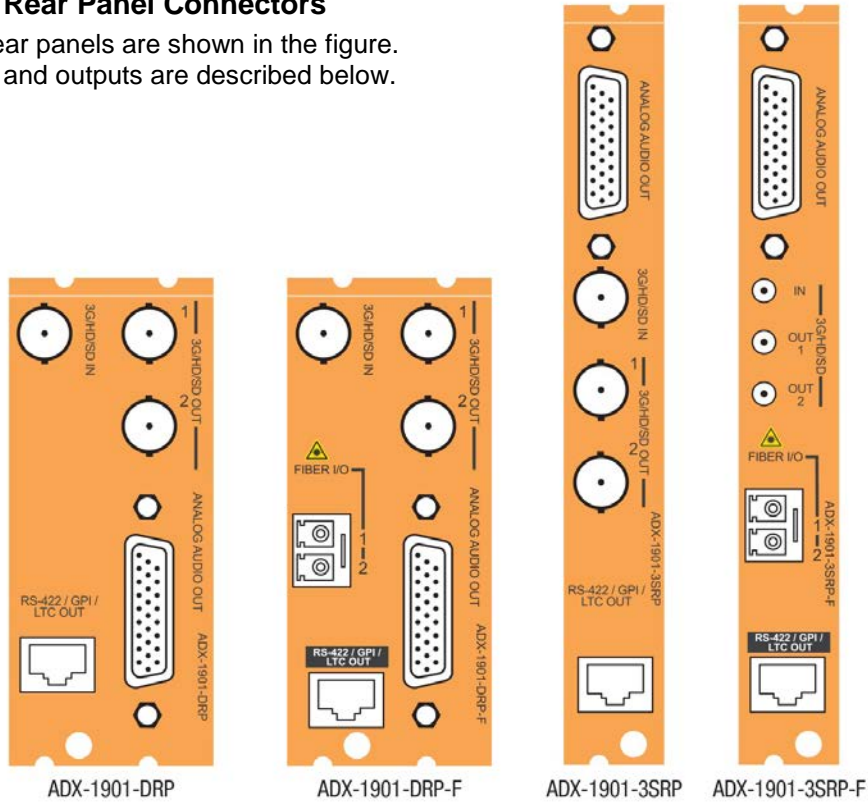
2.3 Installation of the Optical Interface (option)

Refer to [ANNEX 2](#).

2.4 Rear Panels and Connectors

2.4.1 Images of Rear Panel Connectors

The four available rear panels are shown in the figure. Details of the inputs and outputs are described below.



2.4.2 Summary of rear panel connections

ADX-1901-3SRP				
ADX-1901-3SRP-F				
ADX-1901-DRP				
ADX-1901-DRP-F				
Single-slot-width panel				
Double-slot-width panel				
CONNECTORS				
3G/HD/SD IN	1	1	1*	1
3G/HD/SD OUT	2	2	2*	2
Analog Audio OUT on D-SUB	8	8	8	8
2 GPI OUT, LTC OUT & RS-422 OUT on RJ45	yes	yes	yes	yes
Fiber I/O module	yes		yes	

* DIN1.0/2.3 connectors on ADX-1901-3SRP-F panel; BNC connectors on all other panels.

2.4.3 Details of rear panel connections

3G/HD/SD IN – Serial digital 3G/HD/SD input

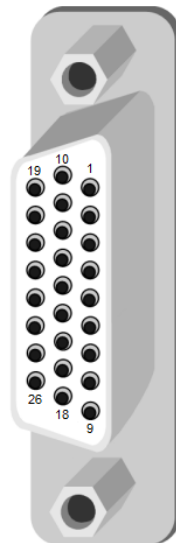
Connect a serial digital video signal, conforming to the SMPTE 425M standard for 3G input signals, SMPTE 292M standard for HD input signals or SMPTE 259M standard for SD input signals, to the connector labeled **3G/HD/SD IN**. The ADX-1901 will automatically switch to the detected line/frame rate format.

3G/HD/SD OUT – Serial digital video outputs

The ADX-1901 provides two 3G/HD/SD SDI video outputs on the connectors labeled **3G/HD/SD OUT 1 and 2**. The SDI video signal conforms to the input standard. The same signal is carried on both outputs.

ANALOG AUDIO OUT – Analog audio outputs (8)

The eight analog audio outputs are balanced outputs, via a 26-pin D-SUB female connector. Pinout for the connector is shown in the table.



Signal	Pin #
AUDIO OUT 1 (Hi)	1
AUDIO OUT 1 (Lo)	10
AUDIO OUT 2 (Hi)	2
AUDIO OUT 2 (Lo)	11
AUDIO OUT 3 (Hi)	3
AUDIO OUT 3 (Lo)	12
AUDIO OUT 4 (Hi)	4
AUDIO OUT 4 (Lo)	13
AUDIO OUT 5 (Hi)	5
AUDIO OUT 5 (Lo)	14
AUDIO OUT 6 (Hi)	6
AUDIO OUT 6 (Lo)	15
AUDIO OUT 7 (Hi)	7
AUDIO OUT 7 (Lo)	16
AUDIO OUT 8 (Hi)	8
AUDIO OUT 8 (Lo)	17
GND	9, 18 to 26

Fiber I/O – Fiber-optic inputs and outputs

Rear panels whose part number ends in –F incorporate a fiber optic interface. The interface consists of two parts:

- A socket on the rear panel into which an SFP interface module is plugged
- An SFP (Small Form-factor Pluggable) module into which the optical fibers are plugged, and which incorporates the optical/electrical interface

The optical fibers must be terminated in an LC/PC connector.

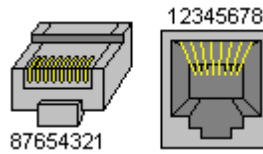
See [ANNEX 2](#) for instructions on installing and removing the SFP interface module, and for plugging and unplugging the LC-terminated fibers.

The SFP modules supported by the ADX-1901 are:

SFP Modules	Description
SFP-T-S13-LC	Single fiber Tx (output) module at 1310 nm with LC/PC connector
SFP-TT-S13S13-LC	Dual fiber Tx (output) module at 1310 nm with LC/PC connector
SFP-RT-S13-LC	Dual fiber Rx (input) and Tx (output) module at 1310 nm with LC/PC connectors
SFP-R-LC	Single fiber Rx (input) module with LC/PC connector
SFP-RT-W13-LC	Single fiber Rx/Tx module at 1310 nm with WDM, LC/PC connector
SFP-RT-W15-LC	Single fiber Rx/Tx module at 1550 nm with WDM, LC/PC connector

RS-422 / GPI / LTC – Metadata Output, GPI Outputs and Timecode Output

RS-422, GPI and LTC signals are carried on an RJ-45 connector, with the pinout as shown in the table:



Function	Pin #
NC	1
NC	2
RS422-TX-1	3
LTC OUTPUT	4
GPI0 USER2 OUTPUT	5
RS422-TX-0	6
GPI0 USER1 OUTPUT	7
GND	8

Note: A GPI output is open when inactive and connected to ground when active.

3 User Interface

3.1 Control options

The ADX-1901 can be controlled in three different ways:

- The local control panel and its push-buttons can be used to move through a menu of parameters and to adjust parameter values (see [section 4](#)).
- Grass Valley’s iControl system can be used to access the card’s operating parameters from a remote computer, using a convenient graphical user interface (GUI) (see [section 5](#)).
- Grass Valley’s RCP-200 panel (check for availability).

3.2 Card-Edge Status LED

The status monitor LED is located on the front card-edge of the ADX-1901, and is visible through the front access door of the DENSITÉ frame. This multi-color LED indicates the status of the ADX-1901 by color, and by flashing/steady illumination.

The chart shows how the various error conditions that can be flagged on the ADX-1901 affect the LED status.

- If a cell is gray, the error condition cannot cause the LED to assume that status
- If more than one LED status is possible for a particular error condition, the status is configurable. See [section 5.16](#) for details.
- The factory default status is shown by a ✱

The LED will always show the most severe detected error status that it is configured to display, and in the chart error severity increases from left to right, with green representing no error/disabled, and flashing red the most severe error.

If the LED is Flashing Yellow, it means that the card is selected for local control using the Densité frame’s control panel. See [section 4.1](#) for details.

Error Condition	LED Status			
	Green	Yellow	Red	Flashing Red
Hardware failure				✱
No Rear				✱
SFP – Absence	✱			
SFP – Type mismatch		✱		
SFP – Temperature 1			✱	
SFP – Optical Power 1		✱		
SFP – Voltage 1			✱	
SFP – Temperature 2			✱	
SFP – Optical Power 2		✱		
SFP – Voltage 2			✱	
Video – Input video error			✱	
Video – input Black Detect	✱			
Video – Audio MTDT absent	✱			
Metadata – SMPTE 2020	✱			
Metadata – DVITC.ATC	✱			
Audio – TP Overload CH1 • • •		✱		
Audio – TP Overload CH8		✱		

Audio – Silence Detection CH1 • •	✱			
Audio – Silence Detection CH8	✱			
Audio – min loudness PGM1 • •	✱			
Audio – min loudness PGM8	✱			
Audio – max loudness PGM1 • •		✱		
Audio – max loudness PGM8		✱		
Audio – phase error CH1-2 • •		✱		
Audio – phase error CH7-8		✱		
Audio – mute CH1 • •		✱		
Audio – mute CH8		✱		
Audio - Test Tone		✱		

4 Local control using the Densité frame control panel

4.1 Overview

Push the SELECT button on the ADX-1901 card edge (see section 1.4) to assign the local control panel to operate the ADX-1901. Use the control panel buttons to navigate through the menu, as described below.

All of the cards installed in a Densité frame are connected to the frame's controller card, which handles all interaction between the cards and the outside world. There are no operating controls located on the cards themselves. The controller supports remote operation via its Ethernet ports, and local operation using its integrated control panel.

The local control panel is fastened to the front of the CPU-ETH2 controller card, and when installed is located in the front center of the frame, positioned in front of the power supplies. The panel consists of a display unit capable of displaying two lines of text, each 16 characters in length, and five pushbuttons.

The panel is assigned to operate any card in the frame by pushing the SELECT button on the front edge of that card.

- Pushing the CONTROLLER button on the control panel selects the Controller card itself.
- The STATUS LED on the selected card flashes yellow.

The local control panel displays a menu that can be navigated using the four pushbuttons located beside the display. The functionality of the pushbuttons is as follows:

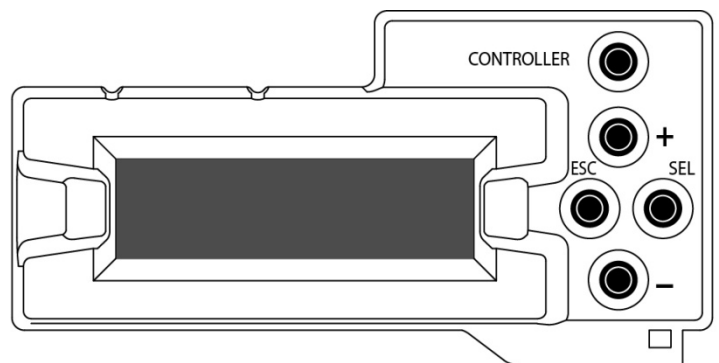


Figure 4.1 Densité Frame local control panel

[+] [-] Used for menu navigation and value modification

[SELECT] Gives access to the next menu level. When a parameter value is shown, pushing this button once enables modification of the value using the [+] and [-] buttons; a second push confirms the new value.

[ESC] Cancels the effect of parameter value changes that have not been confirmed; pushing [ESC] causes the parameter to revert to its former value.

Pushing [ESC] moves the user back up to the previous menu level. At the main menu, [ESC] does *not* exit the menu system. To exit, re-push the [SELECT] button for the card being controlled.

If no controls are operated for 30 seconds, the controller reverts to its normal standby status, and the selected card's STATUS LED reverts to its normal operating mode.

4.2 Menu for local control

The ADX-1901 has operating parameters which may be adjusted locally at the controller card interface.

- Press the SELECT button on the ADX-1901 front card edge to assign the Densité frame's local control panel to the ADX-1901
- Use the keys on the local control panel to step through the displayed menu to configure and adjust the ADX-1901.

The complete menu structure is shown in [ANNEX 1](#) to this document, beginning on page 41.

5 Remote control using iControl

The operation of the ADX-1901 may be controlled using Grass Valley's iControl system.

- This manual describes the control panels associated with the ADX-1901 and their use.
- Please consult the iControl User's Guide for information about setting up and operating iControl.

In iControl Navigator or iControl Websites, double-click on the ADX-1901 icon to open the control panel.

