Lynx STUDIO TECHNOLOGY

LynxTWO

Lynx L22

Installation and Users Guide Addendum

Software Mixer Reference and Application

Macintosh OSX Version

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9/10/04

Window One - Adapter
Status and Settings for Sample Clock, Digital I/O
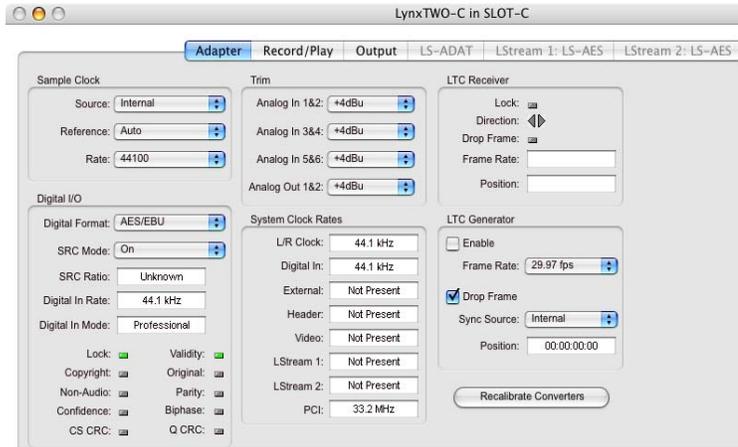
Sample Clock - Provides control of the Sample Clock and reference. All LynxTWO audio devices on a single card MUST have identical sample rates. Clock Source and sample rates cannot be changed when LynxTWO is playing or recording.

Source:

Internal:	Clock derived from the on-board crystal oscillator.
Digital:	Clock signal from the DIGITAL IN connector on the L2Sync cable.
External:	Clock signal from the SYNC IN connector on the L2Sync cable.
Header:	Clock signal from the board-mounted CLOCK IN header.
Video:	NTSC or PAL composite video signal from the SYNC IN connector on the L2Sync cable.
LStream1:	Clock signal from the LStream port on the L2Sync connector.
LStream2:	Clock signal from the LStream port on the board mounted header.

Reference: Provides selection of the clock source reference type from one of the following:

Auto:	Automatic selection. Valid for Internal, Digital, and Video clock sources.
13.5MHz:	13.5MHz video dot clock. Valid for External and Header clock sources.
27MHz:	27MHz video dot clock. Valid for External and Header clock sources.
Word:	Word clock. Valid for External, Header, and LStream clock sources.
Word256:	256X word clock (Super Clock). Valid for External and Header clock sources.

Rate: Displays the current sample rate of the LynxTWO.
Available rates are: 11025, 16000, 22050, 32000, 44100, 48000, 88200, 96000, 176400, 192000, 200000

Digital I/O: Sets and displays the formats, modes and status of the digital audio input and output.
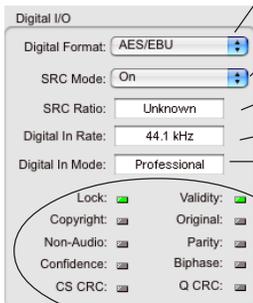
Digital Format: Allows selection of AES/EBU or S/P DIF format for input and output.

SRC Mode: Sample Rate Conversion Mode
On (default):	SRC enabled on digital input.
Off: Clock Sync:	SRC disabled, sample clock source set to source other than Digital.
Off:	SRC disabled, sample clock source set to Digital.
On: Digital Out:	SRC enabled on Digital Output. Requires a valid signal on the Digital In to clock the Digitial Output. Digital Input is muted.

SRC Ratio: Indicates Sample Rate Conversion Ratio when in "SRC On" mode.

Digital In Rate: Measured rate of incoming digital signal.

Digital In Mode: Indicates Professional or Consumer input status.

LED Indicators: Red and/or Green indicators for:
Lock:	Red - Receiver PLL not locked; Green - Receiver PLL locked.
Validity:	Green - Channel status validity bit set.
Copyright:	Green - SCMS copyright bit set (consumer mode).
Original:	Green - SCMS original bit set (consumer mode).
Non Audio:	Green - Channel status non-PCM bit is set, e.g. Dolby Digital, DTS.
Parity:	Red - Parity error detected.
Confidence:	Red - Signal quality degraded.
Biphase:	Red - Bi-phase coding error detected.
CS CRC:	Red - Channel Status CRC error detected.
Q CRC:	Red - Q Channel subcode data CRC detected.

