Chapter 1 – The Manuals

Manual Descriptions

There are two different manuals shipped with the SX-1: a *Quick Start Guide* and an *Owner's Manual* (this manual). If you are missing either of these manuals, you should contact the authorized TASCAM dealer where you purchased your SX-1. The contents and purpose of each manual are described below.

Owner's Manual

The *Owner's Manual* covers all of the SX-1's many features, controls, and parameters in detail. Its explanations assume that you have a certain knowledge base about recording and MIDI. If you find yourself confused by the subjects and terms presented in this manual, you should refer to a beginning recording engineering handbook. This manual does not explain how to set up and begin using the SX-1, for that you should refer to the *Quick Start Guide*.

Quick Start Guide

This guide covers all the basics on setting up your SX-1: unpacking, connecting speakers, listening to the demo, getting recording levels, and hooking up MIDI. If you are not familiar with setting up recording equipment (and even if you are) beginning with the *Quick Start Guide* is a good idea. For more detailed explanations on individual features and functions, refer to the *Owner's Manual*.

Manual Organization

The *Owner's Manual* is divided into sections called Parts, and each Part is divided into chapters. The Parts are designated by Roman numerals (I, II, II, IV, etc.) while the chapters are designated by Arabic numerals (1, 2, 3, 4, etc.). For example, Part II, Chapter 4, is written as, II-4. Each chapter contains relevant figures of the SX-1's front panel and screen shots of the LCD and SVGA displays. For added referencing ease, Appendix 1 has labeled illustrations of the SX-1's front, top, and rear panels.

Each Part covers a specific portion of the SX-1 (for example, the Mixer or the MIDI Sequencer). The chapters address individual features (such as mixer automation or editing MIDI data). So learning about a specific section of the SX-1's functionality is as simple as reading the appropriate Part.

There are a total of ten Parts. The following is a brief description of what you can expect to find in each Part.

Part I — Manuals & Conventions This introductory Part explains the organization and documentation conventions of the Owner's Manual. It also covers the SX-1's general operating conventions for all three control interfaces: the front panel, onboard LCD screen, and a connected SVGA display.

Part II — Monitoring Signals & Selecting Screens There are lots of ways to monitor signals on the SX-1. The front panel meters and LED indicators are one way, and many of the display screens also provide comprehensive metering. This Part covers the SX-1's many meters and indicators and explains how to recall the different display screens.

Part III — Locate, Transport, & Surround Understanding how to navigate your project quickly and efficiently is key to getting the most out of your SX-1. This Part explains the SX-1's transport and locate controls as well as its recording conventions.

Part IV — Mixer Controls The SX-1 has a full-featured mixer with a host of powerful features. Routing for the mixer is available pre and post the mixer channels, the channels themselves have built-in EQ and dynamics, the buss and return architecture is extremely flexible, and practically every parameter can be automated and archived. This section explains the mixer's structure and operations.

Part V — Effects Each onboard effect has is own unique set of parameters. This Part explains these parameters for all the currently available effect algorithms.

Part VI — Audio Tracks Everything you need to know about working with and editing audio regions can be found in this Part. This includes an explanation of different editing features, how to use the audio editing tools, and selecting and displaying waveforms.

Part VII — MIDI Sequencing The SX-1's onboard MIDI sequencer is as comprehensive as a dedicated software based MIDI sequencer (like the type you might install on a desktop computer). This Part covers all of the MIDI sequencer‘s features and addresses working with and editing MIDI note and continuous controller data.

Part VIII — System & File Management Different applications require different system setups: sample rates, bit depths, synchronization, storage, and the like. This Part covers the SX-1's system parameters as well as backing up and project management.

Part IX — Connections & Ports \There are a variety of jacks and connectors located on the top and back of the SX-1. There are also several expansion ports on the unit's rear. This part of the manual explains the purpose behind each of these connections.

Part X — Appendices All the specifications you need to know about the SX-1 are found in this Part: reference diagrams, PS/2 key commands and shortcuts, technical specs, a glossary of terms, and the Index.

Documentation Conventions

The names for all of the SX-1's keys, knobs, and connections are printed in this manual exactly as their labels appear on the SX-1 itself. They are set apart from normal text with brackets. For example, the Play button is written **PLAY**. In the case where a key has more than one function (for example, a main and shift function—the Shift function is explained on pg. 1 2) , it is written as, **ENABLED/ ALL INPUT** (the main function is listed first and the shift function second).

The SX-1's face is organized into different areas for each of its various functions. These areas are labeled and their names also appear in this manual exactly as they are printed on the SX-1 (for example, **EDITING**).

Areas of the SX-1 that are not labeled, but have a specific purpose, are written in conventional title form (such as, **Faders**).

In order to differentiate LED labels from area and control labels, LED names are in angle brackets (for example, **<DISK>**). And to distinguish software buttons and menu names that appear on the LCD or the external SVGA displays from their hardware counterparts, these names are in a lighter typeface (like, the LOAD key or the EQ LIBRARY screen).

All the manuals and guides for the SX-1 adhere to these documentation conventions. Diagrams and illustrations are presented whenever possible to augment the manual's text descriptions.

Hot Tips

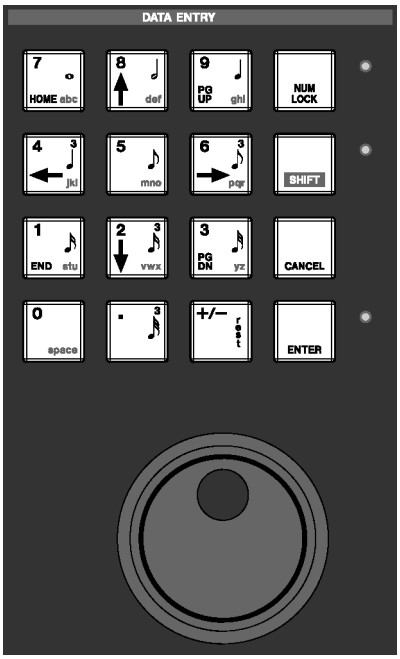
Important notes, that are in addition to general instructions and definitions, are set apart from the manual's normal text titled, **TIP** (see the example below). These important tips call your attention to special situations and offer helpful operating suggestions.

TIP

While reading the SX-1 Owner's Manual, keep your eyes peeled for special operating tips and helpful suggestions in highlighted boxes just like this one..

Chapter 2 – Operating Conventions

Front Panel



Multi-Function Keys

A multi-function key's primary function is accessed by simply pressing the key. Secondary functions are accessed by entering Shift mode. Press the **SHIFT** key on the Numeric **Keypad**, and then press the multi-function key to reach its secondary function. Think of the **SHIFT** key just like the shift key of a standard PS/2 keyboard—it serves a similar purpose.

Data Entry

Only the **Keypad** is actually labeled **DATA ENTRY**, but the **Jog/Shuttle Wheel** (which lies just below the **Keypad**) is also an integral part of this section. The **Keypad** is used for entering numbers and letters directly into a text field, and enabling the Shift function (as described above), up/down and left/right cursor navigation, and entering MIDI step record note values.

Keypad

The **Keypad** has four distinct uses, which change according to the LCD's current display screen and selected text or number field. These are: cursor control (navigation), numeric, note value, and alphabet character entry. Four ancillary keys support these uses: **NUM LOCK**, **SHIFT**, **CANCEL**, and **ENTER**.

Numeric Entry When the cursor is in a value field (in the LCD screen only), the **Keypad** enters numbers.

Navigation Function For the LCD screen, the **Keypad's** navigation keys (the up/down and left/right arrows) let you move the cursor between text fields, scroll through menus, and select objects (such as, highlighting tracks in the SVGA Tracks screen).

Note Value Entry In the MIDI Step Record mode, in both the LCD and SVGA Step Record screens, the keys with notation marks let you quickly assign note values to your stepped MIDI notes.

Character Entry On the LCD screen, when the cursor is in a text field, the **Keypad** enters letters (like a push button telephone, where subsequent key presses cycle through the letters listed on the keys). After entering a letter, the cursor will, after a small delay, autoadvance to the next space.

Ancillary Keys

NUM LOCK Use the **NUM LOCK** key to fix the **Keypad's** operation to only enter numbers.

SHIFT For front panel keys that have a Shift function, press the **SHIFT** key to enable this function. The Shift key is also a part of a number of special multiple-key commands (see Appendix 2).

TIP

An example of a handy multiple-key command is the ability to copy your main mix to the cue mix. By holding down **SHIFT** *and pressing the* **CUE** *key (to the right of the Virtual Channel knobs) you can copy the Master L/R mix to the Cue layer. This move can save valuable time when you need to quickly create a mix for an overdubbing musician.*

CANCEL Use the **CANCEL** key to terminate an action. This key is also part of a number of multiple-key shortcuts. For example, holding down **CANCEL** and touching a fader or other control will set that control to default.

ENTER Use the **ENTER** key to complete an action.

Jog/Shuttle Wheel

The **Jog/Shuttle Wheel** is used for moving back and forth at varying speeds (jogging or shuttling, explained below) over your projects' tracks (audio and MIDI).

TIP

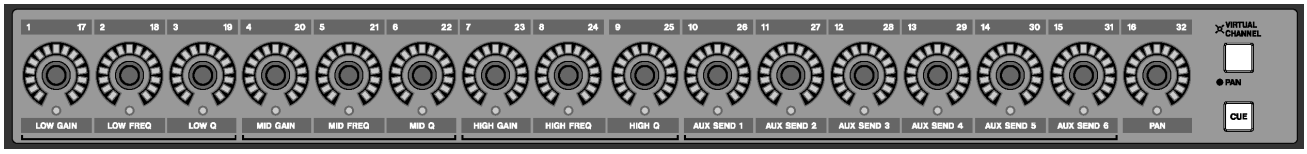
Jogging and Shuttling operations are global. That is, when you jog or shuttle, you will hear all the tracks that are currently playing out the Master L/R bus. To hear just a single track or a group of tracks, use solo or mute the tracks you don't want to hear.

Controls

Jog Wheel Jogging is controlled by the inside wheel of the Jog/Shuttle control. Spin the wheel forward to play audio and MIDI forward, and spin the wheel in reverse to play audio and MIDI backwards. Playback speed is determined by how fast you spin the Jog Wheel. (The Jog Wheel is sometimes referred to as the Scrub Wheel, and similarly, jogging is sometimes called scrubbing.)

Shuttle Wheel Shuttling is controlled by the outside ring of the Jog/Shuttle control. Turn the wheel to the right to shuttle audio and MIDI forwards in time, and turn the wheel to the left to shuttle audio and MIDI backwards. How far you push the wheel, left or right (backwards and forwards, respectively), determines the speed of playback. The wheel is spring-loaded, and upon release it pops back to center position and normal play speed.

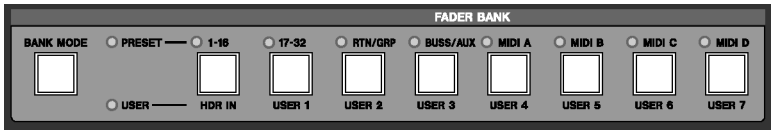
Virtual Channel Pots



The knobs at the top of the channel strips (above the faders) are multi-function, infinitely rotating potentiometers (pots for short).

Depending on their currently selected mode (accessed by the **PAN/ VIRTUAL CHANNEL** or **CUE** keys), these controls serve as a channel's pan pot, EQ, AUX sends or pan for the cue mix. The virtual pots are surrounded by a ring of LEDs, which indicate their current setting. For example, a pan pot that is hard left will have its far left LED illuminated, or an AUX send that is full open will have all of its LEDs lit.

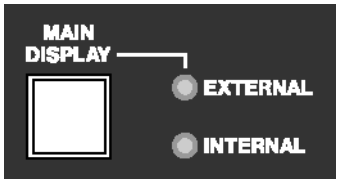
Fader Banks



It's important to remember that the SX-1's faders control more than just one group of levels. Besides the first 16 mixer channels, at default the faders also control: inputs 17-32, the cue mix, MIDI tracks, sends, returns, and busses. Different groups of faders, called "fader banks", are accessed by the keys in the **FADER BANKS** section on the SX-1's slanted front panel, and the cue mix bank is reached via the **CUE** key to the right of the virtual channel strip.

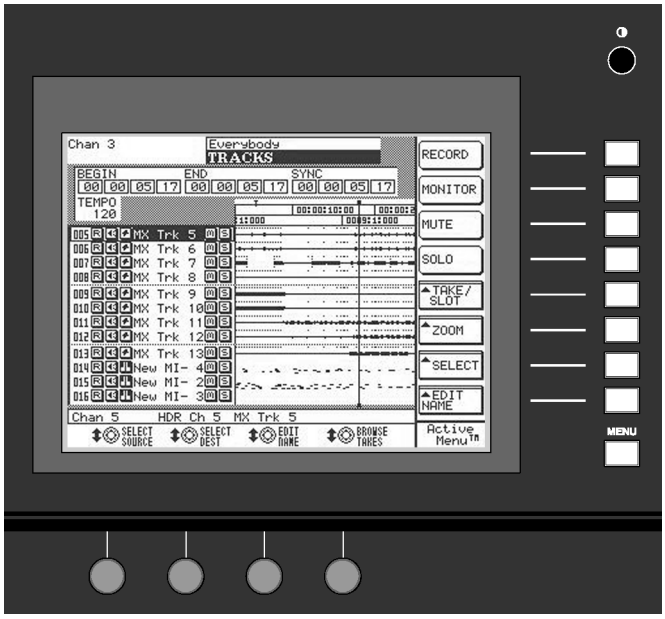
LCD Display

SVGA or LCD



You have a choice of using the LCD or an SVGA display as your main screen. The LCD display always follows the selection keys in the **MAIN DISPLAY MODES** section. To have an external SVGA follow these keys, press the **MAIN DISPLAY** key above the **LCD ACCESS** section (on the SX-1's slanted front panel). The **<EXTERNAL>** LED should light.

LCD Navigation



The LCD display is surrounded by several knobs and buttons. The function of these controls change according to the display on the LCD. We refer to these controls as "soft" knobs and keys because their functions are directly related to the SX-1's software. The soft-knobs and soft-keys line up with onscreen knobs and keys to indicate their current function. Each of the LCD's screens has a different set of these virtual controls. Some keys are single function while others are of a pop-up menu style. Most of the soft-

knobs, upon turning, display a selection of choices in a pop-up style menu.

To scroll up/down and left/right in an LCD window, use the up/down and left/right arrow keys of the Numeric Keypad. And to adjust the viewing angle and contrast of the LCD, use the small “ “ knob to the top right of the LCD.

Common Soft-Knobs & Keys

There are several soft-knobs and keys which are common to many of the LCD screens. How these controls operate are always identical, even if the parameters they adjust, or select, are different.

TIP

Explaining the common virtual knobs and keys here means that not every soft-key and knob is explained for every LCD menu. If you are looking at a LCD menu and don’t see all the items explained next to the manual’s illustration, the missing controls are likely explained here.

Soft-Keys

ACTIVE MENU	This virtual key toggles the LCD screen’s soft-key menu bar on and off in order to expand the visible screen area (this is not necessary for all screens). ACTIVE MENU is always tied to the MENU soft-key (the very bottom soft-key).
Arrow Icon	When you see this icon, “??“, on a virtual key, pressing its associated soft-key will open a menu.
NAME	Opens a dialog for naming the currently selected field.
DELETE	Removes last entry.
OK or ACCEPT	Enters current field’s new value.
COMPARE	Press this key to compare your current settings with your last saved settings.
CANCEL	Escapes current action.
CLEAR	Clears entire field.
SELECT	Opens parameter selection menu.
CURSOR -->	Moves cursor right.
<-- CURSOR	Moves cursor left.
BACK SPACE	Moves cursor back one space.
Notes	A field to write text in that is saved with the patch.
SET TO DEFAULT	This sets the associated controller’s value back to its factory default value.

Soft-Knobs

CURSOR	Moves the Cursor.
EDIT NAME	Opens change name menu.
CHANGE CHAR	Scrolls through characters.
SELECT (PARM or OP)	Opens parameter selection menu.
DEST	Opens destination assign menu (for example, where the track will return).
IMPORT	Opens an import dialog from which you can bring settings from other projects into your current project.

SVGA Display

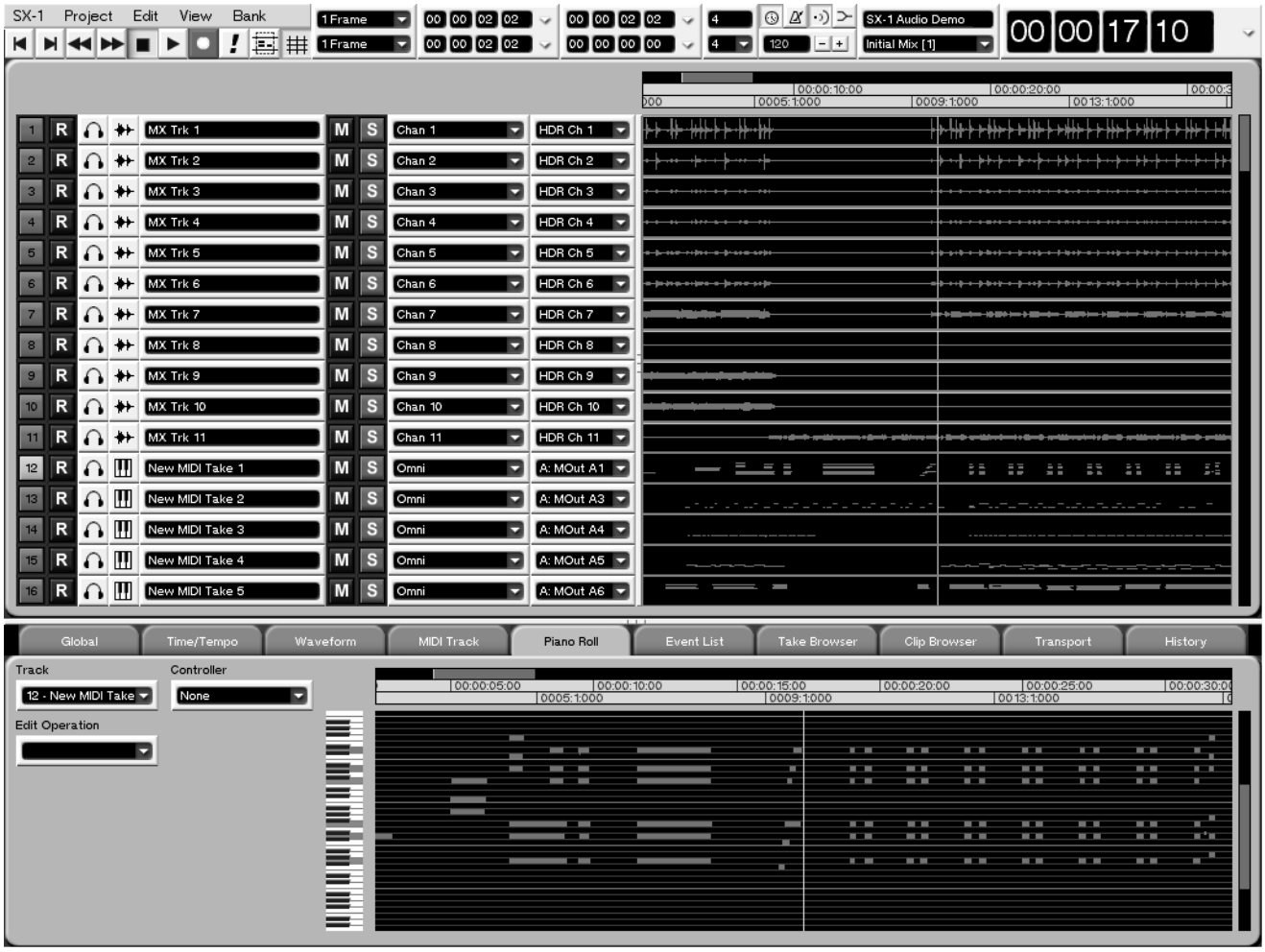
Screen Navigation

Getting around on a connected SVGA Display is just like using a regular computer because the same mouse and PS/2 keyboard rules apply. For example, use the mouse to click on a field and open a pull-down menu, or enter names and values in text fields with the PS/2 keyboard.

A Main Menu Bar at the top of the software GUI allows access to all of the SX-1’s screens and many primary functions. Just like with a wholly computer based application, you can use the Main Menu Bar to change windows, select editing tools, save projects, and set preferences. But unlike a wholly software

based computer device, the SX-1 also gives you real world hardware control of its software right from its front panel.

Tracks Display



The SX-1 has many different SVGA screens that you will use over the course of a project. However, the Track screen (pictured below) is possibly the most commonly accessed screen. Here, you will find a number of essential elements for working with and managing your project. You can get a clear picture of all the tracks in your project and perform a variety of tasks including: creating audio and MIDI tracks, assigning takes, selecting regions for editing, arming and soloing mixer channels, and choosing editing and preference tabs.

TIP

To see the other nine main SVGA screens, press ALT plus a number key from 0-9 on the connected PS/2 keyboard.

Mouse Conventions

Pop-Up Menus Click on the arrow icons (?? and ??) next to a control (this might be anything, from a text field to a button) to display pop-up menus.

TIP

If clicking normally on an arrow only selects the control, but doesn't let you edit it, try right-clicking on it.

Resizing Windows The Tracks and tabs areas can be resized by clicking and dragging on the three dots on the divider bars (pictured left). Click and drag horizontally to resize the Tracks area, and click and drag vertically to resize the tabs area.

Tabs

To reach the various layered operations windows in different screens, click on their labeled “tabs” (just like flipping through folders in a file cabinet).

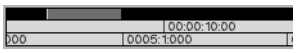
(Tabs without a label are unassigned.)

Main Menu Items

To open the main menu items on the menu bar, click once on an item.

Then drag the mouse downward over the pop-up menu to make your selection. The menu items’ respective commands are covered throughout this manual (for example, the SX-1 commands, which are system oriented, are addressed in **VIII-22**, while the Edit commands are covered in the chapters on editing audio and MIDI regions—**Part VI** and **V I I**).

Zoom & Scroll



Right click and drag over the gray horizontal bar above the timeline (in the TRACK and AUTOMATION screens, and respective Waveform and Audio Track tabs) to zoom in or out. Left click and drag the gray bar to scroll, horizontally (in time), through the project. And, left clicking to the left or right of the gray bar moves the playhead back or forward, respectively, by one screen.

TIP

PS/2 keyboard commands and shortcuts are listed in Appendix 2.

Main Menu Bar Elements

Transport & Record Keys

These keys mirror the SX-1’s hardware Transport and Record Keys.

They can be used in place of their hardware counterparts if desired.

MIDI Panic

Use this button for clearing stuck MIDI notes and other such MIDI log jams.

Tool Select

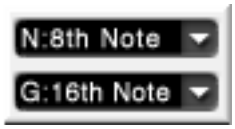
Press this key to choose a cursor selection tool. There are four choices: Region, Event, Pencil, and Curve (the tools’ functions are explained on pg. ??).

Grid Select

Use this key to toggle the "snap-to-grid" feature on and off. The grid is represented by vertical lines that intersect the tracks in the Tracks screen (they also appear in other related screens, such as the SVGA Waveform tab).

When snap-to-grid is on, events (audio and MIDI) will always align to the nearest grid intersection. When the grid is off, events are not constrained to the grid lines.

Nudge & Grid Settings



The top field (designated by N) adjusts your nudge amount. Select an event (audio or MIDI) and use a connected PS/2 keyboard's +/- keys to move the event forward or backward in time by the Nudge value.

The bottom field (designated by G) sets your "snap-to" grid size (as described above). Both values can be either SMPTE, hours:minutes:seconds, bars:beats:ticks, feet:frames, or samples.

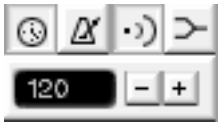
Edit Length Grids

The left displays show a selection's Edit In and Out points. The top right display also shows the selection's sync point. The bottom right display shows the selection's length. Readouts for each display can be in SMPTE, hours:minutes:seconds, bars:beats:ticks, feets:frames, or samples.

Time Signature Selector

The top value represents the number of divisions in a bar (the beats per measure). Almost any value can be entered directly into this field from a connected PS/2 keyboard. The bottom value represents the type of note assigned to the bar divisions (the note that equals one beat). This value is chosen from the pull down menu (click on the arrow). Note values range from a whole note to a 64th note.

Tempo & Click Management



These keys are for adjusting the project's tempo and click, and enabling or disabling MIDI echo and merge.

Use this key to toggle the current project's Conductor track on and off. The Conductor track contains the project's tempo map and can be viewed and edited (using the "Tempo Change" Edit Operation) from the Event List tab (pg. 149). When the key is depressed, the project's tempo follows the Conductor track. When the key is up, tempo follows the Main Menu Bar's tempo setting (the field to the left of the "-/+" keys, pictured to the left and described below).

This key turns the MIDI metronome on and off.

This key turns MIDI echo on and off.

This key turns MIDI merge on and off.

Use these keys to adjust a project's tempo when the Conductor track is not enabled. A value can also be entered directly into the adjacent tempo field from a connected PS/2 keyboard.

TIP

To learn more about MIDI functionality, see Part VII.

Project & Mix Menus

The top field displays the name of your current project. If you click the arrow in this field you can display the remaining record time (for the drive that the current Project is loaded on). The bottom field shows the name of your current Mix (the SX-1 allows multiple mix files to be associated with a project). Mixes are managed from the SVGA's Mix Tab in the Automation screen.

Main Time Code Display

This Time Code display mirrors the SX-1's main LED Time Code display on its slanted front panel. It can display time in SMPTE, hours:minutes:seconds, bars:beats:ticks, feets:frames, and samples.

Common Keys

There are several virtual keys that are common to many of the SVGA screens and tabs. How these controls operate are always identical, even if the parameters that they adjust, or select, are different.

NOTE

Explaining the common SVGA keys here means that not every virtual key is explained for every SVGA screen and tab. If you are looking at an SVGA display and don't see all the items explained next to the manual's illustration, the missing controls are likely explained here.

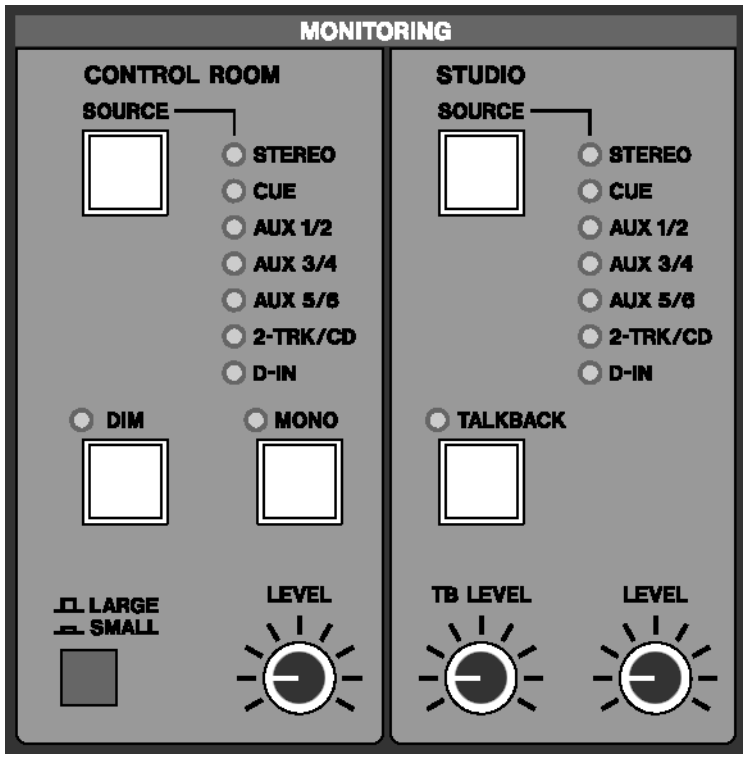
Name field	Displays the name of the currently selected parameter or item. You can also change an item's name by entering text directly into this field and pressing **ENTER** on the **Keypad**.
NEW	Creates a new entry for the currently selected parameter or item.
RECALL	Restores from memory the currently selected (highlighted) parameter or item.
STORE	Saves to memory the currently loaded parameter or item.
DELETE	Deletes the currently selected (highlighted) parameter or item.
DONE	This key is found in all Edit Operations screens. Press the key to complete the edit operation.
EDIT NAME	Enables you to change the name of the currently selected patch or preset.
Library	A field where the names of the Library presets appear.
Notes	A text field where notes can be saved along with the preset.
COMPARE	Press this key to compare your current settings with your last saved settings.
IMPORT	Opens an import dialog from which you can bring settings from other projects into your current project.
SET TO DEFAULT	This sets the associated controller's value back to its factory default value.

Chapter 3 – Monitoring Audio

Output Control

Monitor Section

This section houses controls for the Control Room and Studio monitor outputs (these connections are on the SX-1's top panel).



CONTROL ROOM

This section provides controls for the Control Room monitor outputs.

SOURCE Select The **SOURCE** key allows you to choose the source signal that you want to monitor through your Control Room speakers. Multiple presses of this key allow you to toggle through the following sources:

<STEREO> When the <**STEREO**> LED is illuminated, the source monitored is the Master L/R output (post the Master Fader).

<CUE> When the **<CUE>** LED is on, the source monitored is the Cue mix.

<AUX 1/2> When the **<AUX 1 / 2>** LED is on, the source monitored is the Auxiliary 1 and 2 sends.

<AUX 3/4> With the **<AUX 3 / 4>** LED illuminated, the source monitored is the Auxiliary 3 and 4 sends.

<AUX 5/6> When the **<AUX 5 / 6>** LED is on, the source monitored is the Auxiliary 5 and 6 sends.

< 2 -TRACK/CD> When the **<2 -TRACK/ CD>** LED is on, you are monitoring the signal coming into the **2 TR IN** stereo input (located on the unit's top panel).

<D-IN> With the **<D- IN>** LED illuminated, you are monitoring the unit's digital S/PDIF inputs (found on the unit's rear).

TIP

When the Aux sends are linked for stereo operation, pressing **SOURCE** *accesses both the odd and even Aux channels as a stereo pair. If the Aux sends are not linked, pressing* **SOURCE** *will first monitor the odd, and then the even Aux channels of a pair.*

Monitor DIM Press the **DIM** key to momentarily lower the output level of your Control Room Moni-

tors by a set amount. The default is –12 dB, but this value can be as much as –50 db. The attenuation amount is adjusted from the LCD PREFERENCES screen (**SHIFT**+**SETTINGS/ PREFS**).

TIP

When monitoring at levels that make having a conversation difficult, use **DIM** *to get a quick word in without having to touch the master output levels.*

MONO Select Press **MONO** to hear the source currently selected in mono (instead of stereo). The key is of a latching type.

Speaker Select The Speaker Select switch, labeled **LARGE/ SMALL**, lets you quickly switch between two different sets of speakers (for example, large and small control room monitors). The **LARGE** and **SMALL** speaker connections are located on the top panel of the SX-1.

Monitor LEVEL The **LEVEL** knob controls the volume of your control room monitors. You can preset the control's starting level (if for instance, the initial output seems too loud) from the LCD PREFERENCES screen (**SHIFT**+**SETTINGS/ PREFS**). The default output is +4dBu.

STUDIO Section

This section provides controls for the Studio monitor outputs (which can be used to feed a set of speakers in the tracking room) and the Talkback mic.

SOURCE Select The **SOURCE** key allows you to choose the source signal that you want to monitor through your Studio speakers. Multiple presses of this key allow you to toggle through the following sources:

<STEREO> When the **<STEREO>** LED is illuminated, the source monitored is the Master L/R output (post the Master Fader).

