

# SuperFlex

SFX Series Pro  
Audio Satellite Receiver



## Addendum

To IDC Part No. 92080190-50, User's Guide

**INTERNATIONAL  
DATACASTING**



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## **SFX Series Pro Audio Satellite Receiver Addendum International Datacasting Corporation Part No. 92080960-50**

This Addendum is intended to be used in conjunction with the SFX Series Satellite Receiver User's Guide. International Datacasting Corporation Part No. 92080190-50 or the SFX Duo Series User's Guide. International Datacasting Part No: 92081890-50. Full service and contact information is provided in Chapter 3 of those manuals.

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# Table of Contents

<b>Chapter 1 Getting Started</b>	<b>4</b>
Front Panel	4
Rear Panel	5
Controlling the Pro Audio with the Front Panel LCD Display/Keypad Interface	8
<b>Chapter 2 Web GUI Operation</b>	<b>12</b>
Main Menu Page	12
Audio	12
Configuring an Audio Stream	12
Configuring Silence Monitoring	14
Setting Audio Backup Preferences	15
Live Assist	17
Triggered Action Types	17
Trigger List	18
Viewing the Scheduled Triggers	20
Pro Audio Debug	20
The LiveWire™ Option	21
About Livewire	21
How Livewire Works	21
Using Terminal Commands	23
Additional Audio Commands	23

# Chapter 1

## Getting Started

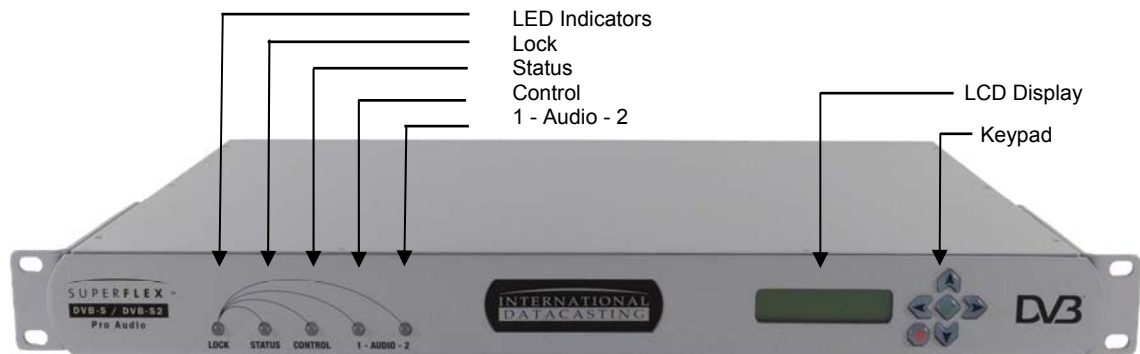
International Datacasting Corporation (IDC) would like to thank you for purchasing the SFX Series SuperFlex Satellite Receiver (herein referred to as the “satellite receiver”). This Addendum provides the information required to configure and operate only the Pro Audio features of your satellite receiver. The installation, set up, control and configuration of the balance of your receiver is described in the appropriate Receiver User’s Guide. Your SFX Pro Audio receiver can be one of three models:

- SFX3102 / SFX3103 Pro Audio Receiver (1R) unit – single tuner, two audio channels
- SFX3109 Pro Audio Receiver (1R) unit – single tuner, two audio channels, satellite feed-through
- SFX3101 Pro Audio EXP Receiver (2R) unit – single tuner, four audio channels; or
- SFX4104 Pro Audio EXP Receiver (2R) unit – dual tuner; four audio channels

The illustrations provided in this chapter identify indicators and connectors on the satellite receiver in both the Pro Audio EXP double height and the Pro Audio single height rack mount configuration. Acquaint yourself with these illustrations, and refer to the physical unit itself.

## Front Panel

Once you have removed the satellite receiver from the box, please familiarize yourself with the front panel. Refer to Figure 1- 1 or Figure 1- 2 for the location of the indicators. The differences between the standard SFX receiver’s front panel and the Pro Audio’s front panel are described in the table under the figures.



**Figure 1-1 Front Panel Indicators (SFX3102 / SFX3103 / SFX3109 Pro Audio)**

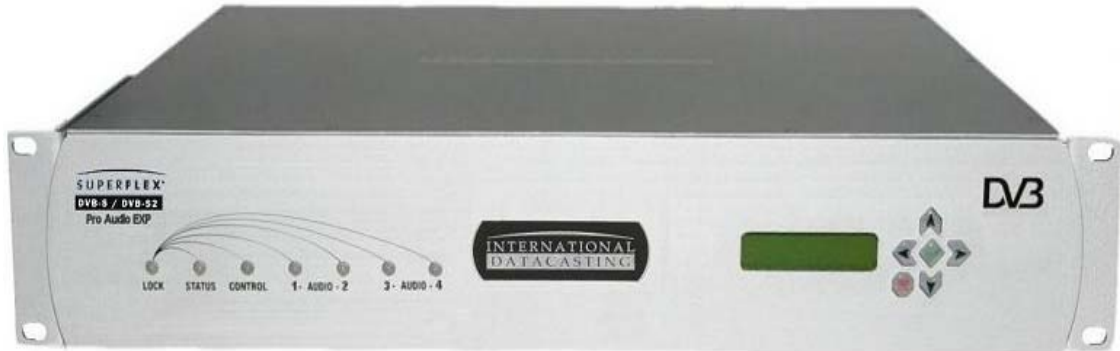


Figure 1- 2 Front Panel Indicators (SFX3101 Pro Audio EXP)



Figure 1- 3 Front Panel Indicators (SFX4104 Pro Audio EXP)

Indicator	Description
1- AUDIO - 2	Purpose: provides indication of the authorization and audio decoding activity on the audio outputs.
3- AUDIO - 4	Colour: off/green, where:  Solid Green – audio channel is authorized (enabled), but there is no audio decoding activity.  Flashing Off/Green – audio channel is authorized and decoder is decoding “streaming audio” (e.g. live programming) activity.  Flashing Off/Orange - audio channel is authorized and decoder is decoding “store and forward” audio (e.g. previously uploaded content).  Red – silence has been detected on audio channel outputs. Note: Relay 4 on the channel with the dead air is also set “ON”.  Off – audio channel is not authorized.

## Rear Panel

Please refer to Figure 1- 4, Figure 1- 6 and Figure 1- 7 for your receiver’s rear panel. The table following the figures describes only the Pro Audio differences from the standard rear panel. It uses the letter “X” in place of the audio and associated relay channel numbers.