5.1 The iControl graphic interface window

The basic window structure for the ADX-1901 is shown in figure 5.1. The window identification line gives the card type (*ADX-1901*) and the slot number where the card is installed in its Densité frame.

There are four main sections in the window itself, as identified in the figure:

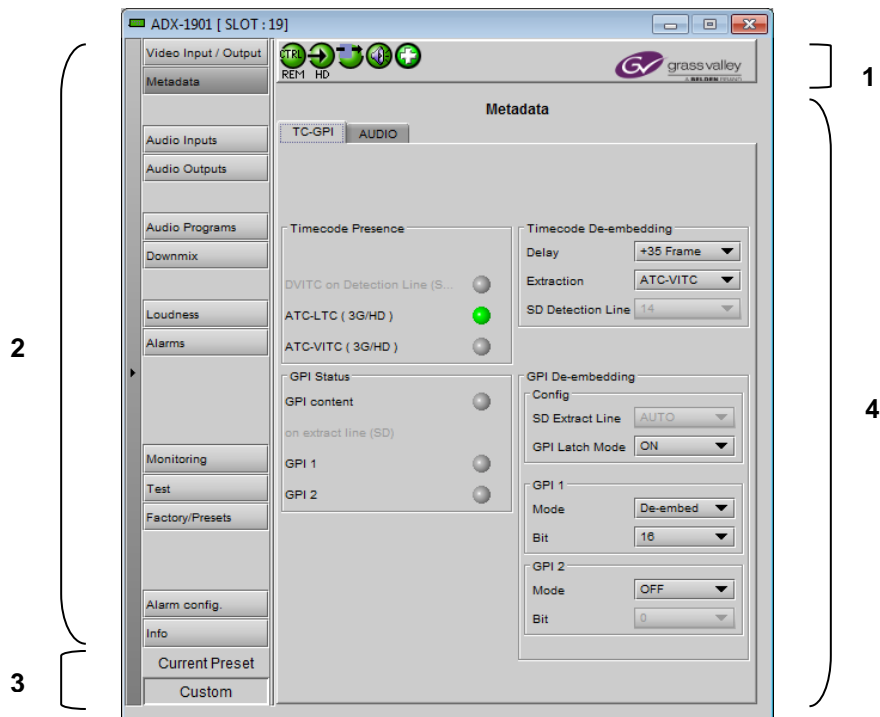


Figure 5-1 ADX-1901 iControl graphic interface window

Section 1. The top section displays five icons on the left. These icons report different statuses such as card communication status, input signal and reference signal format and statuses. In some instances, they relate to conditions defined through parameters settings.



Icon # 1 2 3 4 5

Move the mouse over an icon and a status message appears below the icon providing additional information.








If there is an error, the error status message appears in the message area without mouse-over.






- If there are multiple errors, the error messages cycle so all can be seen
- The icon whose status or error message is shown is highlighted with a mauve background

The table below describes the various status icons that can appear, and how they are to be interpreted.

- In cases where there is more than one possible interpretation, read the error message in the iControl window to see which applies.

Table –iControl Status Icon interpretation

Icon #1 – Manual Card Configuration	
	Remote card control activated. The iControl interface can be used to operate the card
	Local card control active, The card is being controlled using the Densité frame control panel, as described in section 4 . Any changes made using the iControl interface will have no effect on the card.
Icon #2 – Input status	
 (green)	Signal detected and valid. <ul style="list-style-type: none"> • Beneath the icon, the format will be indicated as 3G, HD or SD, and the specific format details will be listed if the cursor is moved over the icon.
 (red)	No rear Video not locked
 (gray)	Video input alarm disabled
Icon #3 – Operation Mode	
 (green)	Operation mode: process – normal processing of the input signal
 (yellow)	Operation mode: TEST – audio test tones enabled (see 5.11)

Icon #4 – Analog Audio Input / Output Status	
 (green)	Audio OK
 (yellow)	Yellow alarm condition detected on 1 or more channels or programs.
 (red)	Red alarm condition detected on 1 or more channels or programs.
Icon #5 – Health Monitoring	
 (green)	Hardware OK
 (red)	Hardware Health Monitoring (Hardware fault detected, SFP errors). If this icon appears flashing red, return the card to Grass Valley and specify the error code.

Section 2. The left portion of the window contains all the parameter groups, which become highlighted when they are selected; the main panel (4) then displays the group's set of parameters. Each of the groups is described in detail below.

Section 3. The lower left corner of the window identifies the Preset currently in use or "Custom" if none is applicable.

Section 4. The main panel contains all the parameters specific to the group selected. It may contain several tabs to help manage the different parameters.

Each of the panels associated with the groups accessed from the buttons in Section 2, and shown in Section 4, is described individually in the following sections.

5.2 Video Input/Output panel

This panel allows input selection and determination of the output in the event of loss of input signal.

The panel appearance is different for installations supporting a fiber input (i.e. using a –F rear panel) and those without fiber support.

5.2.1 Video Input/Output panel (no fiber support)

When the ADX-1901 is installed with a rear panel that has no fiber connectivity, the electrical input (BNC) is automatically selected, and this panel has no active functions.

The current input format, or the last valid input format, is displayed in the Output Status area.



Figure 5-2 Video Input/Output panel (no fiber)

5.2.2 Video Input/Output panel with fiber support

With fiber support, the following sections are added or activated:

Input Select: use the pulldown list to select between the copper input (BNC) and the fiber optic input (only when a receiver SFP module is installed).

Fiber Output Config: This control is only available when a transmitter SFP module is installed. The fiber Out 2 selector is only available when a dual-transmitter SFP is installed.

SFP Mismatch: Illuminates Yellow if the installed SFP module is not supported by the ADX-1901 card.

SFP Info: Displays information about the type and status of the installed SFP module. The two columns showing status data are labeled to reflect the type of SFP module:

- Transceiver SFP: RX-A TX-B
- Single transmitter SFP: TX-A (N/A)
- Dual transmitter SFP: TX-A TX-B

The following identifying information about the SFP module is displayed:

- Vendor name
- Type
- Part Number
- Serial Number
- Date Code



Figure 5-3 Video Input/Output panel (with fiber)

Additionally, some parameters are measured and their values displayed here:

- Temperature
- Voltage (V)
- Optical Power (dBm)
- Wavelength (nm)

5.3 Metadata panel

This panel contains two tabs that give access to metadata processing on the ADX-1901 card:

- TC-GPI
- AUDIO

5.3.1 TC-GPI tab

This tab controls timecode and GPI de-embedding from the input SDI data stream.

Timecode presence:

The Status icons indicate the presence of different time code formats – those that do not apply to the current input format are grayed-out:

- DVITC (SD) embedded in the SDI input on the same line that has been selected in this panel for de-embedding
- ATC-LTC (3G/HD) embedded in the SDI input
- ATC-VITC (3G/HD) embedded in the SDI input

The *Timecode De-embedding* section provides resources to configure the de-embedding process.

- **Delay:** Adjust the timecode delay value to compensate for a 1-to-50 frame offset between the video and the LTC.
Value: [0, 1, 2, ..., 50 frames]
- **Extraction:** Use the pulldown to specify the source of extracted time code:
[OFF, DVITC, ATC-VITC, ATC-LTC, AUTO]

AUTO mode functions as follows:

- 3G/HD signal – the extracted signal will be VITC or LTC if either is present, and LTC if both are present.
- SD signal – the extracted signal will be DVITC.

- **SD Detection Line:** Use the pulldown to specify the line number to extract a time code (SD only).
[AUTO, 10 to 20 (SD525), 7 to 22 (SD625)]

In AUTO mode the ADX-1901 extracts the first timecode encountered in the vertical blanking interval. For example, if timecode is present on lines 12 and 14, the line 12 timecode will be extracted.

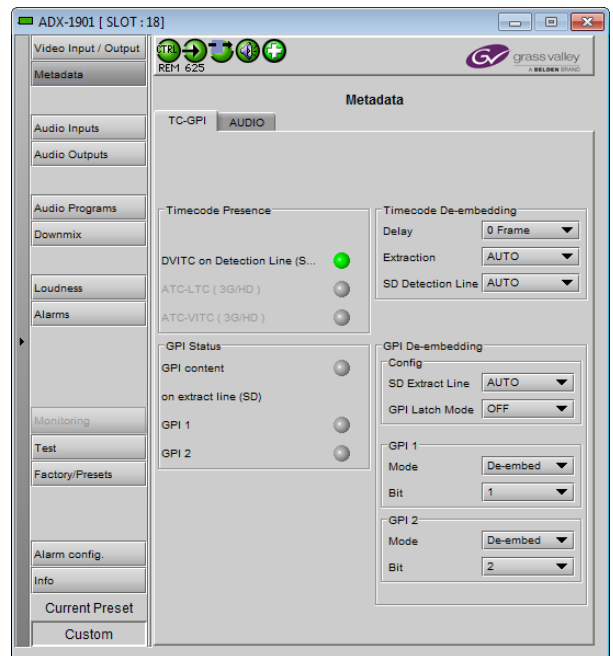


Figure 5-4 Metadata Panel – TC-GPI tab

GPI Status: The GPI Content icon shows the presence of GPI information in the embedded timecode at the SDI input. The two GPI status icons show the status of the two GPI outputs on the rear-panel RJ45 connector.

GPI De-embedding: Set up the de-embedding of GPI data from the input data streams.

- **SD Extract Line:** Use the pulldown to specify the line number from which to extract a time code (SD only). [AUTO, 10 to 20 (SD525), 7 to 22 (SD625)]

In AUTO mode the ADX-1901 extracts the GPI from the first timecode encountered in the vertical blanking interval. For example, if timecode is present on lines 12 and 14, the line 12 timecode will be extracted.

- **GPI Latch Mode:** When no valid time code with embedded GPI data has been detected, the user has the option of releasing the GPI outputs (Latch mode OFF), or holding the last valid de-embedded values (Latch Mode ON).

For each of the two GPIs:

- **Mode:** Use the pulldown list to select the operating mode for this GPI:
 - OFF – the GPI output state is inactive.
 - De-embed – the GPI data located on a pre-defined user bit within timecode in the incoming SDI signal is de-embedded.
 - When De-embed is selected, use the Bit pulldown list to set which of the user bits (1-16) will be selected to de-embed the GPI data. The default is: GPI 1 on bit 1; GPI 2 on bit 2.

5.3.2 Audio tab

This tab provides resources to configure the input and output selections and processing of audio metadata for the ADX-1901 card.

VANC Metadata Extractor

The card can extract an audio metadata stream from the VANC interval.

- The icon flags the presence of the audio metadata
- Extraction is controlled by the SDID selected by the pulldown: (range = 01 to 09).

Delay

Use the two sliders – coarse (ms), and fine (samples) – to adjust the delay of the extracted audio metadata by up to 2.7 seconds to account for video/audio timing differences.

Output Serial Stream

The de-embedded metadata can be output as an RS-422 datastream on the RJ45 rear panel connector. Select the RS-422 status as OFF or Metadata using the pulldown.

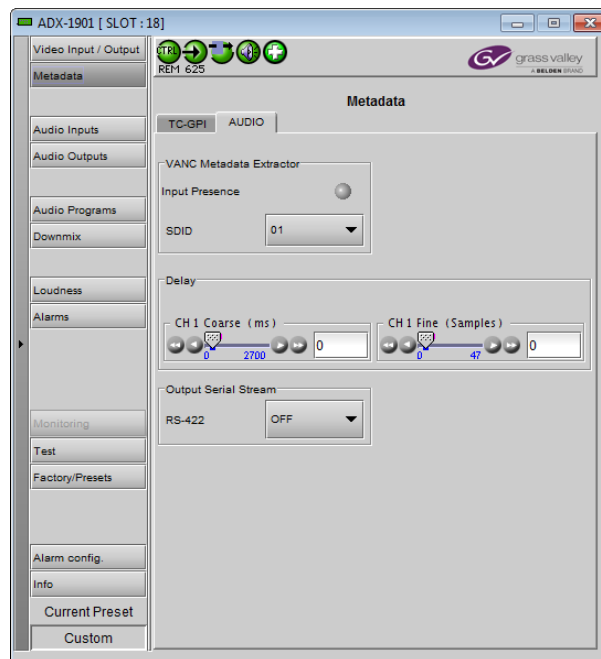


Figure 5-5 Metadata – Audio tab

The SDID is used to specify the relationship between the VANC metadata stream and the first channel of its associated audio program.