<CUE> When the **<CUE>** LED is on, the source monitored is the Cue mix.

<AUX 1/2> When the **<AUX 1 / 2>** LED is on, the source monitored is the Auxiliary 1 and 2 sends.

<AUX 3/4> With the **<AUX 3 / 4>** LED illuminated, the source monitored is the Auxiliary 3 and 4 sends.

<AUX 5/6> When the **<AUX 5 / 6>** LED is on, the source monitored is the Auxiliary 5 and 6 sends.

<2 -TRACK/CD> When the **<2 -TRACK/ CD>** LED is on, you are monitoring the signal coming into the **2 TR IN** stereo input (located on the unit's top panel).

<D-I N> With the **<D- I N>** LED illuminated, you are monitoring the unit's digital S/PDIF inputs (found on the unit's rear).

TALKBACK Select

The **TALKBACK** key engages the Talkback mic located on the left side of the SX-1's slanted front panel. Use the Talkback mic to communicate with musicians and other talent over the Studio outputs.

The **TALKBACK** key is of a latching type.

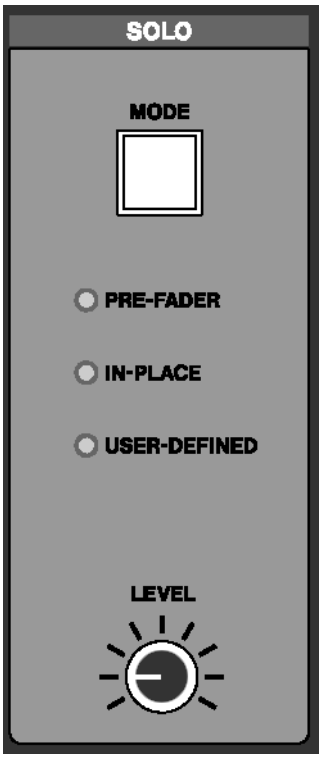
Talkback Level The **TB LEVEL** knob adjusts the volume of the Talkback mic.

Monitor Level

This **LEVEL** knob controls the volume of your Studio monitors.

SOLO Section

This section contains controls for the mixer's Solo function. Pressing the **SOLO** key on the Master Fader engages the solo mode for the Channel Strip's **MUTE** keys.



MODE Select The **MODE** key lets you choose how the SX-1's solo function will operate. There are three options:

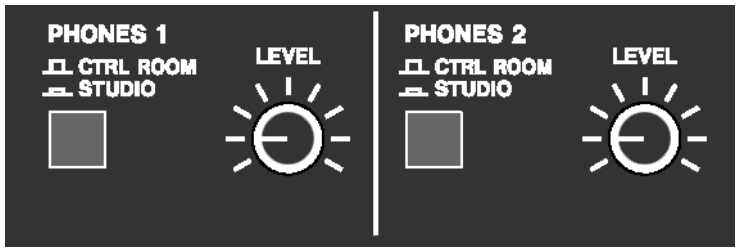
<PRE- FADER> When the **<PRE- FADER>** LED is illuminated, the Pre Fader solo feature is engaged. This lets you solo a source at its input, before it reaches a channel's gain stages.

<IN-PLACE> When the **<I N- PLACE>** LED is on, the In-Place solo feature is engaged. This feature allows a soloed signal to retain the same settings as heard in the main mix (this is accomplished by muting everything going to the Master L/R buss except the soloed channel).

<USER-DEFINED> In operating system (O.S.) Version 1.0. when the **<USER-DEFINED>** LED is on, the solo mode monitors signal directly after the fader (After Fader Level). Signal is fed to the Solo buss without effects. In future O.S. revisions, the User-Defined feature will be expanded to include a number of enhancements.

Solo LEVEL This [level] knob controls the volume of the Solo output in PFL and AFL modes (pre fader and after fader levels).

HEADPHONES



This section contains level and source controls for the two separate headphone outputs found on the SX-1's top panel.

PHONES 1 The **CTRL ROOM/ STUDIO** button selects whether Headphone 1 receives the Control Room or Studio mix.

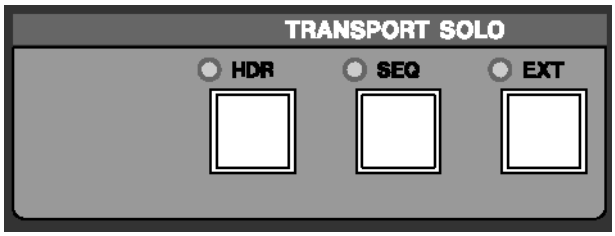
LEVEL 1 This **LEVEL** knob controls the volume for Headphone 1.

PHONES 2 This **CTRL ROOM/ STUDIO** button selects whether Headphone 2 receives the Control Room or Studio mix.

LEVEL 2 This **LEVEL** knob controls the volume for Headphone 2.

TRANSPORT SOLO

The keys in this section provide a way to globally solo individual components (like the HDR or the Sequencer) of your studio with a single button press.



HDR Press **HDR** to hear just the hard disc recorder.

SEQ Press **SEQ** to hear just the MIDI sequencer.

EXTERNAL Press **EXTERNAL** to hear an external device that is slaved and has its audio outputs connected to the SX-1.

Chapter 4 – Metering & Indicators

Reading LED Meters

Master Meter Section

This section houses the main Time Code display, master L/R LED meters, and a variety of indicator LEDs illustrating the SX-1's current state.

LED Time Code Display The Time Code display is designed to display either HOURS:MINUTES:SECONDS:FRAMES or BARS:BEATS:TICKS. However, it can display any of the SX-1's time code formats, including feet:frames and samples.

Changing the Time Code Display's readout can be done from the SVGA's Main Menu Bar Time Code Display.

AUTO MODE These LED indicators reflect the SX-1's current automation status.

<ALL SAFE> Indicates that automation will not be recorded.

<INIT EDIT> Indicates that the automation system is in Init Edit mode.

SYNC STATUS These LED indicators reflect the SX-1's current synchronization state.

<LTC CHASE> Indicates that the SX-1 is chasing incoming Longitudinal Time Code (LTC).

<MTC CHASE> Shows that the SX-1 is chasing incoming MIDI Time Code (MTC).

<LOCKED> Indicates that the SX-1 is locked to incoming time code.

CLOCK These LED indicators reflect the SX-1's current clock status.

<INTERNAL> Indicates that the SX-1's internal clock is the master clock source.

<WORD> Shows that incoming Word Clock is the master clock source.

<VIDEO> Shows that incoming video sync is the master clock source.

<DIGITAL IN> Indicates that the digital input connected to one of the rear digital input ports (SPDIF) is the master clock source.

<OPTION SLOT> Indicates that a device connected to an optional card installed in one of the Option Slots is the master clock source.

<ADAT OPTICAL> Shows that incoming ADAT Optical (on the rear panel) is the master clock source.

SAMPLE RATE These LED indicators reflect the SX-1's current sample rate.

<4 4 . 1KHZ> Indicates that the current sample rate is 44.1 kHz.

<4 8KHZ> Indicates that the current sample rate is 48 kHz.

<2X> Shows that the current sample rate is at one of the two high sample rate settings (88.1 kHz or 96 kHz). For example, at 88.2 kHz, both the 44.1kHz and 2X indicators will light.

HDR RECORD These LED indicators reflect the Hard Disk Recorder's resolution, input and record monitoring states.

<24 -BIT> Indicates that the SX-1 is set to record at 24-bit resolution.

<ALL INPUT> Shows that the All Input monitor mode is selected.

<AUTO MONITOR> Shows that the Auto Monitor mode is selected.

ACTIVITY These LED indicators display hard disk and MIDI activity.

<DISK> Indicates that the hard drive is accessing.

<MIDI> Indicates the existence of incoming or outgoing MIDI data. The actual operation depends on the MIDI LED setting on the LCD Preferences page.

Master Stereo Meter The Master Stereo Meter provides a visual cue of your master output bus. It is a multi-colored, 30-segment LED that goes from –60 to 0 dB and features peak LED indicators to show digital "overs."

TIP

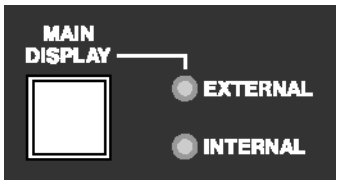
To see discrete track meters for each mixer channel, go to the Overview *screen by pressing* **OVERVIEW** *in the* **MAIN DISPLAY MODES** *section.*

Chapter 5 – Selecting Screens

Screen Controls

You have a choice of using the onboard LCD or a connected SVGA display as your main screen.

Main Display Key



The **MAIN DISPLAY** key selects between the SX-1's onboard LCD screen or an external SVGA monitor as your main GUI display. The LCD display always follows the selection keys in the **MAIN DISPLAY MODES** section.

To have an external SVGA follow these keys, press **MAIN DISPLAY** and make the associated **<EXTERNAL>** LED light. The LED indicator settings are as follows:

<INTERNAL> When the **<INTERNAL>** LED is illuminated, the GUI windows recalled by the keys in the **MAIN DISPLAY MODES** section appear on the LCD screen. If an SVGA screen is connected, its screen will not follow the **MAIN DISPLAY MODE** keys.

<EXTERNAL> When the **<EXTERNAL>** LED is on, the GUI windows recalled by the **MAIN DISPLAY MODES** keys appear on both the LCD screen and the external SVGA display at the same time.

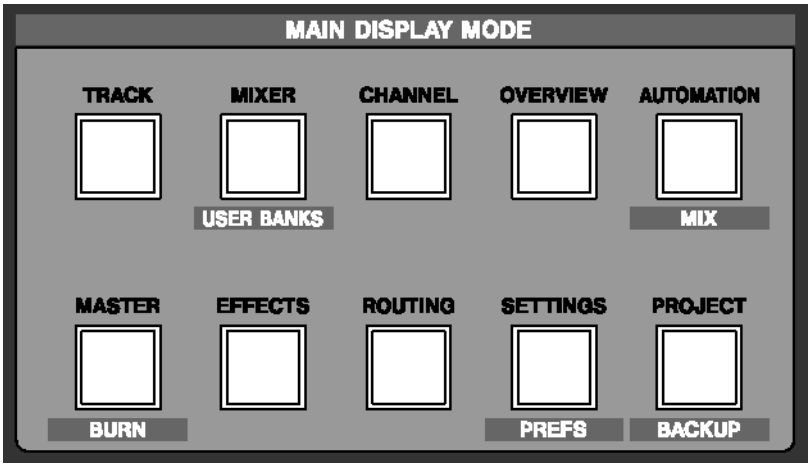
TIP

SVGA screens can also be changed, independently of the LCD, by pressing ALT and a number key on a connected PS/2 keyboard.

This option is available regardless of the **MAIN DISPLAY** *key's setting.*

The LCD also has its own set of dedicated UI controls in the **LCD ACCESS** *section.*

Main Display Mode Section



The controls in this section recall different GUI screens. These screens appear on both the LCD and a connected SVGA display (when the **MAIN DISPLAY** key is set to external).

TRACK The **TRACK** key recalls the TRACK screen, where tracks are created and edited.

MIXER The **MIXER** key recalls the MIXER screen, which shows a full console view on the SVGA, along with a channel-at-once view on the LCD.

CHANNEL The **CHANNEL** key recalls the MIXER CHANNEL screen, which shows all of the parameters for a selected channel.

OVERVIEW The **OVERVIEW** key recalls the OVERVIEW screen, which can be used as a graphic meter bridge.

AUTOMATION/MIX The **AUTOMATION/ MIX** key recalls the AUTOMATION screen, and pressing **SHIFT**+**AUTOMATION/ MIX** recalls the MIX screen.

MASTER/BURN The **MASTER/ BURN** key recalls the MASTER screen where backup CD-Rs can be created and managed. Pressing **SHIFT**+**MASTER/ BURN** recalls the BURN screen.

EFFECTS The **EFFECTS** key recalls the EFFECTS screen, where plug-ins are assigned to the SX-1's four effect quadrants.

ROUTING The **ROUTING** key recalls the ROUTING screen.

SETTINGS/PREFS The **SETTINGS/ PREFS** key recalls the SETTINGS screen which holds all of the controls for clock reference, and pressing **SHIFT** + **SETTINGS/ PREFS** recalls the PREFERENCES screen where a number of other settings can be stored (such as meter preferences).

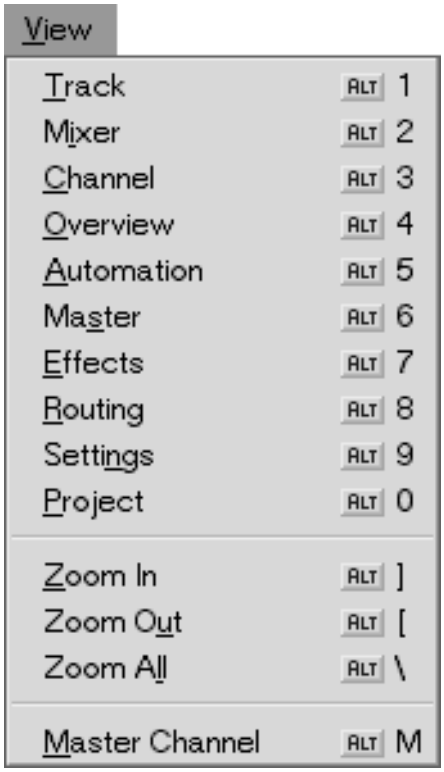
PROJECT/BACKUP The **PROJECT/ BACKUP** key recalls the PROJECT screen, and pressing **SHIFT** + **PROJECT/ BACKUP** recalls the BACKUP screen.

TIP

The SVGA screen can also be switched by pressing ALT and a number key on a connected PS/2 keyboard. This option is available regardless of the **MAIN DISPLAY** *key's setting.*

View Menu

The SVGA display's menu bar also provides a View menu, which mirrors the hardware keys of the **MAIN DISPLAY MODE** section. Zoom commands are also available if you prefer an alternative to the click-and-drag zoom method.



Screen Recall Commands Each command recalls its associated screen for the SVGA. Explanations of these screens are found in the relevant chapters (such as, the Automation screen is found in the chapter that addresses automation, Chapter 12).

Zoom In Magnifies (zooms in) data horizontally, relative to time, on the TRACK and AUTOMATION screens, and "Waveform" and Auto Track tab views.

Zoom Out Expands (zooms out) data horizontally, relative to time, on the TRACK and AUTOMATION screens, and Waveform and Auto Track tab views.

TIP

Another way of zooming in and out is the ALT+Bracket PS/2 Keyboard command. Waveform height can also be changed with SHIFT+ALT+Bracket.

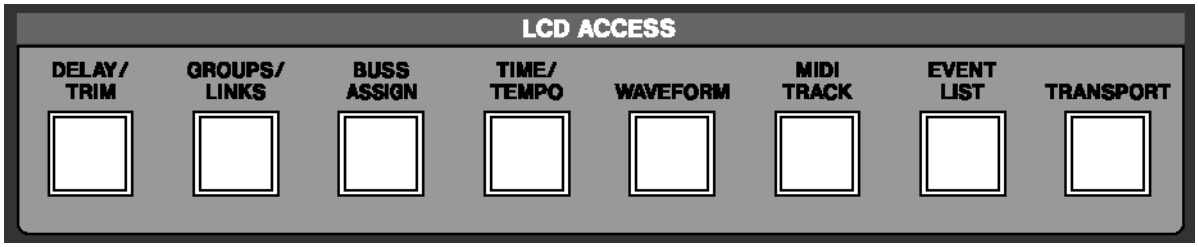
Zoom All Zooms all the way out to show the entire project in the TRACK and AUTOMATION screens, and Waveform and Auto Track tab views.

Master Channel Recalls the Master stereo output CHANNEL screen. This command is identical to pressing **CHANNEL** from the **MAIN DISPLAY MODE** section and then selecting the Master fader channel (by pressing its **SEL** key).

TIP

Each command's associated PS/2 keyboard shortcut is listed in the menu (right after the command's title).

LCD ACCESS Section



The controls in this section recall GUI screens for the SX-1's LCD display. Many of these screens reflect the tabs of the SVGA screens (for example, the Track screen's tabs).

DELAY/TRIM The **DELAY/ TRIM** key recalls the Delay/Trim screen, which houses individual channel delay and level trim controls.

GROUPS/LINKS The **GROUPS/ LINKS** key recalls the Groups/Links screen, where fader groups and linked channels are managed.

BUSS ASSIGNMENT The **BUSS ASSIGNMENT** key recalls the Buss Assignment screen, which handles all buss routing for the console.

TIME/TEMPO The **TIME/ TEMPO** key recalls the Time/Tempo screen, where a project's Tempo and metronome settings may be modified.

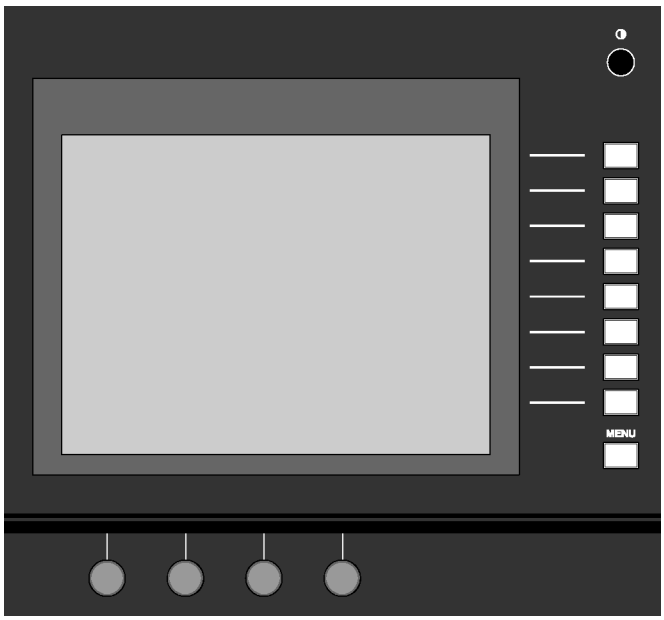
WAVEFORM The **WAVEFORM** key recalls the Waveform screen, where a selected channel's sample-accurate waveforms can be viewed and edited on the LCD.

MIDI TRACK The **MIDI TRACK** key recalls the MIDI Track screen which contains a Piano Roll display.

EVENT LISTS The **EVENT LISTS** key recalls the Event Lists screen where individual events may be viewed and edited.

TRANSPORT The **TRANSPORT** key recalls the Transport screen where locate points are managed, external devices are controlled, and parameters like frame rate are set on the LCD.

LCD Screen



The onboard LCD screen provides access to all the necessary operating windows. In situations when an external SVGA display is not available, the SX-1's software components can be reached directly through the LCD. The LCD can also work in tandem with the SVGA to provide a second GUI screen.

LCD Contrast This knob ◑ adjusts the viewing angle and contrast of the LCD screen.

Soft-Keys The functions of these keys change according to the current LCD screen.

MENU The **MENU** soft-key is dedicated to turning the soft-keys' ACTIVE MENU on and off.

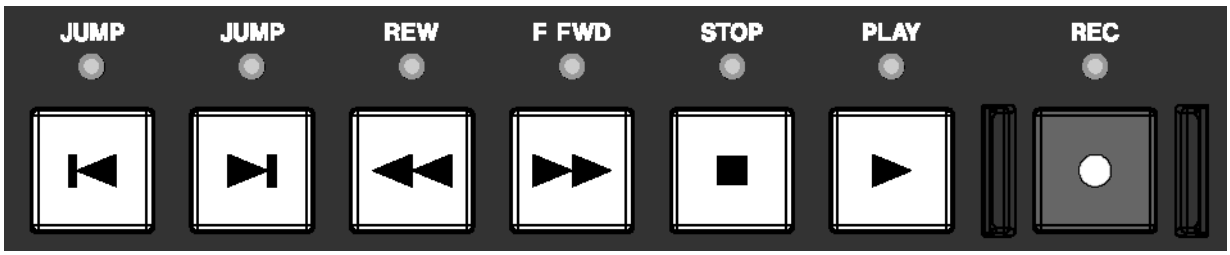
Soft-Knobs The functions of these knobs change according to the current LCD screen.

Part II — Monitoring Signals and Selecting Screens

Chapter 6 – Transport, Loop, Auto Punch

Transport Controls

Front Panel

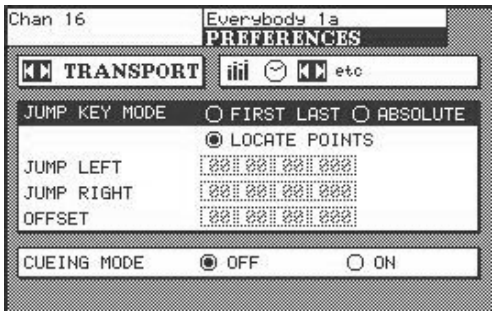


These keys provide standard tape-style transport controls for navigating through the currently loaded project.

JUMP Back By default, this key ?? moves the playhead to the top of the project. However, it is possible to set this **JUMP** key to function differently. These settings are made in the LCD TRANSPORT screen (pictured below).

JUMP Forward By default, this key ?? moves the playhead to the tail of the project. However, it is possible to set this **JUMP** key to function differently. These settings are made on one of the LCD's PREFERENCES screens (the TRANSPORT screen pictured below).

LCD Jump Controls There are controls on the LCD's TRANSPORT screen for setting Jump functionality.



Press **SHIFT**, then, from the **LCD ACCESS MODE** section, press **SETTINGS/ PREFS**. Use the NEXT PAGE soft-key to scroll to this screen.

JUMP KEY MODE The Jump Keys can operate in one of 3 different modes:

FIRST LAST With this setting selected, the Jump Left key will locate the playhead to the beginning of the first event in the project. The Jump Right key will locate the playhead to the end of the last event in the project (this is how the TASCAM MX2424 works).

ABSOLUTE With this setting selected, the **JUMP** Left and **JUMP** Right keys jump to specific values. These values are entered in the Jump Left and Jump Right registers located directly below.

LCT POINTS With this setting enabled, the SX-1 will scroll through all Locate Points stored in the project in chronological order, even if they are not sequentially numbered that way.

JUMP LEFT & JUMP RIGHT Settings entered here will dictate where the playhead locates after a Jump Left or Jump Right in Absolute Jump Mode.

OFFSET This setting acts much like a pre-roll for the Jump commands. If the value is anything other than zero, the playhead will locate to the point dictated by the Jump mode, adding or subtracting the Offset value from the original location.

"CUEING MODE" This setting causes Fast Forward and Rewind to operate audibly at up to a maximum 1.5 times the playspeed while monitoring audio. The effect is much like Scrub, and is useful for situations when an external video deck is chasing the SX-1.

REWIND This key [ ] rewinds the project.

FAST FOWARD

This key ◄◄ fast forwards the project.

STOP This key ■ stops playback.

PLAY This key ► starts playback and punches out of Record.

RECORD With a track record enabled and the transport in PLAY, press this key ● to punch in.

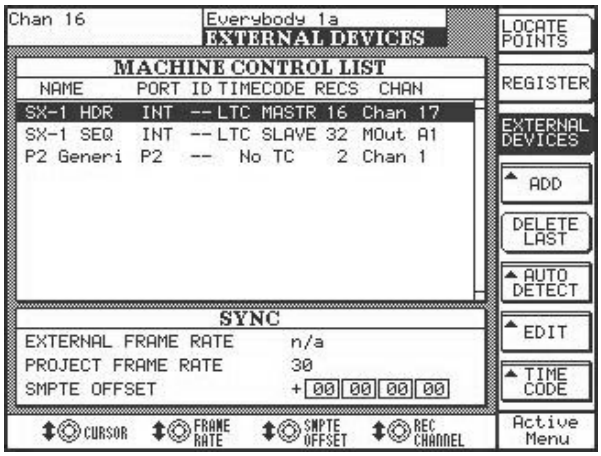
SVGA Transport

Transport controls that mirror the front panel **Transport Keys** are available in the SVGA screens' Main Menu Bar. The Record key displays an "M" when Mixdown Mode is enabled.

LCD Transport

A variety of external devices can have their transports controlled directly from the SX-1's **Transport Keys**.

EXTERNAL DEVICES Use this screen to manage the SX-1's transport communication with external devices.



LOCATE POINTS Opens the TRANSPORT screen where you can manage Locate Points ("Locate Points" on page 26).

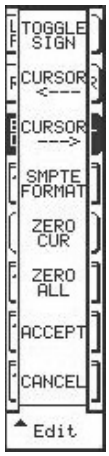
REGISTER Opens the REGISTERS screen where you can view and adjust Loop, Autopunch, and Audition points.

REC CHANNEL This parameter determines which channel strip on the SX1 will act as the first channel for remote track arming. The above example has Channel 17 set for this value.

FRAME RATE This knob sets the project frame rate. Rates of 30, 29.97, 29.97 Drop, 25, and 24 frames per second (fps) are available. To change the current frame rate, you must select "Accept" or "Cancel" from the tab that appears at the right of the screen.

SMPTE/TIMECODE OFFSET This parameter determines the amount of offset from incoming and outgoing timecode. Values can be entered by using the keypad.

Turning the knob accomplishes two things: the knob now acts as a cursor for the offset register (moving the cursor from hours to minutes to seconds, for instance), and it opens a dialog strip on the right side of the LCD screen:



TOGGLE SIGN When this key is pressed, the offset value changes from a positive offset (+) to a negative offset (-), meaning that an offset of +00:00:02:00 would play back two seconds later than the device generating the timecode, and that an offset of –00:00:02:00 would play back two seconds earlier.

CURSOR <--- Moves the cursor to the left one value.

CURSOR ---> Moves the cursor to the right one value.

SMPTE FORMAT This key toggles the offset display to show one of the four timecode choices available in the SX-1.

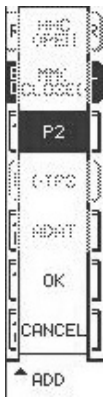
ZERO CURSOR This key clears any value that the cursor is currently selecting.

ZERO ALL This key clears the contents of the entire register.

ACCEPT Accepts the change.

CANCEL Declines the change.

ADD This key opens the ADD dialog. Use these selections to add the devices you want to control from the SX-1:



MMC OPEN Use this to add devices that accept Open Loop MIDI Machine Control Protocol to the list. This selection will be available in Version 1.5.

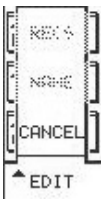
MMC CLOSED Use this to add devices that require Closed Loop MIDI Machine Control Protocol to the list. This selection will be available in Version 1.5.

P 2 This selection adds a generic P2 device. Generic transport, jog/shuttle wheel and track arming is available. With Auto Detect on, the SX-1 will sense from the P2 connection what kind of device is present, and should update its display accordingly.

DTRS This selection will add a DTRS tape machine (this family of machines includes the TASCAM DA-88 and DA-78HR) to the list. This function will be available in Version 1.5.

ADAT Use this selection to create a device profile for controlling a connected ADAT. This selection will be available in Version 1.5.

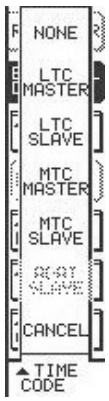
EDIT This key opens the EDIT dialog:



RECS This selection sets the number of record channels that a device supports for remote track arming.

NAME With this selection you can name the devices in your list.

TIME CODE This key opens the TIME CODE dialog. Use these selections to specify whether the SX-1 will operate as a master or slave, and the type of time code it will generate or recognize:



NONE No time code is generated or recognized.

LTC MASTER Specifies that the SX-1 will generate Longitudinal Time Code.

LTC SLAVE Specifies that the SX-1 will chase incoming Longitudinal Time Code.

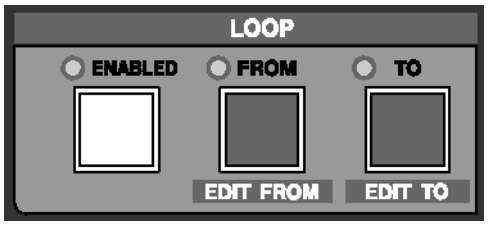
MTC MASTER Specifies that the SX-1 will send MIDI Time Code out its MIDI Out jacks. You can select the MIDI ports that are used to send MTC. This parameter is found in the Global tab of the SVGA Tracks screen.

MTC SLAVE Specifies that the SX-1 will chase incoming MIDI Time Code at its MTC IN jack.

ADAT SLAVE Specifies that the SX-1 will slave to ADAT sync.

LOOP Section

Tracks can be looped during playback, rehearsal, and recording. The keys for setting the loop are found in this section.



ENABLED Press the **ENABLED** key to activate loop playback.

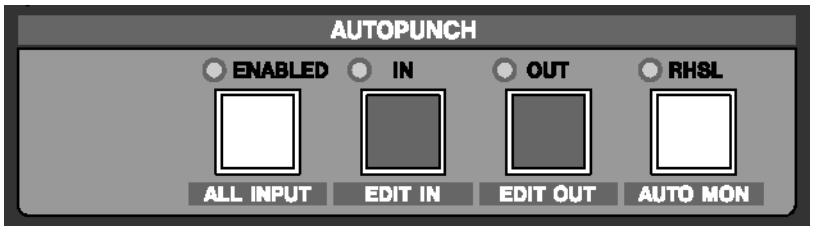
FROM/EDIT FROM After using **CAPTURE** to grab a time value, use the **FROM/ EDIT FROM** key to store the loop start point, and **SHIFT**+**FROM / EDIT FROM** to adjust the loop start point.

TO/EDIT TO After using **CAPTURE** to grab a time value, use the **TO/ EDIT TO** key to capture the loop end point, and **SHIFT**+**TO/EDIT TO** to adjust the loop end point.

TIP

Use the **CAPTURE** *key in conjunction with the* **FROM/ EDIT FROM** *and* **TO/ EDIT TO** *keys to set the loop points. Press* **CAPTURE** *and then the key for the loop point you want to set.*

Auto Record Controls (AUTOPUNCH Section)



The keys in this section are for setting the automatic punch in and out recording points.

ENABLED/ALL INPUT Press the **ENABLED/ ALL INPUT**] key to activate Autopunch mode, and **SHIFT**+**ENABLED/ ALL INPUT** to activate the All Input monitor mode during Autopunch.

IN/EDIT IN Use the **IN/ EDIT IN** key to store the Autopunch input point, and **SHIFT**+**IN/ EDIT IN** to fine-tune the Autopunch input point.

OUT/EDIT OUT After using **CAPTURE** to grab a time value, use the **OUT/ EDIT OUT** key to store the Autopunch output point, and **SHIFT** + **OUT/ EDIT OUT** to fine tune the Autopunch output point.

TIP

Use the **CAPTURE** *key in conjunction with the* **IN/ EDIT IN** *and* **OUT/ EDIT OUT** *keys to set the Autopunch points. Press* **CAPTURE** *and then the key for the Autopunch point you want to set.*

REHEARSAL/AUTO MON Pressing the **REHEARSAL/ AUTO MON** key allows you to practice the Autopunch without actually recording. Pressing **SHIFT**+**REHEARSAL/ AUTO MON** enables All Input monitoring during an autopunch when the Rehearsal mode is active.