Window One - Adapter

Analog Trim, Status and Settings for System Clock Rates,
Longitudinal Timecode (LTC) Receiver and Generator
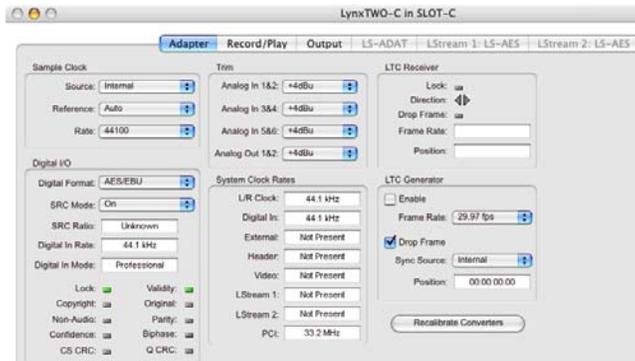
Analog Trim: Sets nominal Input and Output levels to either +4dBu or -10dBv.
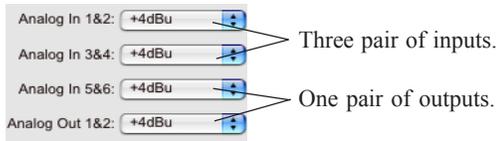
→ Three pair of inputs.

→ One pair of outputs.

This example shows the settings for the LynxTWO-C.
The LynxTWO-A, with four analog inputs and four analog outputs, would have Analog In 1+2, 3+4, Analog Out 1+2, 3+4.
The LynxTWO-B, with two analog inputs and six analog outputs, would have Analog In 1+2, Analog Out 1+2, 3+4, 5+6.
The L22, with two analog inputs and two analog outputs, would have Analog In 1+2, Analog Out 1+2.

System Clock Rates: Displays real-time frequency measurements for each of these clock sources.
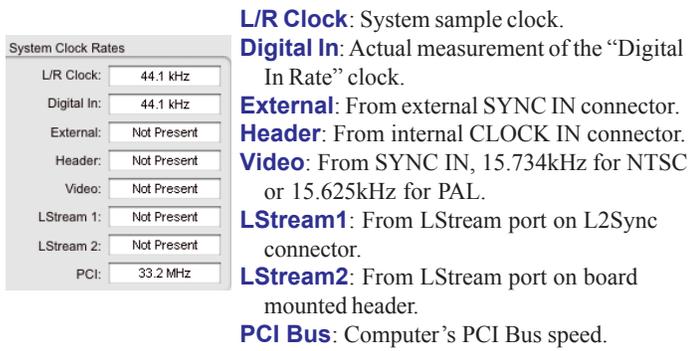
L/R Clock: System sample clock.
Digital In: Actual measurement of the "Digital In Rate" clock.
External: From external SYNC IN connector.
Header: From internal CLOCK IN connector.
Video: From SYNC IN, 15.734kHz for NTSC or 15.625kHz for PAL.
LStream1: From LStream port on L2Sync connector.
LStream2: From LStream port on board mounted header.
**PCI Bus**: Computer's PCI Bus speed.

LTC Receiver: Provides control and status of the Longitudinal Timecode Receiver.
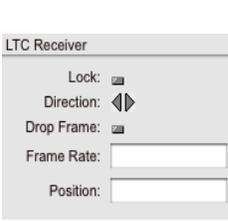
Lock: Indicates the LTC Receiver is locked to an incoming signal.
Direction: Indicates the direction of timecode from the LTC Receiver.
Drop Frame: Indicates if Drop Frame is indicated for the incoming signal.
Frame Rate: Actual frame rate of LTC Receiver.
Position: Latest frame position decoded from LTC Receiver.

Note: This section will not appear on the L22 which does not have LTC synchronization features.