Layout of Output Connectors				
	Relay	Audio	Relay	Audio
Pro Audio	Relay Ch 1	Audio Ch 1	Relay Ch 2	Audio Ch 2
EXP	Relay Ch3	Audio Ch 3	Relay Ch 4	Audio Ch 4
	Relay Ch 1	Audio Ch 1	Relay Ch 2	Audio Ch 2

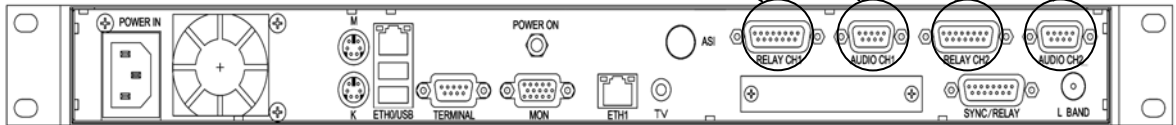


Figure 1-4 SFX 2102 / SFX2103 Pro Audio Rear Panel Connectors

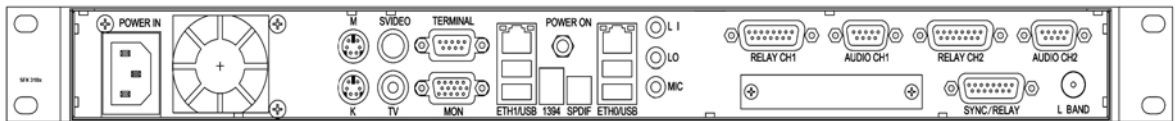


Figure 1-7 SFX 3102 Pro Audio Rear Panel Connectors

Figure 1-5 SFX 3109 Pro Audio Rear Panel Connectors (below)

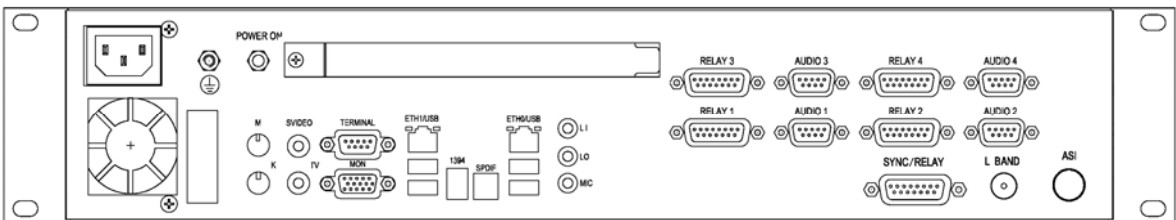
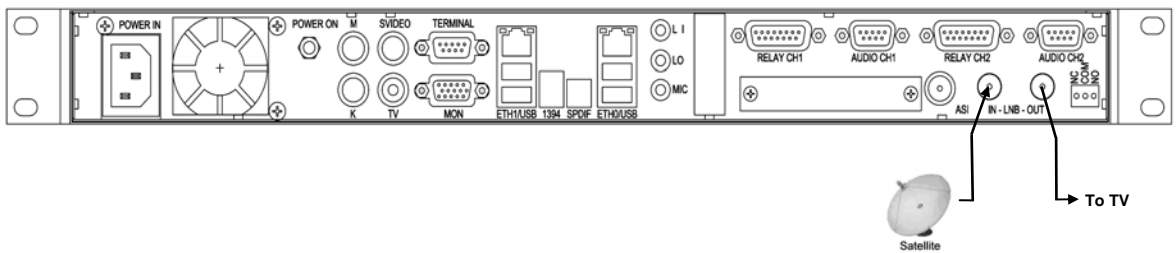