Chapter 7 – Locate Points

Creating Locate Points

CAPTURE Key

All edit and location memory points are set using the **CAPTURE/ USE AGAIN** key. Registers that require this key to set memory points are listed below:

Locate Points	LOOP	EDITING	AUTO PUNCH
keypad 0-999	FROM/ EDIT FROM	BEGIN/ EDIT BEGIN	IN/ EDIT IN
	TO/ EDIT TO	END/ EDIT END	OUT/ EDIT OUT
		SYNC POINT/ EDIT SYNC	

CAPTURE/USE AGAIN When **CAPTURE/ USE AGAIN** is presssed, the playhead's current location is captured as a time value. To assign this location to a register, follow these steps:

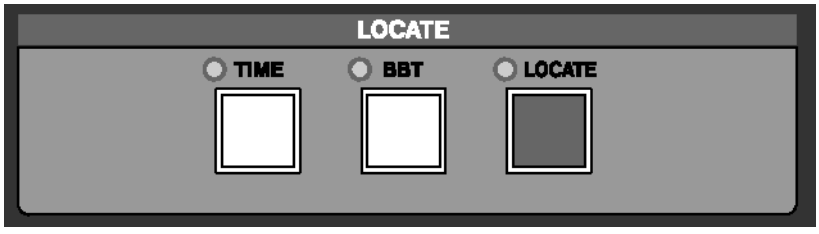
1. **Press CAPTURE.**
2. **An LED next to the keys whose functions can be assigned the captured location point will flash. Press one of these keys and the captured point will be assigned to that register.**

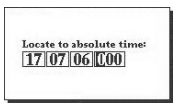
Create a Locate Point

1. **Cue the SX-1 to the spot where you want to capture a locate point.**
2. **Press CAPTURE. The key's associated LED will light to show that the SX-1 has captured the locate point.**
3. **Press a number on the Numeric Keypad in the Data Entry section to assign the captured value to a memory slot/locate point.**
4. **Press ENTER on the keypad to store the location to that slot.**

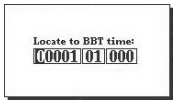
Recalling & Editing Locate Points

LOCATE Section These keys provide a way of locating directly to a specific position within the current project.

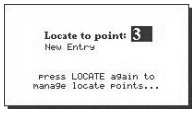




TIME Press the **TIME** key to open a time register window on the LCD screen (pictured left). Enter a value from the keypad and press **ENTER** to move the transport to that location.



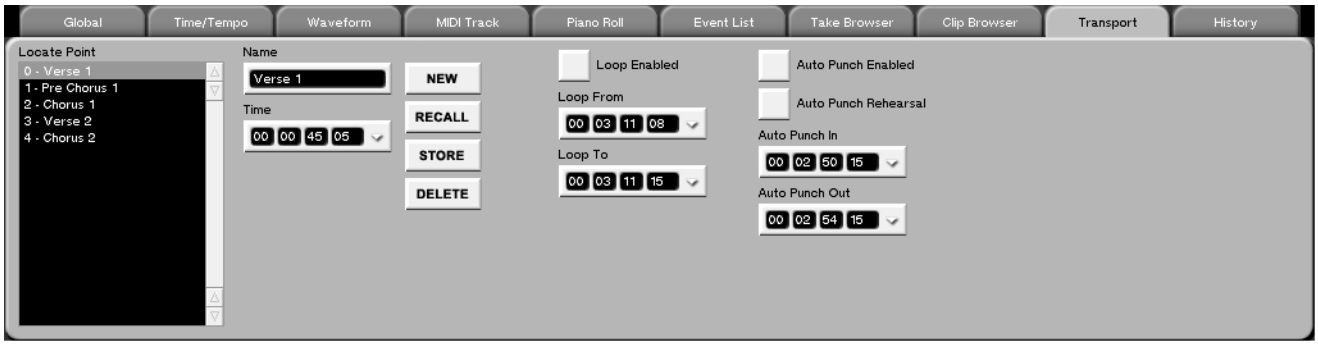
BBT Press the **BBT** key to open a bars:beats:ticks register window on the LCD screen (pictured left). Enter a value from the Keypad and press **ENTER** to move the transport to that location.



LOCATE Use the **LOCATE** key to recall saved locate points and to enable the creation of new ones. Press the key once and a locate point register window appears on the LCD screen (pictured left). Use the Keypad to enter a stored locate point and press **ENTER** to move the transport to that location. Pressing the key twice in rapid succession will bring up the TRANSPORT screen's Locate window where points can be named and managed.

SVGA Locate Control

To reach this tab, press the **TRACK/ USER BANKS** key in the **MAIN DISPLAY MODE** section to recall the Track" screen. Then click once on the Transport tab.



Locate Point This window allows you to see and select locate points associated with your current project.

Time This field has two functions. One, it displays the time stamp of the currently selected (highlighted) locate point. Two, the selected locate point's time stamp can be changed by entering a new time and pressing the STORE button.

Loop Enabled Turns the Loop function on. With Loop enabled, the SX-1 will play from the Loop From point to the Loop To point continuously.

Loop From Sets the Loop In point. Remember that for this location point, as well as all of the following time-based points, pressing **CAPTURE** first will grab the time value. From there you can store that value in any register (as indicated by the prompt lights after you press **CAPTURE**).

Loop To Sets the Loop Out point.

Auto Punch Enabled Turns the Auto Punch function on. In this mode, with the transport in motion and in record, the SX-1 will automatically punch into the record enabled track when the transport crosses the Auto Punch In point, and will punch out of record when the transport crosses the Auto Punch Out point.

Auto Punch Rehearsal Places the Auto Punch function in Rehearsal mode. In this mode, the SX-1 will simulate an Auto Punch action (by switching to Input monitor at the Auto Punch In point and back to disk playback at the Auto Punch Out point). This allows you fine-tune your punch points for accuracy before recording anything.

Auto Punch In Sets the Auto Punch In point.

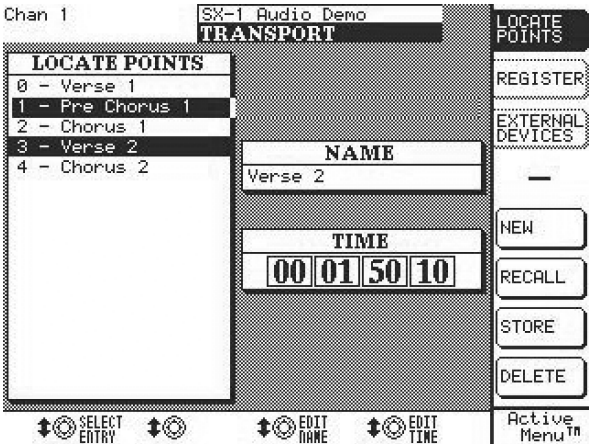
Auto Punch Out Sets the Auto Punch Out point.

LCD Locate Control

Direct access locate controls are also available through the LCD screen.

LOCATE POINTS

On this screen you can manage, create, recall, and edit your current project's locate points.



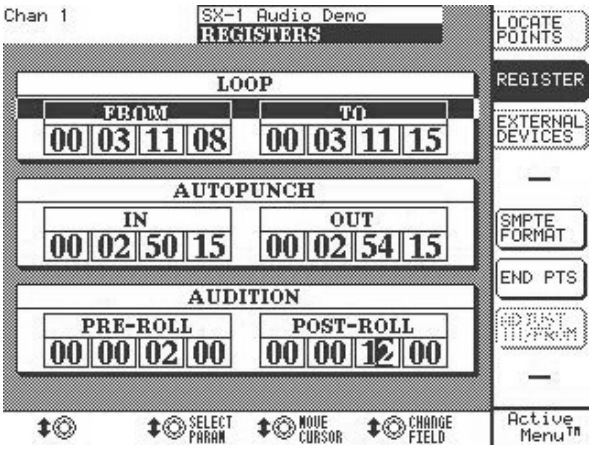
From the **LCD ACCESS** section, press **TRANSPORT**, then press the soft-key next to LOCATE POINTS to recall this screen. Or, just hit the **LOCATE** button on the surface twice, in rapid succession.

SELECT ENTRY Scrolls through the locate points in the LOCATE POINTS window.

EDIT TIME Opens the EDIT TIME dialog and allows the selected locate point's position (its time stamp) to be changed.

REGISTERS

On this screen you can enter values for a variety of location based settings directly from the Keypad.



From the **LCD ACCESS** section, press **TRANSPORT**, then press the soft-key next to REGISTER to recall this screen.

SMPTE FORMAT Switches between the different possible time code displays: SMPTE, hours:minutes: seconds, bars:beats: ticks, feet:frames, or samples.

END PTS & DURATION Switches the Loop TO and the Auto Punch OUT fields between endpoint and duration (the length of the current selection) displays.

ADJUST IN/FROM & ADJUST OUT/TO This parameter becomes active when the Loop and Autopunch Duration fields are active. This setting allows the editing of the In/From and Out/To points separately. For example, this means that while lengthening Duration, you can decide whether to move the Out point to the right (further down the timeline), or the In point to the left (earlier on the timeline)—one of them has to move to lengthen a duration.

SELECT PARAM Moves the cursor between the different location fields.

CHANGE FIELD Changes the value of the selected field.

Chapter 8 – Surround

Setting Up Surround

The SX-1 has full surround mix capabilities. Switching from the default stereo mode of operation to a surround mode changes a number of screens and parameters. This chapter details these changes and explains how to select the surround mix mode that's right for your project and setup.

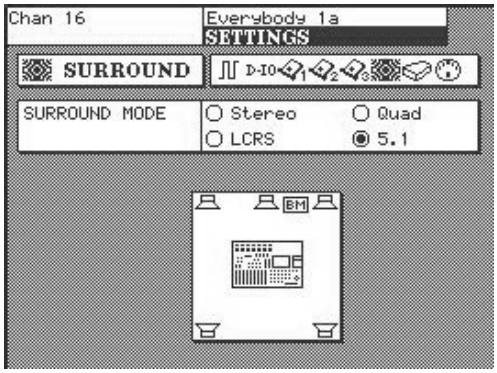
Making the Change to Surround

Switching to surround can be done from both the SVGA and the LCD screen.

From the SVGA, go to the Global tab of the Tracks screen. Here, you will find a field labeled, Surround Mode. In this field you can choose the surround mode that matches your setup: Quad, LCRS Surround, or 5.1 Surround.

LCD Access to Surround

On the LCD there is a screen dedicated to choosing the surround mode. If you are not familiar with the speaker positions of the various surround modes, this screen presents a helpful illustration.



To reach this screen, press the **SETTINGS/ PREFS** key in the **MAIN DISPLAY MODE** section. Then, use the NEXT PAGE soft-key to scroll to the Preferences screen labeled SURROUND. To change the surround mode, use the Left/Right arrows of the Keypad.

Surround Modes Explained

5.1 Surround A panning/routing scenario where six speakers are used. Three speakers are positioned along the front wall, while two more are positioned along the back wall behind the mix position. In addition, there is also a subwoofer speaker. The five regular speakers refer to the "5" in 5.1, while the ".1" in the name refers to to the subwoofer.

The speakers are labeled Left Front, Center, Right Front, Left Rear, Right Rear, and Boom (for the LFE/ subwoofer), and are normally arranged similarly to the setup on the LCD screen (pictured above).

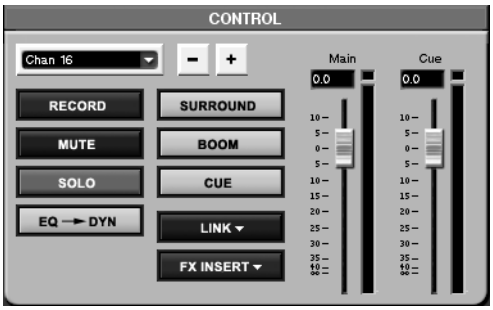
Quad A panning/routing scenario where four speakers are used. The speaker positions in Quad are basically the same as in 5.1, minus the center channel and subwoofer.

LCRS Surround A panning/routing scenario where four speakers are used. The speaker configuration consists of three speakers on the front wall, with only one behind the mix position. "LCRS" refers to speakers arranged as Left, Right, Center, and Surround.

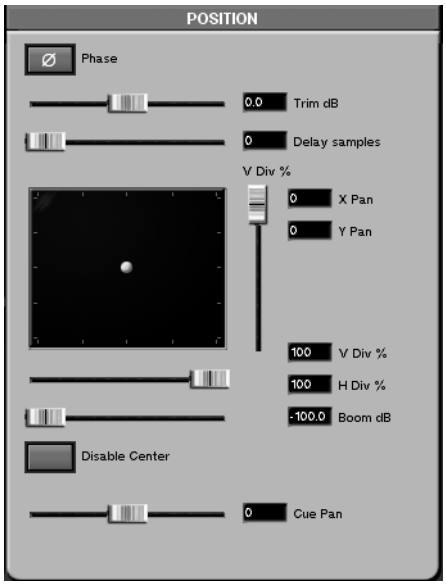
Understanding the Changes

SVGA Channel

Several key adaptations are made to the mixer channels in order to accommodate the selected surround mode. These changes are reflected in both the Channel and the Mixer screens.



On the Channel screen, the CONTROL and POSITION modules (pictured here) are updated. As well, on the Mixer screen, the pan and buss modules for each channel are also updated.



Surround Panner The Panner becomes a dot that can be pulled, using the mouse, in a 360 degree field. In traditonal surround mixing for film, the center channel is reserved for dialog only. This ensures that the dialog is always easily understood, because no music or effects are sent to that channel. The Disable Center key removes the Center channel as a possible output (thus ensuring that none of your music or effects bleeds into your dialog channel). Once Disable Center is selected, the panning paradigm for the channel becomes Quad (with the exception that the Boom send still works).

There is a slider labeled Boom dB which is the send for the subwoofer or LFE (Low Frequency Extension). In the Mixer channels, this slider resides immediately below the Surround Panner control.

The two sliders to the right and bottom of the pan field are for Vertical and Horizontal divergence. Taken individually, vertical divergence sets the distance from the front speakers to the rear speakers, while Horizontal divergence sets the distance from side to side. It acts as if at a lower divergence setting you were physically moving the speakers closer together, and that at a higher setting you were physically moving the speakers further apart.

Tracks Screen On the Tracks screen you'll notice that the buss assignments are now surround mix busses. For example, the updated buss output assignments for 5.1 Surround mode include the surround output, boom, and cue.

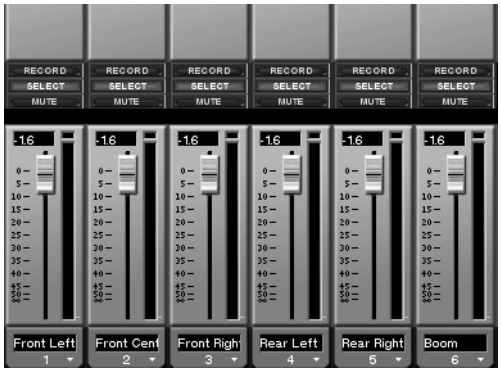
Master Fader The Master Fader normally controls the output of the Master L/R Bus.

However, in surround the Master Fader controls the six surround mix busses. With all the surround busses ganged to the Master Fader, overall level can be controlled for stem recording and, if necessary, surround monitoring (for example, if you don't have a dedicated surround monitoring box).

Mixdown Mode

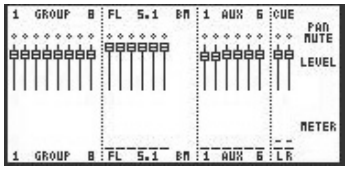
With Surround Mode enabled, Mixdown take names will reflect six tracks (or four for Quad). For example, the files of a 5.1 Surround mixdown will have the following designations: FL (Front Left), FC (Front Center), FR (Front Right), RL (rear Left), RR (Rear Right), and BM (Boom). Mixdowns are partially managed from the "**Global**" tab of the SVGA "**Tracks**" screen (for more on mixing down, see Chapter 21).

Routing Surround Busses



The surround busses can be assigned to any available output (for example, an Option Slot, Aux Send jack, Control Room, Studio, SPDIF, etc.).

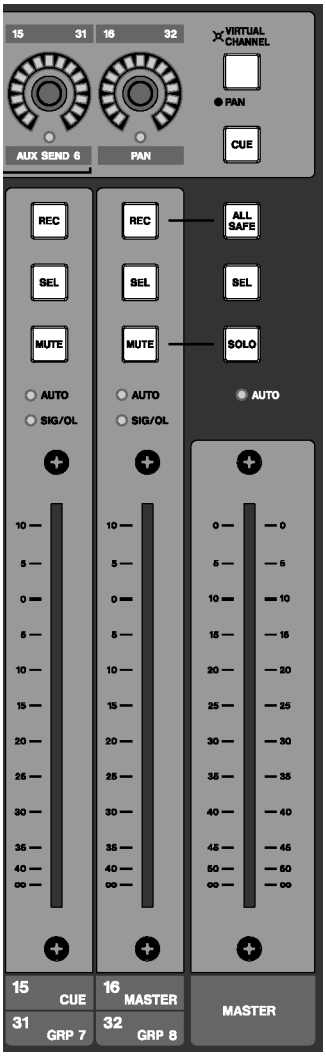
All the routing pages and menus will update to reflect the currently selected Surround Mode. The image at left shows how the Fader Bank Mixer Buss screen appears in 5.1 mode (notice there are 6 busses where there were previously 8 in stereo mode). The surround busses are also reflected on the LCD screen (pictured below). To reach this screen, with surround enabled, press **OVERVIEW** and then the BUSS softkey.



Chapter 9 – Channel Control

Front Panel

Channel Strips



There are 16 Channel Strips, each with its own fader and associated control keys. The Channel Strips are fully assignable, allowing them control over any of the mixer's 40 inputs as well as groups, master faders, MIDI tracks, busses, and aux sends.

Channel Fader

Fader for controlling the channel's level. The SX-1's faders are motorized and touch-sensitive for dynamic automation.

REC Use this key to arm a track for recording. This can be an HDR or a MIDI track, depending on what the strip is assigned to.

SEL The **SEL** key selects the mixer channel for editing of its individual parameters (such as, EQ, effects, and automation).

MUTE The **MUTE** key works either as a channel mute or a solo button. If the **SOLO** key on the Master Fader is not lit, then the **MUTE** key mutes the channel. If the **SOLO** key on the master fader is depressed (and glowing red), the **MUTE** key solos the channel (the Master Fader **SOLO** key is described below).

<AUTO> The **<AUTO>** LED indicators glow solid red to show Write automation ready. They blink red when writing automation data for their associated channel strip.

<SIG/OL> The **<SIG/ OL>** LEDs glow green to indicate that a signal is present at the channel's input and red on over limit peaks.

Master Channel There is one Master Channel for controlling the mixer's main stereo output. The Master Channel's keys also dictate how the Channel Strips' associated keys and Virtual Channel will function.

Master Fader The Master Fader controls the level for the master stereo bus output.

TIP

The Master Fader Channel screen can be recalled on the SVGA or LCD by pressing the **CHANNEL** *key (from the* **MAIN DISPLAY MODE** *section, pg. QQQ). Then select the Master Fader by pressing its* **SEL** *key.*

ALL SAFE Use the **ALL SAFE** key to disable the **REC** key on all channels. This prevents the record arming of audio and MIDI tracks.

TIP

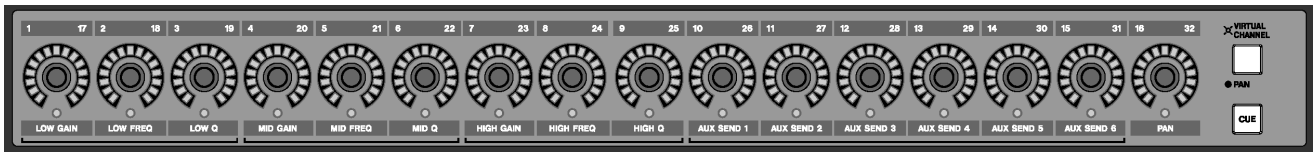
The All Safe mode is ideal for safeguarding a project from accidental erasures and changes.

SEL This **SEL** key selects the Master Fader channel for editing of its individual parameters (such as, EQ, effects, and automation).

SOLO The **SOLO** key determines the mode of the channel strips' **MUTE** keys. When depressed, the key glows red to show that the Solo mode is active. This causes the **MUTE** keys to function as solo keys.

<AUTO> This LED indicator glows solid red to show Write automation ready for the Master Fader. It blinks red when writing automation data for the Master Fader.

Virtual Channel



The Virtual Channel is the horizontal row of 16 knobs (called "virtual pots") above the Channel Strips.

Virtual Pots These pots are multi-function, infinitely rotating potentiometers. They serve as the channels' pan pots, EQ controls, AUX sends, or pan pots for the cue mix. They are surrounded by a ring of LEDs which indicate their current setting. For example, a pan pot that is hard left will have its far left LED illuminated, or an AUX send that is full open will have all of its LEDs lit. The virtual pots' functions are determined by the **VIRTUAL CHANNEL/ PAN** and **CUE** key settings.

VIRTUAL CHANNEL/PAN The **VIRTUAL CHANNEL/ PAN** key determines whether the virtual pots will function as EQ, Aux Sends, and a pan pot for the selected Channel Strip (the channel whose **SEL** key is active), or as individual pan pots for each of the 16 Channel Strips.

VIRTUAL CHANNEL ON (the key is lit)

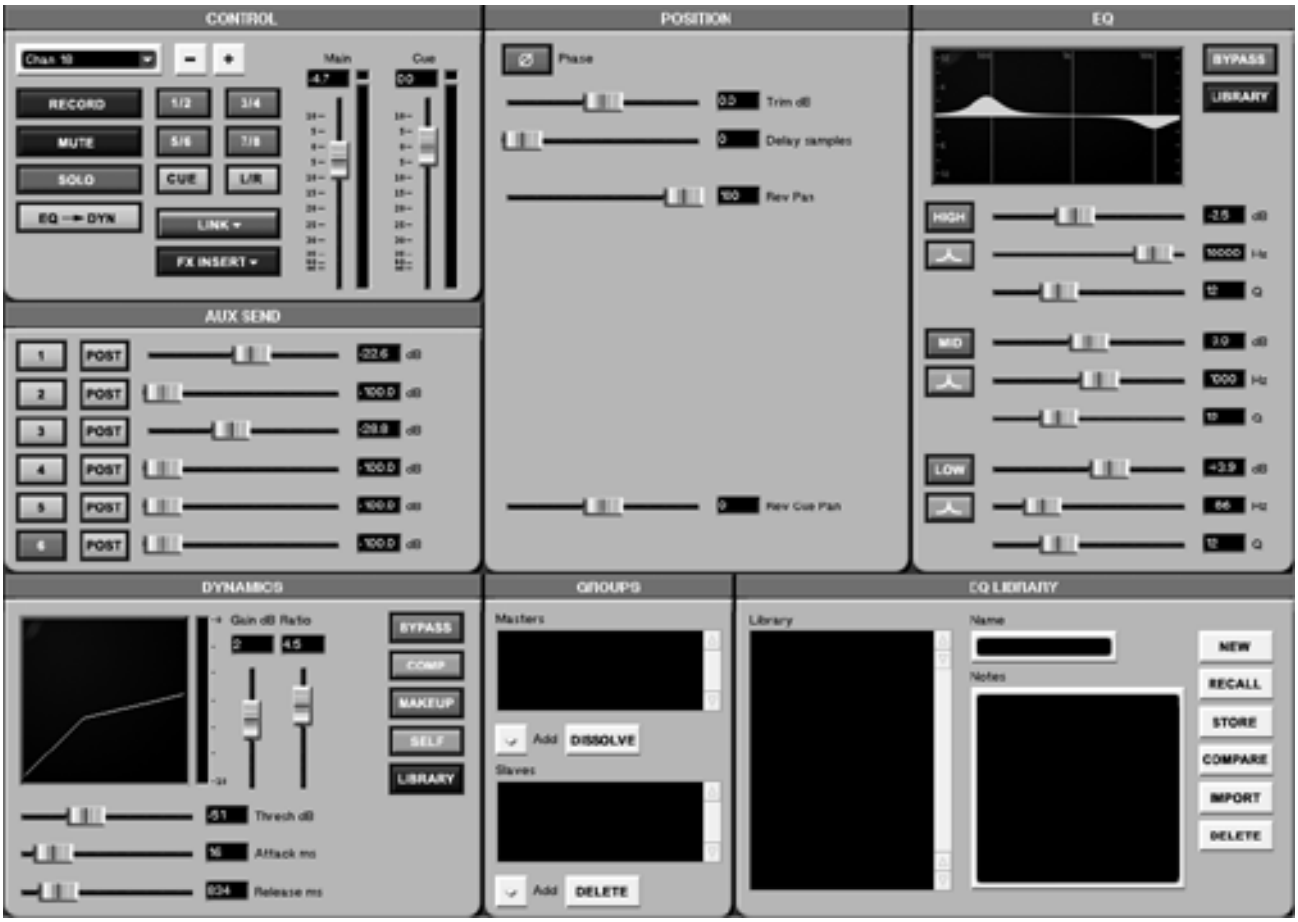
1/17	2/18	3/19	4/20	5/21	6/22	7/23	8/24	9/25	10/26	11/27	12/28	13/29	14/30	15/31	16/32
Low Gain	Low Freq	Low Q	Mid Gain	Mid Freq	Mid Q	High Gain	High Freq	High Q	Aux Send 1	Aux Send 2	Aux Send 3	Aux Send 4	Aux Send 5	Aux Send 6	Pan

PAN ON (the key is unlit)

1/17	2/18	3/19	4/20	5/21	6/22	7/23	8/24	9/25	10/26	11/27	12/28	13/29	14/30	15/31	16/32
Pan	Pan	Pan	Pan	Pan	Pan	Pan	Pan	Pan	Pan	Pan	Pan	Pan	Pan	Pan	Pan

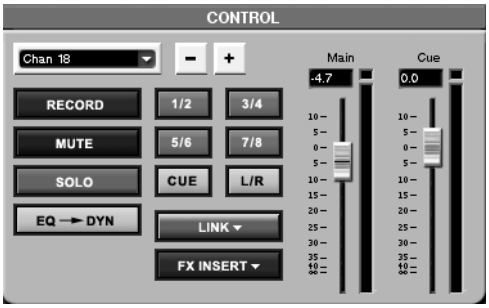
CUE The **CUE** key enables each Channel Strip to control its respective channel's cue mix. When **CUE** is illuminated, the faders control the channels' cue send levels, and each channel's associated virtual pot controls the cue mix pannings.

Screen Control (SVGA Channel Display)



Press the **CHANNEL** key in the **MAIN DISPLAY MODE** section to recall the Channel screen on a connected SVGA display. The mixer channel displayed is determined by the Channel Strip's **SEL** key. The Channel display provides onscreen access and control of all the selected channel's features in a single window.

"CONTROL" The CONTROL module contains the selected channel's basic level, routing, bussing, and monitoring controls. It is also possible to select a channel for display directly from within this module.



Channel Select Click on the ▼ next to the channel name (top left corner) to access a pop-up window of all the mixer's channels, groups, returns, and sends. Select the channel you want to see and the entire Channel screen will update to show that selection.

+/- keys Click on the +/- keys to step through the mixer's channels, groups, returns, and sends one at a time.

TIP

The Channel Select *field and +/- keys have the same affect as actually pressing the* **SEL** *key on a Channel Strip.*

RECORD The RECORD enable key is identical to the **REC** enable key on a Channel Strip.

MUTE The MUTE key is identical to the **MUTE** key on a Channel Strip.

SOLO The SOLO key solos the selected channel. It works the same way as a Channel Strip's **MUTE** key does in the solo mode.

EQ —> DYN Press this key to toggle the order of the selected channel's EQ and dynamics setup. The choices are EQ pre or post the dynamics processing.

1/2, 3/4, 5/6, 7/8 These keys assign the selected channel to the 8 busses.

CUE Press this key to assign the selected channel to the Cue mix.

L/R Press this key to send the selected channel to the master stereo bus out.

LINK The LINK key allows the selected channel to be ganged with an adjacent channel (the next even channel if the selected channel is odd, and the previous odd channel if the selected channel is even) for stereo operation. Use the mouse to right click on the key and select which of the channel's functions are linked (aux send, dynamics, EQ, faders, trim/delay, stereo pan, and cue pan).

FX INSERT Use this key to enable or disable one of the SX-1's eight inserts. Use the mouse to right click on the key's arrow to select or configure an insert source.

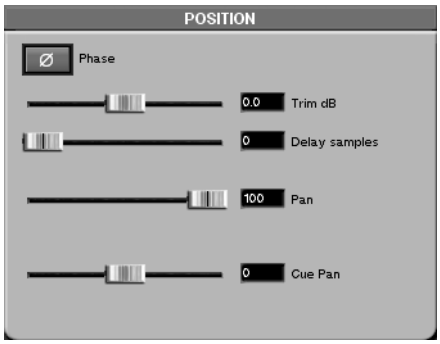
Main This onscreen fader mirrors the selected channel's physical fader.

Cue This onscreen fader mirrors the selected channel's physical fader for its cue level.

TIP

Exact numerical values can be entered directly into the text field above the Main *and* Cue *faders. Click once in the field to highlight the text, then enter a value using the PS/2 keyboard's number keys and press "enter" to set the value.*

POSITION The POSITION module houses various controls for fine-tuning the selected channel's performance.



Phase This button reverses the selected channel's phase by 180º.

Trim dB Use this fader to trim the selected channel's audio ±20dB.

Delay Samples Use this fader to delay the selected channel's audio by a set number of samples (up to 8191 samples).

Pan This fader mirrors the selected channel's physical pan pot.

Cue Pan This fader mirrors the selected channel's Cue mix pan pot.

"GROUPS" (The operation of fader groups is covered in more depth on Page 95) The GROUPS module gives you direct access to the selected channel's associated fader groups.

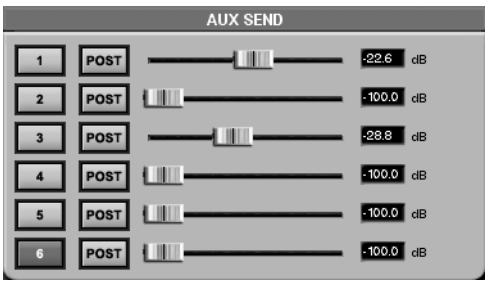
Masters This window displays the master faders associated with the selected channel.

Add Press the key (under either the Masters or the Slaves windows) to add a fader to its associated group.

DISSOLVE Removes the selected Master fader from the Masters window.

Slaves This window displays the slave faders associated with the selected channel and its Master faders.

AUX SEND The AUX SEND module houses controls for all six of the channel's aux sends.

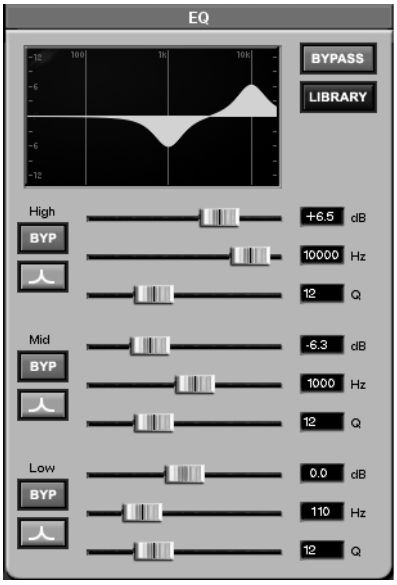


Keys 1 to 6 These keys enable, or disable, the selected channel's aux sends.

PRE/POST The PRE/POST keys select whether their associated aux sends will operate before (pre) or after (post) the selected mixer channel's fader level.

Faders These faders mirror the Virtual Channel's Aux Send pots.

"EQ" The "**EQ**" module houses the selected Channel Strip's controls for all three bands of equalization. The faders mirror the Virtual Channel's EQ pots.



BYPASS Press this key to turn the EQ module on and off for the selected channel.

LIBRARY Use this key to make the LIBRARY module display the EQ Library. For example, If the LIBRARY window currently shows the Dynamics Library, pressing this key will override that display and recall the EQ Library instead.

HIGH, MID, & LOW dB These faders provide gain (±15 dB) control for their respective EQ bands.