LTC Generator: Provides control and status of Longitudinal Timecode Generator.
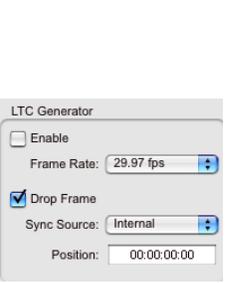
Enable: When checked, the LTC Generator is enabled.
Frame Rate: Provides selection of the frame rate of the LTC generator. Allowed rates are 24, 25, 29.97 and 30 fps.
Drop Frame: Used to indicate drop frame for 29.97 and 30 fps frame rates.
Sync Source: Selects the synchronization source for the LTC Generator.
  Internal: On-board oscillator.
  Video: Start of video frame received on SYNC IN connector.
Position: Used to enter the starting position for the LTC generator and display the current timecode position

Note: This section will not appear on the L22 which does not have LTC synchronization features.

Recalibrate Converters: Used to calibrate DC offset of the A/D and D/A converters. Upon power up, the converters are calibrated to reduce DC offset. Over time temperature changes inside your computer may cause the DC offset to drift slightly. Because of this, Lynx recommends recalibration 15 to 30 minutes after your computer has been turned on and whenever significant changes in room temperature occur. See "Automatic Converter Calibration" in the Advanced Settings Menu.

Window Two - Record / Play Inputs and Routing

Selecting and monitoring the inputs to be sent to each of the LynxTWO's Recording and Playback Busses.
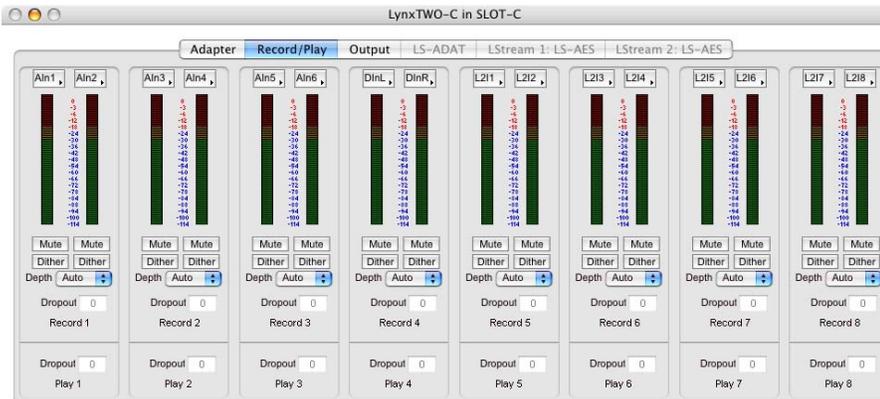
**Record Device Source Selection Button**: Controls routing of an input source to a recording device. Each device can derive its source from any one of the 40 available inputs.

Pop-Up Menu: Gives you a the choice of all available input options from which to choose.

Peak Meters: Displays the instantaneous level of the audio being sent to the LynxTWO.

Mute: Enables mute function for each associated input.

Dither: Enables dither for each associated input. The Dither type is specified in the Settings menu.

Depth: Allows selection of the dither bit depth. Options are Auto, 8-bit, 16-bit, 20-bit and 24-bit. Auto allows the recording application to determine the bit depth. 24-bit turns off dither.

Dropout: Shows the actual number of data dropouts during recording or playback. Drop outs indicate missed data and cause audio glitches. One dropout at the end of playback is normal.
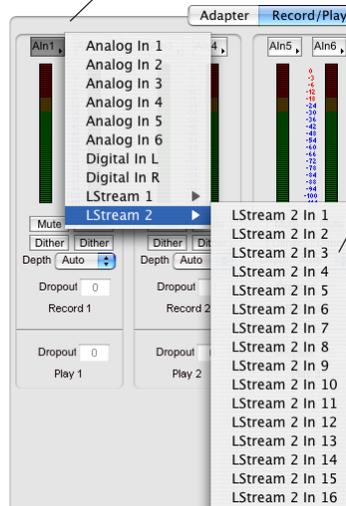
Sixteen channels of LStream Port 2 on internal header. Maps to 16 input channels of LS-ADAT or 8 channels of LS-AES.
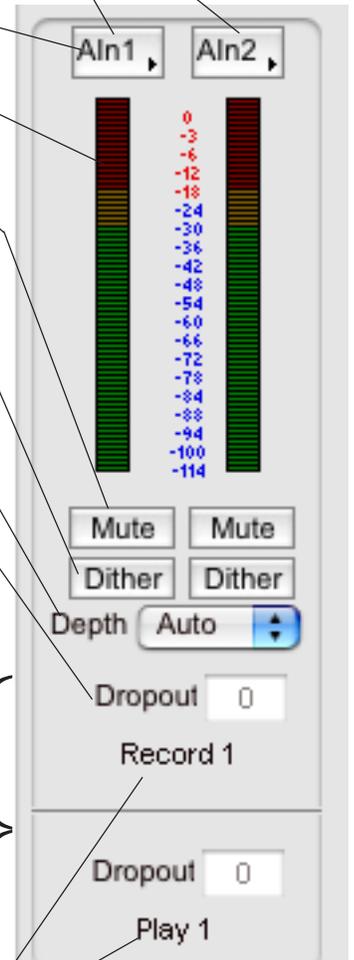
Record Device Status
For **Record 1 to Record 8**