Figure 1-6 SFX 3101 Pro Audio EXP Rear Panel Connectors

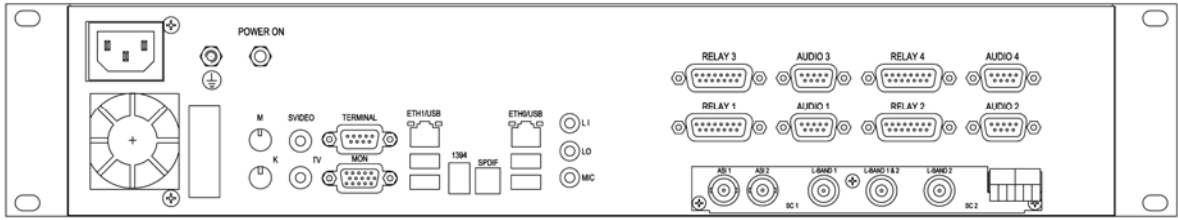


Figure 1-7 SFX 4104 Pro Audio Rear Panel Connectors

Connector	Description																																																												
Audio Channel X	<p>This is a DE-9P (male) connector used as a unidirectional (output) analog audio data port. The standard pin outs for this port are as follows:</p> <table border="1"> <thead> <tr> <th>PIN</th> <th>Acronym</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>LEFT +</td> <td>Audio Left +</td> </tr> <tr> <td>2</td> <td>GND</td> <td>Ground</td> </tr> <tr> <td>3</td> <td>AES +</td> <td>Digital Audio Output +</td> </tr> <tr> <td>4</td> <td>GND</td> <td>Ground</td> </tr> <tr> <td>5</td> <td>RIGHT +</td> <td>Audio Right +</td> </tr> <tr> <td>6</td> <td>LEFT -</td> <td>Audio Left -</td> </tr> <tr> <td>7</td> <td>GND</td> <td>Ground</td> </tr> <tr> <td>8</td> <td>AES -</td> <td>Digital Audio Output -</td> </tr> <tr> <td>9</td> <td>RIGHT -</td> <td>Audio Right -</td> </tr> </tbody> </table> <p>An alternative pin out is available as below. This alternative is in use if a label "Option B" is on the rear panel.</p> <table border="1"> <thead> <tr> <th>PIN</th> <th>Acronym</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>LEFT -</td> <td>Analog Left Out -</td> </tr> <tr> <td>2</td> <td>LEFT +</td> <td>Analog Left Out +</td> </tr> <tr> <td>3</td> <td>AES +</td> <td>AES +</td> </tr> <tr> <td>4</td> <td>RIGHT -</td> <td>Analog Right Out -</td> </tr> <tr> <td>5</td> <td>RIGHT +</td> <td>Analog Right Out +</td> </tr> <tr> <td>6</td> <td>GND</td> <td>Analog Ground</td> </tr> <tr> <td>7</td> <td>GND</td> <td>Analog Ground</td> </tr> <tr> <td>8</td> <td>AES -</td> <td>AES -</td> </tr> <tr> <td>9</td> <td>GND</td> <td>Analog Ground</td> </tr> </tbody> </table>	PIN	Acronym	Reference	1	LEFT +	Audio Left +	2	GND	Ground	3	AES +	Digital Audio Output +	4	GND	Ground	5	RIGHT +	Audio Right +	6	LEFT -	Audio Left -	7	GND	Ground	8	AES -	Digital Audio Output -	9	RIGHT -	Audio Right -	PIN	Acronym	Reference	1	LEFT -	Analog Left Out -	2	LEFT +	Analog Left Out +	3	AES +	AES +	4	RIGHT -	Analog Right Out -	5	RIGHT +	Analog Right Out +	6	GND	Analog Ground	7	GND	Analog Ground	8	AES -	AES -	9	GND	Analog Ground
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Connector	Description																																																
Relay CH X	This is a DA-15P (male) connector used as for 4 Form C relays for Legacy Networks. The pin outs for this port are as follows: <table border="1" data-bbox="743 352 1263 852"> <thead> <tr> <th>PIN</th> <th>Acronym</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>RX</td> <td>RS-232 Receive</td> </tr> <tr> <td>2</td> <td>Relay 1 NO</td> <td>NO Form C Lock 1</td> </tr> <tr> <td>3</td> <td>Relay 2 NO</td> <td>NO Form C Lock 2</td> </tr> <tr> <td>4</td> <td>Relay 3 NO</td> <td>NO Form C Lock 3</td> </tr> <tr> <td>5</td> <td>Relay 4 NO</td> <td>NO Form C Lock 4</td> </tr> <tr> <td>6</td> <td>GND</td> <td>Ground</td> </tr> <tr> <td>7</td> <td>Relay 1 NC</td> <td>NC Form C Lock 1</td> </tr> <tr> <td>8</td> <td>Relay 2 NC</td> <td>NC Form C Lock 2</td> </tr> <tr> <td>9</td> <td>TX</td> <td>RS-232 Transmit</td> </tr> <tr> <td>10</td> <td>Relay 1 Com</td> <td>Form C Common 1</td> </tr> <tr> <td>11</td> <td>Relay 2 Com</td> <td>Form C Common 2</td> </tr> <tr> <td>12</td> <td>Relay 3 Com</td> <td>Form C Common 3</td> </tr> <tr> <td>13</td> <td>Relay 4 Com</td> <td>Form C Common 4</td> </tr> <tr> <td>14</td> <td>Relay 3 NC</td> <td>NC Form C Lock 3</td> </tr> <tr> <td>15</td> <td>Relay 4 NC</td> <td>NC Form C Lock 4</td> </tr> </tbody> </table>	PIN	Acronym	Reference	1	RX	RS-232 Receive	2	Relay 1 NO	NO Form C Lock 1	3	Relay 2 NO	NO Form C Lock 2	4	Relay 3 NO	NO Form C Lock 3	5	Relay 4 NO	NO Form C Lock 4	6	GND	Ground	7	Relay 1 NC	NC Form C Lock 1	8	Relay 2 NC	NC Form C Lock 2	9	TX	RS-232 Transmit	10	Relay 1 Com	Form C Common 1	11	Relay 2 Com	Form C Common 2	12	Relay 3 Com	Form C Common 3	13	Relay 4 Com	Form C Common 4	14	Relay 3 NC	NC Form C Lock 3	15	Relay 4 NC	NC Form C Lock 4
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8	Relay 2 NC	NC Form C Lock 2																																															
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12	Relay 3 Com	Form C Common 3																																															
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14	Relay 3 NC	NC Form C Lock 3																																															
15	Relay 4 NC	NC Form C Lock 4																																															

## Controlling the Pro Audio with the Front Panel LCD Display/Keypad Interface

The SFX Series Satellite Receiver Users Manual describes how to set up the receiver using only the keypad and front panel display. This addendum describes how to set up the receiver Pro Audio items only.

**NOTE:**  
The LCD Display/Keypad interface will remember the last menu item you accessed and will always start there the next time you enter the menu item group from the display item group. The same is true in reverse – it will remember the last display item when you return from the menu item group.

Table 1- 1 lists the items in the display item group of a SFX Series Satellite receiver with the Pro Audio option installed. Table 1- 2 lists the items appearing in the menu item group of the same receiver. Display item 1 or 2 will generally be displayed during normal operation. From there, you can press the arrow keys to navigate around the various other display items, or enter the menu item group, as shown in the table by the item number references and notes for each of the arrow keys.

Pressing the check mark button is generally the same as pressing Enter on a keyboard and commits an action or selection. Pressing the X button is generally the same as pressing Esc on a keyboard and aborts an action or selection. The X button is also used to exit from the menu item group back to the to the display item group. When you are in the display item group, you can press X twice to return to display item 1.

When power is applied to the unit, you will always start the cycle at Menu main item 1 (Carrier A). You are able to cycle through the main items by using the vertical arrow keys ( ^ ) or ( ~ ). To examine or change one of the main item parameters press the check mark button ( √ ) to enter the sub menu. You can move through the sub menu parameters by using the horizontal arrow keys (< for back or > forward). If you wish to change a parameter, press the check mark button ( √ ) to enter the edit mode or use the vertical arrow keys ( ^ ) or ( ~ ) which will select it. In the case of a numeric value, a flashing cursor will appear over one digit. To change that digit, use the vertical arrow keys ( ^ ) or ( ~ ). To change another digit in this parameter, use the horizontal arrow keys (< for back or > forward) to select it and repeat. When you have finished, commit your changes by pressing the check mark button ( √ ). If the sub menu item is not numeric, using the vertical arrow keys ( ^ ) or ( ~ ) will allow you to cycle through the available settings. Commit your choice as above. A \* beside a displayed selection indicates that this is the current configured value being used by the receiver.



**Table 1- 1 Display Item Group - Pro Audio**

Tuner	Display Items	Carrier Selection		
	Parameter	S	Any S2	Remarks
LBAND 1	Eb/No	■		*Out of Lock* or real value
	C/N	■	■	*Out of Lock* or real value
	Uncorr Errors	■	■	*Out of Lock* or real value
	Viterbi BER	■		*Out of Lock* or real value
	BER		■	*Out of Lock* or real value
	Signal Level	■	■	%
	Signal Quality	■		%
	Audio Backup	■	■	Pref/Alt/Netstream/Playlist
	Sat0 MAC Address	■	■	MAC address
	Stream 1 Channel	■	■	Channel ID or "none"
	Stream 2 Channel	■	■	Channel ID or "none"
	Stream 3 Channel	■	■	EXP Models Only
	Stream 4 Channel	■	■	EXP Models Only
	CH1 Relays 1-4	■	■	1 = "energized"
	CH2 Relays 1-4	■	■	1 = "energized"
	CH3 Relays 1-4	■	■	EXP Models Only
	CH4 Relays 1-4	■	■	EXP Models Only
	MetaData String 1	■	■	String or "none"
	MetaData String 2	■	■	String or "none"
	MetaData String 3	■	■	EXP Models Only
MetaData String 4	■	■	EXP Models Only	
Ch1 Ch2	■	■	LR and Level Meter	
Ch3 Ch4	■	■	EXP Models Only	
LBAND 2	Repeat items shown above 2			4104 EXP Models only
	Audio Backup	■	■	