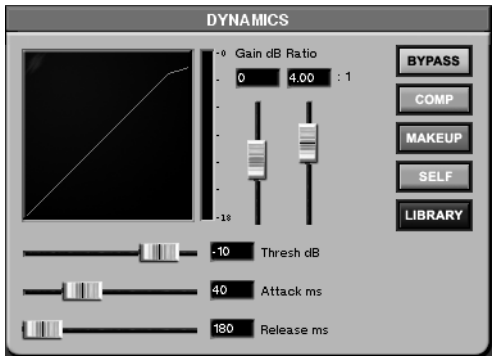
HIGH, MID, & LOW Hz These faders control the center frequency of the EQ bell (20Hz to 20kHz).

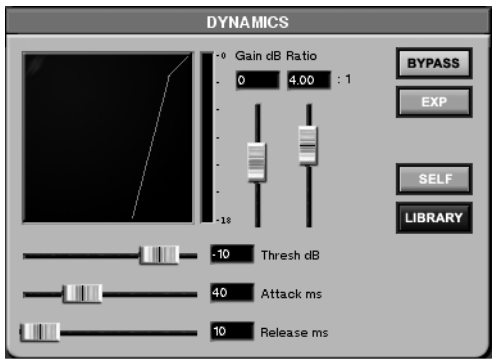
HIGH, MID, & LOW Q These faders control the width of the EQ bell curve. They are only active with the Parametric and Notch EQ curves.

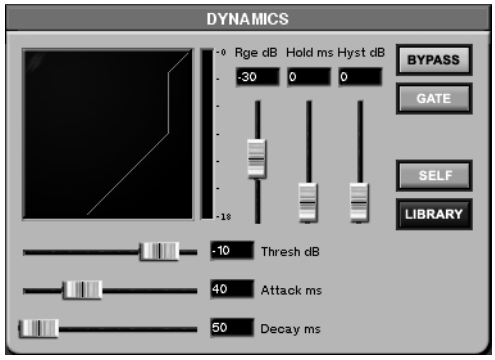
BYP These keys bypass just their associated band of EQ (not the entire EQ module).

Curve Key For each EQ band, you have a choice of Parametric, Notch, Low Pass, High Pass, Low Shelf, and High Shelf curves. Click on the keys immediately below each BYP key to select from a menu of these curves.

"DYNAMICS" The "**DYNAMICS**" module houses the dynamics controls for the selected channel. Several of these controls mirror the LCD " **MIXER CHANNEL**" screen for the "**AUX DYN**" settings.







There are three different types of dynamics processors available to each mixer channel (all 40 inputs). These are, Compressor, Expander, and Gate (all of which are pictured at left). One of these processors can be used at a time, per channel. Click on the key where the dynamics processor's name appears (either COMP, EXP , or GATE) to select the processor you want to use.

Compressor & Expander The following parameters apply to both the Compressor and the Expander. The only difference is that compression limits levels above the threshold setting while expansion lowers levels below the threshold setting.

Gain dB Use this fader to adjust the selected channel's gain (±20 dB) post dynamics processing.

Ratio This fader adjusts the compression ratio (from 1:1 to infinite). For example, with a setting of 4:1, for every 4 dB of input gain above the threshold, 1 dB of gain is output.

Threshold dB Use this fader to set the threshold at which the dynamics processing is active.

Attack ms This fader sets the attack time (0 to 125 ms) for the dynamics algorithm.

Release ms This fader sets the release time (1 to 5000 ms) for the dynamics algorithm.

TIP

To gain control of the DYNAMICS *module's faders via the LCD's soft knobs, recall the LCD's* MIXER CHANNEL *(press* **CHANNEL** *in the* **MAIN DISPLAY MODE SECTION**. *Then press the* AUX DYN *soft key to reach the* AUX DYN *control screen.*

BYPASS Press this key to turn dynamics processing on and off for the selected channel.

Gate The following three parameters are unique to the gate algorithm:

Rge dB This slider determines the range of the gate, which is the amount of attenuation when the gate closes. The default is –30 dB, but the range is from 0 to –60 dB.

Hold ms Determines the duration that the gate will remain open without being re-triggered.

Hyst dB Short for Hysterisis, this parameter provides a way of fine-tuning the clamping action of the gate. The higher the value, the less "gate chatter", which often happens with gates as the input signal remains very close to the gate threshold.

COMP Use this key to select the type of dynamics processing you want on the selected channel: compressor, expander, or gate. The key's label changes according to the selection. Use your mouse to click on the key and bring up the dynamics menu.

MAKEUP Use this key to compensate for level lost during compression.

SELF This key selects a trigger source for the selected channel's dynamics processor (the audio signal that dictates how the dynamics will behave). The selections are: Self, Side, or Both.

Self**:** This setting uses the selected channel's audio to trigger the dynamics processor. It is the default setting.

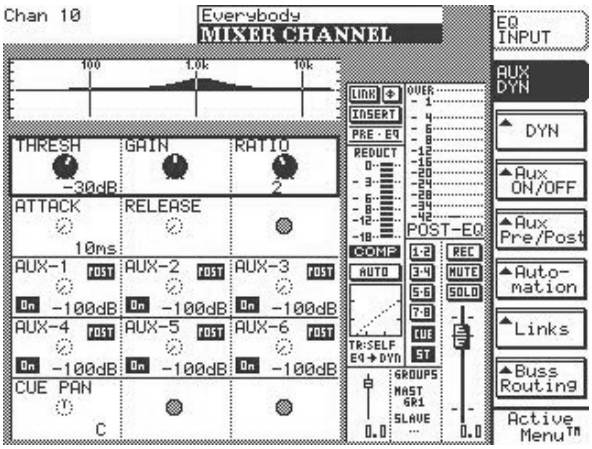
Side**:** This setting uses an adjacent channel's (the channel that would be part of a linked pair—see Links on pg. QQQ) audio to trigger the dynamics processor. This is commonly referred to as a "side-chain". It is important to note that while the dynamics processor's input is being controlled by the other channel in this case, the selected channel's audio is the one affected by the processing.

Both**:** This setting uses the audio from both channels to trigger the dynamics processor. The effect is like having a linked pair strapped to one compressor setting, with the exception that the audio from the channel providing the "Side" input is not affected.

LIBRARY Use this key to make the LIBRARY module display the Dynamics Library. For example, If the LIBRARY window currently shows the EQ Library, pressing this key will override that display and recall the Dynamics Library instead.

LCD Channel Display

This screen's functions parallel the SVGA "**Channel**" screen. Many of the controls found on this screen are identical to the controls found in the "**Channel**" screen's modules and are explained on the previous pages. Only those controls that are unique to this LCD screen are explained here.



Pressing either the **CHANNEL** or the **MIXER/ USER BANKS** keys in the **MAIN DISPLAY MODE** section of the front panel recalls the MIXER CHANNEL screen.

EQ INPUT Press this key to recall the controls for the selected channel's EQ, trim, pan, and delay.

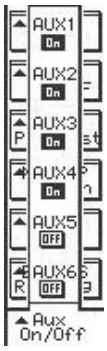
AUX DYN Press this key to recall the controls for the selected channel's dynamics, aux sends 1 through 6, and cue pan (pictured above).

DYN This key opens the selected channel's Dynamics dialog:

TYPE/COMP Use this key to select the type of dynamics processing you want on the selected channel: compressor, expander, or gate.

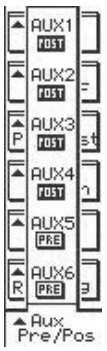
MAKEUP/AUTO Use this key to compensate for level lost during compression.

TRIG SELF Use this key to select a trigger source for the selected channel's dynamics processor (the audio signal that dictates how the dynamics will behave). The selections are: Self, Side, or Both.



"Aux ON/OFF" This key opens the selected channel's Aux On/Off dialog:

AUX1/On" to "AUX6/On These keys turn their respective aux sends, for the selected channel, on and off.



"AUX Pre/Post" This key opens the selected channel's Aux Pre/Post dialog:

AUX1/Pre" to "AUX6/Pre These keys toggle the aux sends for the selected channel pre or post fader.

"Automation" This key opens the selected channel's Automation dialog (see Chapter 12 for details about automation features):

AUTO Use this soft-key to place the selected controller into Automatic Status.

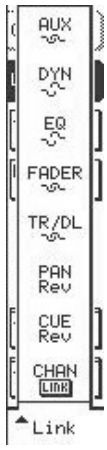
STATIC Use this key to place the selected controller to a Static state **SEAN, CHECK QQQ**.

WRITE Use this key to place the selected channel to Write mode.

TRIM Use this key to place the selected channel to Trim mode.

SAFE Use this key to place the automation for the selected channel in Safe mode (for example, to prevent writing over recorded data).

OFF Use this key to turn off automation for the selected channel.



Links This key opens the selected channel's Link dialog, where you can choose which of the channel's parts are ganged together when a pair of channels is linked:

AUX Turns the Aux Sends link feature on and off.

DYN Turns the Dynamics link feature on and off.

EQ Turns the EQ link feature on and off.

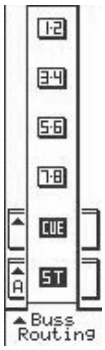
FADER Turns the Fader link feature on and off.

TR/DL Turns the Trim/Delay link feature on and off.

PAN Turns the Stereo Pan link feature on and off.

CUE/Rev Turns the Cue Pan link feature on and off and lets you select how the link pan controls will operate. There are three settings: Mono (the pan controls operate independently), Position/Width (one pan knob controls the channels' pan position while the other pan knob controls the width of the channels' stereo pan field), or Reverse (the pans move opposite to one another).

CHAN/LINK Turns the channel linking feature on and off. That is, links to or breaks the link to the adjacent channel.



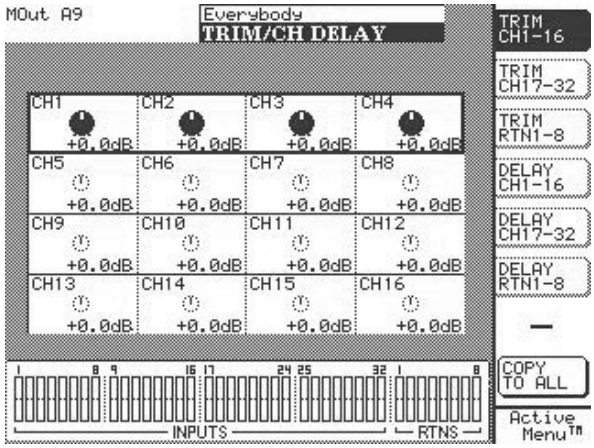
"Buss Routing" This key opens the selected channel's Buss Routing dialog:

1-2 to 7-8 Use these keys to send signals from the selected channel to busses 1-8.

CUE Use this key to send signal from the selected channel to the Cue buss.

ST Use this key to send signal from the selected channel to the Master stereo buss.

"TRIM/CH DELAY" Screen Trim and channel delay controls are available from the LCD. The trim controls are different from the pre-mixer channel input trim controls found on the top of the SX-1. These trim controls allow you to adjust the actual mixer channel's level from –20 to +20 dB before it reaches the fader. The delay function lets you delay the mixer's channels' from 0 to 8191 samples. On the SVGA, the trim and delay controls are found on the POSITION module of the Channel screen.



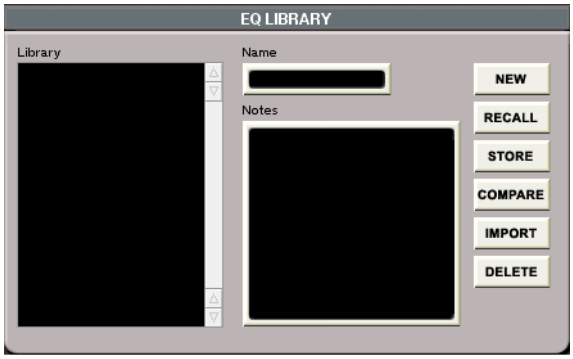
To reach this screen, press the **DELAY/ TRIM** key in the **LCD ACCESS** section. To reach a channel, press the soft-key next to the Trim or Delay group that the channel belongs to. To select a channel for editing, use the keypad's up/down arrow keys.

COPY TO ALL Use this key to copy the delay and trim settings of your currently selected channel to all of the mixer's channels.

EQ & Dynamics Libraries - The Library Feature

A Library feature is available for saving your custom EQ and Dynamics setups (the Library also works for saving routing configurations, among other things—Library information is covered after each relevant section). Dedicated LCD and SVGA screens are available for accessing this feature. You can press the LIBRARY keys in the SVGA CHANNEL display or the hardware keys in the **LIBRARY** section to reach the LCD screens.

SVGA Displays



This window is part of the Channel screen. Here you can create, edit and store EQ and Dynamics channel settings.

Library The Library window lists the EQ or Dynamics currently available library settings.

Name The currently selected library entry appears in this text field. Click once in the text field to highlight it, now the selected library preset's name can be changed. Type in a new name and press [ENTER] from a PS/2 keyboard.

Notes Each library setting can have important commentaries saved right along with the preset. These notes can be edited at any time from a connected PS/2 keyboard.

IMPORT This key lets you import a library setting from another project. Press IMPORT and browse through the available projects listed in the Import Project window. Select the library file you want to import and press OK (or CANCEL to escape the action).

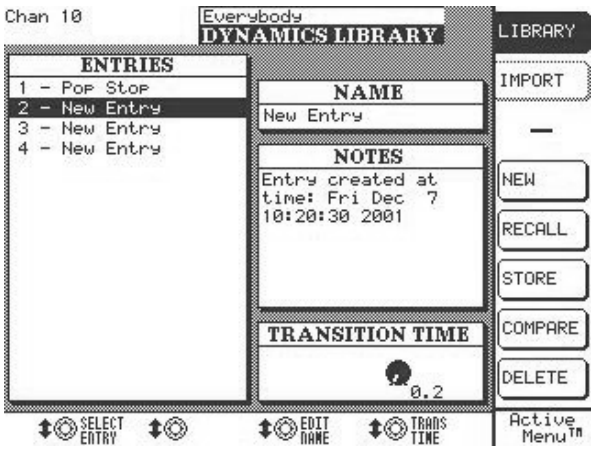
TIP

If you press IMPORT *and don't see any project files in the* Import Project *window, be sure the proper hard drive (the drive where your project files are stored) is selected in the* Import Volume *menu.*

LCD Displays

There are several Library screens to address the many functions that can have their discrete parameters stored and recalled. The Dynamics (shown below) and EQ Library screens are shown in the SVGA's Channel screen and can be recalled on the LCD via the **EQ** and **DYN** keys in the **LIBRARY** section (on the front panel).

"DYNAMICS LIBRARY" From the **LIBRARY** section, press the **DYN** key to recall the DYNAMICS LIBRARY LCD screen. This screen's function parallels the Channel screen's Dynamics Library module on the SVGA.



IMPORT Opens the IMPORT screen. From here you can import the settings of the dynamics (or EQ, if you are on that screen) from another project, to your current project.

COMPARE Compares the channel's current EQ or dynamics state to the last loaded (or saved) version.

"TRANS TIME" The amount of time it takes for parameters to move from their current state to the settings of a library preset that has just been recalled.

Chapter 10 – Routing & Bussing

Routing

The SX-1's routing matrices are extremely comprehensive. These patch matrices (seen in the ROUTING screens) allow any of the SX-1's inputs, outputs, and mixer channels to be routed almost anywhere. The patch matrices are broken down into three basic areas: inputs pre mixer, mixer channels, and outputs post mixer (note that pre and post mixer deal primarily with physical I/O). Patching for the SX-1's internal effects, inserts, and Hard Disk Recorder (HDR) are also available. These "virtual patch bays" offer a convenient and extremely flexible way of connecting a wide variety of the SX-1's patch points.

SVGA Routing Displays

In the **MAIN DISPLAY MODE** area, press the **ROUTING** key to recall the ROUTING SVGA screen.

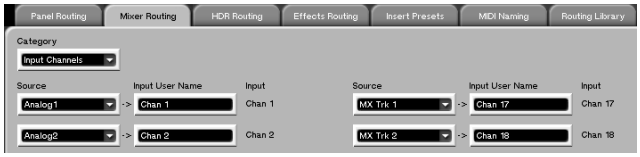
Panel Routing To reach this tab, first press the **ROUTING** key in the **MAIN DISPLAY MODES** section. Then click on the Panel Routing tab. This tab contains both the pre and post mixer patch bay. From this screen you can route any of the SX-1's physical inputs to the mixer's 32 inputs, 8 returns, or 8 inserts. In this tab, you can also give your analog inputs custom names.

Category Selects between viewing the routings for: Analog Inputs, Outputs, Digital I/O, and Option Slots 1-3.

Input User Name Use this field to type in a custom name for the input. This feature is useful if you leave the same device plugged into an input all the time, or to remind yourself of devices that were connected to the SX-1 when returning to a previous mix.

Destination Selects the input's routing destination.

Mixer Routing To reach this tab, press the **ROUTING** key in the **MAIN DISPLAY MODES** section. Then click on the Mixer Routing tab. This is the mixer patch bay. Use this tab to route sources to and from the mixer's channels.



Category Selects between viewing the routings for: Input Channels, Aux Returns, Direct Outs, Bypass, Loopback, and Busses.

TIP

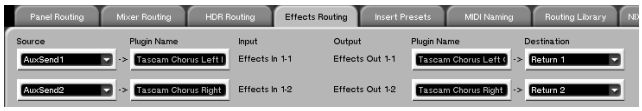
The Bypass *and Loopback categories allow you to route 16 channels each without actually using up a mixer channel. Mixer Bypass routes 16 channels from the pre-patchbay to the post patchbay, and Mixer Loopback routes 16 channels from the post-patchbay back to the pre-patchbay—without using up a channel strip. For example, use Bypass to go from an analog input directly to an analog output. Or, use Loopback to go directly out of a channel and back into a return, without using up a mixer channel strip.*

Source Selects the input's feed.

HDR Routing To reach this tab, press the **ROUTING** key in the **MAIN DISPLAY MODES** section. Then click on the HDR Routing tab. This is where the SX-1's Hard Disk Recorder tracks are patched and routed (along with the actual slots on the Track screen). HDR Inputs and outputs are handled from this tab.

Take Name Displays the name of the HDR tracks' currently loaded Take.

Effects Routing To reach this tab, press the **ROUTING** key in the **MAIN DISPLAY MODES** section. Then click on the Effects Routing tab. This tab (as well as the SVGA Effects screen) is where you route the SX-1's internal effects.

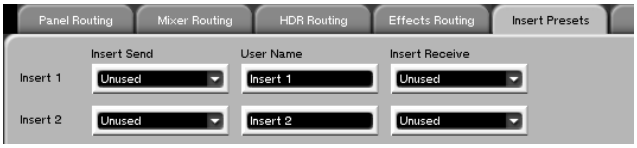


Plugin Name Displays the name of the effect plug-in that is selected for that quadrant on the Effects screen.

TIP

You must first assign an effect to one of the four effect quadrants on the "Effects" screen before a plug-in will appear on this tab.

Insert Presets To reach this tab, press the **ROUTING** key in the **MAIN DISPLAY MODES** section. Then click on the Insert Presets tab. From this tab, you configure the routing for the mixer's effect inserts. You can have up to eight possible insert effect presets spread across any of the mixer's 32 full featured channels, as well as the 8 mix busses and Master L/R buss.



Insert Send This field determines where the insert send goes. Notice that external ports are available, making external inserts possible.

User Name Use this field to name your insert preset.

I n s e r t Receive This field determines where the insert's return is coming from (see pg. ??? for instructions on routing effects).

LCD Routing Displays

On the LCD, there is a set of Routing screens that parallel the SVGA Routing tabs. Press the **ROUTING** key in the MAIN DISPLAY MODE section to reach these screens. These routing screen choices are listed here.

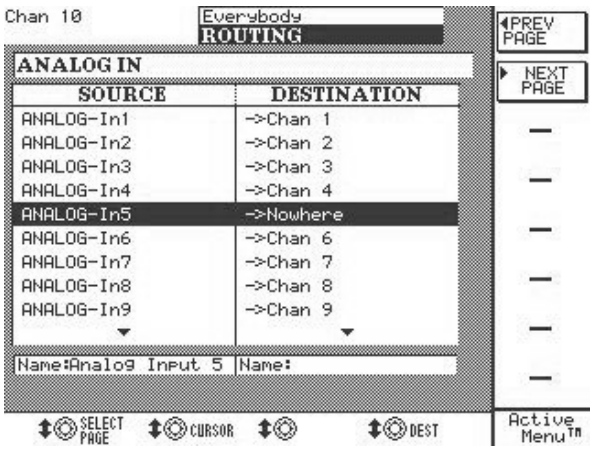
ANALOG IN
ANALOG OUT
DIGITAL IN
DIGITAL OUT
OPTION CARD IN 1
OPTION CARD IN 2
OPTION CARD IN 3
OPTION CARD OUT 1
OPTION CARD OUT 2
OPTION CARD OUT 3
MIXER IN
DIRECT OUT
BYPASS
LOOP BACK
BUSSES
HDR
EFFECTS
INSERT

TIP

To learn the functions of the individual routing screens, see the definitions for the SVGA equivalent tabs. These are covered on the preceding pages.

ANALOG IN

The ANALOG IN screen is an example of how all the ROUTING screens appear. The controls found in these screens directly parallel the controls of the SVGA Routing tabs.



PREV PAGE Moves backward through the routing screens.

NEXT PAGE Moves forward through the routing screens.

SELECT PAGE Lets you jump to a specific routing page.

Bussing

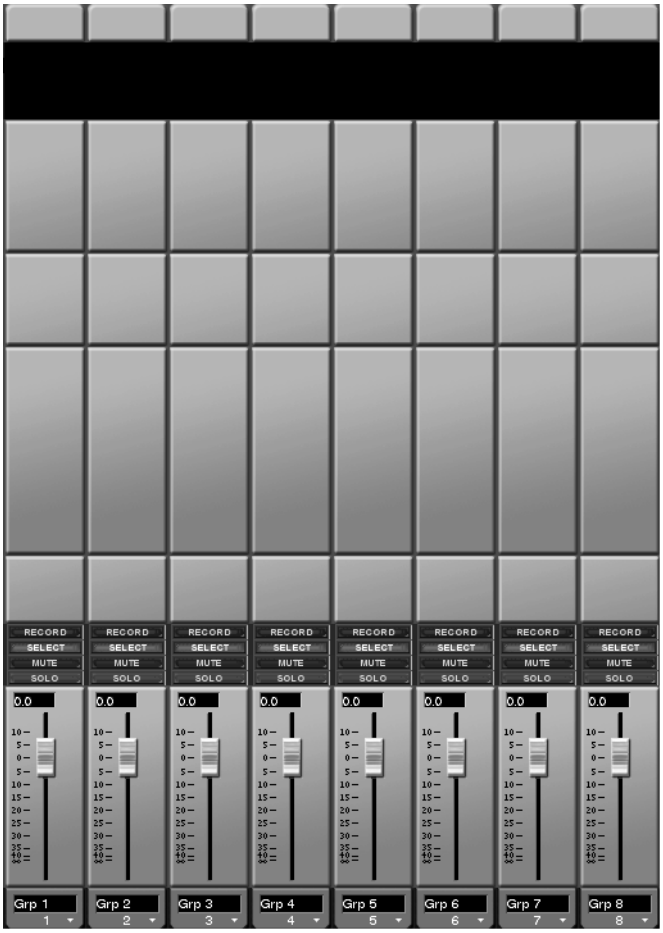
The mixer has a total of eight busses, not including the Cue, monitor (Studio and Control Room outs), and Master L/R busses. Any mixer channel or pre mixer input can be sent to any buss (whether routed through the mixer or not). Buss assign controls are available in both the SVGA and LCD screens.

SVGA Controls

A channel can be assigned to the busses via the SVGA's Channel screen, in the CONTROL module, and directly on a channel in the Mixer screen.

Bus Assign Keys These are the bus assign keys from the CONTROL module of the Channel screen. They look very similar to the assign keys on the mixer channels in the Mixer screen.

Bus Masters Master levels for the busses are reached through the Fader Banks. To see the busses on the SVGA, make sure the Mixer screen is selected (press **MIX** in the **MAIN DISPLAY MODE**). From the **FADER BANK** section, press **BANK MODE** so that the **<PRESET>** LED is on. Then press **BUSS/AUX** to reach this screen.

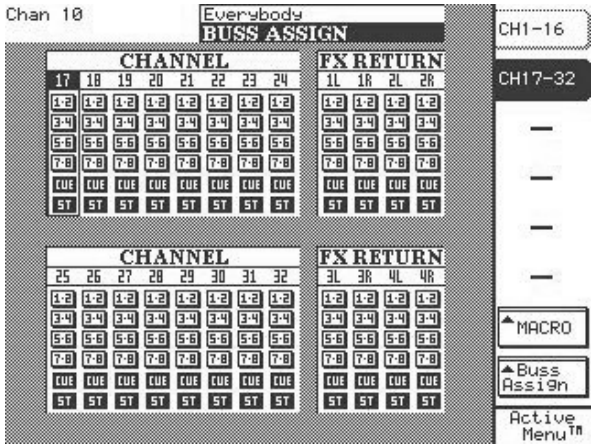


TIP

Keep in mind that it's not necessary to have a Fader screen up just to move a buss level. If a buss fader bank has been recalled to the surface, you can just move the faders directly on the mixer while leaving a different screen on the display.

LCD Bus Controls

From this screen you can assign the mixer channels and effects returns to any of the eight stereo busses, along with the Cue and L/R busses.



To reach the BUSS ASSIGN screen on the LCD, press the **BUSS ASSIGN** key in the **LCD ACCESS** section.

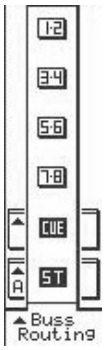
CH 1-32 The bussing pages are set up in two groups of 16 channels each, with the Effects Returns sharing the Channels 17-32 screen. These keys select the channels you want to view.

MACRO These "macro" commands allow busses on all the channels to be turned on or off at the press of a single soft-key.

1-8/ALL OFF Turns any of the eight stereo busses that are on, off (does not inlude the Cue bus).

ST/ALL OFF Unassigns all of the mixer channels from going to the stereo Master L/R bus.

ST/ALL ON Assigns all of the mixer channels to the Master L/R bus.



"Buss Assign" Press the Buss Assign soft-key to open the bus select menu for the selected mixer channel. (Select the mixer channel by pressing **SEL** on the channel you want to bus, or by using the Left/Right arrow keys of the Keypad).

1-2 to 7-8 These keys assign the selected mixer channel to their respective busses.

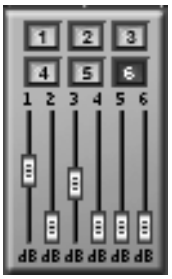
CUE This key assigns the selected mixer channel to the Cue output.

S T This key assigns the selected mixer channel to the Master L/R output.

Aux Sends & Returns

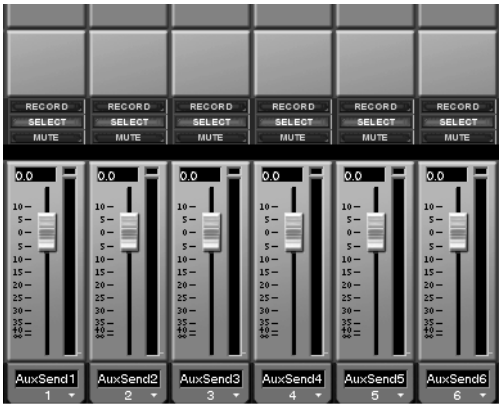
The mixer features 6 Aux Sends and 8 Returns. The Aux Send controls are available from the surface, the SVGA, and the LCD screens. Aux sends can be routed internally, or externally to the four Aux Send jacks on the top panel (and, for that matter, any other external jack using the SX-1's flexible routing). The Returns can accept input from nearly any source, internal or external. Routing for the Returns is configured in the Mixer Routing tab of the SVGA Routing screen.

SVGA Aux Send Controls



Aux send levels can be controlled from the SVGA Channel screen in the AUX SEND module and from the LCD MIXER CHANNEL page. Identical controls (pictured left) are also found on the channels in the Mixer screen. As well, all 6 Aux Sends are also part of the Virtual Channel Strip for each channel.

Aux Send Masters



Master levels for the Aux Sends are reached through the Fader Banks. To see them on the SVGA, make sure the Mixer screen is selected (press **MIX** in the **MAIN DISPLAY MODE**. From the **FADER BANK** section, press **BANK MODE** so that the **<PRESET>** LED is on.

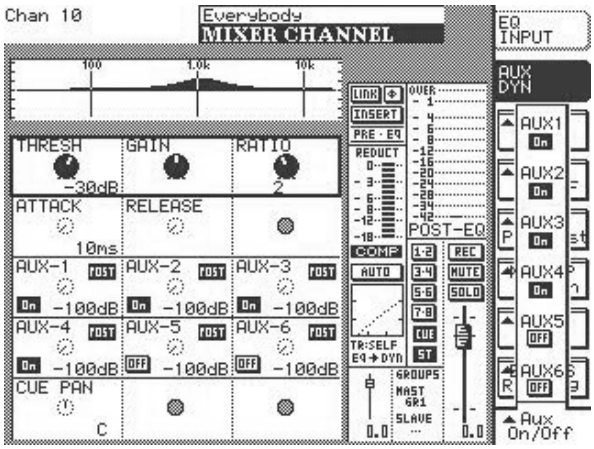
Then press **BUSS/ AUX** to reach this screen.

TIP

Keep in mind that it's not necessary to have a Fader screen up just to move an aux send level. If an aux send fader bank has been recalled to the surface, you can just move the faders directly on the mixer while leaving a different screen on the display.

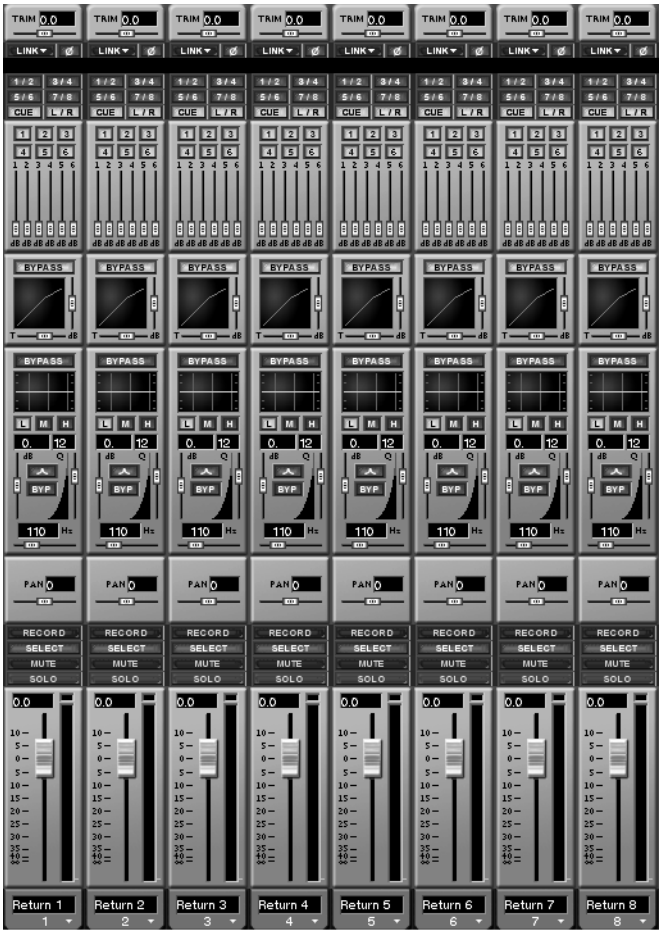
LCD Aux Send Controls

Aux Send controls on the LCD are available directly on the MIXER CHANNEL screen.