Playback Device Status
For **Play 1 to Play 8**

Activity Indicators: The device labels reflect the name of the associated wave device.

Window Three - Output Section

Provides selection and level control of the Sixteen outputs.
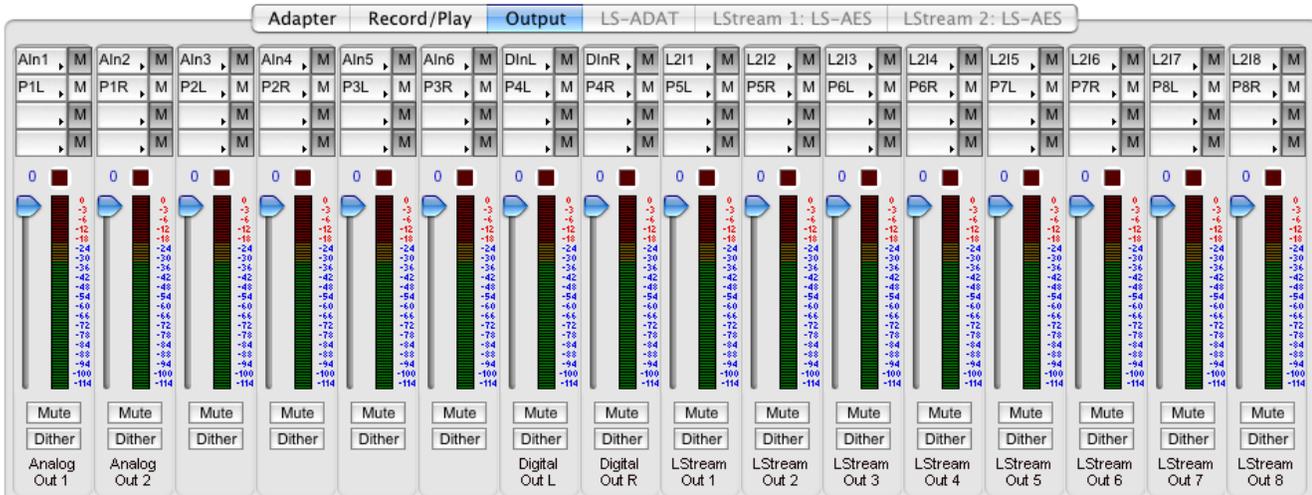
Extensive Output Monitor Selection

For each of the four sources you can choose between any of the Record channels or Play channels.