SDID	Associated channel pair
01	No association, or only one audio program (default value)
02	Channel pair 1&2
03	Channel pair 3&4
04	Channel pair 5&6
05	Channel pair 7&8
06	Channel pair 9&10
07	Channel pair 11&12
08	Channel pair 13&14
09	Channel pair 15&16

5.4 Audio Inputs panel

The icons across the top of the panel indicate:

Group Detected – a green icon shows the presence of any embedded audio groups detected in the incoming SDI signal.

Signal Presence – indicates the presence of audio in the 16 channels that may be carried in the embedded audio groups

- Green – audio present
- Gray – audio not present (for 2 seconds minimum)

5.4.1 CH 1-4, 5-8, 9-12, 13-16 tabs

These four tabs each provide individual phase and delay controls for four of the sixteen extracted audio channels.

Phase invert – select the checkbox to invert the phase of the channel at the input of the signal processing chain.

Fixed delay – add delay to the channel, using the two sliders, or by typing directly into the data box:

- Coarse delay (range = 0 to 2700 msec)
- Fine delay (range = 0 to 47 samples)

Maximum delay is limited to 2.7 s.

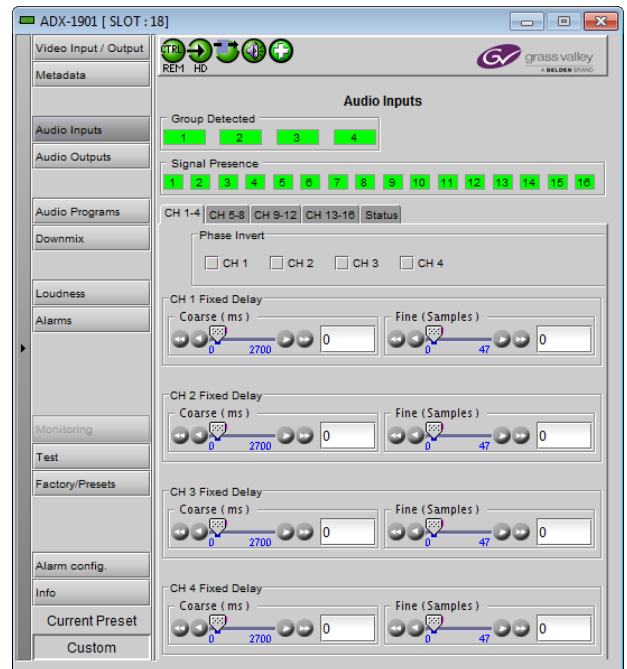


Figure 5-6 Audio Inputs panel – Analog 1-4 tab

5.4.2 The Status tab:

Audio Type Status – the format of audio signals in each of the 16 audio channels is indicated by the text inside each icon.



Figure 5-7 Audio Input panel - Status

5.5 Audio Output panel

The ADX-1901 provides eight analog audio outputs, selected from amongst the 16 channels extracted from the SDI input. This panel provides selection and audio processing for the eight analog audio outputs:

- audio channel shuffling
- level adjustment
- mixing

5.5.1 1-2, 3-4, 5-6, 7-8 tabs

Each of these tabs provides all necessary controls for the output mixers. The example shown is for 1-2 output, but all panels have the same controls.

Operation Mode (Off, A, SUM(A+B), Mix): This menu allows the source(s) of each output channel to be selected – a single channel, the sum of two channels, or a mix of two channels.

Off: The output channel is muted.

A: The output channel is the source selected in sub-menu SOURCE A.

SUM (A+B): The output channel is the sum of the two source channels selected in sub-menus SOURCE A and SOURCE B.



Figure 5-8 Audio Output panel – 1-2 tab

- If you select this option, the SUM (A+B) Level pull-down is activated, allowing you to reduce the level of the summed output (0dB, -3dB or -6dB).

Mix: The output channel is a mono mix of source channels selected in sub-menus SOURCE A and SOURCE B.

Mute: Mute the audio channel by checking this box.

Clipping: indicates a very high level at the output, resulting in signal clipping.

Source A & Source B: These sub-sections allow the source channels (A and B) to be selected for each output channel.

Channel: CH 1, ..., CH 16: selects the demuxed input channel to be used for this output channel mixer input.

Level (dB): Sets the audio gain of the source from -96 to +12 dB in 0.5 dB steps

5.5.2 Config tab

0 dBFS Output – The tab contains a single pulldown allowing selection of the digital-to-analog conversion ratio for maximum output level.

Choices available: 0 to +24 dBu



Figure 5-9 Audio Output - Config tab

5.6 Audio Programs panel

The Audio Programs panel provides resources to define eight audio programs, and to specify the inputs for each program.

Coding Mode:

Use the eight pull-downs to specify the coding of the programs that you want to appear on the 8 analog audio outputs. The options are:

Coding Mode	Program Channels					
	Left	Right	Center	LFE	Ls	Rs
1/0			X			
2/0	X	X				
3/0	X	X	X			
3/0L	X	X	X	X		
2/1	X	X			X	
2/1L	X	X		X	X	
3/1	X	X	X		X	
3/1L	X	X	X	X	X	
2/2	X	X			X	X
2/2L	X	X		X	X	X
3/2	X	X	X		X	X
3/2L	X	X	X	X	X	X
OFF	This program is not used					

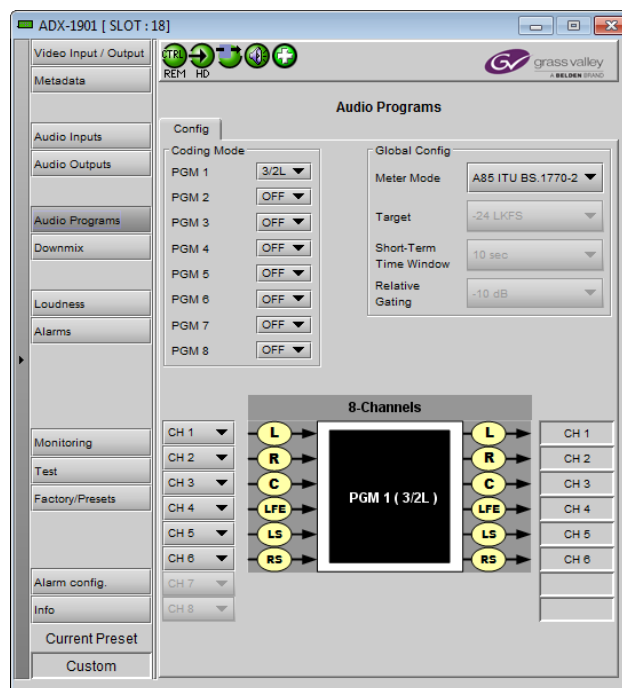


Figure 5-10 Audio Programs panel

The graphic at the bottom of the panel illustrates the selected programs, and provides pull-downs to choose the audio input that feeds each program input.

Note 1: An input channel cannot be assigned to more than one (1) program, and can only be used once within a program.

Note 2: The programs defined here are the programs available for [Loudness monitoring](#) and [Downmix](#).

Global Config:

Use the Meter Mode pull-down to select the parameters that will be used for all audio level measurements on this ADX-1901.

Mode	Loudness Unit	Target	Short-Term Time Window	Relative Gating
EBU R128 2011	LUFS	-23	3 sec	-10 dB
A85 ITU BS.1770-3	LKFS	-24	10 sec	-10 dB
ARIB TR-B32	LKFS	-24	3 sec	-10 dB

Each of these has predetermined values for Target, Short Term Time Window and Relative Gating, as shown in the table, and which are displayed in gray in their (inactive) pull-downs in the panel.

If you select *Custom* in the Meter Mode pull-down, these parameters can all be selected in order to define a custom mode.

5.7 Downmix panel

This tab provides resources to control the downmix of a “5.1 channel” surround-sound audio signal into an LoRo stereo pair. The 5.1 terminology refers to six discrete audio channels, with the low frequency effect (LFE) channel of limited bandwidth designated as the “.1” channel.

The Input channels are automatically assigned to the 3/2 or 3/2L program defined in the "Audio Program" tab. If no such program is defined, the panel is inoperative and a warning is displayed:

Creation of a 3/2(L) program is needed to access this page.

Downmix:

Operating Mode: Use the pulldown to select the downmix operating mode:

- OFF: Downmix is disabled. Input channels pass through unchanged.
- Manual: Downmix follows the downmix parameters manually configured by the user.

Level Normalization: use the pulldown to select the type of normalization to be applied on the downmix output level.

- OFF: Downmix output level is not normalized. Clipping may occur depending on the input channel levels and the selected mix levels.
- Level A: Downmix output level is normalized based on the applied mix levels to provide a uniform output over the range of mix levels available. Clipping will never occur, even with full scale input channels and mix levels.

Output Channels: Select the audio channels whose content will be replaced by the output of the downmix processor

- 1-2
- 3-4
- 5-6
- 7-8
- This selection is not available when the *Operating Mode* is OFF (downmix disabled).

Manual Downmix Config

- When Manual Operating Mode is selected in the pulldown above, these controls are active.

Mode: this pulldown menu selects the downmix mode, which is forced to the default value:

- LoRo: Enables the downmix of 5.1 channels into an LoRo (Left only Right only) stereo pair, which is a conventional stereo signal. The input signals on the channel pair selected as the Output Channels are discarded.



Figure 5-11 Downmix tab

Dialnorm: this pulldown selects the dialog normalization level. Select OFF to prevent the downmix from applying the dialnorm.

[OFF, -12 dBFS, -13 dBFS, -14 dBFS,, -31 dBFS]

Center Mix Level – sets the center channel downmix level to the selected value

[+3 dB, +1.5dB, 0 dB, -1.5 dB, -3 dB, -4.5 dB, -6 dB, Mute]

Surround Mix Level – sets the surround channels (Ls & Rs) downmix level to the selected value

[+3 dB, +1.5dB, 0 dB, -1.5 dB, -3 dB, -4.5 dB, -6 dB, Mute]

LFE Mix Level – sets the LFE channels downmix level to the selected value.

[+10 dB, +9 dB, +7.5 dB, +6 dB, +4.5 dB, +3 dB, +1.5dB, 0 dB, -1.5 dB, -3 dB, -4.5 dB, -6 dB, Mute]

The block diagram below shows the configuration of the Lo/Ro stereo downmixer.

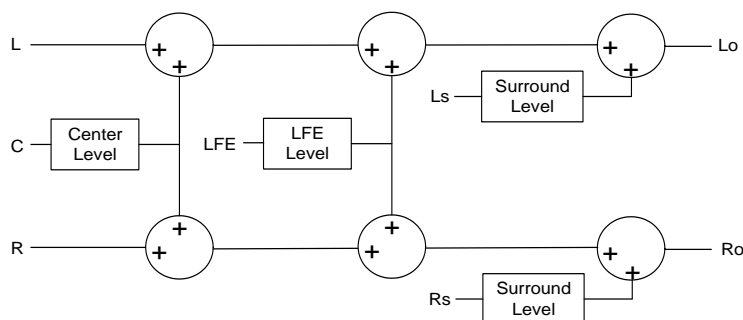


Figure 5-12 Lo/Ro downmixer

5.8 Loudness Panel

The ADX-1901 allows the user to measure the loudness of audio streams passing through it. The measurement process is flexible:

- All major loudness standards are supported.
- The measurement standards can be customized if desired.
- Up to eight programs can be measured at once.
- Segment markers can be inserted from two triggers.
- Log files of the measurements can be stored externally, for analysis using Miranda’s Audio Loudness Analyzer.

5.8.1 Loudness | Config panel

Global Config

All loudness measurements performed by this ADX-1901 are performed on the programs defined in the [Audio Programs Panel](#), using the metering defined and described in that panel.

Global Control

The ADX-1901 can monitor loudness on up to eight programs specified by the user.



Figure 5-13 Loudness panel – Config tab

Enable Loudness Monitoring turns all loudness monitoring functions ON or OFF

RESET resets the measurements, and places a segment marker in the log file (but only if *User Event* is selected in the Segment Marker area).

RUNNING / PAUSE shows the current status of the loudness monitoring.

- Click the button to change the status.
- PAUSE stops the measurement until the button is clicked again, but keeps the last value for logging and measurement.

Segment Marker

Select the checkboxes corresponding to the events for which you want a segment marker inserted in the loudness log file:

- User Event – a manually-triggered RESET (but not a PAUSE).
- Target change – a manually-triggered Meter Mode or Target change in the Audio Programs tab.

Note that segment marker triggers in one PGM will generate segment markers in the logs for all PGMs.

Logging Status/Control

This panel monitors logging activity for all loggers connected to the application server associated with this ADX-1901 and its associated Densité frame.

- The Logging Activity icon will be GREEN when logging activity is detected.
- The number of loggers connected to the appserver is shown in the data box.