**Table 1- 2 Menu Item Group – Pro Audio**

Main Item	Parameter	Remarks
Eth 0 Interface	See User's Guide	
Eth 1 Interface	See User's Guide	
Note: If there are more Ethernet interfaces, they will appear here		
Sat0 Interface	See User's Guide	
Sat1 Interface	See User's Guide	4104 Models Only
Routing	See User's Guide	
Configuration	See User's Guide	

SFX SERIES PRO AUDIO SATELLITE RECEIVER ADDENDUM

	Volume	Ch 1 Level Ch 1 Mute Ch 2 Level Ch 2 Mute <hr style="border-top: 1px dashed black;"/> Ch 3 Level <i>EXP Models Only</i> Ch 3 Mute <i>EXP Models Only</i> Ch 4 Level <i>EXP Models Only</i> Ch 4 Mute <i>EXP Models Only</i> <hr style="border-top: 1px dashed black;"/>	
	NTP	See User's Guide	
	Info	Firmware Version Live Assist Version LiveWire™ Version XD version Pro Audio Version <hr style="border-top: 1px dashed black;"/>	
	SoftCell or CypherCast Option Only	<i>Option</i>	
	Tuner	See User's Guide	
LBAND 1	1) Carrier A or B	See User's Guide	
	2) LNB	See User's Guide	
	3) Ch Guide Config	See User's Guide <i>Includes Channel Guide Reset option</i>	
	4) Ch Guide List	Channel Number	
		Channel Name	
		Channel Description	
Authorized			
Audio Player 1			
Audio Player 2			
Audio Player 3	<i>EXP Models Only</i>		
Audio Player 4	<i>EXP Models Only</i>		
Channel Forward eth0			
Channel Forward eth1			
5) PID List	See User's Guide		
6) Ports	See User's Guide		
LBAND 2	Items 1,2 5 & 6 repeated for LBAND 2	<i>4104 Models Only</i>	
	Reboot		
	Audio Player 1	Channel ID Channel Name	

SFX SERIES PRO AUDIO SATELLITE RECEIVER ADDENDUM

		<p>Audio type</p> <p>Multicast Address (not shown for type = PES)</p> <p>UDP Port (not shown for type = PES)</p> <p>Interface</p> <p>Output Device (only available if Livewire™ is installed)</p> <p>Async Data</p>
	Audio Player 2	As Audio Player 1
	Audio Player 3	<i>EXP Models Only</i>
	Audio Player 4	<i>EXP Models Only</i>
	Audio Alarms	<p>Alarm Timeout</p> <p>Pro Audio 1</p> <p>Pro Audio 2</p> <p>Pro Audio 3 <i>EXP Models Only</i></p> <p>Pro Audio 4 <i>EXP Models Only</i></p> <p>Relay4 on Channel 1</p> <p>Relay4 on Channel 2</p> <p>Relay4 on Channel 3 <i>EXP Models Only</i></p> <p>Relay4 on Channel 4 <i>EXP Models Only</i></p>
	Audio Backup	<p>General Configuration</p> <p>Preferred Carrier</p> <p>Alternate Carrier</p> <p>Netstream</p> <p>Playlist</p>
	XD License Info	See User's Guide



# Chapter 2

## Web GUI Operation

This chapter will provide detailed information on the meaning and operation of the Pro Audio pages and menu options available on the Web GUI for the SFX Series Pro Audio family of receivers. Note: you cannot set up the audio functions described here through the front panel key pad.

### Main Menu Page

Once you have successfully logged in to the Web GUI you will be presented with the Main Menu page as shown in the SFX Series Satellite Receiver Users Guide. This addendum is concerned with the Audio Menu items shown there. On most of the pages in your Pro Audio receiver, there are two common buttons:

Menu Item	Description
Show	Selecting this button will always return you to the status display for the current selected page.
Edit	Selecting this button will enter the Edit mode for the current selected page.

### Audio

When the Audio Menu Tool Bar item is selected, a sub menu page appears which provides menu items relating to the setup and maintenance of both store and forward and live streaming audio distribution streams, audio triggers, silence monitoring, and audio backup functions. These are described in the following sections.

### Configuring an Audio Stream

To show the current audio stream configuration, click the Audio Tab in the Main Menu. An example of the Audio Configuration page, for a Pro Audio EXP model, is shown in Figure 2- 1. To configure an audio stream, click on Edit to show the Edit Audio Configuration page (Figure 2- 2). You can also select the audio stream from the Electronic Channel Guide (ECG) if it is available. In this case, select a channel from the drop-down list (if your Service provider is broadcasting an Electronic Channel Guide). Complete information on the use of the Channel guide is contained in your SFX Series Satellite Receiver User's Guide. The display fields in the Audio Configuration Page are explained in Figure 2- 2 (Edit Audio Configuration) except for the following:

Column/Field	Description
Relays 1- 4	Form C relays, with NO, Common and NC contacts controlled from head end by Service Provider and locally by "Fire Trigger".  Note: Relay 4 can be used to show an Audio Alarm output.
Metadata	Descriptive text related to audio stream content, provided by Service Provider.