The record channel popup menu also shows the associated input that is routed to that record channel. This routing is changed on the Record/Play page.
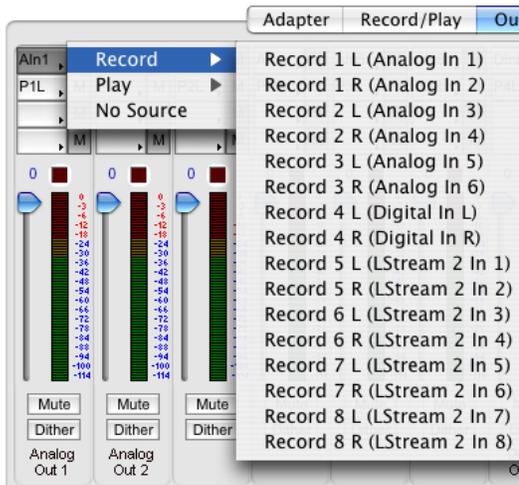
The play channel popup menu provides access to any of the 16 playback streams that can be accessed from an audio application.
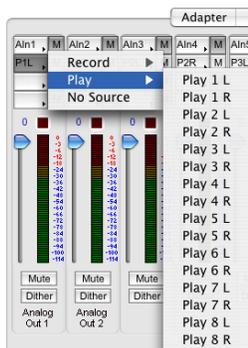
Output Monitor Source Buttons: Controls routing of record and playback sources to each of the sixteen output channels. Each output is derived from the sum of the four sources associated with each button. Your options include any of the Analog or Digital inputs, LStream inputs or Play 1-8, Left or Right channels from the Record/Play screen.

Mute: Allows any of the four sources to be independently muted.

Overload Indicator: Provides instantaneous overload indication of the audio being played or monitored. The overload indicator remains set until it is cleared by clicking on the control. Holding the shift key and clicking will reset overloads for all outputs at once. Overloads can occur only when more than one source is driving an output.

Volume Faders: Controls digital attenuation of the audio being played or monitored. This control acts on the digital signals before D/A conversion.

With the volume fader at its maximum position, the vertical line within the fader turns black, no volume calculation is performed and the audio stream is unaltered. ***This is the recommended position for critical recording and mixdown sessions in which the highest signal quality is required.***

Volume control processing is done prior to peak meter readings.

Holding down the shift key while changing the volume control will change both volumes in a stereo pair.

Peak Meters: Displays the instantaneous level of the audio being played or monitored.

Mute: Enables a mute function for each associated output.

Dither: Enables the addition of triangular probability density dither for each associated output. Dither is recommended when more than one source is driving an output or when the volume fader is not at its maximum.
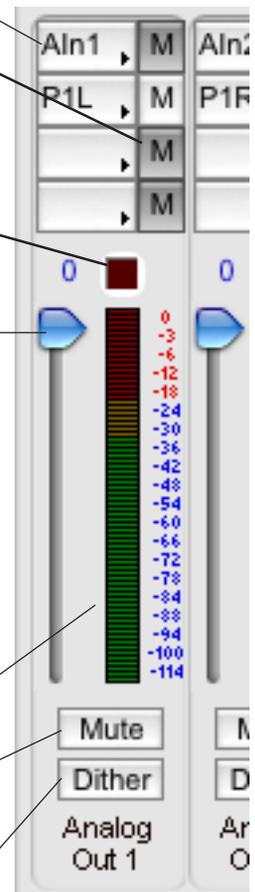
Window Three - Output Section