About Log Files

Loudness logs contain data for a period of up to 24 hours. New log files are started when the logging function is enabled.

5.8.2 Loudness | PGM panel

Eight PGM panels – PGM 1 to PGM 8 – are available. These panels show the results of loudness measurements made on this program.

Program Settings & Input Channel Settings

These data boxes show the program definition – the coding mode and channel selections are those made in the [Audio Programs panel](#).



Figure 5-14 Loudness panel – PGM 1 tab

Coding Mode	Program Channels					
	Left	Right	Center	LFE	Ls	Rs
1/0			X			
2/0	X	X				
3/0	X	X	X			
3/0L	X	X	X	X		
2/1	X	X			X	
2/1L	X	X		X	X	
3/1	X	X	X		X	
3/1L	X	X	X	X	X	
2/2	X	X			X	X
2/2L	X	X		X	X	X
3/2	X	X	X		X	X
3/2L	X	X	X	X	X	X

Measurements

The Measurements area displays results from the loudness measurements performed on the selected program according to the settings made in the Loudness | Config tab and the Audio Programs panel. The three data boxes show these values:

- True peak MAX Maximum true peak level found in all selected input channels
- Momentary MAX Loudness averaged over a 400 ms sliding rectangular time window
- Short term (S) Loudness averaged over the short-term time window

The chart shows a running plot of the last 15 seconds of the value of the Short Term (yellow trace) and Momentary (green trace) loudness values. The bar graph at the right indicates the current Momentary value.

A reset, initiated by a user via the Reset button on the Loudness | Config tab, will reset all of these measurements.

About Log Files

Loudness logs contain data for a period of up to 24 hours. New log files are started:

- when the logging function is enabled
- every 24 hours after logging was enabled, until logging is disabled
- when the reference changes
- when the global config is changed,

See [ANNEX 3 -ANNEX 3 - Loudness Logging and the Miranda Audio Loudness Analyzer](#) beginning on page 44 for detailed instructions on activating logging and analyzing the logged data files.

5.9 Alarms panel

This panel provides resources to set the detection conditions and card response for each of the alarms supported by the ADX-1901.

5.9.1 Alarms – Video panel

Only one video alarm is defined.

Video Black Detection

This alarm detects the presence of a continuous black signal on the input for a period of time; the condition is flagged only when the time duration criterion has been satisfied.

Enable the alarm by selecting the checkbox.

The user sets the detection parameters for this error using three sliders:

- Threshold (mV) – sets the signal level below which Black will be considered to have been detected.
- Set Duration (sec) – sets the time interval over which Black must be continuously detected before the error is flagged.
- Clear Duration (sec) – sets the time interval over which a non-black signal (i.e. above the Threshold) must be continuously present to clear the alarm if it has been set.

Use the *LED Color* pulldown to choose the color that will be displayed by the status LED on the card edge when a Black Detect alarm is set. Choices are:

- Green, Yellow, Red, Flashing Red

Zone settings – define a zone within which the alarm detection will be applied.

- Line: Start Stop
- Pixel: Start Stop

The ranges always start at 1, but the upper limit depends on the video format. The zone is indicated by the black line and the video image size by the gray window.

5.9.2 Alarms – Metadata panel

SMPTE2020 Metadata

This alarm checks the presence of audio metadata inserted (SMPTE-2020) in the input video signal.

Enable the alarm by selecting the checkbox.

The user sets the detection parameters for this error using two sliders:

- Set Duration (sec) – sets the time interval over which Audio Metadata must be continuously absent before the condition is flagged and the alarm is set.
- Clear Duration (sec) – sets the time interval over which Audio Metadata must be continuously present to clear the alarm if it has been set.

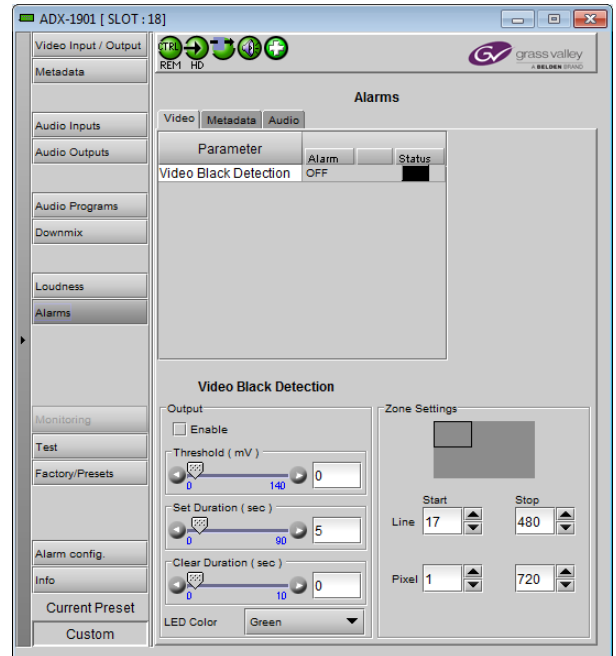


Figure 5-15 Alarms panel – Video – Input Black

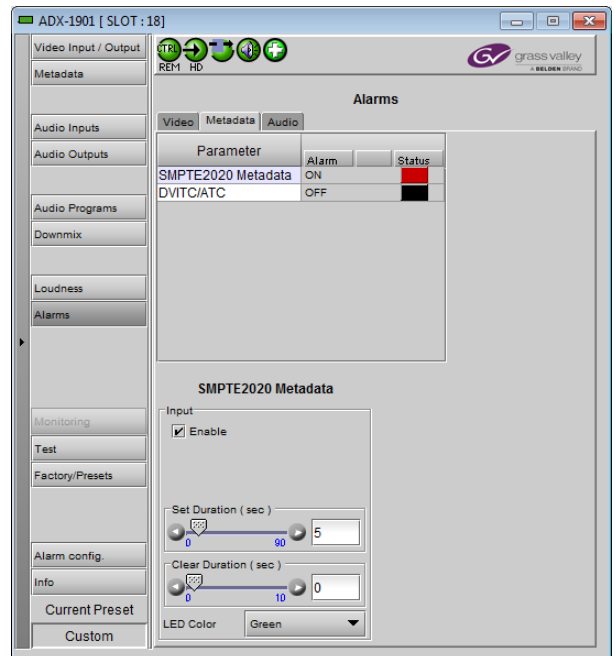


Figure 5-16 Alarms – Metadata – SMPTE 2020

Use the *LED Color* pull-down to choose the color that will be displayed by the status LED on the card edge when a SMPTE-2020 alarm is set. Choices are:

- Green, Yellow, Red, Flashing Red

DVITC/ATC

This alarm checks the presence of a DVITC or an ATC Time Code inserted in the input video signal.

Enable the alarm by selecting the checkbox.

The user sets the detection parameters for this error using two sliders:

- Set Duration (sec) – sets the time interval over which DVITC/ATC must be continuously absent on the video input before the condition is flagged and the alarm is set.
- Clear Duration (sec) – sets the time interval over which DVITC/ATC must be continuously present to clear the alarm if it has been set.

Use the *LED Color* pull-down to choose the color that will be displayed by the status LED on the card edge when a DVITC/ATC alarm is set. Choices are:

- Green, Yellow, Red, Flashing Red

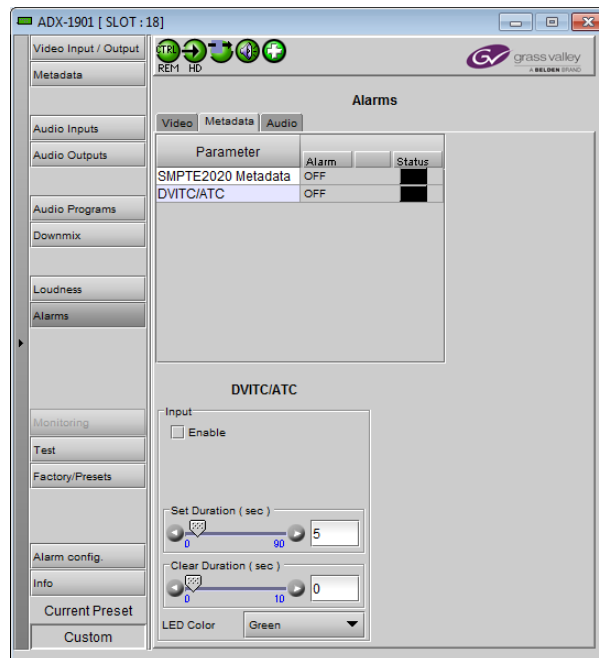


Figure 5-17 Alarms – Metadata – DVITC

5.9.3 Alarms – Audio panel

The Audio alarms are detected after the Audio Output stage, just before the Digital to Analog converters.

Overload

The overload detection is True Peak.

- Enable the alarm by selecting the checkbox.
- Select the *Apply To All* checkbox to apply the next alarm settings modifications simultaneously to all eight channels.

The user sets the detection parameters for this error using three sliders:

- Threshold (dBFS) – sets the signal level above which an overload will be considered to have been detected.
- Set Duration (sec) – sets the time interval over which an overload must be continuously detected before the error is flagged.
- Clear Duration (sec) – sets the time interval over which a non-overload signal (i.e. below the Threshold) must be continuously present to clear the alarm if it has been set.

Use the *LED Color* pulldown to choose the color that will be

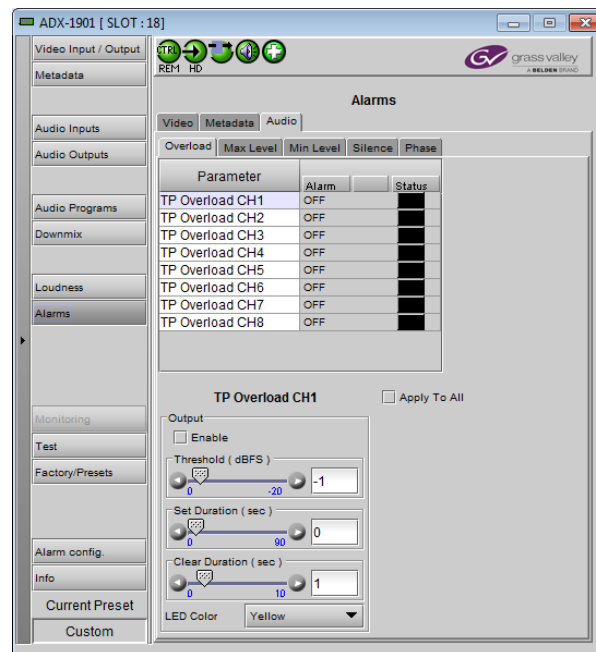


Figure 5-18 Alarms – Audio – Overload

displayed by the status LED on the card edge when an Overload alarm is set. Choices are:

- Green, Yellow, Red, Flashing Red

Max Level

This parameter is measured for the eight programs defined in the Audio Programs panel, and uses the Momentary Loudness values.

- Enable the alarm by selecting the checkbox.
- Select the *Apply To All* checkbox to apply the next alarm settings modifications simultaneously to all eight programs.

The user sets the detection parameters for this error using three sliders:

- Threshold (dBFS) – sets the signal level above which Max Level will be considered to have been detected.
- Set Duration (sec) – sets the time interval over which Max Level must be continuously detected before the error is flagged.
- Clear Duration (sec) – sets the time interval over which a non-Max-Level signal (i.e. below the Threshold) must be continuously present to clear the alarm if it has been set.

Use the *LED Color* pulldown to choose the color that will be displayed by the status LED on the card edge when a Max Level alarm is set. Choices are:

- Green, Yellow, Red, Flashing Red

Min Level

This parameter is measured for the eight programs defined in the Audio Programs panel, and uses the Momentary Loudness values.

- Enable the alarm by selecting the checkbox.
- Select the *Apply To All* checkbox to apply the next alarm settings modifications simultaneously to all eight programs.

The user sets the detection parameters for this error using three sliders:

- Threshold (dBFS) – sets the signal level below which Min Level will be considered to have been detected.
- Set Duration (sec) – sets the time interval over which Min Level must be continuously detected before the error is flagged.
- Clear Duration (sec) – sets the time interval over which a non-Min-Level signal (i.e. above the Threshold) must be continuously present to clear the alarm if it has been set.