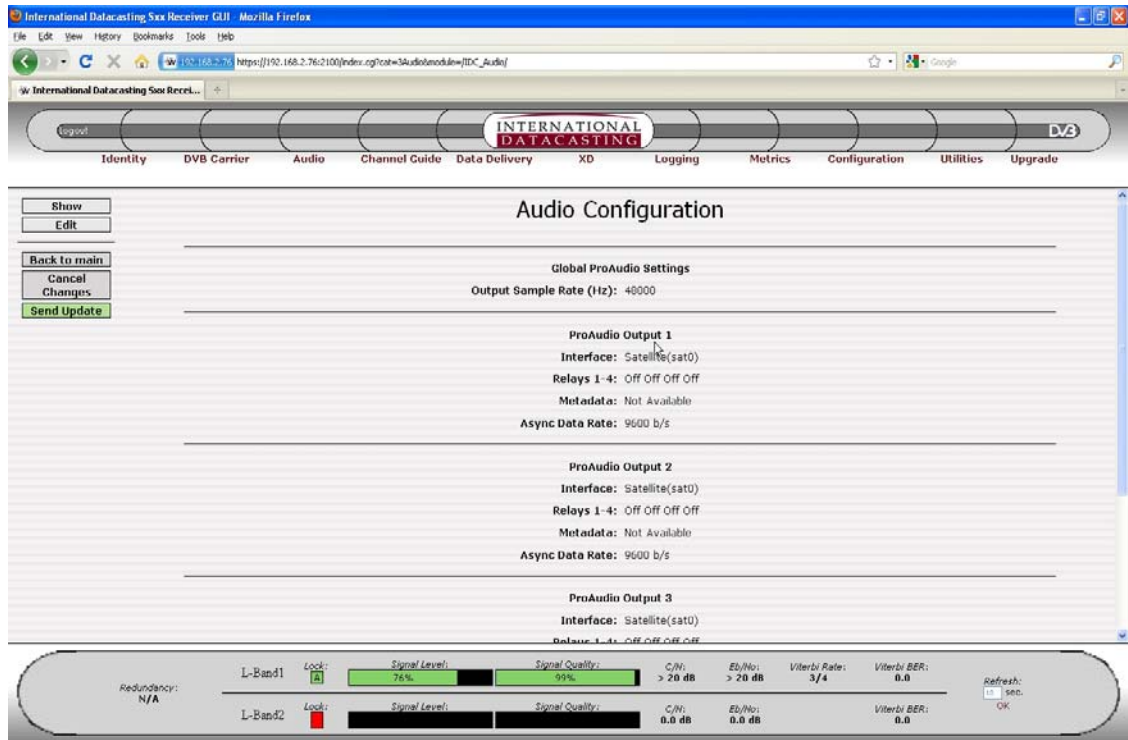


Figure 2- 1 Audio Configuration Page (top)

The following fields can be edited on the Edit Audio Configuration page:

Edit Field	Description
Output Sample Rate	Select from the pull down list the output sample rate for all output streams.
Audio Player	Select from the pull down list the audio decoder to be used to decode the selected stream.
Interface	Select the source interface for the incoming audio stream, options are: sat0, sat1 (only on 4104 models), eth0 and eth1.
Output Device	Selection is not available without Livewire™ installed. Select the device for audio output from CH1 (Pro Audio) through CH4 (Pro Audio), or Livewire™ 1 – 4 (Note: only 2 Pro Audio and 2 Livewire devices are available in the 1RU model).
Async Data Rate	Select the data rate for the RS232 compatible Metadata output (IP audio only).

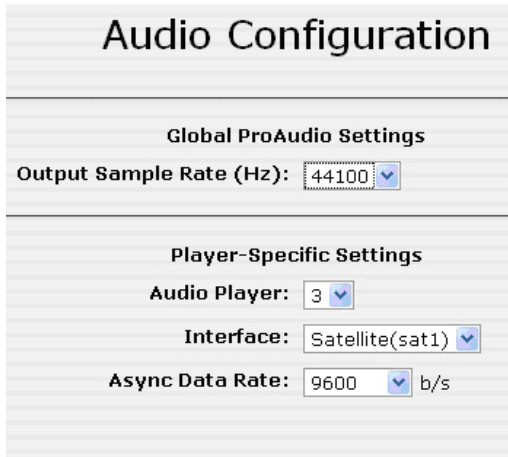


Figure 2- 2 Edit Audio Configuration Detail

### Configuring Silence Monitoring

Silence monitoring allows you to individually monitor the output of each of the audio players for unwanted periods of silence in their live audio stream. The threshold – the period of time for which the silence must remain to cause a warning – is configurable. When detected, the event will cause an error message to be logged and set the corresponding player’s front panel led RED. If the audio re-commences playing for a period longer than the threshold time, silence monitoring will log a return to live audio and return the led for that player to green/flashing.

To show the current audio stream silence monitoring preferences, click the Audio Main Menu Tab and click Audio Alarms Configuration. To configure an audio alarm, click on Edit to show the Edit Audio Alarms page (Figure 2- 3).

The following fields can be edited on the Edit Audio Alarms Configuration page:

Edit Field	Description
Alarm Timeout (ms)	Set the period for monitoring for silence on any player (50 – 500 milliseconds).
Alarm on Pro Audio Output 1	When checked, Audio Alarm feature is enabled on this player.
Alarm on Pro Audio Output 2	When checked, Audio Alarm feature is enabled on this player.
Alarm on Pro Audio Output 3	When checked, Audio Alarm feature is enabled on this player. <i>EXP Models Only</i>
Alarm on Pro Audio Output 4	When checked, Audio Alarm feature is enabled on this player. <i>EXP Models Only</i>
Relay 4 on Pro Audio Output 1	When checked, Relay 4 will change on Audio Alarm for this player.
Relay 4 on Pro Audio Output 2	When checked, Relay 4 will change on Audio Alarm for this player.
Relay 4 on Pro Audio Output 3	When checked, Relay 4 will change on Audio Alarm for this player. <i>EXP Models Only</i>
Relay 4 on Pro Audio Output 4	When checked, Relay 4 will change on Audio Alarm for this player. <i>EXP Models Only</i>



Figure 2- 3 Edit Audio Alarms Configuration Detail

## Setting Audio Backup Preferences

Audio backup allows you to predetermine a sequence of state changes that will reprogram your receiver's audio output if signal levels drop below previously set threshold levels on your receiver's current input. The sequence begins with the preferred carrier state (note: this can be Carrier A or B, as set under the DVB Carrier menu item).

If the C/N ratio of the preferred carrier drops below a threshold level, the receiver will switch to the alternate carrier. A channel change can also be programmed during the switch, to change the audio processed from the alternate carrier. If the C/N ratio of the alternate carrier drops below a threshold level, the receiver will test the level of the preferred carrier and switch back to it if the C/N is higher than the threshold level. If the level is insufficient, the receiver will switch to a network interface for input. The receiver will continue to test both the preferred and alternate carriers' C/N levels and will switch back to the first carrier for which the C/N exceeds the threshold. If during this state the network interface LAN times out, the receiver will use a local playlist as the audio source. In the playlist state, the receiver will poll the Net input and will switch to it as soon as the Net input becomes valid. It also continues to check the levels of the preferred and alternate carriers.

You can set individual C/N levels (in dB) for each carrier; the time period used to determine C/N failure and for timeout protection for the network LAN. Each individual state in the sequence can be disabled, allowing the sequence to skip that step on failure. Each state switch can be accomplished with or without a channel change.

To show the current audio stream backup preferences, click the Audio Tab in the Main Menu and click Audio Backup Configuration. To configure an audio backup, click on Edit to show the Edit Audio Backup page (Figure 2- 4).