Press either **MIXER** or **CHANNEL** in the **MAIN DISPLAY MODE** section. Use the beypad's arrow keys to scroll to the Aux Send field you want to adjust. Then use the soft-knobs to adjust the Aux Sends.

SVGA Aux Return Masters



Master levels for the Aux Returns are reached through the Fader Banks. To see the return levels on the SVGA, make sure the Mixer screen is selected (press **MIX** in the **MAIN DISPLAY MODE**. From the **FADER BANK** section, press **BANK MODE** so that the **<PRESET>** LED is on. Then press **RTN/ GRP** to reach this screen.

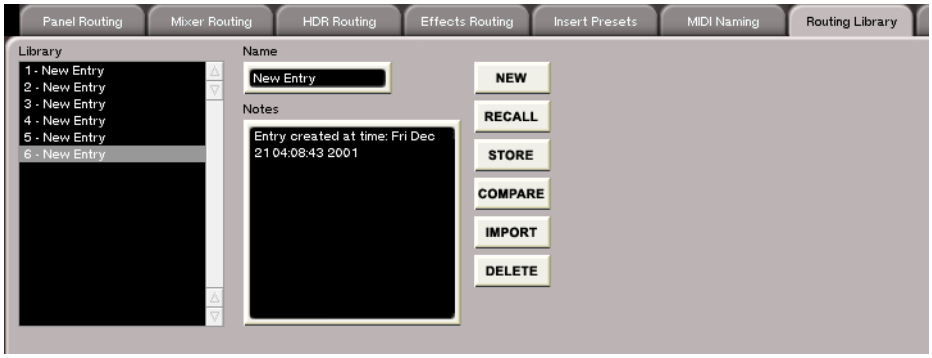
TIP

Keep in mind that it's not necessary to have a Fader screen up just to move an aux return level. If an aux return fader bank has been recalled to the surface, you can just move the faders directly on the mixer while leaving a different screen on the display.

Routing Library Displays

A Library feature is available for saving your custom routing configurations (such that making a library routing entry saves all configurable routing parameters). Dedicated LCD and SVGA screens are available for accessing these features.

SVGA Routing Library Display



From the SVGA ROUTING screen, click on the Routing Library tab. Here you can create, edit and store routing settings.

Library The **Library** window lists the currently available library routing entries.

Name The currently selected library entry appears in this text field. Click once in the text field to highlight the selected library preset's name. Once that's done, the name can be changed. Type in a new name and press [ENTER] from a PS/2 keyboard.

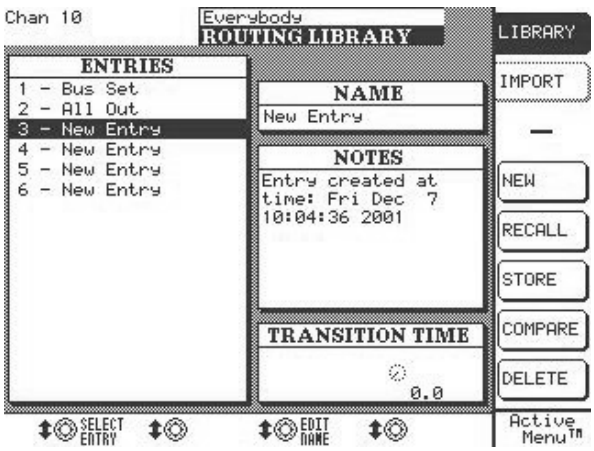
Notes Each library setting can have important commentaries saved right along with the preset. These notes can be edited at any time from a connected PS/2 keyboard.

IMPORT This key lets you import a library entry from another project. Press IMPORT and browse through the available projects listed in the Import Project window. Select the library file you want to import and press OK (or CANCEL to escape the action).

COMPARE Compares the SX-1's current routing state to the last loaded (or saved) routing library preset.

LCD Routing Library Display

From the **LIBRARY** section, press the **ROUTING** key to recall the ROUTING LIBRARY LCD screen. This screen' parallels the Routing Library tab in the ROUTING screen of the SVGA. Use the controls on this screen to store, recall, and name custom routing presets.



IMPORT Press this key to open the screen through which you can import routing presets from other projects into your current project.

SELECT ENTRY Scrolls through the presets listed in the ENTRIES window.

EDIT NAME Allows you to change the name of the currently selected (highlighted) routing preset.

Chapter 11 – Fader Links, Groups, & Banks

Links

It's possible to link any (including aux, effect sends, busses, and MIDI channel faders) odd numbered mixer channel with its adjacent, even numbered channel to form a stereo pair. This feature can be accessed from the SVGA (whenever you see a LINK key), the LCD (from the GROUPS/LINKS screen), or simply by pressing the **SEL** keys for two adjacent channels simultaneously (this move lets you quickly link and unlink channels).

SVGA Fader Links

The Link feature can be accessed from the CONTROL module in the CHANNEL screen. It is also available directly on the channels shown in the MIXER screens.

LINK This is an example of the LINK key in the CONTROL module. It is similar in appearance to the LINK keys found on the mixer channels in the MIXER screens.

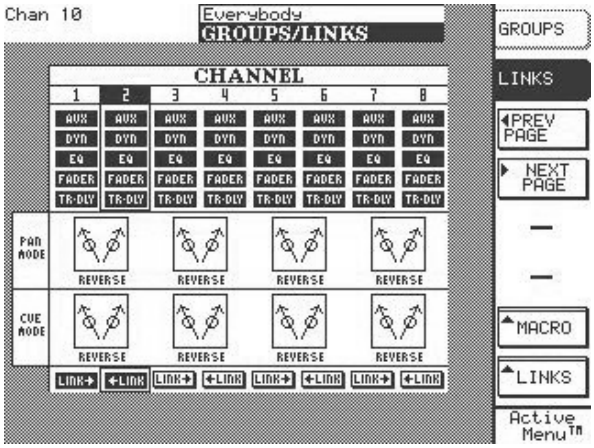
Press the LINK key to gang the selected channel with an adjacent channel (the next even channel if the selected channel is odd, and the previous odd channel if the selected channel is even). The LINK key glows blue when active.

TIP

Right click on the "LINK" arrow to view the channel elements you would like to link: aux send, dynamics, EQ, faders, trim/delay, stereo pan, and cue pan. This trick also works for the channels in the "Mixer" screens.

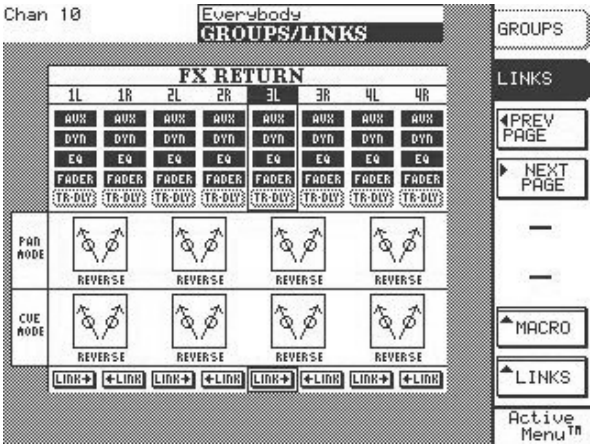
LCD Fader Links

From the **LCD ACCESS** section, press the **GROUPS/LINKS** key to reach the GROUPS/LINKS screen. Then press the LINKS soft-key to reach the LINKS page.

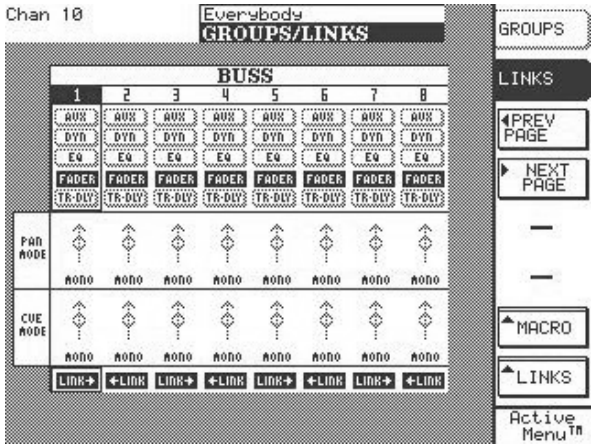


LINKS From this screen you can turn links on and off and control which parameters (such as, EQ, aux sends, and pan) of each channel are actually linked.

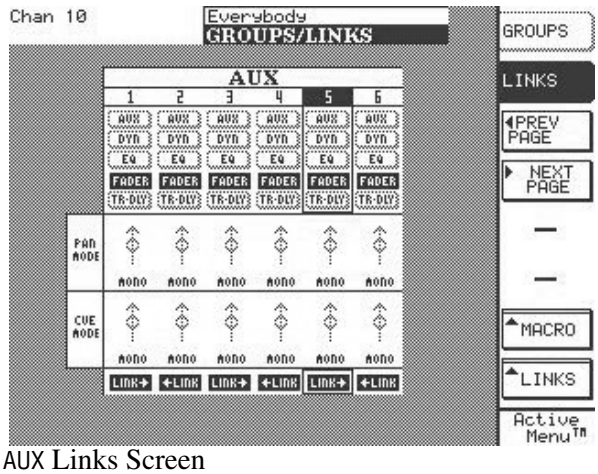
PREV PAGE and NEXT PAGE These keys scroll through the LINKS pages (pictured below).



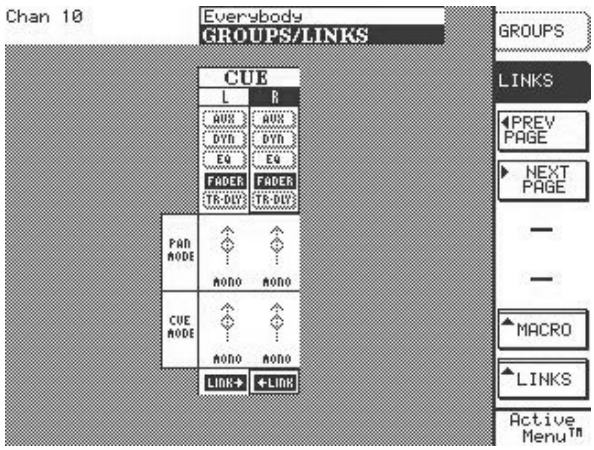
FX RETURN Links Screen



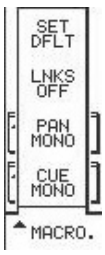
BUSS Links Screen



AUX Links Screen



CUE Links Screen



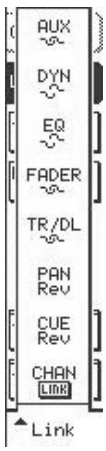
MACRO This key opens the "**MACRO**" dialog where there are several special link-related commands:

SET DFLT Press this soft-key to make the mixer's channel links return to their factory default settings.

LINKS OFF Turns all presently active links off.

PAN MONO Sets the stereo pan for the selected channel to mono.

CUE MONO Sets the cue pan for the selected channel to mono.



LINKS This key opens the LINKS dialog, which contains the selected channel's available parameters for linking.

AUX Makes or breaks the selected channel's Aux Sends link.

DYN Makes or breaks the selected channel's Dynamics link.

EQ Makes or breaks the selected channel's EQ link.

FADER Makes or breaks the selected channel's Fader link.

TR/DL Makes or breaks the selected channel's Trim and Delay link.

CUE Makes or breaks the selected channel's Cue link.

CHAN/LINK Turns the Link function on and off for the selected channel.

Groups

It's possible to group any (including aux, effect sends, busses, and MIDI channel faders) of the mixer channels in two different ways, as stereo pairs or groups containing master and slave faders.

SVGA Fader Groups

The GROUPS module of the CHANNEL screen gives you direct control over the selected channel's associated fader groups.

Press **CHANNEL** in the **MAIN DISPLAY MODES** section to find this module. From here you can add and delete master and slave faders.

Masters This window displays the master faders associated with the selected channel.

Slaves This window displays the slave faders associated with the selected channel.

Add Press the key to select the type of fader you want to add as either a Master or Slave.

DISSOLVE Removes the selected Master fader from the Masters window.

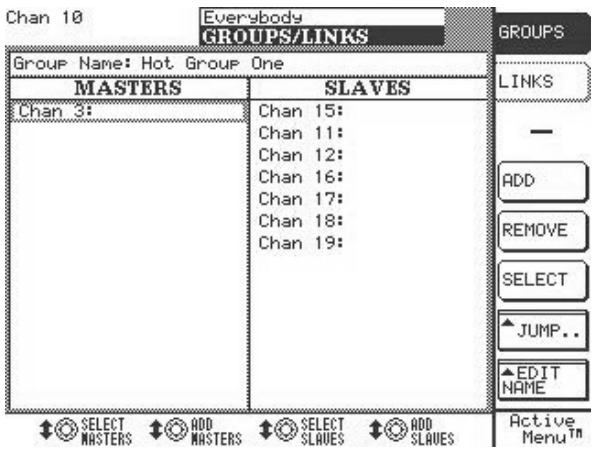
DELETE Removes the selected Slave fader from the Slaves window.

TIP

Step by step instructions for creating a slave group controlled by a Group Master fader are given in just a couple of pages.

LCD Fader Groups

The GROUPS/LINKS screens' GROUPS page parallels the GROUPS module on the SVGA Channel screen.



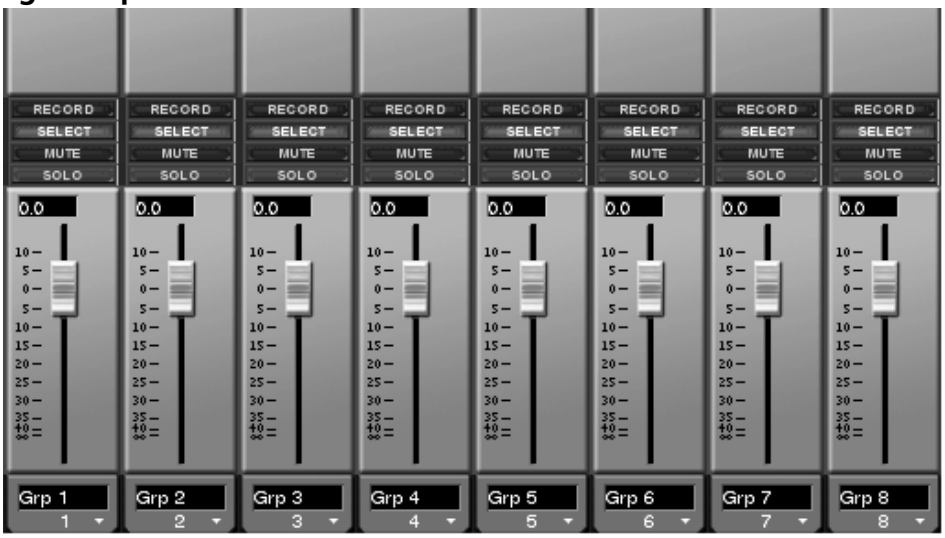
From the **LCD ACCESS** section, press the **GROUPS/LINKS** key to reach the GROUPS/LINKS screen. Then press the GROUPS soft-key to reach the GROUPS page.

SELECT Allows you to select faders for editing. For example, several faders can be simultaneously highlighted and removed.

JUMP Allows you to jump between a project's different fader groups.

EDIT NAME Allows you to name your Fader Groups. This feature is unique to the LCD GUI and is not reflected in the SVGA's GROUPS module.

Understanding Group Masters



Group Masters are faders that are dedicated controllers. No signal actually passes through them - they merely control a group of slave faders. The benefit of using a Group Master instead of a regular mixer channel as a master fader is that you don't waste a mixer channel controlling your slaves.

There are eight Group Masters.

They show up in the Return/Group preset fader bank (pictured here—press the [**RTN/ GRP**] key in the **FADER BANK** section to reach this screen).

To assign a group of slave faders to a Group Master, follow these steps:

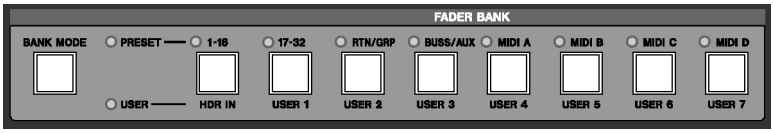
1. **Select a slave fader that is part of the group of Slave faders you want to control. Press the channel's SEL key and then press CHANNEL in the MAIN DISPLAY MODE section to view the slave fader's channel screen.**
2. **In the** GROUPS **module (of the SVGA's** Channel **screen—that you recalled in the last step) under the** Masters **window, click the** Add **arrow.**
3. **From the menu, choose** GRP1 **from the** Group Masters **sub-menu.**
4. **That's it. The first Group Master fader will now control the selected slave's associated group. If you want to add other slave channels to the group, click on the** Add **arrow below the** Slaves **window (in the same module) and select the desired channels.**

Fader Banks

The 16 mixer faders allow level control over all of the SX-1's audio and MIDI channels. The faders themselves are not hardwired to a particular channel, but instead are able to become whatever channel they are assigned (from the obvious 32 mixer inputs to sends and returns, busses, and MIDI tracks).

All the different types of channels can be recalled to the actual faders in "banks" of 16 at a time. These banks are called "fader banks" and can be accessed from the keys in the **FADER BANKS** section on the SX-1's slanted front panel.

Fader Bank Section



Fader banks are available as presets, or you can create your own user defined banks. The keys in this section are for recalling fader banks.

BANK MODE Use the **BANK MODE** key to switch between our preset fader banks or your own custom fader banks. Press **BANK MODE** and then the fader bank (Preset or User) you want to recall.

<PRESET> Indicates that the **FADER BANK** keys will recall the default/preset fader banks (the labels on top of the **FADER BANK** keys—see below for each key's individual description).

<USER> Indicates that the **FADER BANK** keys will recall the user defined fader banks (the labels at the bottom of the **FADER BANK** keys).

1–16/HDR IN Use the **1 - 16 /HDR IN** key to recall audio mixer channels 1 to 16. And, be sure the **<USER BANK>** LED is lit (if not, press **BANK MODE**) and press **1 - 16 /HDR IN** to recall the Hard Disk Recorder inputs 1 to 16.

TIP

The HDR IN bank always controls the master input levels to the HDR. For example, even if the direct out from channel 1 feeds HDR In 1, that channel's level can still be controlled by the HDR Bank.

17-32/USER 1 Use the **17 - 3 2 /USER 1** key to recall audio mixer channels 17 to 32 (which, at default, have the HDR outs routed to their inputs), and your own custom user bank. When recalling the User Bank, be sure the **<USER BANK>** LED is lit (if not, press the **BANK MODE** key).

RTN/GRP/USER 2 Use the **RTN/ GRP/ USER 2** key to recall the audio mixer's fader groups and Return channels, and your own custom user bank. When recalling the User Bank, be sure the **<USER BANK>** LED is lit (if not, press the **BANK MODE** key).

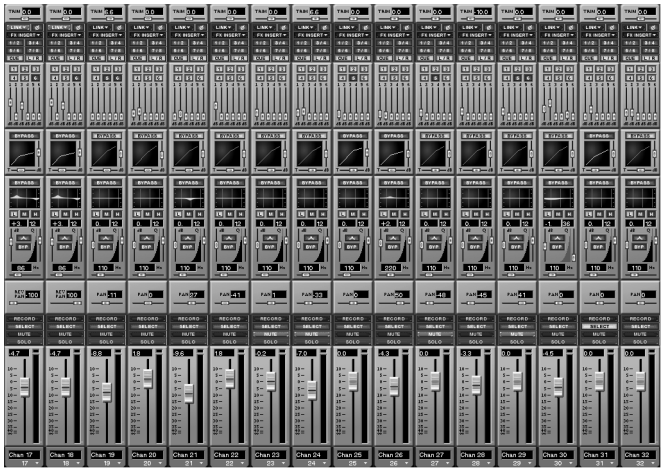
BUS/AUX/USER 3 Use the **BUS/ AUX/ USER 3** key to recall the audio mixer's busses and auxillary returns, and your own custom user bank. When recalling the User Bank, be sure the **<USER BANK>** LED is lit (if not, press the **BANK MODE** key).

MIDI A/USER 4 to MIDI D/USER 7 Use the **MIDI A/ USER 4** to **MIDI D/ USER 7** keys to recall MIDI sequencer channels 1-16 for port A through 1-16 for port D, and your own custom user banks. When recalling the User Bank, be sure the **<USER BANK>** LED is lit (if not, press the **BANK MODE** key).

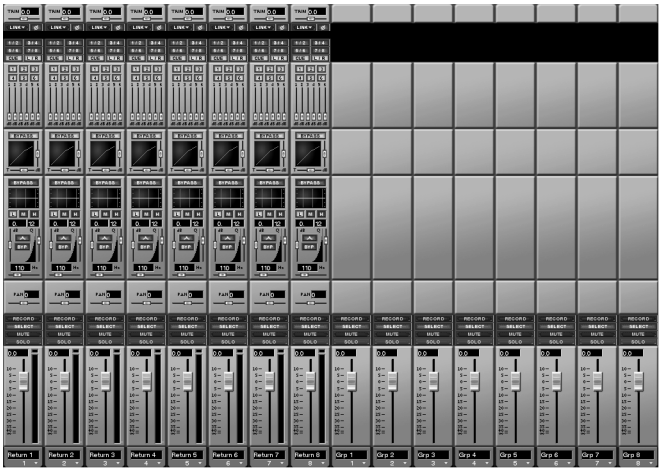
SVGA Fader Banks

In the **FADER BANK** section each key has an associated SVGA screen. The User Banks screens reflect your own custom bank setup (explained in the following pages).

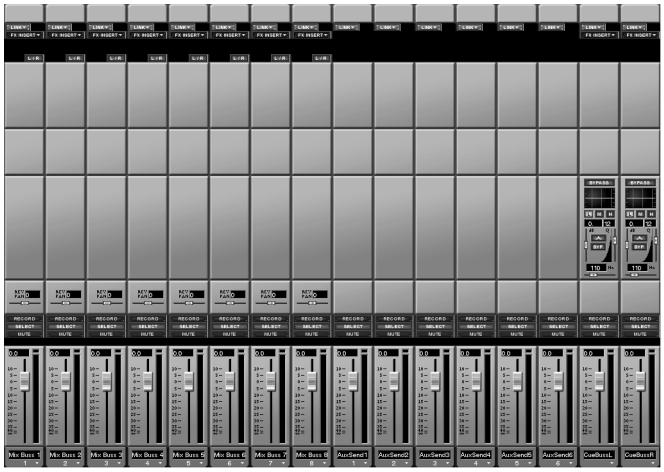
From the **MAIN DISPLAY MODE** section, press **MIXER/ USER BANKS** and then the preset fader bank screen you would like to view: Channels 1 –32 (in two groups of 16), Return/Group, Buss/Aux, and all the MIDI channel banks (in four groups of 16 channels each for a total of 64 MIDI channels). See the preset fader bank screen examples below.



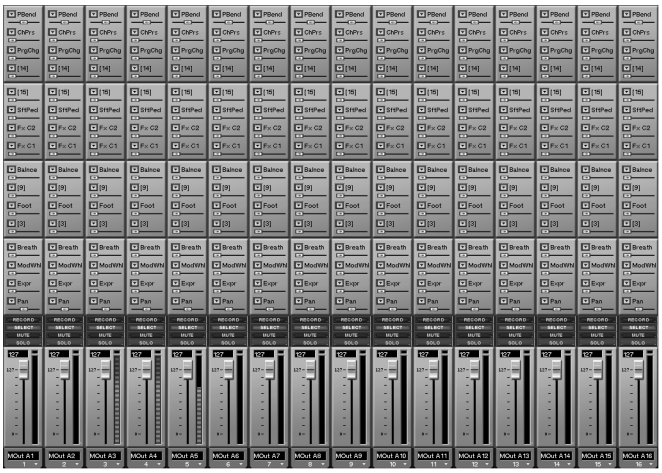
Mixer channels



Return channels & group faders



Buss & Aux channels



MIDI channels

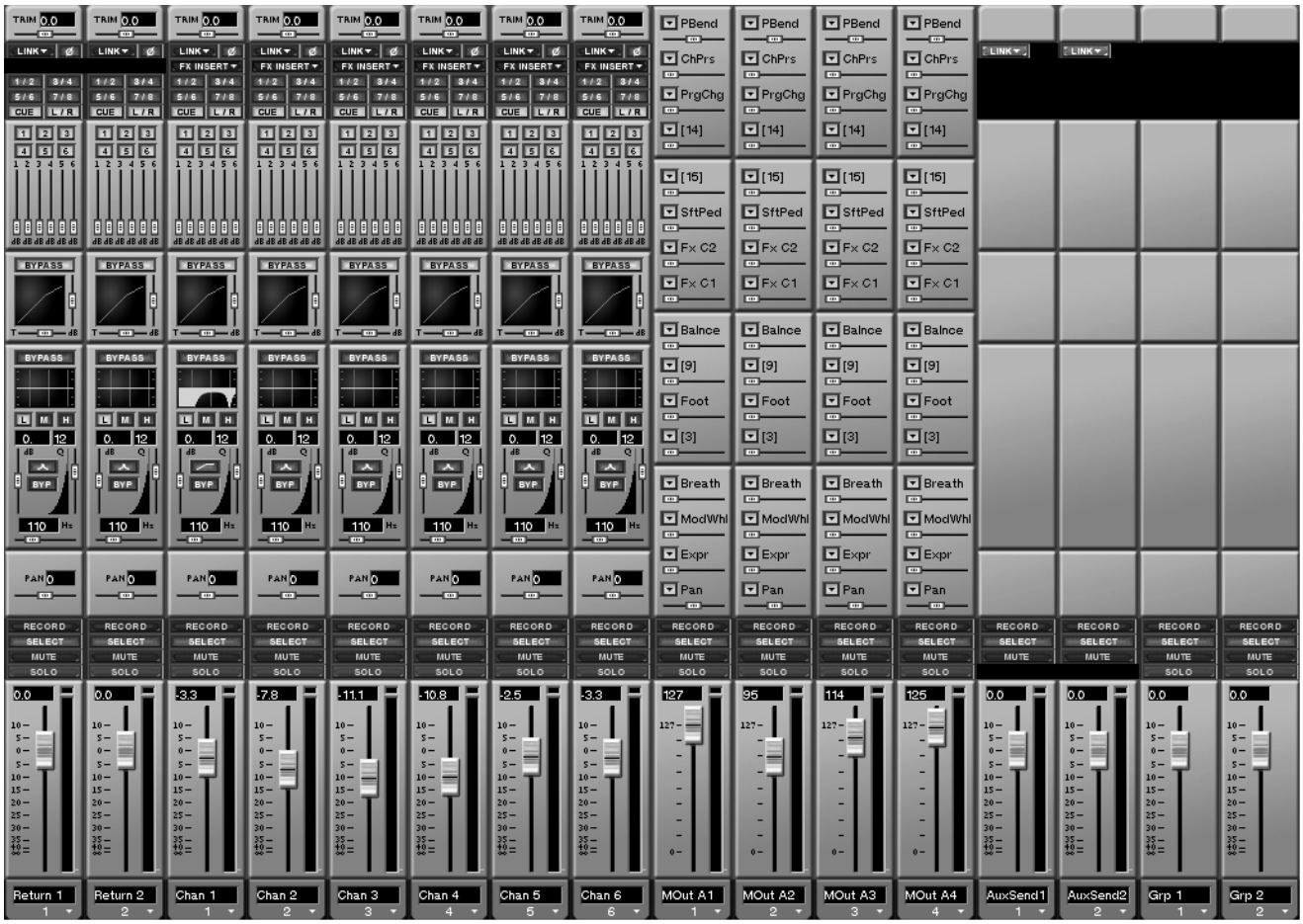
TIP

The **MIXER/ USER BANKS** *key's default screen is the same as the preset fader bank* **1 - 16 /HDR IN** *screen (showing mixer channels 1-16). Before pressing any* **FADER BANK** *keys, when you first press* **MIXER/ USER BANKS**, *it recalls this screen. Otherwise, the SVGA* Mixer *screen always follows the selected bank.*

USER Fader Banks

From the **MAIN DISPLAY MODES** section, press **MIXER/ USER BANKS**. Make sure that the **BANK MODE** LED is set to **<USER>**, if not, press **BANK MODE**. Then select the User Bank key for the user bank screen you want to view.

The example below has several different channel types arranged on a single screen and saved as a User Bank for quick recall.

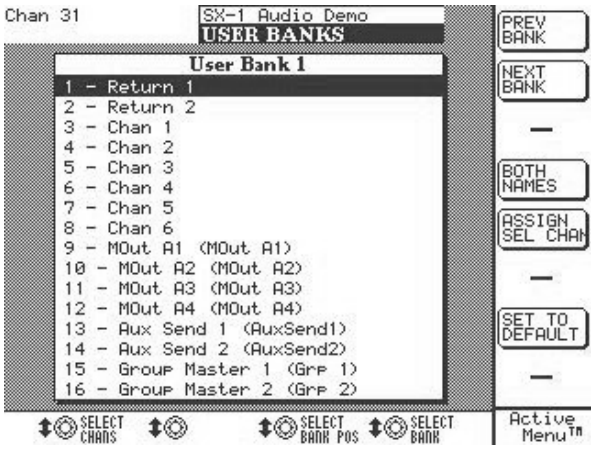


TIP

To create a User Fader bank in the "Mixer" screen, first make sure that the **BANK MODE** *key is set to* **<USER>***. Then right-click on the arrow at the bottom of a channel to select the type of channel you want to assign to that display strip.*

LCD User Fader Banks

Press **SHIFT** on the **Keypad** and then the **MIXER/ USER BANKS** key in the **MAIN DISPLAY MODE** section. This recalls the USER BANKS screens.



PREV BANK Scrolls forward to the next User Bank.

NEXT BANK Scrolls back to the previous User Bank.

BOTH NAMES Allows the display of both the pre-set system names and user defined names.

ASSIGN SEL CHAN Selects a channel to be edited.

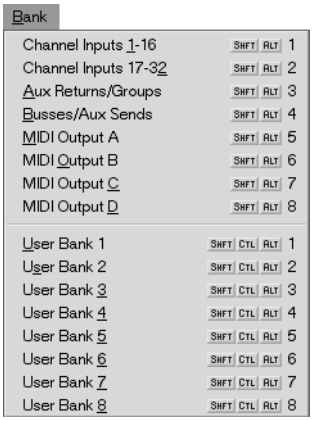
SET TO DEFAULT Returns the currently selected User Bank back to its default setup.

SELECT CHANS Selects a channel to be edited.

SELECT BANK POS Selects the channel to be positioned at the highlighted slot.

SELECT BANK Selects the bank to be edited.

SVGA Bank Menu All Fader Bank screens can also be recalled directly from the menu bar's Bank menu.