Provides selection and level control of the Sixteen outputs.
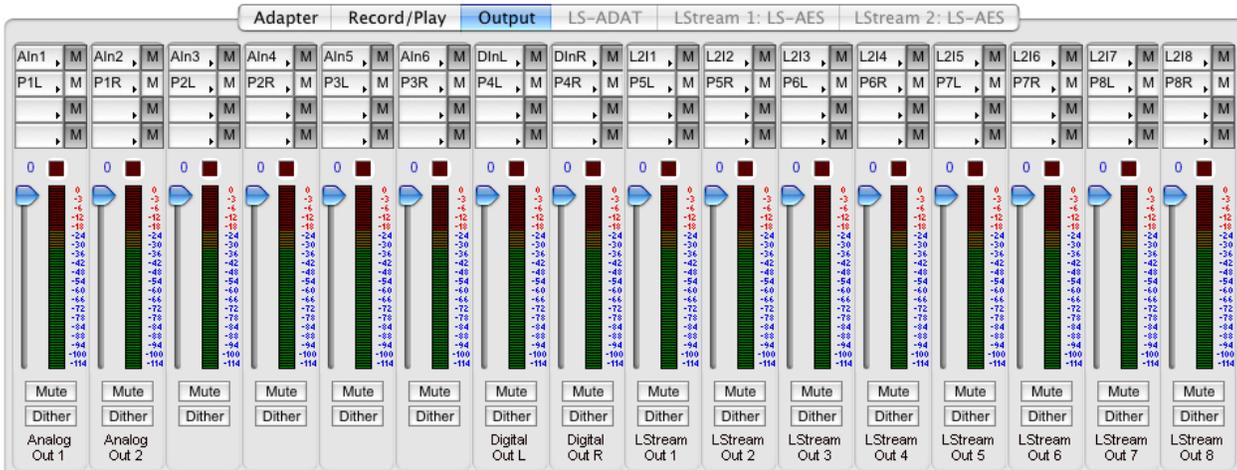
Standard Settings	With One LS-ADAT		With One LS-ADAT (option)		With One LS-AES	With Two LS-AES	
Analog Out 1	Analog Out 1	LS-ADAT Out 9	Analog Out 1	LS-ADAT Out 1	Analog Out 1	Analog Out 1	LS-AES2 Out 1
Analog Out 2	Analog Out 2	LS-ADAT Out 10	Analog Out 2	LS-ADAT Out 2	Analog Out 2	Analog Out 2	LS-AES2 Out 2
Analog Out 3	Analog Out 3	LS-ADAT Out 11	Analog Out 3	LS-ADAT Out 3	Analog Out 3	Analog Out 3	LS-AES2 Out 3
Analog Out 4	Analog Out 4	LS-ADAT Out 12	Analog Out 4	LS-ADAT Out 4	Analog Out 4	Analog Out 4	LS-AES2 Out 4
Loopback Out L	Loopback Out L	LS-ADAT Out 13	Loopback Out L	LS-ADAT Out 5	Loopback Out L	Loopback Out L	LS-AES2 Out 5
Loopback Out R	Loopback Out R	LS-ADAT Out 14	Loopback Out R	LS-ADAT Out 6	Loopback Out R	Loopback Out R	LS-AES2 Out 6
Digital Out L	Digital Out L	LS-ADAT Out 15	Digital Out L	LS-ADAT Out 7	Digital Out L	Digital Out L	LS-AES2 Out 7
Digital Out R	Digital Out R	LS-ADAT Out 16	Digital Out R	LS-ADAT Out 8	Digital Out R	Digital Out R	LS-AES2 Out 8
LStream Out 1	LS-ADAT Out 1		LS-ADAT Out 9		LS-AES Out 1	LS-AES1 Out 1	
LStream Out 2	LS-ADAT Out 2		LS-ADAT Out 10		LS-AES Out 2	LS-AES1 Out 2	
LStream Out 3	LS-ADAT Out 3		LS-ADAT Out 11		LS-AES Out 3	LS-AES1 Out 3	
LStream Out 4	LS-ADAT Out 4		LS-ADAT Out 12		LS-AES Out 4	LS-AES1 Out 4	
LStream Out 5	LS-ADAT Out 5		LS-ADAT Out 13		LS-AES Out 5	LS-AES1 Out 5	
LStream Out 6	LS-ADAT Out 6		LS-ADAT Out 14		LS-AES Out 6	LS-AES1 Out 6	
LStream Out 7	LS-ADAT Out 7		LS-ADAT Out 15		LS-AES Out 7	LS-AES1 Out 7	
LStream Out 8	LS-ADAT Out 8		LS-ADAT Out 16		LS-AES Out 8	LS-AES1 Out 8	

With LS-ADAT: The standard setting allows LS-ADAT channels 9-16 to use the same output configuration as the Analog, Loopback and Digital outputs. If the user prefers to have LS-ADAT channels run 1-16 in order, simply select Output Selection: 1-8/9-16 on the LStream page.

With One LS-AES You have the option of using one LS-AES card for eight AES/EBU channels or two LS-AES for sixteen channels. With one LS-AES, the last eight output channels are dedicated to the eight AES/EBU outputs on the LS-AES card.

With Two LS-AES The second LS-AES card's outputs mirrors the configuration of the Analog, Loopback and Digital Out channels.