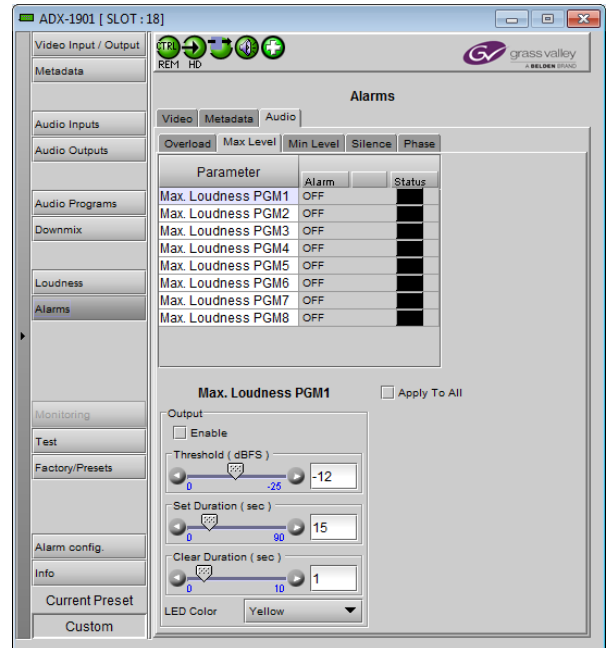


Figure 5-19 Alarms – Audio – Max Level

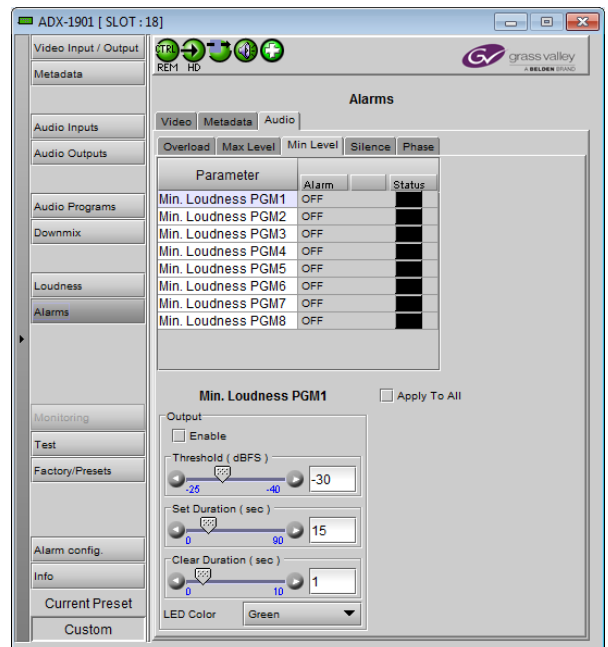


Figure 5-20 Alarms – Audio – Min Level

Use the *LED Color* pulldown to choose the color that will be displayed by the status LED on the card edge when a Min Level alarm is set. Choices are:

- Green, Yellow, Red, Flashing Red

Silence

- Enable the alarm by selecting the checkbox.
- Select the *Apply To All* checkbox to apply the next alarm settings modifications simultaneously to all eight channels.

The user sets the detection parameters for this error using three sliders:

- Threshold (dBFS) – sets the signal level below which Silence will be considered to have been detected.
- Set Duration (sec) – sets the time interval over which Silence must be continuously detected before the error is flagged.
- Clear Duration (sec) – sets the time interval over which a non-silent signal (i.e. above the Threshold) must be continuously present to clear the alarm if it has been set.

Use the *LED Color* pulldown to choose the color that will be displayed by the status LED on the card edge when a Silence alarm is set. Choices are:

- Green, Yellow, Red, Flashing Red

Phase

The Phase measurements are limited to adjacent channel pairs.

- Enable the alarm by selecting the checkbox.
- Select the *Apply To All* checkbox to apply the next alarm settings modifications simultaneously to all four channel pairs.

The user sets the detection parameters for this error using three sliders:

- Threshold (degrees) – sets the value above which a phase error will be considered to have been detected.
- Set Duration (sec) – sets the time interval over which a phase error must be continuously detected before the error is flagged.
- Clear Duration (sec) – sets the time interval over which an in-phase signal (i.e. below the Threshold) must be continuously present to clear the alarm if it has been set.

Use the *LED Color* pulldown to choose the color that will be displayed by the status LED on the card edge when a Phase alarm is set. Choices are:

- Green, Yellow, Red, Flashing Red

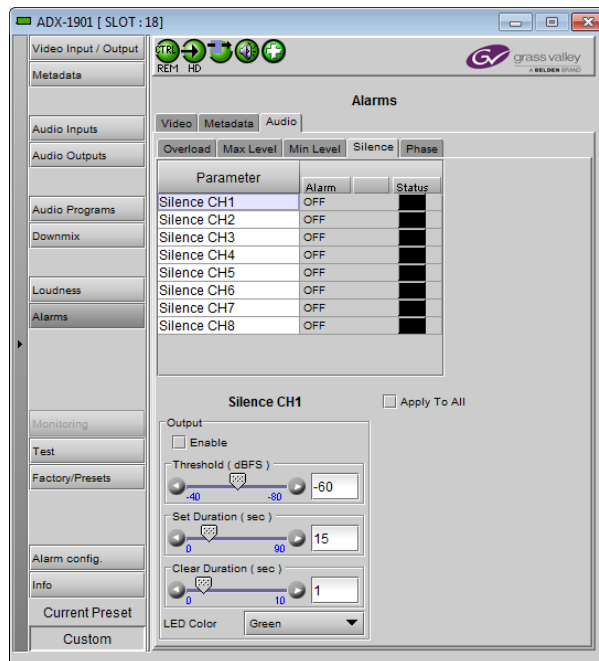


Figure 5-21 Alarms – Audio – Silence

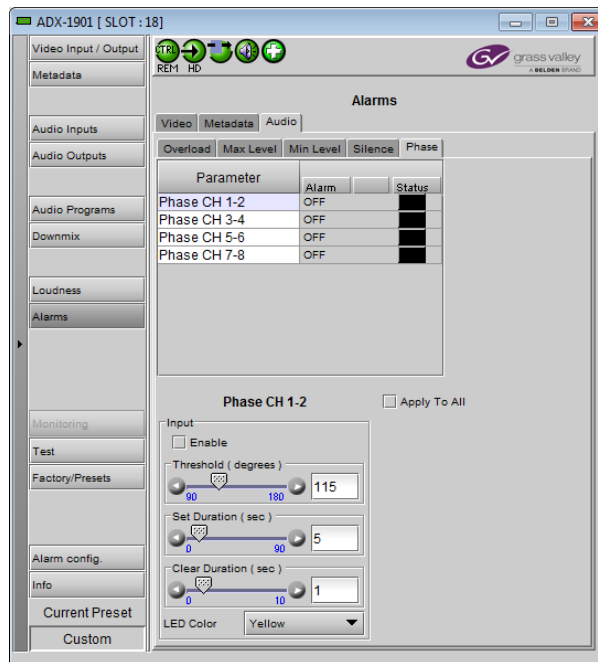


Figure 5-22 Alarms – Audio – Phase

5.10 Monitoring panel

The Remote Audio Level Meter (RALM) panel displays audio output level meters for the 8 analog outputs. Channels are displayed in pairs, so up to four meters will be present in the meter display window. The source for each meter is selected using the pulldowns in the RALM Remote Control area at the bottom of the control panel.

- OFF
- Audio Output CH 1&2 up to CH 7 & 8

The meter is divided into three zones, and the dividing points and color of each zone are individually configurable under the *Meter Ballistics Config* tab.

Speed – select the meter response from the pull-down list, options are [fast, medium, slow]

5.10.1 RALM Connections tab

Use the radio buttons to turn the meter display ON (RALM) or OFF for the indicated channels. The meter appears directly above the controls.

Reset Counter: click this button to reset the overload counter on the ALM display to zero. See the next section for instructions on setting up the overload counter.

5.10.2 Meter Ballistics Config tab

Type – select a type of meter from the pull-down list

Upper Zone Limits – select the crossover level between the upper and middle zones of the meter (the range of values shown in the pull-down list depends on the type of meter selected)

Lower Zone Limits – select the crossover level between the middle and lower zones of the meter (the range of values shown in the pull-down list depends on the type of meter selected)

Color samples – the three samples show the current selected color for the upper, middle and lower zones of the meter.

- Click on the color sample of a zone to open a color selection panel to choose a different color for that zone

Overload Cursor – The overload cursor appears on the meter as an arrowhead in the meter scale. The two pull-down boxes set the position of the overload cursor on the left and right meters. If the audio level on a channel goes above the cursor, the Overload Counter at the top of the meter is incremented.

This counter shows a running count of the number of overloads detected.



Figure 5-23 Monitoring - RALM

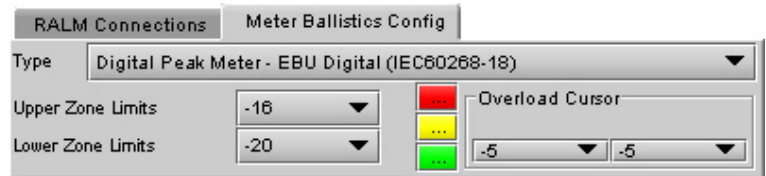


Figure 5-24 RALM - meter ballistics configuration

The *Phasemeter* (located at the bottom of the RALM meter display) is a small meter that represents the phase correlation factor between the two channels of a pair.

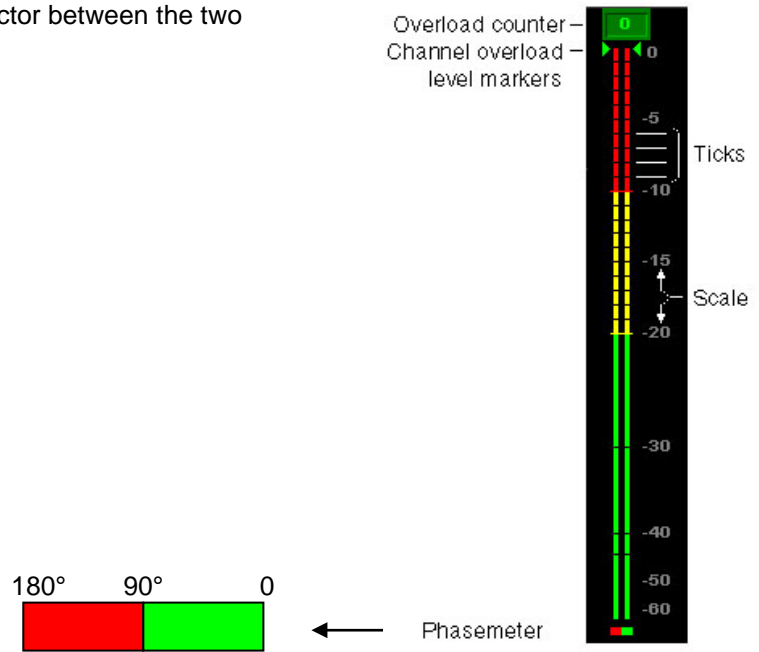


Figure 5-25 RALM meter display

5.11 Test panel

Use the checkboxes to select whether each output pair has an EBU tone forced onto the outputs.

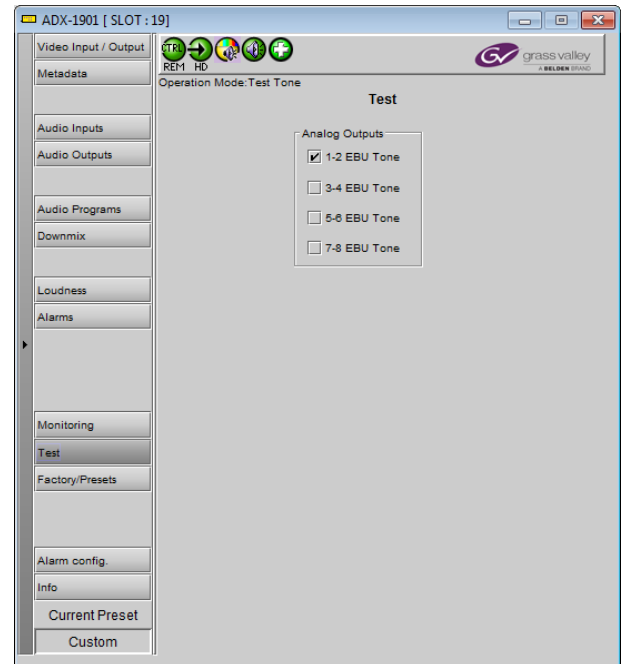


Figure 5-26 Test panel

5.12 Factory/Presets panel

Factory Section

Load Factory: Clicking this button will restore the card to a factory default state. Two checkboxes enable the user to choose whether to include Parameters and/or Alarms in the restoration process

- Note that User Presets are not changed

User Presets section

The ADX-1901 has memory registers which can hold up to 5 user-defined parameter settings.

The *Current Preset* box (at the bottom left corner of the panel) displays the last loaded preset. Any change to the card configuration after a preset is loaded will change the display to "Custom" instead of the preset value.