TIP

Note the PS/2 keyboard commands after the menu items. Use the PS/2 keyboard as another alternative to pressing **FADER BANK** *keys.*

Channel Overview Screens

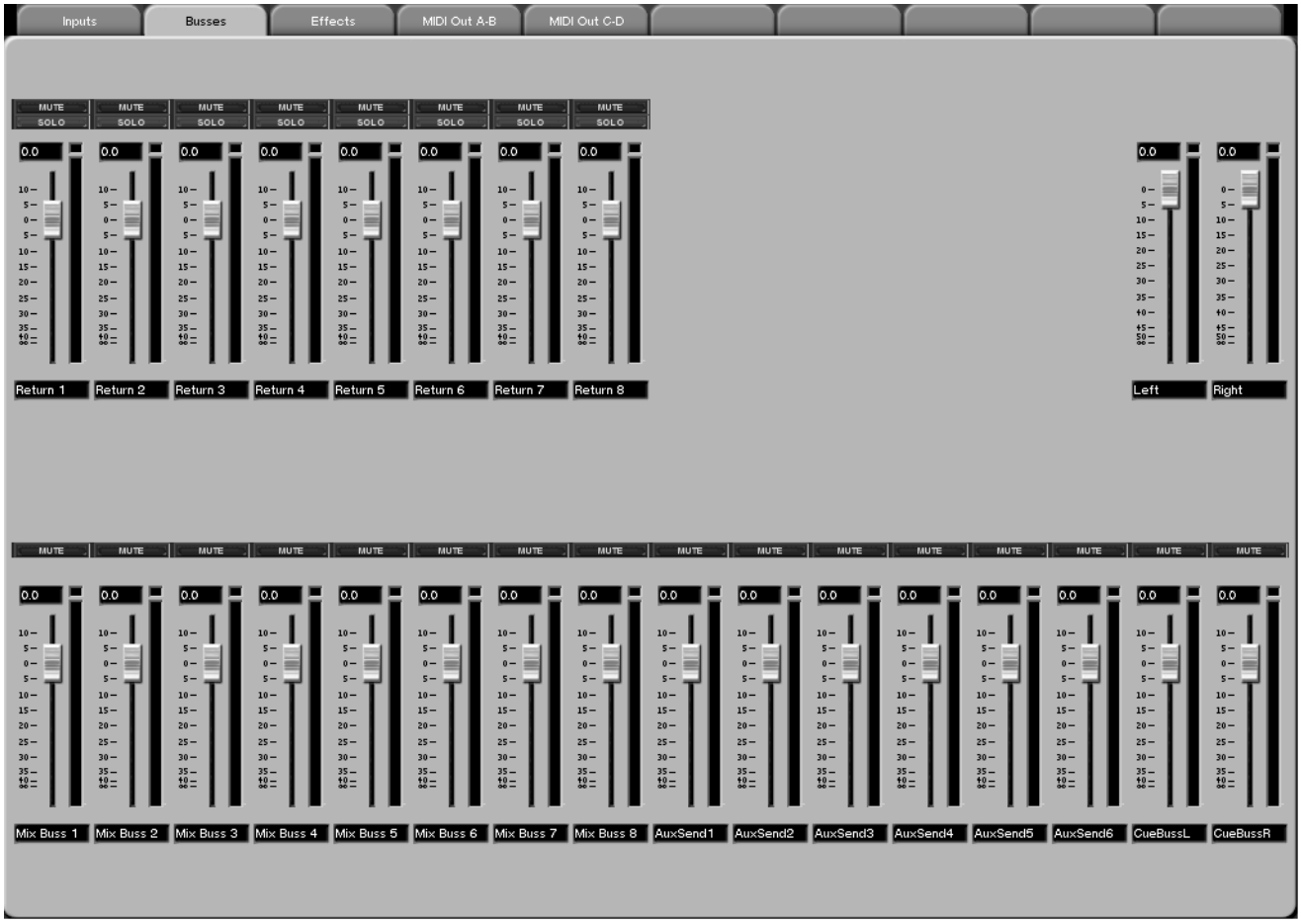
The Overview screens are recalled by pressing the **OVERVIEW** key in the **MAIN DISPLAY MODE** section, and then clicking on the corresponding tab for the overview you want to see. These screens show all the signals running through the mixer at a glance.

TIP

The Overview screens can also be recalled from the View *menu on the SVGA screen's Main Menu Bar.*

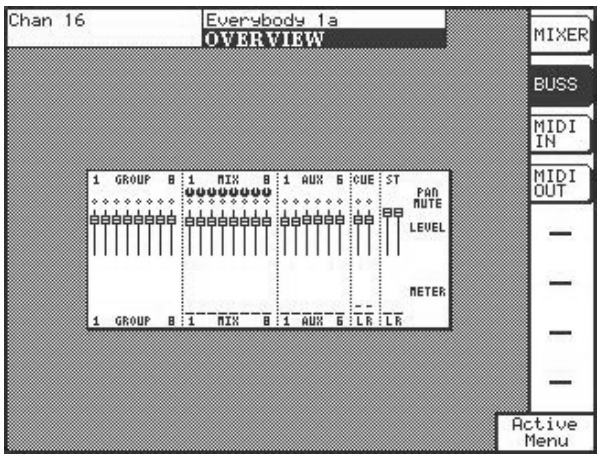
SVGA Bus Overview Screen

The returns, mix busses, aux sends, and Master L/R bus are displayed in this overview.



LCD Bus Overview Screen

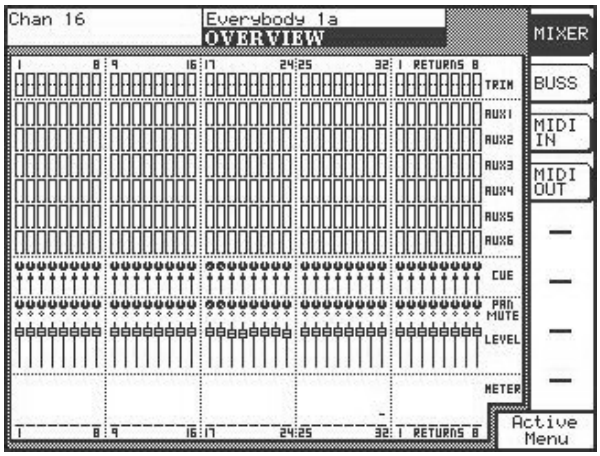
Press **OVERVIEW** from the **MAIN DISPLAY MODE** section, then press the BUSS soft-key.



Use this screen to view the fader positions of the channel busses, group masters, aux sends, cue and L/R Master busses. The pan positions for the channel busses are also shown.

LCD Mixer Overview Screen

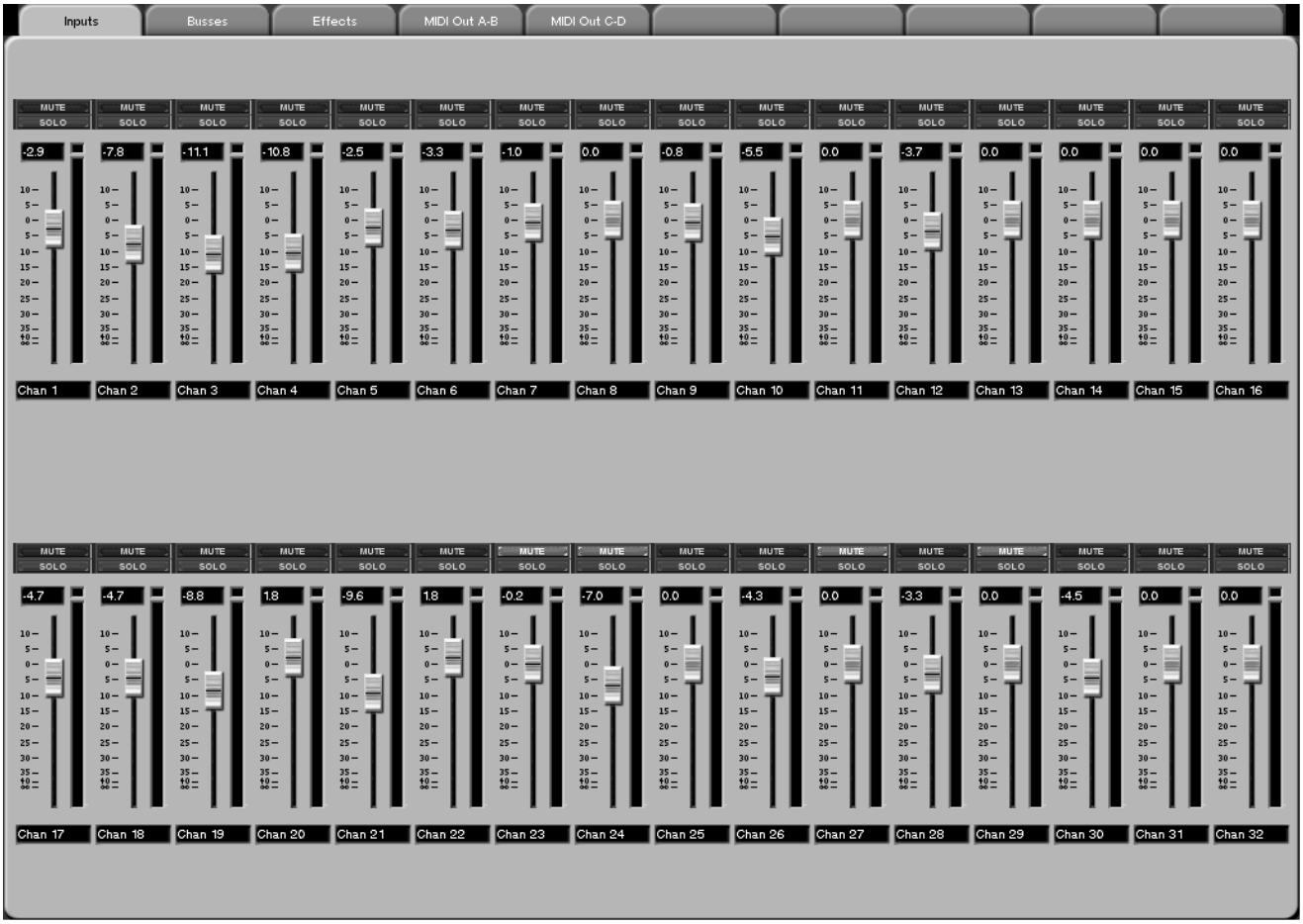
Press **OVERVIEW** from the **MAIN DISPLAY MODE** section, then press the MIXER soft-key.



This screen shows the fader and pan positions for all of the mixer's input channels and cue sends. Mute switches and trim are shown for the mixer channels as well. Aux send levels are also displayed here.

SVGA Input Overview Screen

All 32 of the mixer channel inputs are displayed in this overview.



TIP

The meters of the SX-1's SVGA screens are able to display three signal weights at once: Peak, Average, and Current. The white dot to the right of the meter (when signal is present) is RMS (or Average), the peak LED that holds for a few seconds is Peak, and the regular meter shows current amplitude (Current).

Chapter 12 – Automation

Understanding Modes & States

The SX-1 can write automation moves to any of the mixer's controls, including: faders, mute, pan, surround, EQ, dynamics, aux send, buss assign, input (trim and delay), library, and cue. Automation can also be written to the effect plug-ins' parameters.

The automation functions are best understood when broken into two categories - those functions that are global in scope and those that are controller specific. We'll call the first category Global Modes, and the second, Controller States. Global Modes cause all controllers to respond in a way that is defined by each individual controller's State. A controller's State refers to its current automation condition — which in turn determines how it will react to the Global Mode.

While Global Modes can be turned on and off, a controller's State is always active (even if its automation State is Off, which is still a State). For example, a controller whose state is Automatic will read pre-existing automation data with no Global Mode active. However, when Global Write is enabled the controller will also (in addition to reading the pre-existing data) write automation over its pre-existing data when the controller is moved. Each of the automation's Global Modes and Controller States are explained on the following pages.

TIP

The SX-1's faders are touch sensitive. During automation, they sense that they are being touched through the stray capacitance in your fingertips. To insure that the touch-sensitivity of the faders is responding properly, always use the pads of your fingers to move the faders. If you use another device (such as a pencil, ruler, or even your fingernail), the fader will not register as having been touched.

Controller States

There are six different Controller States:

Automatic (Auto)

This is a controller's default automation state. It is highly flexible, as it will change its behavior depending on the status of the Global Modes and whether or not it is being touched.

For example, when a control is in Auto and the transport is running, the control enters *write ready* if the Global Write LED is lit, or *trim ready* if the Global Trim LED is lit. The control reads pre-existing data (if any) until it is moved, and then enters the appropriate state (writing or trimming). It is possible for a single control, or a group of controls to drop into and out of writing and trimming in one pass.

Static

During the course of an automated mix, some controls require movement (Dynamic automation) while others remain stationary throughout the track. The position of these controls can be saved as part of the mix using the Static Control State. A control in Static will have its position automatically updated in the current project's mix file whenever that control is moved, regardless of whether a Global Mode is active.

Write

A control in Write Status behaves just as if it were set to Auto, and Global Write was on. This status does not require that a Global Mode be enabled to enter *write ready,* as the control enters that status the moment Play is depressed. Any movement of the control while the transport is running will overwrite pre-existing data.

Safe

Any control in Safe will only read existing static or dynamic automation, regardless of the Global Mode. Moving a control in Safe will not write any automation data nor affect the audio passing through that control.

Off

Use this selection to turn a control's automation functionality off. A control that is Off will neither write or playback automation data, regardless of the Global Mode. However, moving a control that is Off will affect its audio. Though unlike the Static Controller State, the new, final resting position of the control is not stored to the project's mix file.

Global Modes

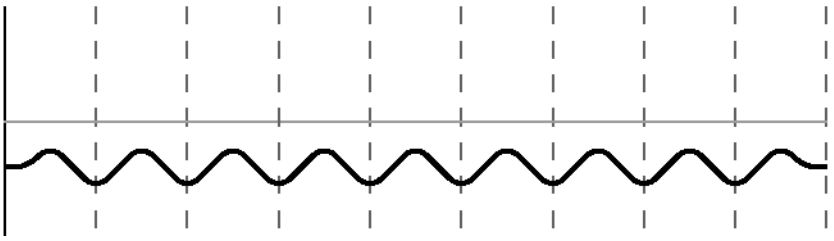
There are three different Global Modes:

Global Write

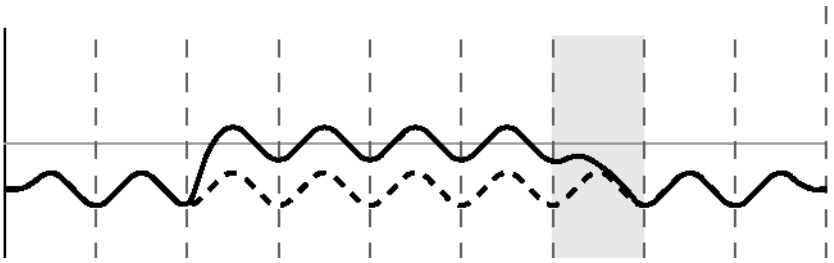
Think of this mode as "automation-record-ready". When Global Write is enabled, and the transport is moving, all the controls that are in Auto will read pre-existing automation data until they are moved. As soon as you move a control, automation will begin writing for that control, overwriting any pre-existing data.

Trim

During a mix, sometimes there are sections when a control's mix moves are perfect but the overall level needs to be raised or lowered. To change such a section's level without affecting its contours (the peaks and valleys of the automation data), use Global Trim Mode. The diagram below illustrates how Trim will affect the pre-existing automation data when the conroller's State is in Auto.



Before Trim

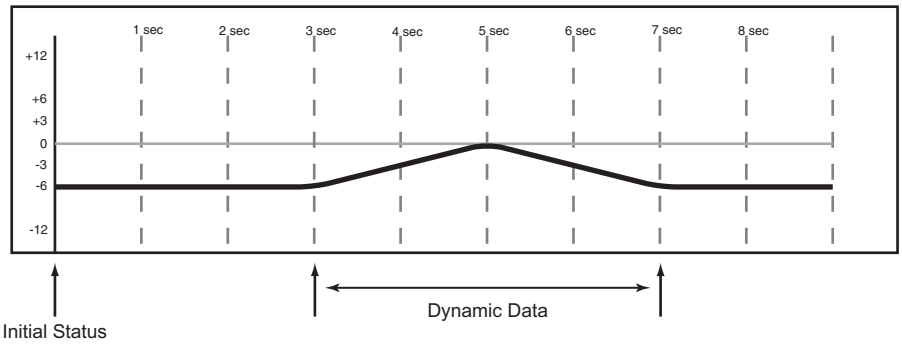


After Trim

Revert time

Init Edit

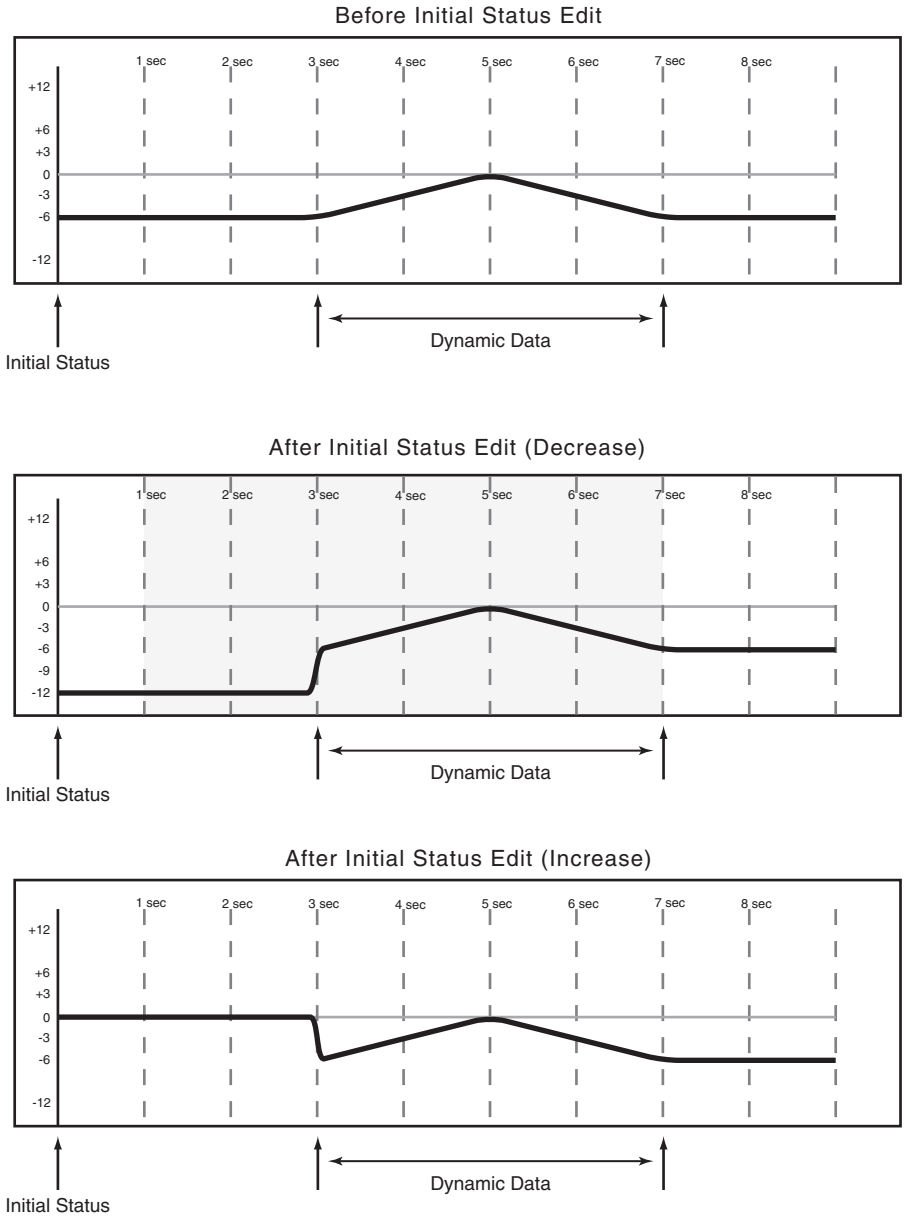
The Initial Status of a control is its value before the first dynamic mix move is present. Until dynamic mix moves are written to a control, there is no difference between the Initial Status of a control and its position were it set to Static. When dynamic mix moves are written to a control, and the controller is in Auto, the controller becomes dynamic. Any change to the mix data on such a control takes into account both its Initial Status and any dynamic automation. The illustration below shows what Initial Status looks like with respect to dynamic automation data.



Once a control contains dynamic automation data, any new mix moves written to that control will be dynamic mix moves as well. If it becomes necessary to alter a control's starting point (Initial Status) before the first dynamic move written, Init Edit is used.

You can adjust any control to change its Initial Status. In the case of faders, moving the fader element while in Init Edit will change its Initial Status to reflect its new setting. In the case of keys and knobs, pressing a key while in Initial Edit will change its Initial Status to reflect its new setting. The illustration

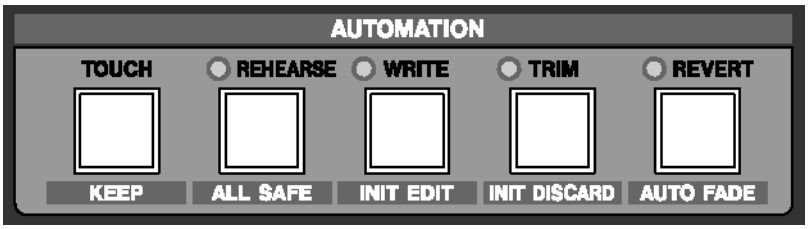
below shows how an Init Edit operation on a controller set to Auto would look.



Rehearse Functionality

Rehearse This is a special automation setting that allows you to practice or experiment with mix moves without actually writing them. It works with all the Global Modes.

Automation Controls



Front Panel Controls

All the automation modes can be entered from the SX-1's front panel as well as through associated LCD and SVGA screens. However, the front panel controls give you direct and immediate access to the automation modes without needing to be on an automation screen.

The keys in this section access most of the mixer's automation States and Modes.

TOUCH/KEEP Use the **TOUCH/ KEEP** key to enable touch automation. To enter the Touch automation mode, first press the **WRITE/ INIT EDIT** key (make sure its associated LED is illuminated) and then **TOUCH/ KEEP**.

Pressing **SHIFT**+**TOUCH/ KEEP** executes a "Keep Mix" command.

REHEARSE/ALL SAFE The **REHEARSE/ ALL SAFE** key enables the write automation Rehearse mode. Press **SHIFT**+**REHEARSE/ ALL SAFE** to prevent automation from being written at all.

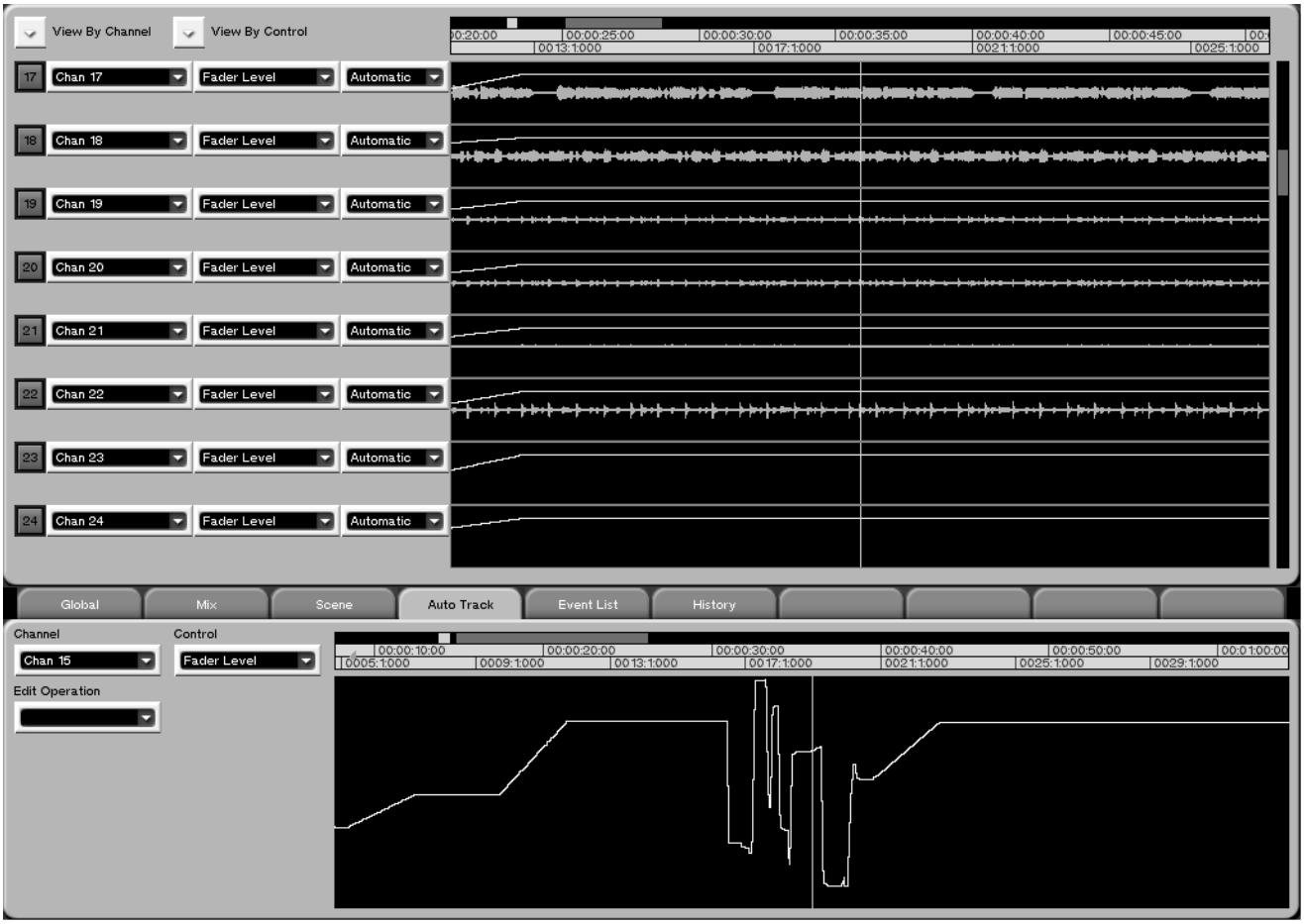
WRITE/INIT EDIT Use the **WRITE/ INIT EDIT** key to enable writing automation data. The Write mode must be enabled (as indicated by the **WRITE/ INIT EDIT** key's associated LED) in order for touch automation to function. Press **SHIFT**+**WRITE/ INIT EDIT** to initialize the last automation edit.

TRIM/INIT DISCARD The **TRIM/ INIT DISCARD** key enables the Trim automation mode. Trim automation allows you to add or subtract values from your current automation data. For example, if automation data already exists, entering the Trim mode and than pushing the fader up will add this extra value to the track's already recorded automation. Pressing **SHIFT** + **TRIM/ INIT DISCARD** throws out the previous automation initialization edit.

REVERT/AUTO FADE Press the **REVERT/ AUTO FADE** key to cause the current automation data to return to its previous value. The time of the revert can be set in the Global tab. **SHIFT**+**REVERT/ AUTO FADE** automatically fades the Master Fader out over a specified time (this time is also set from the Global tab).

SVGA Automation Screen

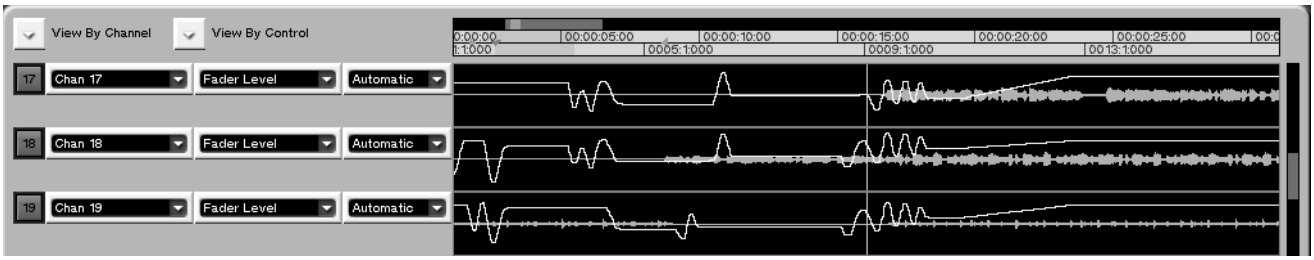
From the **MAIN DISPLAY MODE** section, press the **AUTOMATION** key to reach the Automation screens. These screens provide control of all the SX-1's automation parameters.



TIP

Working with data in the AUTOMATION *screen is very similar to working with audio or MIDI data in the* TRACK *screen. Most of the same editing and selection commands and tools apply to these regions as with audio and MIDI regions.*

Automation Track Area



This area works in much the same way the Tracks channels work on the TRACK screen. Regions of automation data can be selected and edited just as if they were MIDI or waveform data (for more on editing tools and commands, see pg. QQQ).

View by Channel Click on the arrow to select a channel to view. This allows you to view different controllers for the same mixer channel or effects plug-in at the same time. All the automation tracks will update to show the selected channel.

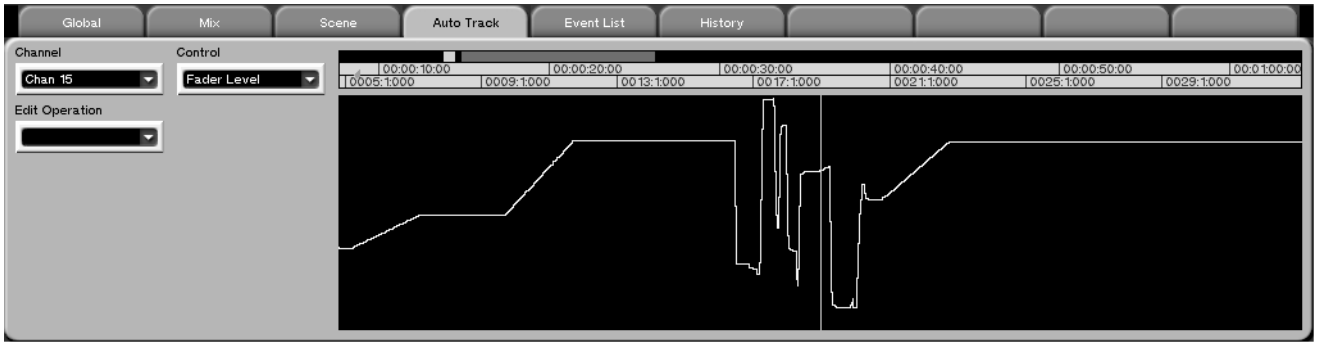
View by Control Click on the arrow to select a controller type to view. This allows you to view the same controller for several different mixer channels or effects plug-ins at the same time. All the automation tracks will update to show the selected controller type.

Chan 1 This field shows the name of the mixer channel or effect plug-in displayed in the automation track window. You can click on the arrow to select a channel to view.

Fader Level This field shows the name of the controller displayed in the automation track window. You can click on the arrow to select a controller to view.

Automatic Click on the arrow to select the controller's automation State. The available choices are Auto, Static, Write, Safe, and Off.

Auto Track



This tab works in much the same way the Waveform tab works in the TRACK screen. Here you can view a single controller's automation data and select and edit that data just as if it were a MIDI controller or a waveform. From the **MAIN DISPLAY MODE** section, press **AUTOMATION**, then the Auto Track tab. Also see Chapter 19 for tool editing.

Channel Click on the arrow to select a channel to view. This field shows the name of the mixer channel or effect plug-in displayed in the tab's track window.

Control Click on the arrow to select a controller to view. This field shows the name of the controller displayed in the tab's track window.

Edit Operation Click on the arrow to select the type of edit operation you want to perform on your selected region. The choices are:

Insert Library Entry Recall This operation allows you to store the recall of a library entry as an automation event. You can define which library (EQ or Dynamics) an individual preset is recalled from, and where the recall event will be inserted. You can also select a different transition time for each automated recall.

Event Editor This operation provides a register for modifying the time stamp of the automation event.

Move Allows you to nudge, by fine or gross amounts, the automation data of your selected region.

Render Library Recalls Use this function to take a single library preset recall event and expand the preset's processors' individual parameters into the host automation track. For example, one EQ library recall event would be expanded so that all of its EQ settings were listed as separate events on the automation track.