The following fields can be edited on the Audio Backup Configuration page:

Edit Field	Description	
Audio Backup Enabled	Check this box to enable/disable the Audio backup feature.	
Preferred	C/N Fault Threshold (dB)	Set the threshold at which this carrier will be tagged as faulty and a state change will be made to the first available good alternate stream source.
	C/N Recovery Threshold (dB)	Set the level which the carrier signal must (re)establish before the carrier is tagged as good. This level must be equal to or greater than the Fault Threshold; can be up to 4.dB greater than the Fault Threshold level and can be set to 2 decimal places.
	Fault Timeout (sec)	Set the period (in secs) during which the carrier must remain below the Fault Threshold to be tagged as failed.
	Recovery Timeout (sec)	Set the period (in secs) for which the carrier must exceed the Recovery Threshold before being tagged as restored.
	Lock Audio Configuration	When checked, and in this state, this forces the players to the channel shown in their respective pull down boxes. No changes are allowed from a local interface. When unchecked, changes can be made through a local interface.
	Player 1 Channel	Use the pull down list to select the channel to use on this player when switched to this state or continue with "Use Original Channel" option.
	Player 2 Channel	Use the pull down list to select the channel to use on this player when switched to this state, or continue with "Use Original Channel" option.
	Player 3 Channel Player 4 Channel	<i>Same as above, EXP Models only</i>
Alternate	<p>Check Preferred State Enabled</p> <p>Check this box to allow disconnection from this carrier to check for the availability of the Preferred carrier.</p> <p>Note: This will result in a change in the output of the audio players at least two lock times in duration. During this change, the players will output the Net stream if available, or revert to the playlist if not. If no playlist is specified, there will be no output until lock is re-acquired.</p>	

Edit Field	Description	
	Check Preferred State Interval	Enter the interval to be used by the Alternate state between checks for the availability of the Preferred state.
	C/N Fault Threshold (dB)	Set the threshold at which this carrier will be tagged as faulty and a state change will be made to the first available good alternate stream source.
	C/N Recovery Threshold (dB)	Set the level which the carrier signal must (re)establish before the carrier is tagged as good. This level must be equal to or greater than the Fault Threshold; can be up to 4 dB greater than the Fault Threshold level and can be set to 2 decimal places.
	Fault Timeout (sec)	Set the period (in secs) during which the carrier must remain below the Fault Threshold to be tagged as failed.
	Recovery Timeout (sec)	Set the period (in secs) for which the carrier must exceed the Recovery Threshold before being tagged as restored.
	Lock Audio Configuration	When checked, and in this state, this forces the players to the channel shown in their respective pull down boxes. No changes are allowed from a local interface. When unchecked, changes can be made through a local interface.
	Player 1 Channel	Use the pull down list to select the channel to use on this player when switched to this state. Default is "Use Original Channel".
	Player 2 Channel	Use the pull down list to select the channel to use on this player when switched to this state. Default is "Use Original Channel".
	Player 3 Channel	<i>Same as above, EXP models only</i>
	Player 4 Channel	<i>Same as above, EXP models only</i>
Netstream	Enabled	Check this box to allow this interface to be a part of the Audio Backup sequence. If not enabled, this state will be skipped in the backup sequence.
	Interface	Use the pull down list to select the network interface to be used in this state.
	Fault Timeout (sec)	Set the period (in secs) at which the network interface will be determined to have lost data connection if no packets have been received in the period.
	Recovery Timeout (sec)	Set the period (in secs) for which the interface must have received packet data to be tagged as connected.
	Lock Audio Configuration	When checked, and in this state, this forces the players to the channel shown in their respective pull down boxes. No changes are allowed from a local interface. When unchecked, changes can be made through a local interface.
	Player 1 Channel	Use the pull down list to select the channel to use on this player when switched to this state or continue with "Use Original Channel" option.
	Player 2 Channel	Use the pull down list to select the channel to use on this player when switched to this state or continue with "Use Original Channel" option.
	Player 3 Channel	<i>Same as above, EXP models only</i>
	Player 4 Channel	<i>Same as above, EXP models only</i>
Playlist	Enabled	Check this box to allow the playlist to be a part of the Audio Backup sequence. If not enabled, this state will be skipped in the backup sequence.
	Check Net State Interval	Enter the interval to be used by the Playlist state between checks for the availability of the Netstream state.
	Player 1 Trigger	Use the pull down list to select the trigger for this player
	Player 2 Trigger	Use the pull down list to select the trigger for this player
	Player 3 Trigger	<i>Same as above, EXP models only</i>
	Player 4 Trigger	<i>Same as above, EXP models only</i>



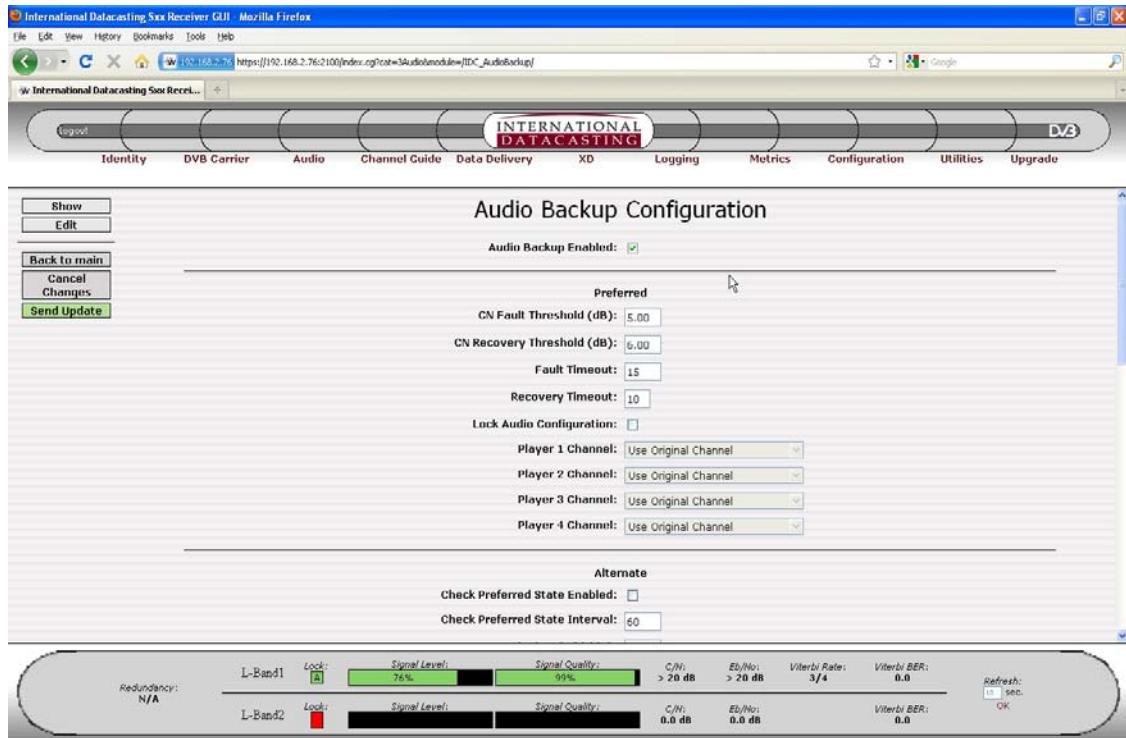


Figure 2- 4 Edit Audio Backup Configuration (top)

## Live Assist

Selecting the Trigger List menu item from the Audio main page shows a list of all events (see Figure 2- 5) that are scheduled to be triggered in the receiver, together with their trigger type and description. This list of events and the actual triggered actions are made up from triggers provided by your Service Provider.