Select any one of the five presets using the pull-down list.

Click **Load** to load the contents of the selected User Preset into the ADX-1901. All parameter settings and values will be replaced by the contents of the selected User Preset.

Click **Save** to store the current parameter settings and values from the ADX-1901 into the selected User Preset. The existing contents of the preset will be overwritten.

Profiles

This section provides the option to save and recover the entire card configuration (including user presets if desired) on an external disk, or to copy it to another ADX-1901 card.

Click on *Profiles* to open the Profile Copy window.

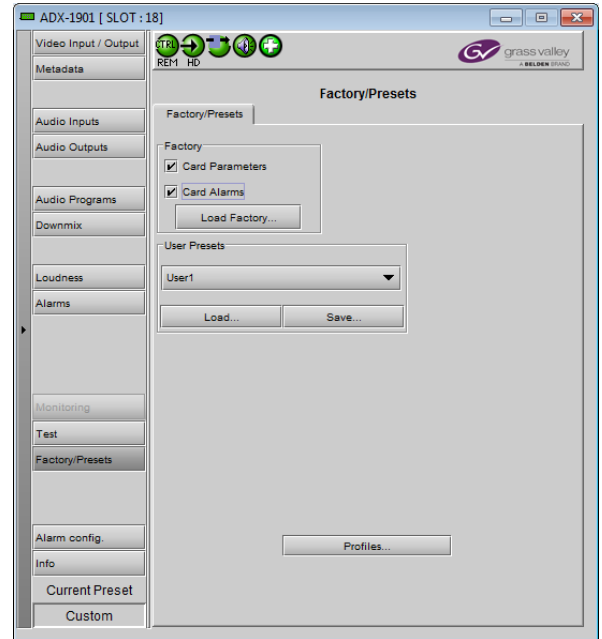


Figure 5-27 Factory / Presets panel

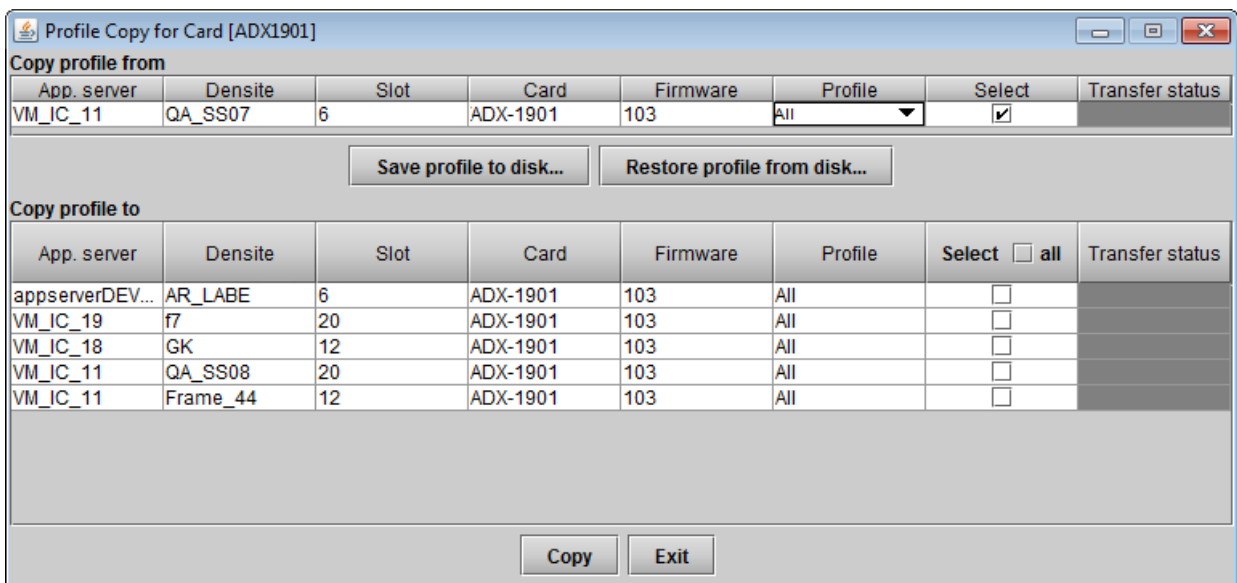


Figure 5-28 Profile Copy window

Copy profile from

This line shows this ADX-1901 card, and identifies it by App server, Densité frame and slot number, card type and firmware version.

The *Profile* column has a pulldown that allows you to select which profiles you will work with, and gives these choices:

- Current, User1, User2, User3, User4, User5, All

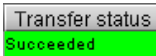
The *Select* column includes a checkbox (preselected checked) to confirm that you want to work with the current card.

Save Profile to Disk...

Click this button to open a Save dialog allowing you to specify a file name and location to which the selected profiles for this card will be saved.

Hint - It is a good idea to create a folder for these files, because they are not explicitly identified as ADX-1901 profiles, and will be difficult to find and identify if not clearly named and conveniently located.

- Click the save button once the name and location have been identified in the Save box
- If the file is saved correctly, the Transfer Status box on the right of the *Copy profile from* line will indicate *Succeeded* against a green background:



- If the file was not saved for some reason, the Transfer Status box to the right of the *Copy profile from* line will indicate *Failed* against a red background:

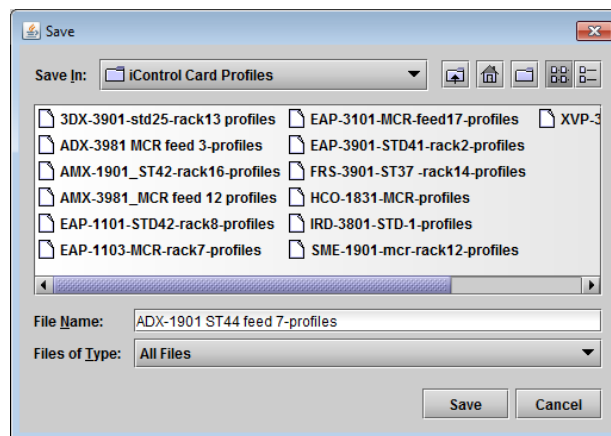
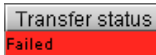


Figure 5-29 Save Profile to Disk dialog

Restore profiles from disk...

Click this button to open an *Open* dialog box within which you can locate and select a valid ADX-1901 profile file.

- Click Open to read the contents of the file and to reconfigure this ADX-1901's profiles according to its contents
- While the reconfiguration is in progress, the Transfer Status box on the right of the *Copy profile from* line will indicate *Working* against a yellow background
- When the reconfiguration is complete, the Transfer Status box on the right of the *Copy profile from* line will indicate *Succeeded* against a green background

Copy Profile to

This line shows other ADX-1901 cards that are available on the iControl network, each identified by App server, Densité frame and slot number, card type and firmware version

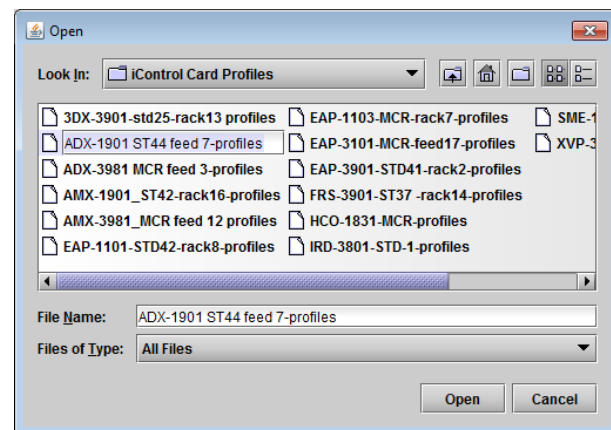


Figure 5-30 Restore Profiles from Disk dialog

The *Profile* column shows the same information as is shown for the current card in the Copy profile from line, i.e. one of the following:

- Current, User1, User2, User3, User4, User5, All

The *Select* column includes a checkbox to identify the ADX-1901 cards onto which you will copy profiles from the current card.

- For convenience, a *Select all* checkbox is provided in the column header
- Note that you can only select ADX-1901 cards with the same firmware version as the source card; cards with a different firmware version will show N/A against a yellow background in the *Transfer Status* column.

Click *Copy* to copy the selected profiles from this card into the selected other ADX-1901 cards

- While the profile copy operation is in progress, the Transfer Status box on the right of the *Copy profile to* line will indicate *Working* against a yellow background
- When the profile copy operation is complete, the Transfer Status box on the right of the *Copy profile to* line will indicate *Succeeded* against a green background

5.13 Alarm Config panel

This panel allows the alarm reporting of the ADX-1901 to be configured. The panel opens in a new window when the button is clicked, and can be resized if needed.

The panel is organized in columns.

Status/Name

This contains an expandable tree listing all the alarms reported by this ADX-1901 card.

- Each alarm name includes an icon that shows its current status
- Some alarms may be text-only and the alarm status is shown in the name and not by a status icon
- The figure shows the entire tree, but some repetitive alarms were removed to reduce the size of the image.

The **Card LED** and **Overall alarm** columns contain pulldown lists that allow the level of contribution of each individual alarm to the alarm named in the column heading to be set.

- If there is no arrowhead in the box, there is no pulldown and the alarm is not user-configurable

Card LED

This column allows configuration of the contribution of selected individual alarms to the status LED located on the front card edge. The Card LED status is shown at the bottom of the alarm tree in the Status/Name column.

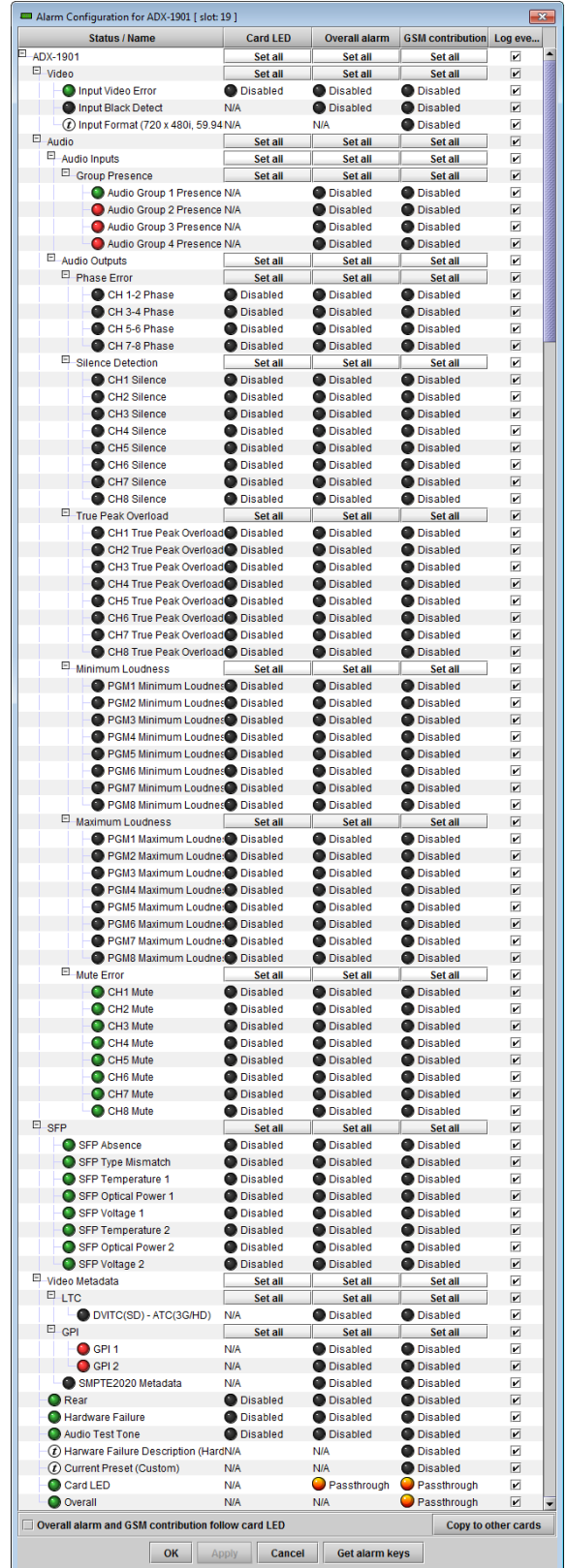


Figure 5-31 Alarm Configuration panel

Overall Alarm

This column allows configuration of the contribution of each individual alarm to the Overall Alarm associated with this card. The Overall Alarm is shown in the upper left corner of the iControl panel, and also appears at the bottom of the Status/Name column.