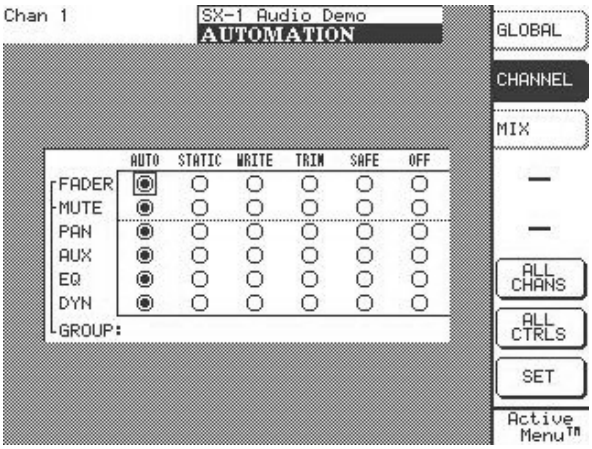
Smooth Events Allows you to thin out the automation data of your selected region. Several thinning choices are available, from very fine to very gross.

TIP

Smoothing evens out automation moves by deleting any unnecessary data that may cause jittering. For example, jumpy automation can increase over time as multiple Touch passes are made over a region. Performing a "Smooth Events" edit on such a region will "smooth" out the rough spots.

LCD "CHANNEL" Screen

On this screen you can define the type of automation assigned to each controller of your selected mixer channel. This screen also comes in handy as an overview of a channel's automation state.



From the **MAIN DISPLAY MODES** section, press **AUTOMATION** and then the CHANNEL softkey to reach this screen.

ALL CHANS Use this key to assign a State to all the mixer's channels. Press this key, assign your controller States, then press SET.

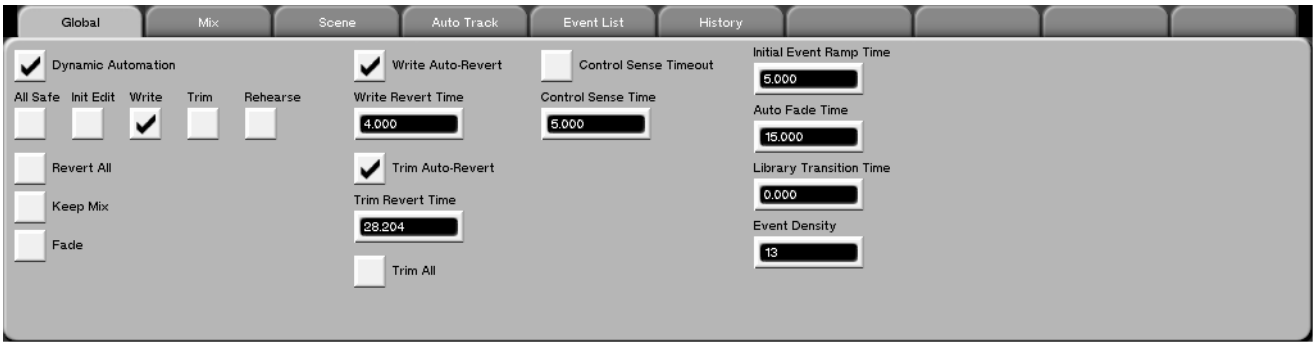
"ALL CNTRLS" Use this key to assign a State to all the mixer's channels for a selected controller. Press this key, assign a state to the selected controller, and then press SET.

SET Use this key to enter the ALL CHANS or ALL CNTRLS selection.

Global Controls

The Global screen houses parameters for defining how automation will operate in the current project.

SVGA Automation Global Tab



Dynamic Automation Enables dynamic automation (for example, the moving faders).

All Safe Enables the automation All Safe mode, where no auto data is generated.

"Init Edit" After dynamic automation is already recorded, check this box to enable changing the initial value of the automation data. For example, to change the initial start position of a fader before the first automation move.

Write Enables Global Write mode.

Trim Enables Global Trim mode.

Rehearse Enables Global Rehearse mode.

Revert All Click to revert the most recently moved controllers back to their original values.

Keep Mix Press this button to save your current mix. The saved mix is added to the project's mix files. You manage these files from the Mix tab (explained on pg. QQQ) of the SVGA's Automation screen.

Fade Click to begin an auto-fade on the Master fader.

Write Auto-Revert Enables auto-revert during Write automation. Auto Revert moves the control back to its original value after the last touch event.

Write Revert Time Determines the amount of time it takes, after the control is released, for a Write move to return to its original value.

Write To End (for Write mode): Checking this box turns auto revert off completely - in such a way that the value of the control in question never reverts and stays at its present value until the end of the project.

Trim Auto-Revert Enables auto-revert during Trim automation.

Trim Revert Time Determines the amount of time it takes, after the control is released, for a Trim move to return to the track's original value (see the Before and After Trim figures on pg. QQQ).

Write To End (for Trim Mode): Checking this box turns auto revert off completely - in such a way that the value of the control in question never reverts and stays at its present value until the end of the project.

Trim All When enabled, a Trim operation will be applied to all mix moves from the beginning of a mix to its end, regardless of the transport's position within the program. This allows you to change the overall level of a control and maintain all pre-existing mix moves on that control while listening to the program at any time code location.

Control Sense Timeout This is used for controls that are not touch-sensitive. From the last recorded event, the SX-1 will wait the duration of the Control Sense Time (see below) and then revert.

Control Sense Time Adjusts the time for the Control Sense Timeout.

Initial Event Ramp Time The time it takes for a controller's new position to return to its initial position.

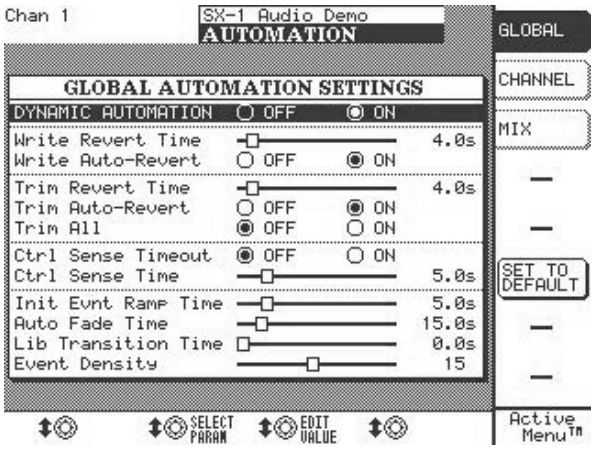
Auto Fade Time Enables the Master Fader auto fade function (pg. QQQ).

Library Transition Time The amount of time it takes for controllers to move from their current state to the new settings of a just recalled library preset.

Event Density Determines the events per second recorded during automation. The more events that are used to describe a move, the smoother the move is.

LCD "GLOBAL" Screen

This screen mirrors the GLOBAL automation tab of the SVGA Automation tracks screen. Most of the parameters found on this screen are identical to the parameters found in the SVGA Global automation tab and are explained on the previous pages. Only those parameters that are unique to this LCD screen are explained here.



From the **MAIN DISPLAY MODES** section, press **AUTOMATION** and then the **GLOBAL** soft-key to reach this screen

SET TO DEFAULT Returns the currently selected parameter back to its default setting.

Operations Examples

The following examples and explanations are intended to help you better understand the SX-1's automation protocols. In each case of an operation, a brief explanation is given on how the SX-1's automation engine will respond.

Writing Mix Moves

Before or after pressing **PLAY**, press **WRITE** (in the **AUTOMATION** section) so that its indicator lights. Perform your desired mix moves.

With the console in Global Write mode, any movement of a control while the HDR is in play is written to that control by the automation system. In the case of the touch-sensitive faders, writing begins when a fader is touched. In the case of soft-knobs, writing will begin when the control is moved. Once dynamic mix moves have been written to a control, that control is in Auto Status in order to play back the Dynamic automation. Controls that have not had mix moves written to them remain in Static mode, even if those controls are on the same channel as a control that has had dynamic mix data written to it.

Revert Time

When a control stops recording mix moves, it "reverts" to the setting that existed before recording the move. The previously existing setting could be a dynamic mix move or a static control position. The amount of time it takes to make a smooth match from the end of the recorded mix move to the previously existing setting is called the *Revert Time*.

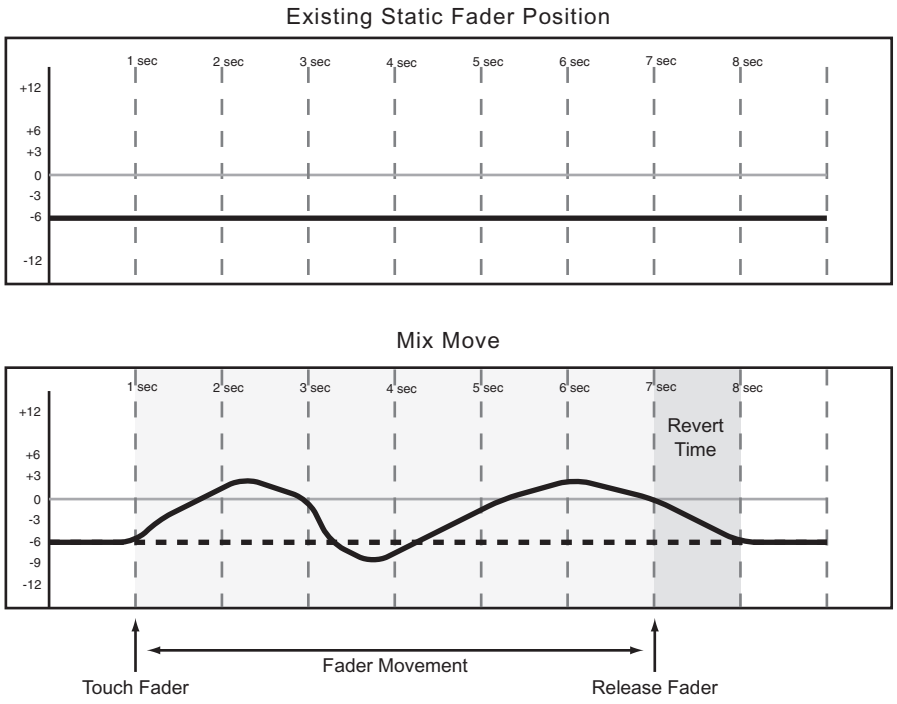
A Revert Time is applied even past the point where the playhead is stopped to ensure a smooth transition between the new mix move and the control's previous setting.

Auto Revert Choices With AUTO REVERT Write (or Trim) enabled, the automation system stops writing mix moves automatically on a per control basis without the need to end writing manually. That is, controls stop writing mix moves at different times, depending on when they were released (faders) or when movement ended (soft-knob controls).

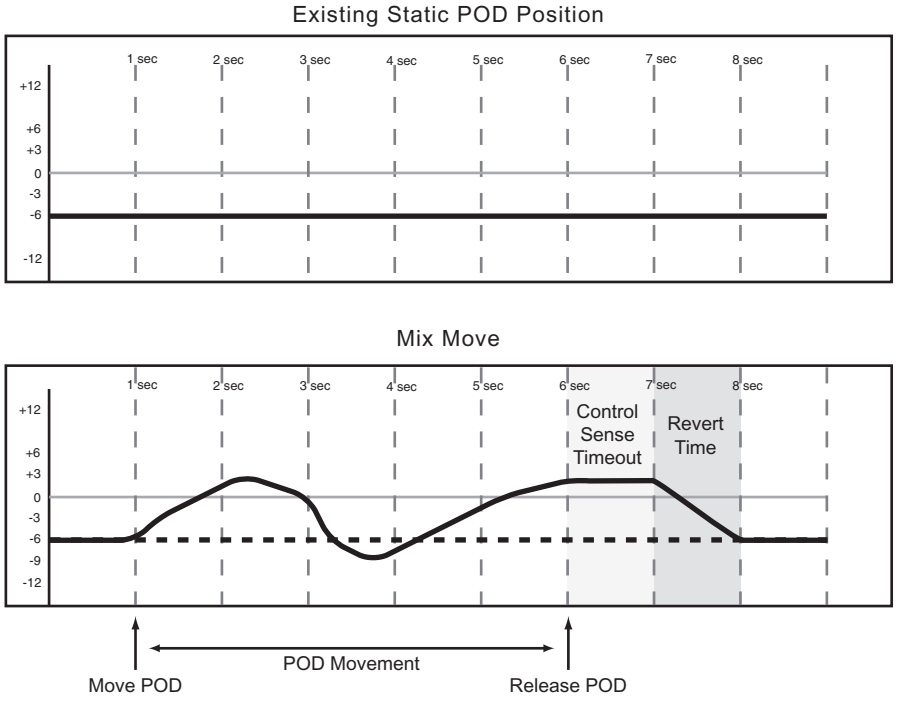
In the case of touch-sensitive faders, reverting begins when the fader is released. In the case of soft-knob controls, reverting begins when the CONTROL SENSE TIMEOUT has expired without the control being moved. CONTROL SENSE TIMEOUT allows the soft-knob controls to respond as if they are touch-sensitive (even though they are not).

When a Revert occurs, the control smoothly matches back to its previous value, based on the set value of the Revert Time. The previous control value could be a control's Static position or a control's Dynamic mix moves.

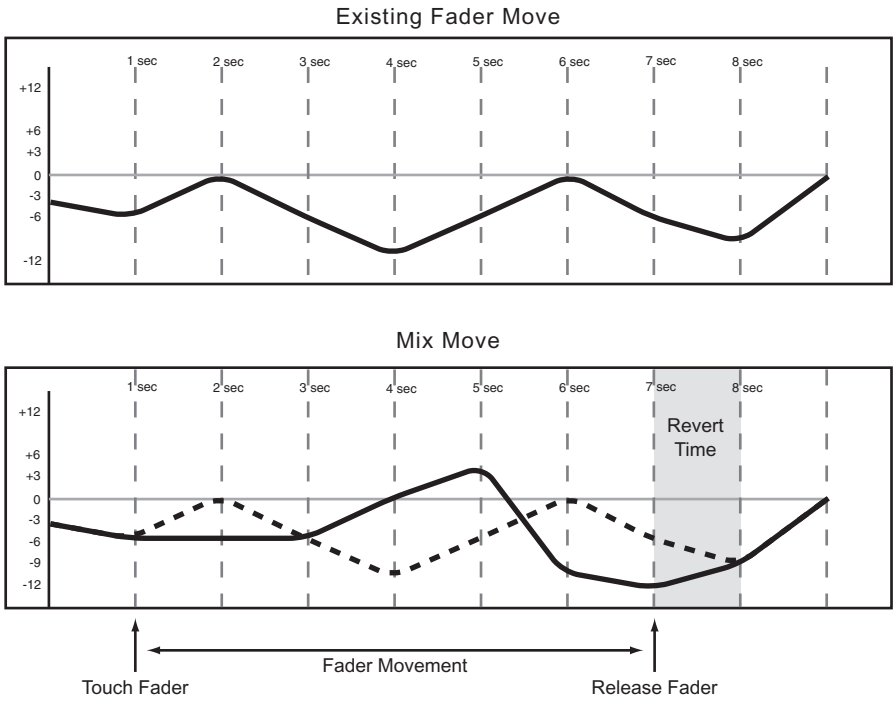
Below is an example of writing a fader move over a previous static fader position with Auto Revert enabled:



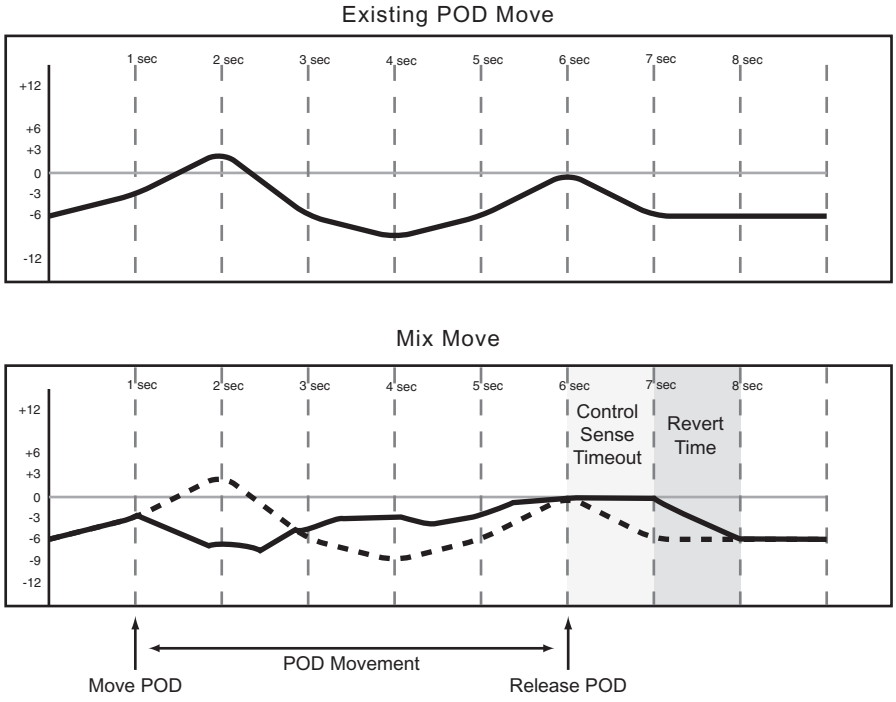
Below is an example of writing a soft-knob (labeled POD) move over a previous static position with Auto Revert enabled:



Below is an example of writing a new fader move over a previous Dynamic fader move with Auto Revert enabled:



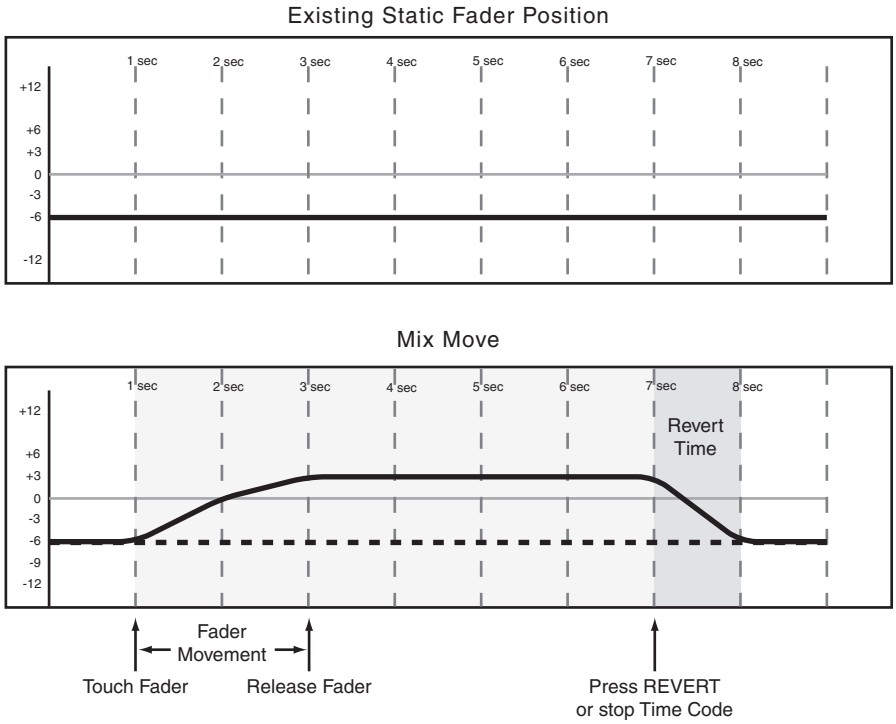
This is an example of writing a new soft-knob (labeled POD) move over a previous Dynamic soft-knob move with Auto Revert enabled:



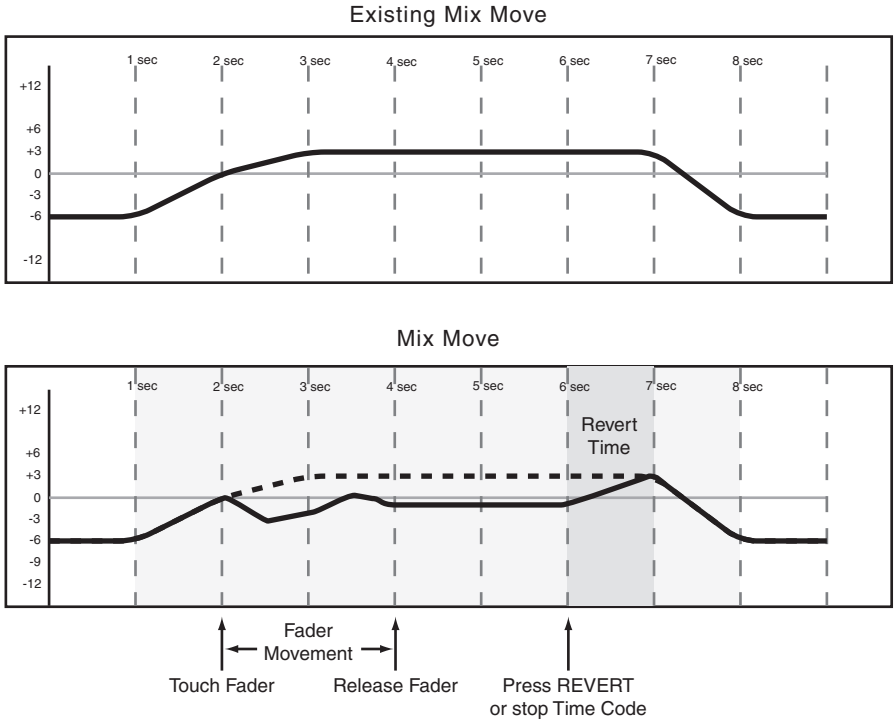
Disabling Auto Revert allows you to manually stop writing mix moves, either by stopping play, or by pressing the **REVERT/ AUTO FADE** key. In this situation, all controls that are writing mix moves will stop writing simultaneously when **REVERT/ AUTO FADE** is pressed or play stops.

When a Revert is triggered by pressing [**STOP**], the Revert Time is still applied to the control beyond where the playhead stopps, for a smooth match from the end of the new mix move to the control's previous setting.

Below is an example of writing a new fader move over a previous Static fader position with Auto Revert disabled:



Below is an example of writing a new fader move over previous Dynamic fader moves with Auto Revert disabled:

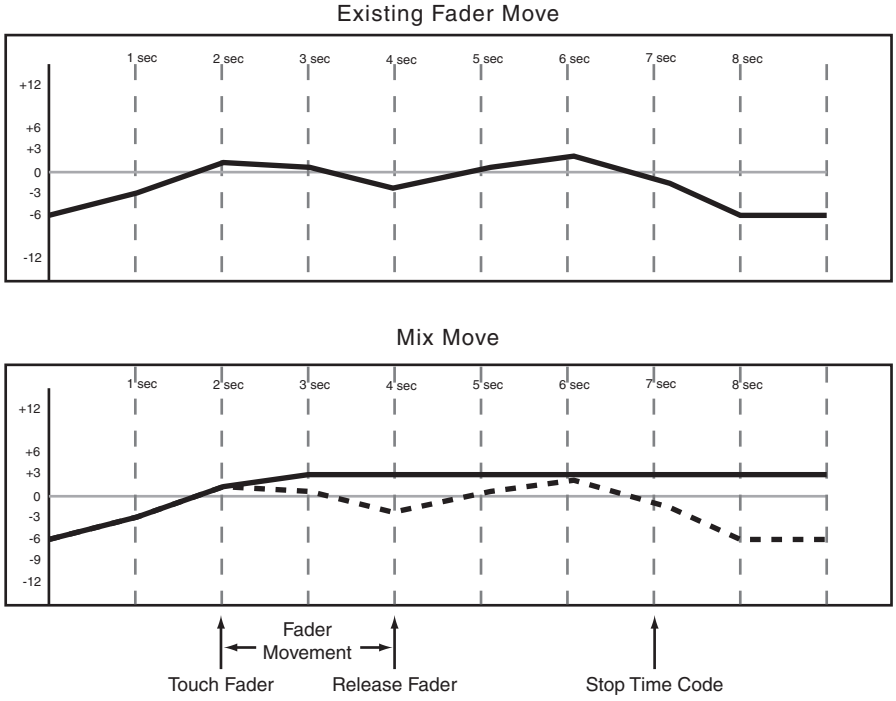


Write to End When the Write Revert Time is set to 31,000, you are essentially telling the automation system to maintain a control's last setting from the point where the automation recording ends, all the way to the end of the program. This is called Write to End. In this case, any mix moves existing in the time between the end of automation recording and the end of the program will be erased.

TIP

A Write/Trim To End operation must be completed by pressing ***STOP****. Manually disabling Write or Trim mode while in play will not perform a Write To End operation. Also, Auto Revert must be enabled to use Write To End.*

Below is an example of a Write to End operation over previous Dynamic fader moves:



Writing Switch Events

Switch Events are defined as the switching of any "on/off" controls. Examples of such controls are Mute and soft-keys, virtual and softknobs.

Before or after pressing **PLAY**, press **WRITE** (in the **AUTOMATION** section) so that its indicator lights. With the SX-1 in play, press the desired key or keys to write the switch event at the desired locations. This works for switches such as mutes, EQ On/Off, EQ band types, Dynamics On/Off, Dynamic Makeup gain, Auxiliary send Pre/Post, and even Library Recall. With Write or Trim mode enabled, Moves can be made by using the mouse to click on items in the SVGA Channel screens, via the soft-keys of the LCD MIXER CHANNEL screen, or the front panel's keys and knobs.

Switch events can be written in Write or Trim mode with the same results. Once a switch event has been written to a control, the automation system automatically changes that control from Static mode to Dynamic mode, in order to read mix moves. Controls that have not had switch events written remain in Static mode, even if those controls are on the same channel as a control that has had other mix data written to it.

Revert Time

Because switch events do not generate continuous data like fader moves, there is no need to make a smooth match to previous data. Consequently, adjusting the Revert Time has no effect on writing switch events.

CONTROL SENSE TIME OUT & Switch Events The SX-1's faders are touch-sensitive, so the automation system knows when you have touched or released a fader. However, keys are not touch-sensitive. These controls simply write a switch event (with Write or Trim mode enabled) whenever

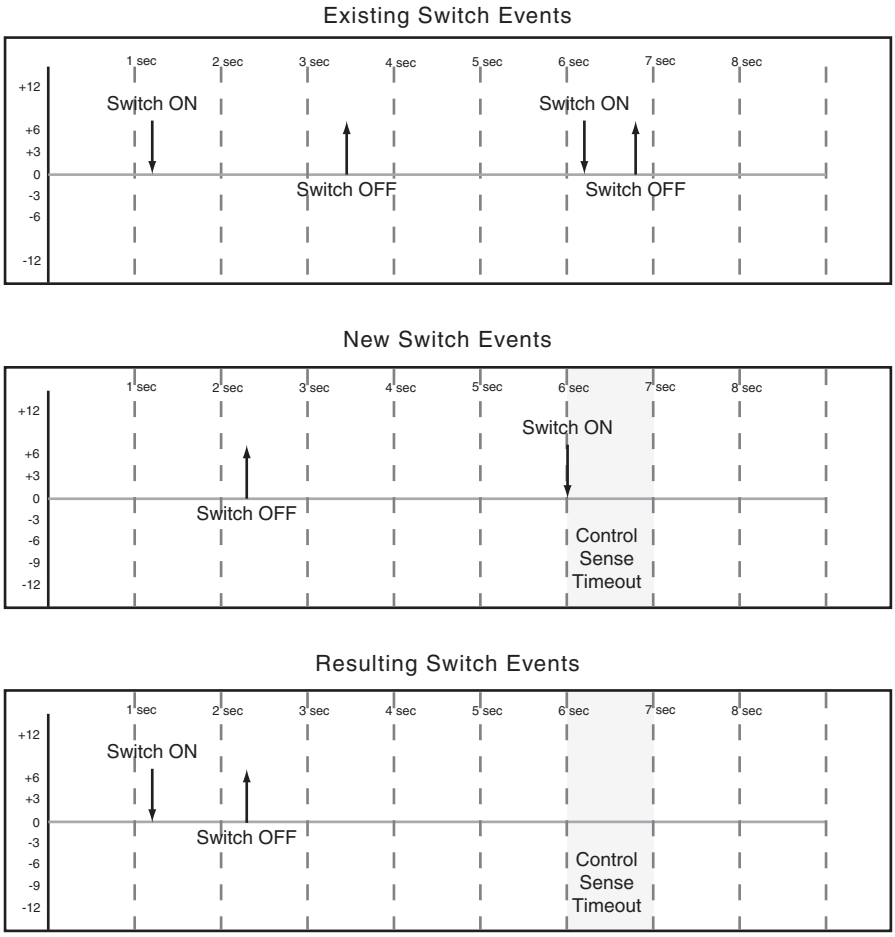
they are pressed. Control Sense Time Out allows these keys to punch out of automation writing automatically, after the specified amount of time has passed without being pressed. This field can be set from 0.5 seconds to 10 seconds in 0.5 second increments.

Auto Revert Choices With Auto Revert Write (or Trim) enabled, the automation system stops writing switch events automatically on a per control basis without the need to end writing manually. That is, keys stop recording switch events at different times, depending on when they were last pressed and depending on the Control Sense Time Out value.

In the case of control surface keys and knobs, writing ends when the Control Sense Time Out has expired without a key press or knob turn. Control Sense Time Out allows the control surface keys to respond as if they are touch-sensitive, even though they are not.

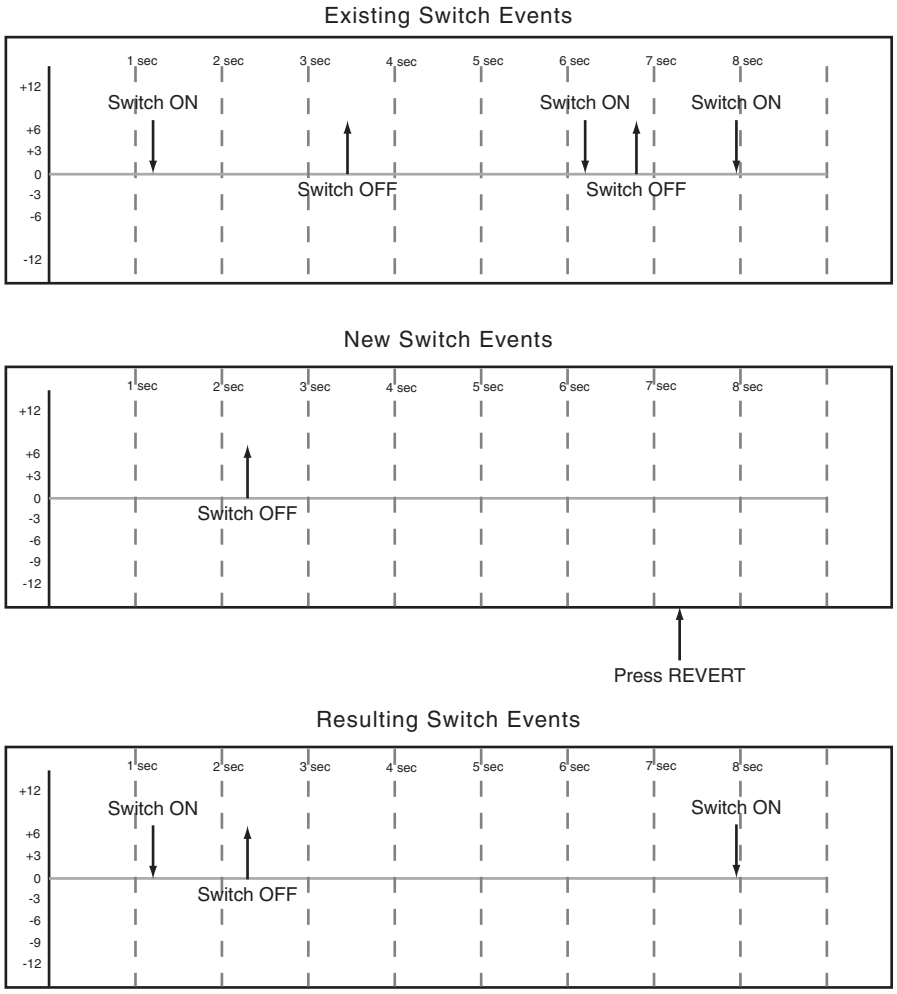
Writing switch events over a Static switch position simply adds the new switch events. When writing new switch events over previous ones, the SX-1 automation system provides you with a high degree of flexibility over when writing will end.