File Menu

The File Menu at the top left of the screen allows selection of functions that are global to the mixer.
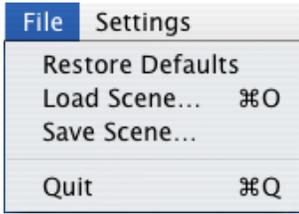
Restore Defaults: Restores all user changeable controls to the factory default settings.
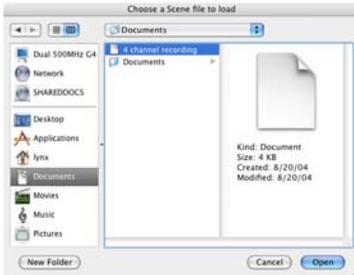
Load Scene...: Allows saving and restoring of all user changeable controls to scene memory. When selected, a screen similar to the example on the left will appear. Navigate to the location where scene files have been saved, highlight the desired mixer scene and click "Open". The Lynx Mixer will imeediately revert to the state of the saved scene. Scene memory is global to all users on a single computer. Please note that when the computer is shutdown the current mixer state is saved, and when the computer is started back up, the mixer state is restored. This function is independant of the Mixer Scene memory.
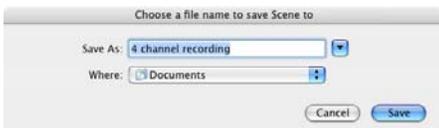
Save Scene...: Once you have configured the mixer with the controls set the way you wish to have them, you may save that mixer "Scene" into scene memory. To save a scene into scene memory, type the name of the scene into the "save as" window then press the Save button. The state of all user settable controls will be stored into scene memory. Clicking on an existing scene name, then pressing the Save button will update/overwrite that scene with the current state of the user settable controls. The Mixer Scene dialog box will be closed automatically after the scene is saved.

Quit: Closes the Lynx Mixer program. Please note: all mixer settings will still be active when the application has been closed.

Settings Menu

The Settings Menu at the top of the screen offers advanced settings.

Digital In Mute On Error: When checked, all Digital Inputs (including any on the LStream ports) mute on any error condition including the validity bit being set off. When unchecked all Digital Inputs continue to pass received data even if it is invalid. Defaults to On.

Digital Out Valid: When Checked, sets the validity bit in the digital output signal. This bit is used to indicate that that signal being transmitted is suitable for be conversion to an analog audio signal. Defaults to On.

Digital Out Non-Audio: Sets the non-audio channel status bit in the digital output signal. This bit is used to indicate that that signal being transmitted is not PCM data, e.g. Dolby Digital or DTS compressed formats. Defaults to Off.

Digital Out Emphasis: Sets the emphasis channel status bit in the digital output signal. This bit is used to indicate that the signal being transmitted has been processed through an emphasis filter. Defaults to Off.

Record Dither Type: Provides selection of the type of dither used on all record channels. The selection may be one of the following:

None - Dither is disabled. Volume processing utilizes rounding prior to truncation. Default.

Triangular - Enables the addition of triangular probability density dither. This type of dither is free of data-dependent noise modulation effects, but decreases signal-to-noise ratio by 4.8 dB. Triangular is the preferred dither type in most cases.

Shaped Triangular - Enables the addition of shaped triangular probability density dither. This type of dither is essentially high-pass filtered triangular dither that places most of the dither energy at higher frequencies making it less audible to the human ear. Shaped triangular dither also decreases signal-to-noise by 4.8 dB.

Rectangular - This type of dither decreases the signal-to-noise ratio by 3 dB (less than triangular), but is less desirable because of its noise modulation effects.

A>D High-Pass Filter: Enables the high-pass filter built into the A/D converters. This filter blocks residual DC signals present at the input of the converters. This should always be enabled. Defaults to On.

D>A De-emphasis: Enables a de-emphasis filter in the D/A converters. This filter should be used if the data being sent to the converters has been processed through an emphasis filter. Defaults to Off.

LStream Dual Internal: Provides support for two LStream internal devices connected to the LStream 2 header. The control routes signals from the LStream 1 Port bracket connector to the LStream 2 Port header connector. Currently, only the LS-AES is compatible with this feature. Default is Off.

MTC Source: Controls the source of MIDI Time Code sent to an application. The signal received from each source is automatically converted to MTC. The available sources are:

LTC Receiver - Time code from the LTC IN connector

LStream 1 ADAT Sync In – Time code from an LS-ADAT connected to LStream Port 1 (on bracket connector)

LStream 2 ADAT Sync In – Time code from an LS-ADAT connected to LStream Port 2 (on internal header connector)