GSM Contribution

This column allows configuration of the contribution of each individual alarm to the GSM Alarm Status associated with this card. GSM is a dynamic register of all iControl system alarms, and is also an alarm provider for external applications. The possible values for this contribution are related to the Overall alarm contribution:






- If the Overall alarm contribution is selected as Disabled, the GSM alarm contribution can be set to any available value
- If the Overall alarm contribution is selected as any level other than disabled, the GSM contribution is forced to follow the Overall Alarm.

Log Events

iControl maintains a log of alarm events associated with the card. The log is useful for troubleshooting and identifying event sequences. Click in the checkbox to enable logging of alarm events for each individual alarm.

Levels associated with these alarms:

The pulldown lists may contain some or all of the following options:

	Disabled	The alarm makes no contribution (black icon)
	Minor	The alarm is of minor importance (yellow icon)
	Major	The alarm is of major importance (orange icon)
	Critical	The alarm is of critical importance (red icon)
	Passthrough	The alarm exists but has no effect (used for text and composite alarms)

Shortcut: if you click in one of the Set All boxes beside a section heading, you will open a pulldown that lets you assign a level to all alarms in that section of the column simultaneously.

Once the alarms are configured, you may accept the changes or discard them:

Overall alarm and GSM contribution follow card LED

Click in the checkbox to force the Overall alarm and GSM contribution to be identical to the Card LED status

- All Overall alarms and GSM contributions for which there is a Card LED alarm will be forced to match the Card LED alarm
- All Overall Alarms and GSM contributions for which there is no Card LED alarm will be forced to Disabled

A warning box will open allowing you to confirm the action, since it will result in changes to the configuration and there is no *undo* function.

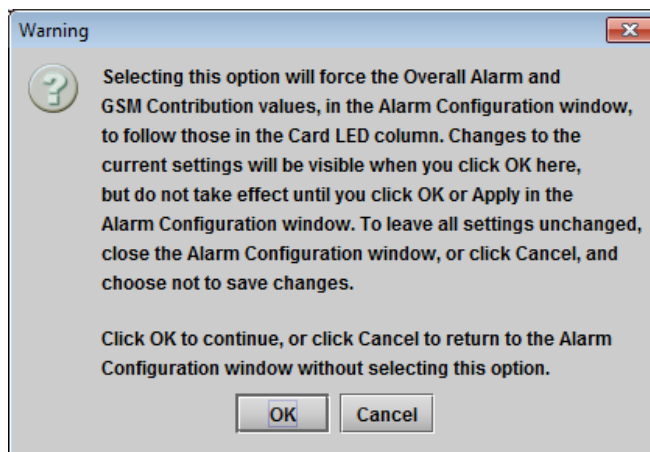


Figure 5-32 Warning for Follow LED change

Copy to other cards

Click this button to open a panel that allows the alarm configuration set for this card to be copied into another ADX-1901 card.

- Select one or more destination cards from the list in the window by clicking in the checkboxes, or all of them by clicking in the *All* checkbox
- Note that when you do a [Copy Profile](#) for this card (see section 5.14), the alarm configuration is copied along with all the other settings.

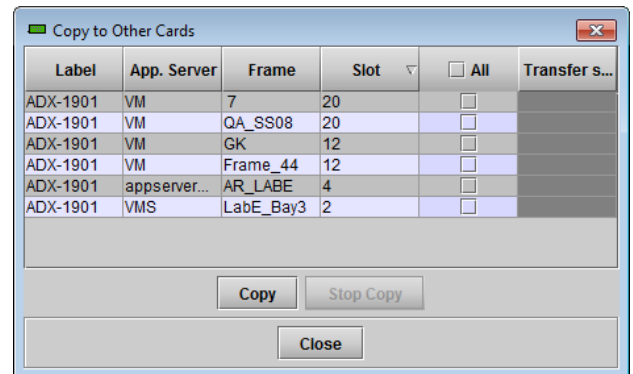


Figure 5-33 Copy to Other Cards window

Get alarm keys

Click this button to open a save dialog where you can save a file containing a list of all alarms on this card and their current values, along with an Alarm Key for each. The alarm keys are useful for system integration and troubleshooting.

- The file is saved in .csv format

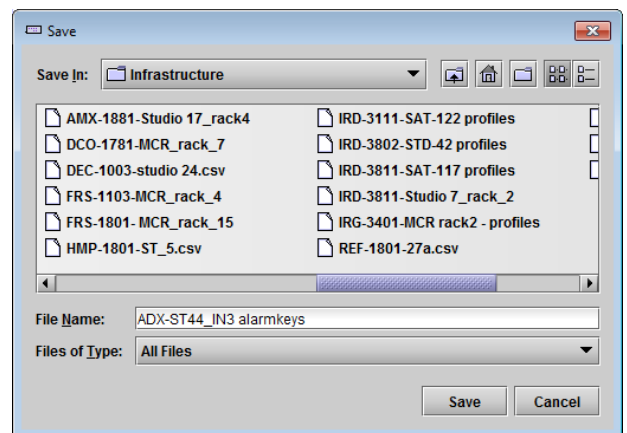


Figure 5-34 Get Alarm Keys dialog

OK, Apply, Cancel

- **OK** accepts the settings and closes the window once the card confirms that there are no errors.
- **Apply** accepts the settings, but leaves the window open
- **Cancel** closes the window without applying any changes, and leaves the previous settings intact.

5.14 Info panel

When the ADX-1901 is included in an iControl environment, certain information about the card should be available to the iControl system. The user can enter labels and comments that will make this card easy to identify in a complex setup. This information is entered into data boxes in the Info control panel.

Rear Type: specifies the rear module currently installed.

Label: type the label that is shown for this ADX-1901 when it appears in iControl applications

Short Label type the short-form label that iControl uses in some cases (8 characters)

Source ID type a descriptive name for this ADX-1901

Comments: type any desired text

The remaining data boxes show manufacturing information about this card.



Figure 5-35 Info panel

Three buttons in the panel give access to other information.

- **Details...:** Reports the Firmware version, service version, and panel version for this card

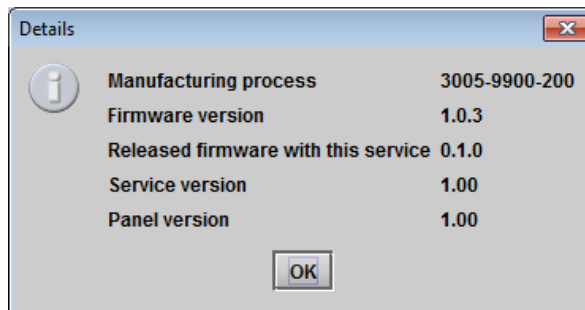


Figure 5-36 Details window

- **Advanced...:** Shows the Long ID for this card. The Long ID is the address of this ADX-1901 in the iControl network.

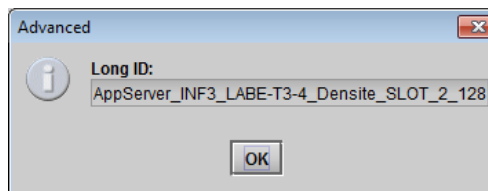


Figure 5-37 Advanced window

- Remote System Administration – opens the Joining Locators window, which lists remote lookup services to which this ADX-1901 is registered

Add: Force the iControl service for this ADX-1901 to register itself on a user-specified Jini lookup service, using the following syntax in the data box:

jini://<ip_address>

where <ip_address> is the ip address of the server running the lookup service, e.g.:

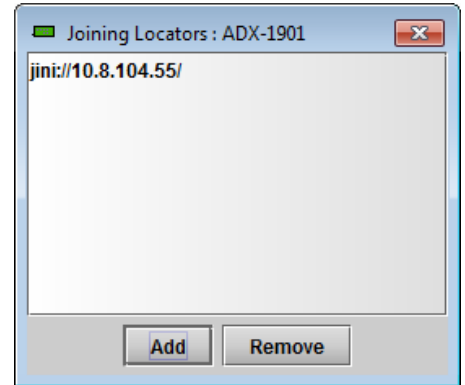
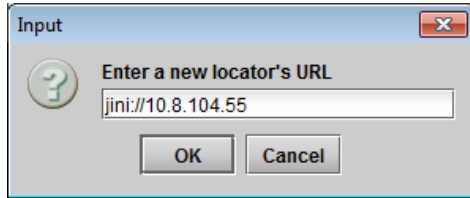
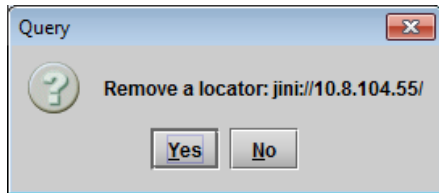


Figure 5-38 Joining Locators window

Remove: select one of the services listed in the window by clicking on it, and click *Remove* to open a query box allowing you to delete it from the window.



6 Specifications

Analog Audio Outputs (8)

Signal:	balanced analog audio
Impedance:	< 60Ω
Max. level:	+24 dBu / 2 KΩ

Audio Processing Performance

Quantization:	24 bits
Sampling:	48 kHz
Audio latency:	0.967 ms at 48 kHz
Audio delay:	Up to 2.7s (1 ms steps and 1 sample steps)
SNR:	>116 dB A weighted
0 dBFS:	0 to +24 dBu (1 dB steps)
Distortion:	<-90 dB (20Hz to 5 kHz)
Crosstalk:	<-110 dB (20 Hz to 20 kHz)
Freq. response:	± 0.05 dB (20 Hz to 20 kHz)
Tone generator:	-18 dBFS 1 kHz sine wave interrupted on left channel (250 ms) per EBU R49

Video Input / Output

Signal:	SMPTE 259M-C (270 Mb/s) SMPTE 292M (1.485, 1.485/1.001 Gb/s) SMPTE 424M (2.970, 2.970/1.001 Gb/s)
Supported formats:	SD: SMPTE 259M: 480i59.94, 576i50 HD: SMPTE 274M: 1080i59.94, 1080i50, 1080p23.98, 1080psf24, 1080p25, 1080p29.97 HD: SMPTE 296M: 720p59.94, 720p50, 720p23.98, 720p24 3G: SMPTE 425M Level A (mapping 1), Level B: 1080p59.94, 1080p50
Embedded audio:	SMPTE 272M (SD), SMPTE 299M (HD)
Embedded ATC:	SMPTE RP188
Embedded ANC:	SMPTE 291M
Cable length:	SD: 400 m (1,312 ft.) Belden 1694A at 270 Mb/s HD: 200 m (656 ft.) Belden 1694A at 1.485 Gb/s 3G: 100 m (328 ft.) Belden 1694A at 2.970 Gb/s
Input impedance:	75 Ω
Return Loss:	>15 dB up to 1.5 GHz >10 dB from 1.5 GHz to 3 GHz
Jitter:	HD/SD: < 0.2 UI 3G: < 0.4 UI

Video Processing

Signal Path:	10 bits
Video latency:	SD < 2.5 μS HD, 3G: < 1 μs

OPTICAL VIDEO INPUT (0 or 1)

Refer to SFP module specifications:

SFP-R-LC, SFP-RT-S13-LC, SFP-RT-W13-LC.
SFP-RT-W15-LC

Optical Video Output (0, 1 or 2)

Refer to SFP module specifications:

SFP-T-S13-LC, SFP-TT-S13-LC, SFP-RT-W13-LC,
SFP-RT-W15-LC

LTC Output (1)

Signal:

SMPTE12M

Connector:

RJ45

Impedance:

50Ω

Level:

1 Vp-p

GPI Signal Output (2)

Signal:

Contact closure to ground, continuous max current 20 ma.