### Triggered Action Types

The triggered actions shown can be to play file, change to a different audio stream or channel on the satellite or to return to the live stream. The local content played can be organized into Single, Timed Playlist or Percent events and may be either with or without throwing relay contacts.

1. Single – The receiver executes a single action unless “repeat” is checked. Actions may be one of:
  - Play File – the receiver plays a file stored on the hard drive and then returns to the live stream.
  - Relay Only – adjust the relay settings for the selected channel.
  - Play File and Relay – the receiver executes a combination of the Play Local Content and Relay Only.
  - Return to Live – the receiver returns to the live satellite stream, aborting the local content playback (if necessary). Note: if the receiver is currently outputting a satellite channel, RTL will have no effect.
  - Set Channel – the receiver tunes the selected player to a new audio channel.
2. Timed Playlist – The receiver executes a sequential list of actions using their specified start time for control. The individual actions available are described above.

3. **Percent** – The receiver executes a single action from a Playlist with no “repeat” possibility. The action is selected according to a percentage chance allocated to each Playlist action. Over the number of times that the receiver is to execute the action it will only do so the specified percentage of times.

Relay contacts are shown (Figure 2- 1) as ON, OFF, N/A or as a numeric value. This numeric value is the time in milliseconds that the contacts are activated. Note that NO and NC contacts are available for all actions and states.

The percentage attribute does not apply to Timed Playlists triggers. Relay operation in a local trigger is limited to a 250ms pulse option.

### Trigger List

Selecting the Trigger List menu item from the Audio main page shows a list of all events that are scheduled to be triggered in the receiver, together with their trigger type and description. The detail of each trigger may be viewed using pull down box in each trigger and selecting Show.

Trigger List				
ID	Trigger Type	Description	Options	Fire Trigger
10000	Timed Playlist	Classical FM	--Select Option--	
10001	Timed Playlist	Classical FM	--Select Option--	
10002	Single	Classical FM	--Select Option--	--Select Player--
10003	Timed Playlist	2-1283348100	--Select Option--	
20049	Playlist	npr troy	--Select Option--	--Select Player--

**Figure 2- 5 Trigger List Detail**

The following buttons are available on the Trigger List and the View Schedule Pages:

Menu Item	Description
Show List	Select this button to return you back to the Trigger List page, Figure 2- 5.
Show Trigger Definition	Select this button to show the Trigger detail page Figure 2- 6.
View Schedule	Select this button to show the View Schedule page Figure 2- 7.
Clear All timed Triggers	Select this button to clear all timed triggers in the schedule.

The display fields and columns in the Trigger List Page have the following meaning:

Column/Field	Description
ID	Cross reference to the unique identifier for this trigger, as shown in Figure 2- 5.
Trigger Type	The trigger types are: Single, Timed Playlist, or Percent (see under Triggers above).
Trigger Description	Descriptive text, usually, but not always, showing the trigger action. Provide by the creator of the trigger.
Options	Use this pull down box to Show/Edit/Delete this Trigger. The Show choice returns the page

Column/Field	Description
	shown in Figure 2- 6.
Fire Trigger	Use this pull down box to fire the selected trigger on any of the available players. When selected the trigger is activated immediately.

Trigger Info					
ID: 20049					
Trigger Type: Playlist					
Description: npr troy					
Earliest Valid: 08/30/2010 00:00:00					
Expiry: 11/30/2010 23:59:59					
Repeat: No					
Start Method: Triggered					
Output Stream: Player 1					
Elem#	Action	Relay 1	Relay 2	Relay 3	Relay 4
0	Set Channel 2	N/A	N/A	N/A	N/A

**Figure 2- 6 Trigger Info – from Show Trigger Definition**

The information shown on the Trigger Info page is different whether a playlist (P) or timed playlist is shown. The timed playlist shows all parameters, the Playlist, only those indicated. The fields and columns have the same meaning as described on the Trigger List page. The additional display fields and columns have the following meaning:

Column/Field	P	Description
Earliest Valid	•	The start time of the window in which the triggered actions may occur (dd:mm:yy format).
Expiry	•	The end time of the window in which the triggered actions may occur (dd:mm:yy format). The receiver may purge the trigger at any time after this date/time.
Repeat		Shows the Days of the week in which this trigger may occur.
Repeat Count		The number of times this event will be repeated (max. = 65,535).
Repeat Intervals		The interval in HH:MM:SS format for the time between repetitions of this event (Note: if Repeat Interval is shown, the choice of First Date and Time in the element will be disabled).
Output Stream	•	The selected audio player in which this event will be inserted or no action; (N/A).
Elem #	•	Designator for the possible action resulting from a trigger. Up to 10 elements may be listed in a single Timed Playlist. Multiple timed playlists may be used on a single receiver.
First Date		The first date (within the time window) on which this element will occur (Note: that if this is the first element in the trigger, then this date is also the first date of the trigger activation).
Time		The start time of the first element in this trigger, in hh:mm:ss format.

Column/Field	P	Description
Action <sup>1</sup>	•	Shows the action required by this element. Available commands are:  Play Local File  Relay only  Play Local file and Relay  Return to Live  Set Channel  N/A shows no action
Relays 250 ms Pulse 1 2 3 4	•	A check in the appropriate box shows pulsed operation of a relay. Blank shows no operation.

**Note (1):** The action includes the full path of the file to be played by the chosen audio player or the Channel number to tune to for a Set Channel command.

**Note (2):** Files can be placed on the receiver via Samba directory shares as described in the SFX Series User's Guide).

#### Viewing the Scheduled Triggers

To view the triggers currently scheduled in the receiver, click the View Schedule button on any trigger page. In a large schedule, use the scroll bar to view the portion of interest. In the View Schedule page (Figure 2- 7) the display fields and columns have the following meaning:

Column/Field	Description
Audio Player	Use the pull down box to see only triggers that are scheduled for this audio player.
Date	Select the adjacent button to select the schedule start date for display from the pull down list.
Update View	Use this button to refresh the schedule when you change date or time on this page.
Time	The start time of this element of the trigger, in hh:mm:ss format.
Trig ID	The ID of this trigger.
Element #	The ID of the separate elements in this trigger.
Action	The action performed by this element.
File Name / Channel Number	The data needed by the action to enable completion.