Connector:

RJ45

RS-422 Metadata Output (1)

Signal:

RS-422,

Connector:

RJ45

Level:

3 Vp-p min.

Rate:

115,200 Bd

Electrical

Power:

<7W with dual SFP cartridge

7 Grass Valley Technical Support

For technical assistance, please contact the Grass Valley Technical Support Center nearest you:

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Telephone: 1-800-547-8949
+1 530 478 4148
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asiatech@grassvalley.com

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ANNEX 1 – ADX-1901 Local User Interface

LEV1	LEV2	LEV3	LEV4	VALUES	Conditions
STATUS	GENERAL STATUS			REAR TYPE / OPTIC TYPE or HARDWARE ERROR	
	VIDEO STATUS			NO CARRIER or "FORMAT" / TRS ERROR	
	AUDIO STATUS			GROUP N# "1 to 4" "VALID or NONE"	
	METADATA STATUS	TIME CODE AUDIO METADATA		DVITC "VALID or NONE", VITC "VALID or NONE", ATC "VALID or NONE" S-2020 "VALID or NONE",	
CONFIG	LOAD SAVE			[USER1, USER2, USER3, USER4, USER5] [USER1, USER2, USER3, USER4, USER5]	
VIDEO IN/OUT	INPUT SELECT			[BNC IN, FIBER IN1]	
	FIBER OUTPUT	FIBER OUT 1 FIBER OUT 2		[OFF, ON] [OFF, ON]	
METADATA EXTRACT	TIME CODE	LTC SOURCE SD LINE NUMBER TIME CODE DELAY		OFF, DVITC, ATC-LTC, ATC-VITC, AUTO [10, ..., 20] en 525; [7, ..., 22] en 625 [0, ..., 50]	SD Only unit=frame
	AUDIO METADATA	AUDIO META SDID AUDIO META DELAY		[1, ..., 9] [0, 2700] [0, 47]	unit = ms, sample
AUDIO	INPUT	INPUT CH1-16	PHASE INVERT AUDIO DELAY	[OFF, ON] [0, 2700] [0, 47]	unit = ms, sample
	OUTPUT	MIXER 1-8	MIX MODE	[OFF, Δ, A+B, MIX]	
			SOURCE A LEVELA	[CH01, ..., CH16] [-96, ..., 12]	step = .5dB
		SOURCE B LEVELB	[CH01, ..., CH16] [-96, ..., 12]	step = .5dB	
		0 dBFS SETTING	MUTE	[OFF, ON] [0, ..., 24]	step = 1dBu
TEST TONE	Output CH1-2 Output CH3-4 Output CH5-6 Output CH7-8			[OFF, EBU ENABLE] [OFF, EBU ENABLE] [OFF, EBU ENABLE] [OFF, EBU ENABLE]	
VERSION	CARD VERSION CPU VERSION FPGA VERSION			CARD V.nnn CPU V.n.n.nnn FPGA V.n.n.nnn	
FACTORY DEFAULT	CARD PARAMETERS CARD LED ALARMS			[RESTORE] [RESTORE]	

Note: Some menu items may not be present depending on input format, or card configuration.

ANNEX 2 – Installing the Optical Interface

Installing and removing the Fiber I/O interface cartridge requires special care. This annex describes the process.

Some rear panels used with the ADX-1901 incorporate a fiber optic interface. The interface consists of two parts:

- A socket on the rear panel into which an SFP interface module is plugged
- An SFP (Small Form-factor Pluggable) module into which the optical fibers are plugged, and which incorporates the optical/electrical interface

Cautions and Warnings



SFP Transmitter modules contain a class 1 laser, which emits invisible radiation whenever the module is powered up. Because the SFP is hot-swappable, the module may be powered up as soon as it is installed.

DO NOT LOOK INTO AN OPERATING SFP MODULE'S CONNECTORS, AS EYE DAMAGE MAY RESULT.



The SFP module is sensitive to electrostatic discharge (ESD). It is recommended that you use an ESD-preventive wrist strap grounded to the Densité chassis while handling the SFP module.



SFP modules are subject to wear, and their useful lifetime is reduced each time they are inserted or removed. Do not remove them more often than is absolutely necessary.



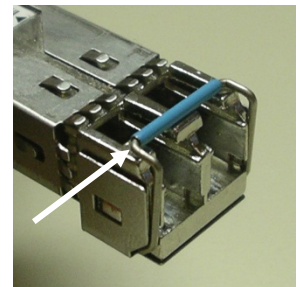
Never remove or install an SFP module with the fiber optic cables connected. Damage to the cables could result.



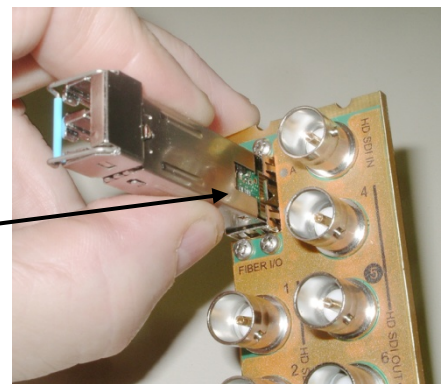
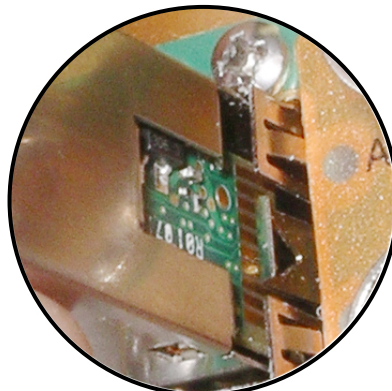
The presence of dust and debris can seriously degrade the performance of an optical interface. It is recommended that you insert a dust plug into the SFP module whenever a fiber optic cable is not connected.

Installing an SFP module

1. Make sure that the bale clasp lever is in the closed position



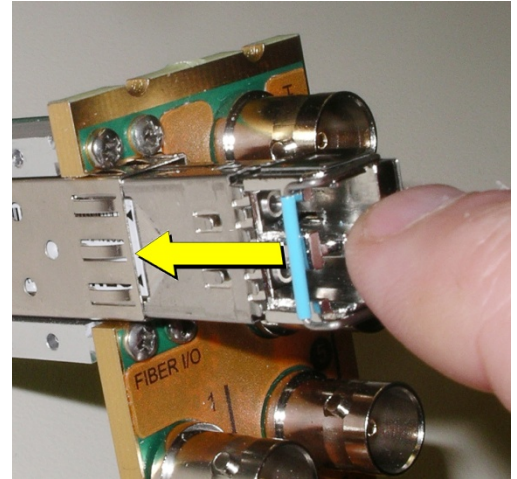
2. Position the SFP module so that the recessed slot is lined up with the tab side of the socket.



- Slide the module straight into the socket, and push gently until it clicks into position.

Connecting the fiber optic cables

- Remove the dust plug from the SFP module if present
- Verify that the exposed end of the optical fiber in the LC connector is clean
 - Carefully remove any debris if necessary.
- Plug the LC-terminated fiber optic cable into the SFP module

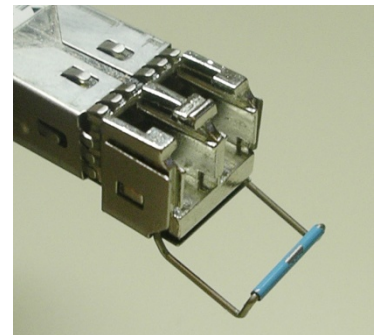


Removing the fiber optic cables

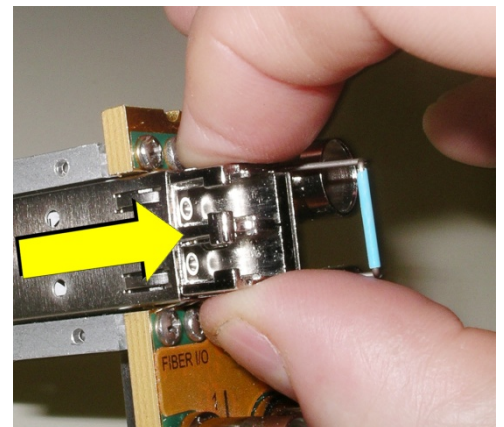
- Grasp the LC fiber optic connector that is plugged into the SFP module, and pull it straight out to disengage the optical fiber from the SFP.
 - Never pull the fiber optic cable itself, as catastrophic damage may occur.
- Insert a dust plug into the SFP module.

Removing the SFP module

- Move the bale clasp lever to the open position.



- Grasp the SFP module between your thumb and forefinger, and pull it straight out of the slot.
 - Do NOT pull on the bale clasp lever to remove the module, as it is easily damaged
 - You may find that you need to wiggle the module, or perhaps push it into the slot a bit, before it will release and slide out.



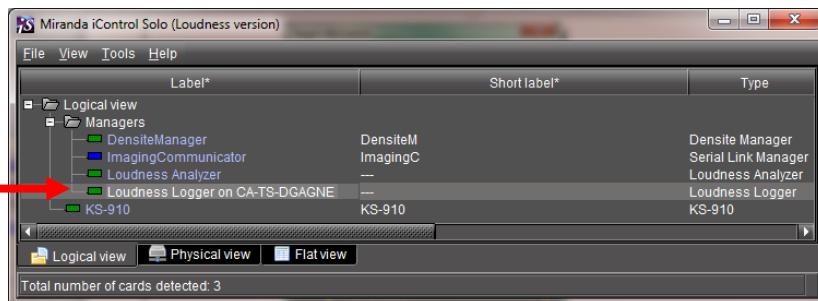
- Insert a dust plug into the SFP module.

ANNEX 3 - Loudness Logging and the Miranda Audio Loudness Analyzer

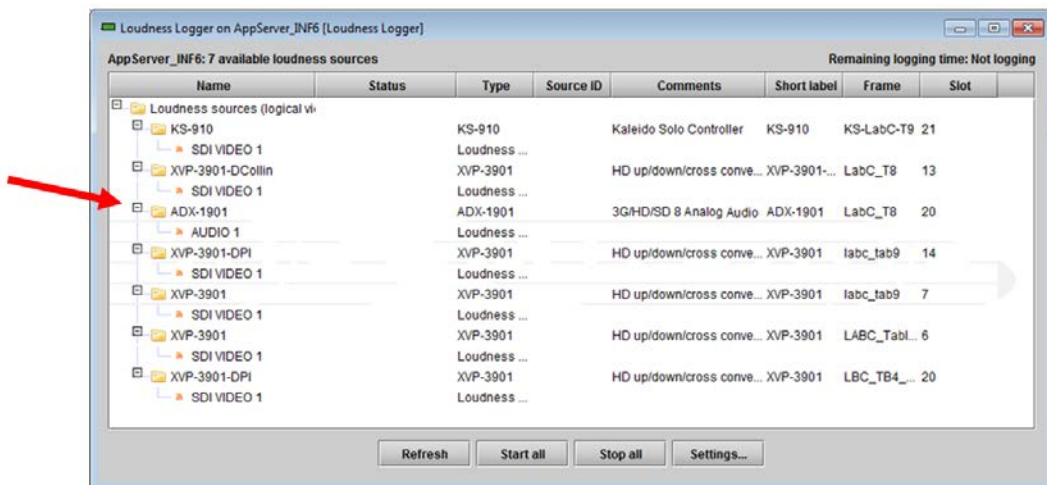
Activating and Managing Loudness Logging

Use iControl or iControl Solo to activate the loudness logging feature of the ADX-1901, and specify the location where the log files will be saved for future analysis.

- In the Logical View of your iControl Application (iControl Solo or iControl Navigator) open the Managers folder, and double-click on Loudness Logger
 - Note that in Navigator, there may be more than one logger available; be sure to select the one associated with the appserver whose Densité Manager was used to install the ADX-1901.



- A list of loudness monitoring resources will appear, including your ADX-1901.



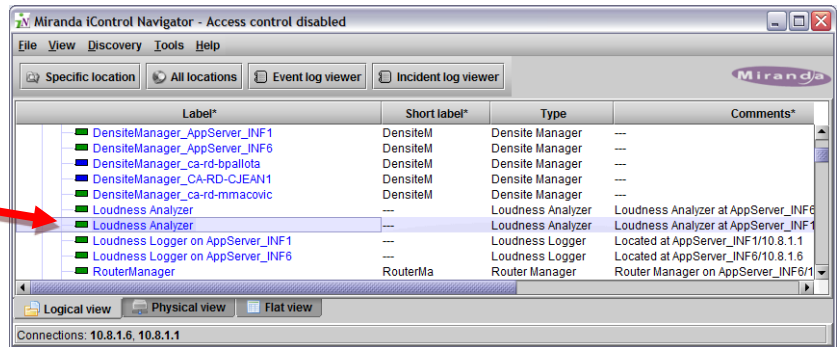
- Click "Settings" to specify the path to the location where loudness data files will be saved.
- Browse to the desired location and click the "Apply" button.

Note that the Settings apply to all loudness sources reported in the window, so be careful not to change them if other sources are active.
- To start logging on an individual ADX-1901, right-click on its icon and select "Start"
- To start logging on all the loudness sources in the display, click the "Start all" button.
- Look under "Status" and verify that logging is in progress, as indicated by the green check mark.
- To stop logging, right-click on the individual ADX-1901 and select "Stop", or click "Stop all" to stop logging on all devices in the list.

Starting the Audio Loudness Analyzer from iControl

The Audio Loudness Analyzer processes the log files saved from the ADX-1901, as described above.

1. From your iControl Application (iControl Solo or iControl Navigator), double-click *Loudness Analyzer*.



The complete user manual for the Audio Loudness Analyzer is available from its Help menu.

1. Pull down Help and select Open Help to see the manual
2. Consult the manual as necessary to perform the loudness analysis.