**Figure 2- 7 View Schedule**

## Pro Audio Debug

Selecting the Pro Audio Debug menu item from the Audio main page shows a list of parameters for each audio channel (see Figure 2- 8).

The display fields and columns have the following meaning:

Column/Field	Description
Audio Channel	Identifies the audio player.
Live	The number of audio samples in the Live buffer, normally 9000>X<14000
File	The number of audio samples in the File buffer. Only shows a count when a file is being played.
FPGA	The number of audio samples in the FPGA buffer, normally 9000>X<14000

Aside from the Common Menu items, the following buttons are available on the Pro Audio Debug page:

Menu Item	Description
Show Pro Audio Debug Info	Select this button to return you back to the Show Audio Debug page, Figure 2- 8.
Edit Refresh Interval	Select this button to access the Refresh Debug Info page where the refresh interval can be changed.

ProAudio Debug Info			
Audio Channel	Live	File	FPGA
1	11401	0	9892
2	11070	0	10259
3	11302	0	10921
4	11698	0	11453

**Figure 2- 8 Pro Audio Debug Information Detail**

## The LiveWire™ Option

### About Livewire

Livewire is an Audio-over-IP communications protocol developed and marketed by the Axia Audio division of Telos Systems. Livewire allows transport of real-time, “live” uncompressed digital audio, plus program associated data (PAD) and machine remote control over a switched Ethernet network. The same network can also carry file transfers, messaging and other routine traffic.

Because Livewire makes use of existing Ethernet cabling, an entire facility can be wired in hours, instead of weeks. Expanding or modifying your system is simple, thanks to Livewire’s inherent scalability and modularity.

### How Livewire Works

In a Livewire IP-Audio network, every audio source has a text name and a unique numeric ID. When a source is ready for use, its presence is “advertised” over the network, and added to the global list of audio sources from which users can select.

Livewire networks employ two types of audio streams: Livestreams, with small, fast packets for high-priority live audio, and Standard Streams, with bigger packets for audio file transfers and other non-critical audio. There is no inefficiency from having both available because all streams stop at the Ethernet switch and take no system network bandwidth unless they are subscribed to by a receiver. Each receiver takes only the stream it needs, taking the low-delay version if available, or the standard version if not. The selection happens transparently with no user action needed. Users just select the channel they want and audio is delivered to the equipment they are using.

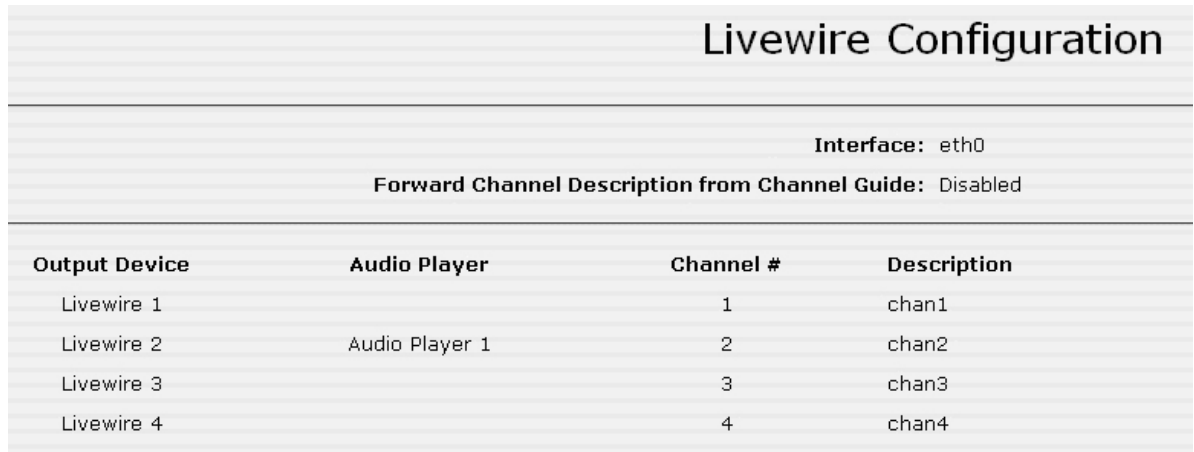
To utilize the Livewire outputs, click the Audio main menu tab, select Edit and then select “Livewire #” under “Output Device” as shown in Figure 2- 9. Then under the Configuration main menu tab, click Livewire Configuration to show the current configuration as shown in Figure 2- 10.



**Figure 2- 9 Livewire setup**

Aside from the Common Menu Items, the following menu items are available on the Livewire configuration page:

Menu Item	Description
Show	Selecting this button returns you to the Livewire Configuration page, shown in Figure 2- 10.
Edit Options	Selecting this button will enter the Edit Options page (not shown).
Edit Channels	Selecting this button will enter the Edit Channels page shown in Figure 2- 11.



**Figure 2- 10 Livewire Configuration**

NOTE: Only 2 Livewire output devices will be shown for a 1R unit. This page is from a 2R unit.

The following fields can be edited through the Edit Options Page.

Column/Field	Description
Interface	Select the Ethernet interface for the Livewire output.
Forward Channel	Select to enable/disable the output of the Channel Description (from the Channel Guide) in

Column/Field	Description
Description from Channel Guide	Livewire information format.

The following fields can be edited through the Edit Channels Page.

Column/Field	Description
Output Device	Identifies the Livewire device (output stream).
Audio Player	Identifies the player for this Livewire stream.
Channel #	Select to set a Livewire channel number to this device (Note: this channel number differs from the one provided by the Channel Guide (if present) and is used by Livewire to identify and demultiplex the audio streams).
Description	Select to set a description to this Livewire output stream (Note: this description can differ from the Channel Description provided by the Channel Guide).

Livewire Configuration			
Output Device	Audio Player	Channel #	Description
Livewire 1		<input type="text" value="1"/>	<input type="text" value="chan1"/>
Livewire 2	Audio Player 1	<input type="text" value="2"/>	<input type="text" value="chan2"/>
Livewire 3		<input type="text" value="3"/>	<input type="text" value="chan3"/>
Livewire 4		<input type="text" value="4"/>	<input type="text" value="chan4"/>

Figure 2- 11 Livewire Edit Channels

## Using Terminal Commands

### Additional Audio Commands

The full Terminal command set and how to connect to your receiver and use them can be found in your receiver User's Manual. These additional commands are applicable to the Pro Audio models only and are listed in alphabetical order (ignoring the command modifier eg: "Set").

Command	Description
GetFECConfig	Displays the current FEC configuration
GetFECDebug	Displays the packet statistics, by audio decoder
GetFECTunnelEnable SetFECTunnelEnable	Enable/disable FEC on all audio decoders



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