Below is an example of writing new switch events over previous switch events with Auto Revert enabled:



Disabling Auto Revert allows you to manually stop writing switch events, either by stopping play, or by pressing the **REVERT/ AUTO FADE** key. In this situation, all controls that are writing will stop writing simultaneously when **REVERT/ AUTO FADE** is pressed or play stops.

Below is an example of Writing new switch events over previous switch events with Auto Revert disabled:



Trimming Mix Moves

There may be times when a control has existing mix moves that are good, but the overall level of those moves needs to be raised or lowered. In this situation, Trim is used to offset existing moves.

Before or after pressing **PLAY**, press **TRIM** (in the **AUTOMATION** section) so that its indicator lights. Perform your desired Trim operation.

With the mixer in Trim mode, any movement of a control while timecode is running performs a Trim operation on that control. The audio passing through the control reflects the previous mix moves, combined with the offset created by the Trim operation.

In the case of the touch-sensitive faders, trimming begins when a fader is touched. In the case of keys and knobs, trimming begins when the control is moved.

Revert Time

When a control stops trimming mix moves it "reverts" to reading any mix data that existed before trimming began. The previously existing data could be a dynamic mix move or a static control position. The amount of time it takes to move smoothly from the end of the trimmed mix move to the previously existing data is called the *Revert Time*.

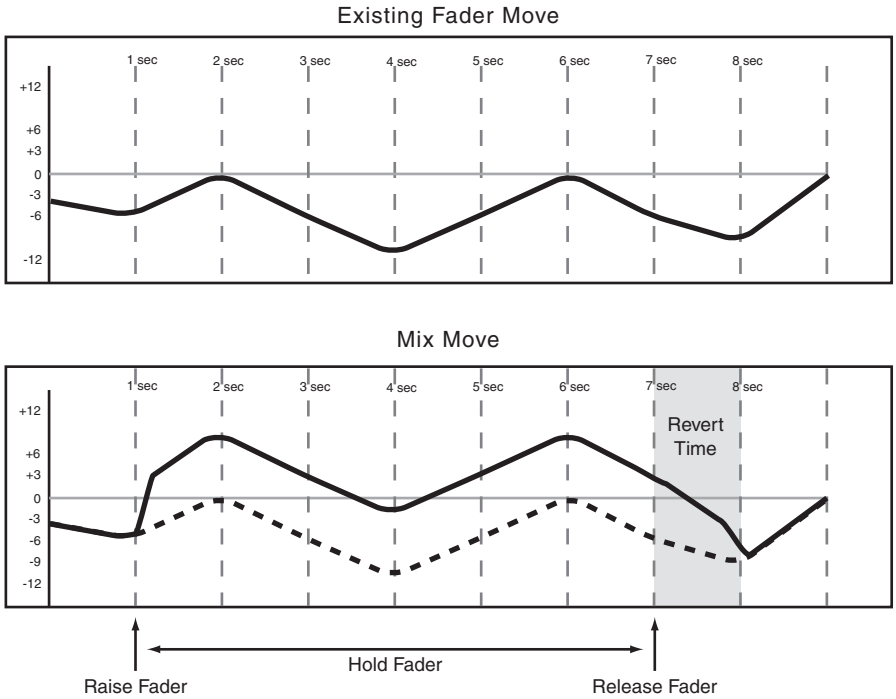
A Revert Time is applied, even after stopping play, past the point where the playhead stops, to ensure a smooth transition between the trimmed mix move and the control's previous setting.

Auto Revert Choices With AUTO REVERT Trim enabled, the automation system stops writing trimming mix moves automatically on per control without the need to stop trimming manually. That is, controls stop trimming mix moves at different times, depending on when they were released (faders) or when movement ended (keys and knobs).

In the case of the touch-sensitive faders, the revert starts when the fader is released. In the case of keys and soft-knobs, revert starts when the Control Sense Time Out has expired without movement of the control. Control Sense Time Out allows the control surface keys and knobs to respond as if they are touch-sensitive, even though they are not.

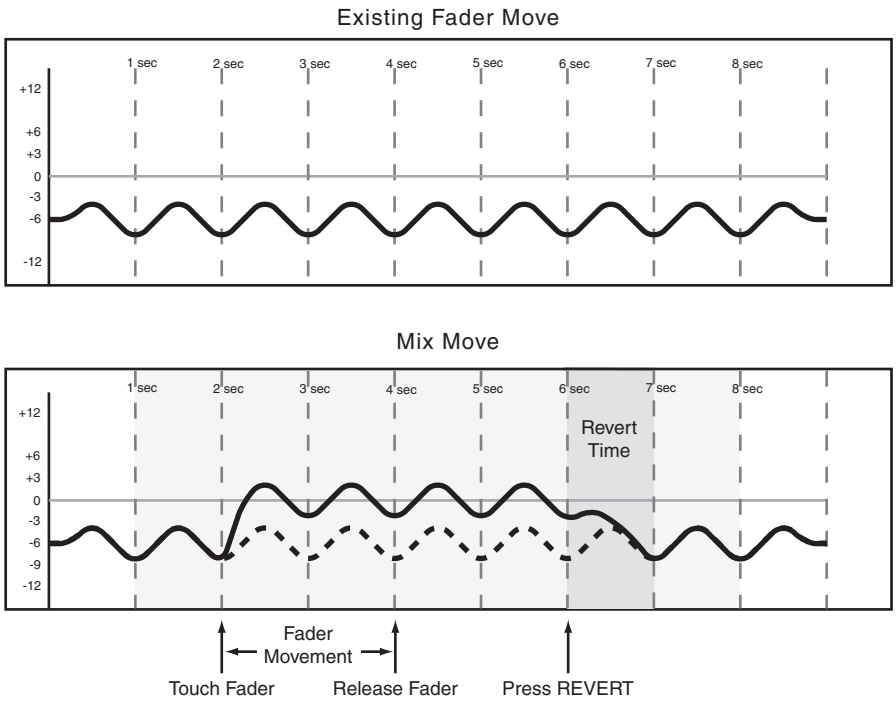
When a Revert occurs, the control smoothly matches back to its previous data based on the amount of Revert Time set. Previous data could be a control's Static position or a control's Dynamic mix moves.

Below is an example of trimming fader moves with Auto Revert enabled:



Disabling AUTO REVERT when TRIM is enabled allows you to manually stop trimming mix moves by stopping play code or by pressing the **REVERT/ AUTO FADE** key. In this situation, all controls that are trimming mix moves will stop trimming simultaneously when **REVERT/ AUTO FADE** is pressed or play stops.

Below is an example of trimming fader moves with Auto Revert disabled:



Automating Library Recall

The SX-1 automation system is capable of including library recall events as part of an automated mix. These are treated by the automation system as Switch Events. All SX-1 libraries support automated recall for: Snapshot, EQ, Compression, Expand, Gate, and the plug-in effects.

Because there may be differences between control settings recalled by a library and those being played back by the automation system, below are some important things to keep in mind in order to avoid unexpected behavior.

The basic rule is that a mix event (library recall or dynamic mix move) only has priority until another mix event (library recall or dynamic mix move) is played back.

Writing Library Recall Events Over Existing Static Control Positions

When a library recall event is written by the automation system which affects controls in Static mode, the library recall switch event becomes dynamic mix data. However, the controls themselves remain in Static mode with their Initial Status unaffected. In this case, if a dynamic mix move is written after a library recall, the control will Revert to its Initial Status, not its position after the library recall.

If a library is recalled which affects controls in Static mode without the library recall event being written, the controls will update their static positions as if they had been directly adjusted.

Combining Library Recall With Dynamic Mix Moves

Dynamic mix moves are treated in a way similar to continuous data by the SX-1 automation system. Library recall events are instantaneous snapshots. If a library recall occurs while the automation system is reading dynamic mix moves, the affected controls will snap to the positions recalled by the library then snap to reading previous dynamic mix moves as the time code position crosses the previous data. While this can create some interesting effects when used purposely, it could also take you by surprise.

Automating Groups

There are several considerations and possibilities when using the SX-1 automation with grouped controls:

- Creating a group with controls that don't have dynamic automation.
- Creating a group with controls that have existing dynamic automation.
- Automating the Group Master.
- Automating group slaves.
- Removing slaves from an automated group.

Grouping Non-Automated Controls Create the group normally using the Groups module on the Channel screen. The group master or slaves within the group may then be automated. A Group Master may be automated just like any other control. The group slaves follow the group master.

Automation data is only written by the Group Master. Any group slave that is removed from a group no longer follows any mix moves written by the Group Master. However, it continues to read its own mix moves. Any group slave may be individually automated just like any other control.

It reads its own moves, which would be offset by the moves of the Group Master.

Grouping Automated Controls It is possible to create a group containing controls that have existing dynamic automation moves. In this case, the mix moves of the group slaves are maintained while following the overall moves of the Group Master. Essentially, this is using the movements of the group master to trim the moves of the group slaves. It should be noted that this does not actually write Trim data to the group slaves.

Mix Displays

The SX-1 has the ability to save multiple discrete "Mix" files for a single project. These files contain a large amount of data, such as which audio files are used, how the effects are set up, where things are routed, and where automation has been recorded. The Mix screens allow you to manage these mixes.

SVGA "Mix" Tab

From the AUTOMATION screen, press the Mix tab. Here, you can name, save, and recall mixes.

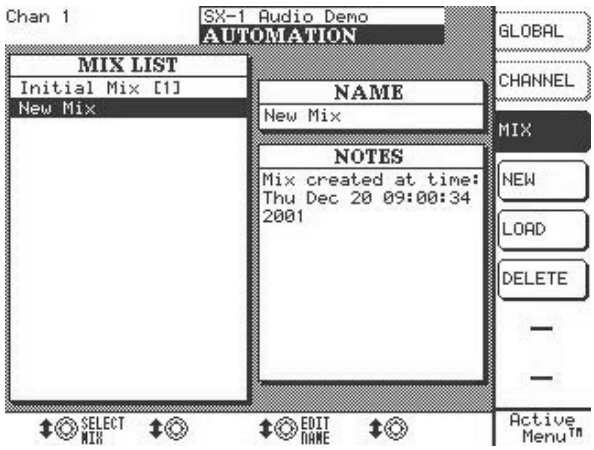
KEEP MIX Press this key to save your current mix. Pressing **SHIFT** and the **TOUCH/ KEEP** key does the same thing from the control surface.

TIP

Pressing KEEP MIX *will automatically increment your current mix's name by a number (mix [1], mix [2], etc.) so as not to overwrite the last saved version of the mix. Or, you can highlight the "Name" field and enter a new name from your PS/2 keyboard before pressing the* KEEP MIX *key.*

LCD "MIX" Screen

The MIX screen mirrors the MIX tab from the SVGA AUTOMATION screen.



From the **MAIN DISPLAY MODES** section, press **AUTOMATION** and then the MIX soft-key to reach this screen.

TIP

A project's associated mixes can also be recalled directly from the SVGA's Main Menu Bar.

Automation Events & History Screens

These tabs allow you to follow automation events and editing history.

"Event List" Tab

From the AUTOMATION screen, click on the Event List tab. Here you can see the automation events for specific controllers of a selected channel or effect plug-in. It is also possible to edit automation data from this tab.

Edit Operation Click on the arrow to select the type of edit operation you want to perform on your selected region. The choices are:

Insert Library Entry Recall This operation allows you to store the recall of a library entry as an automation event. You can define which library (EQ or Dynamics) an individual preset is recalled from, and where the recall event will be inserted. You can also select a different transition time for each automated recall.

Event Editor This operation provides a register for modifying the time stamp of the automation event.

Move Allows you to nudge, by small or large amounts, the automation data of your selected region.

Render Library Recalls Use this function to take a single library preset recall event and expand the preset's processors' individual parameters into its own automation track. For example, one EQ library recall event would be expanded so that all of its EQ settings were listed as separate events on the automation track. This operation creates an automation track for the EQ processor that allows editing of its individual parameters.

"Smooth Events" Allows you to thin out the automation data of your selected region. Several thinning choices are available, from Mega to Very Thin.

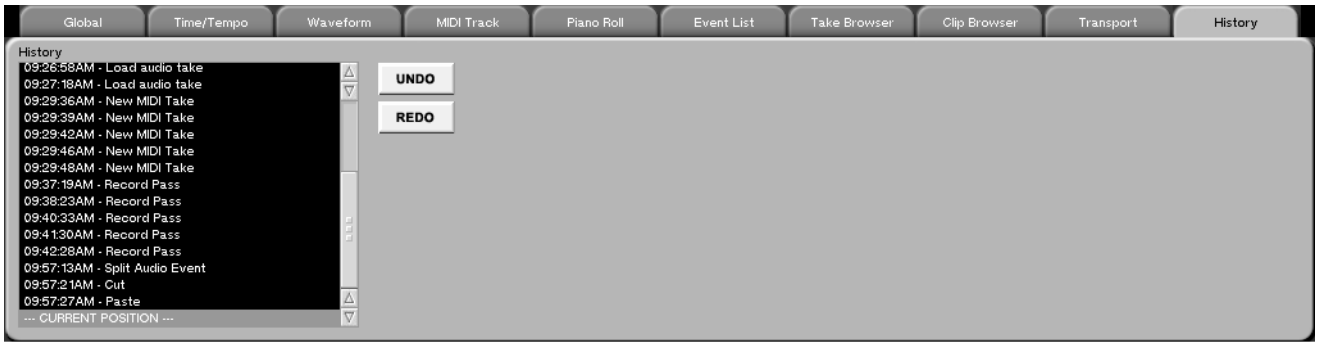
TIP

Smoothing creates more even automation moves by deleting any unnecessary data that may cause jittering. For example, jumpy automation can increase over time as multiple Touch passes are made over a region. Performing a "Smooth Events" edit on such a region will "smooth" out the rough spots.

SCROLL When depressed, the event list follows the playhead (it scrolls). When not depressed, the event list does not follow the playhead.

Event Display Filters Selects the type of controller you do not want to view for the selected mixer channel or effect plug-in. For example, if your track has a ton of pitch bend data making it difficult to see just Note On messages, select Pitch Bend from the Filter menu. This will omit the Pitch Bend data from the Event List, leaving the Note On messages easily visible.

"History" Tab



This History tab displays all of your edit operations for easy undo and redo. It shows the same information that is displayed in the History tab for the TRACK screen (essentially, it is the same tab).

From the AUTOMATION screen, click on the History tab.

Automation Scenes

In addition to being to save multiple mixes with a project, you can also save Scenes, or "snapshots," of the mixer's current state. A Scene includes all of a channel's controllers, bus assignments, and effect plug-in settings.

SVGA "Scene" Tab

From the AUTOMATION screen, click on the Scene tab. Here, you can name, save, and recall scenes.

Library In this window, you can see the scenes that are associated with your current project. Highlight a scene and press RECALL to load the scene to the mixer, or DELETE to remove the scene from the list.

NEW Press this key to save the mixer's current state as a scene. Use the Name field to edit the scene's name.

IMPORT This key lets you import a scene setting from another project. Press IMPORT and browse through the available projects listed in the Import Project window. Select the scene file you want to import and press OK (or CANCEL to escape the action).

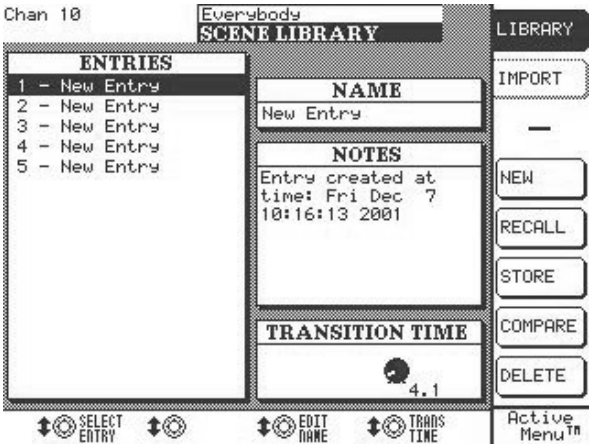
COMPARE Compares the mixer's current scene to the last loaded (or saved) scene.

TIP

Scenes are a wonderful way of quickly trying out different mix levels and settings for a particular section of your project. When you have one you like, it can also work as the template from which to begin recording automation.

LCD "SCENE LIBRARY" Screen

The SCENE LIBRARY screen mirrors the Scene tab of the AUTOMATION screen. Most of the parameters found on this screen are identical to the parameters found in the SCENE LIBRARY automation tab and are explained on the previous pages. Only those parameters that are unique to this LCD screen are explained here.



From the **LIBRARY** section, press the **SCENE** key, and then the LIBRARY soft-key.

TRANS TIME The amount of time it takes to move from the mixer's current scene to a scene that has just been recalled.

IMPORT Recalls the screen where you can import scenes from other projects.

Commands include:

SELECT Selects the scene you want to import.

SEL ALL Selects all the scenes associated with the project highlighted in the PROJECT window.

SEL NONE If any scenes are selected, pressing this key de-selects all of them.

SELECT VOLUME Select a mounted storage drive from which to view a project's associated scenes.

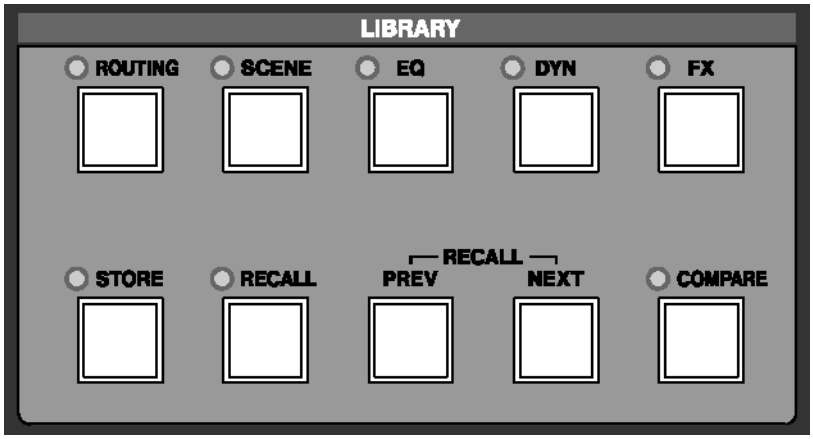
SELECT PROJECT Select a project from which to import scenes.

Chapter 13 – Library Overview

Understanding the Library Feature

The SX-1 has five different libraries for saving five different types of settings: routings, scenes, EQ, dynamics, and effects. Each of these categories can have their unique parameters saved as a preset for later recall.

Library Section



The keys in this section are for saving and recalling Library presets. The top five keys recall an associated LCD screen, and the bottom five keys provide functionality.

TIP

Before saving a library preset, you must first press one of the top five keys. This tells the SX-1 what type of library preset you want to save. After pressing **STORE***, a prompt to give the preset a patch number will appear on the LCD screen. Type a number on the Keypad and press* **ENTER***.*

ROUTING This key recalls the ROUTING library screen from which you can name, store, and recall the mixer's patch setups.

SCENE This key recalls the SCENE library screen from which you can name, store, and recall mixer Scenes.

EQ This key recalls the EQ library screen from which you can name, store, and recall the mixer's EQ setups.

DYN This key recalls the DYNAMICS library screen from which you can name, store, and recall the mixer's dynamics setups.

FX This key recalls the EFFECTS library screen from which you can name, store, and recall effects patches.

STORE With the LIBRARY screen open to the type of library you want to save, press **STORE** to save a preset of the mixer's current settings for that feature.

RECALL With the LIBRARY screen open to the type of library you want to recall, press **RECALL** to load the selected (highlighted) preset.

PREV Press to recall the last preset in the currently open Library window.

NEXT Press to recall the next preset in the currently open Library window.

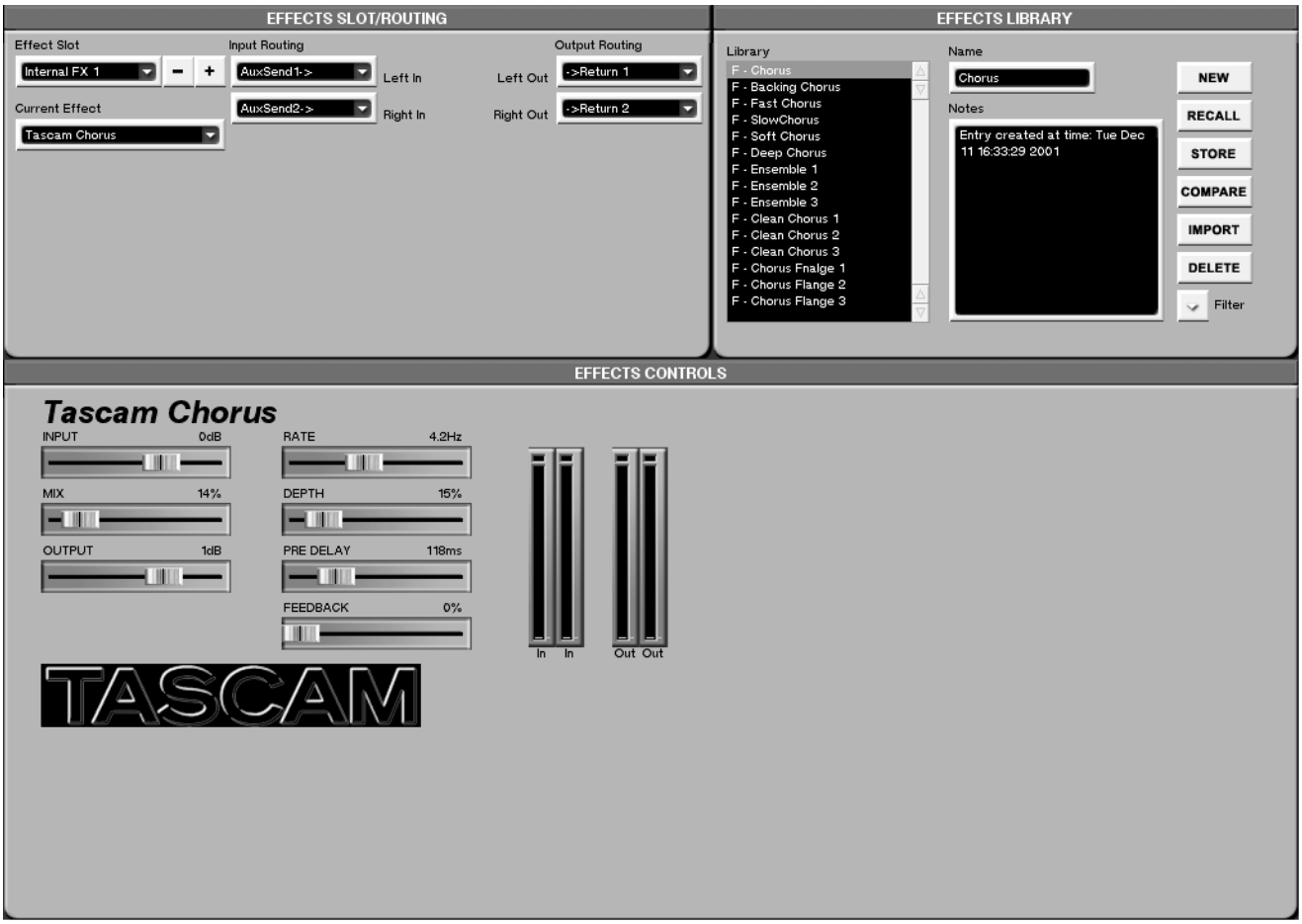
COMPARE Compares a current set of parameters with the last loaded (or saved) set of like parameters.

Chapter 14 – Working with Effects

Understanding the Architecture

The SX-1 has a host of native, stereo effects plug-ins. These plug-ins can be assigned to any one of the mixer's four effect engines (or quadrants). The effects can be assigned to aux sends, inserts, channel direct outs, or a variety of other outputs and returned to just about any input on the mixer.

SVGA Effects Screens

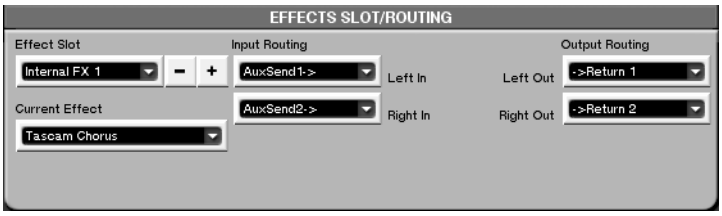


From the **MAIN DISPLAY MODES** section, press **EFFECTS**. This takes you to the main SVGA effects control screen. From here you can assign effects to one of the four effect busses, save and recall effects to the effects library feature, and change individual effect parameters (individual effect algorithms are covered in the next chapter, Chapter QQQ).

Routing Effects Screens

The effects routing displays let you select, configure, and route the effects plug-ins.

SVGA "EFFECTS SLOT/ROUTING" Module



This module is part of the Effects screen. It houses the controls for assigning the effects algorithms to the processor slots, inputs and outputs.

Effect Slot Selects the placement of the effect algorithm in the DSP chain. The selections are:

Internal FX 1-4 The four available native DSP quadrants.

Current Effect Selects an effect algorithm.

Input Routing Click on the arrow for the Left In and Right In fields to select the input source for the effect displayed in the Current Effect field.

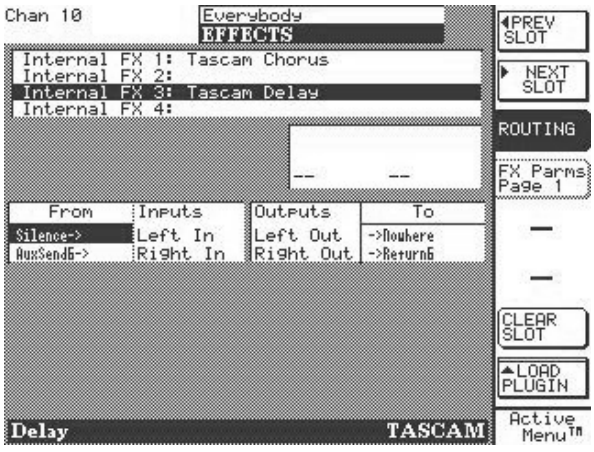
Output Routing Click on the arrow for the Left Out and Right Out fields to select the output destination for the effect displayed in the Current Effect field.

LCD Effects Routing Screen

The LCD Effects screens mirror the SVGA Effects screen.

"EFFECTS" The EFFECTS screen's ROUTING page houses controls for assigning the effect algorithms to a DSP quadrant, the effect algorithm's input source, and output destination.

From the **MAIN DISPLAY MODES** section, press **EFFECTS**.



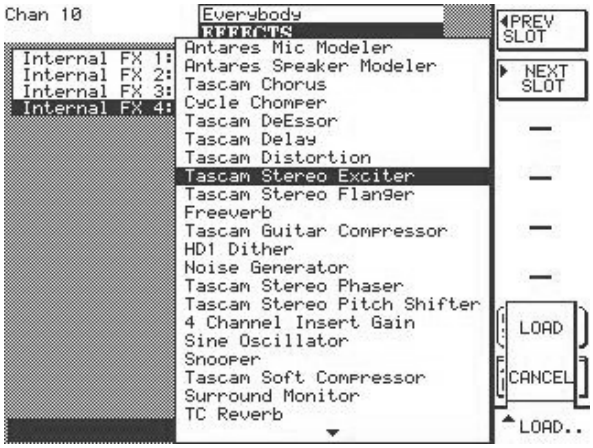
PREV SLOT Skips back to select the previous effects slot.

NEXT SLOT Skips forward to select the next effects slot.

ROUTING This screen's default page.

CLEAR SLOT Removes the effect algorithm from the currently selected slot.

LOAD PLUG-IN Pressing the LOAD PLUGIN" soft-key opens a dialog where you select from a menu of effects algorithms.



TIP

You can use the arrow keys on the Keyboard to step through the effects plug-ins. Then, with the one you want to load highlighted, press **ENTER** *to load the plug-in to the selected slot.*

Effects Controls Displays

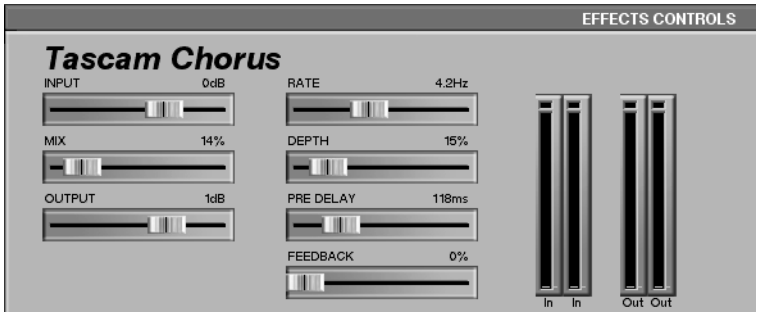
The effects controls screens house the effect plug-in's parameters.

The controls that appear in these screens change according to the effect plug-in selected.

SVGA "EFFECTS CONTROLS" Screen

The EFFECTS CONTROLS module is part of the Effects SVGA screen. From the **MAIN DISPLAY MODE** section, press **EFFECTS**.

Below is an example of the module with a chorus effect selected in the EFFECT SLOT module (the EFFECTS CONTROLS module follows the effects selection in the EFFECT SLOT module).

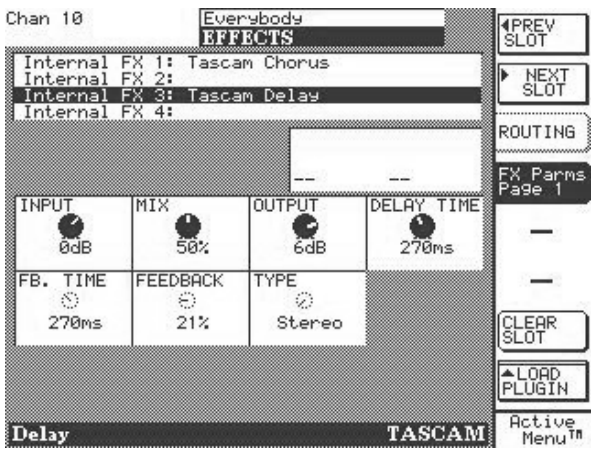


TIP

When you turn the LCD screen's soft-knobs that are tied to the parameters in the EFFECTS CONTROLS *module, these parameters track the soft-knobs' movements. You can also use the mouse to directly move the* EFFECTS CONTROLS *parameters.*

LCD "EFFECTS" Control Screen

This screen mirrors the SVGA EFFECTS CONTROL module. And, like the controls of the EFFECTS CONTROL module, the LCD EFFECTS screen's controls change according to the selected plug-in.



From the **MAIN DISPLAY MODES** section, press **EFFECTS**. Then press FX Parms Page 1 to reach the first page of the effects parameters.

PREV SLOT Skips back to select the previous effects slot.

NEXT SLOT Skips forward to select the next effects slot.

ROUTING Opens the EFFECTS screen's routing page (the default page for this screen).

FX Parms Page 1 Since the LCD has limited space, all effect parameters can't always appear on the screen at the same time. The FX Parms Pages let you skip forward and back through the selected effect plug-in's controls.

TIP

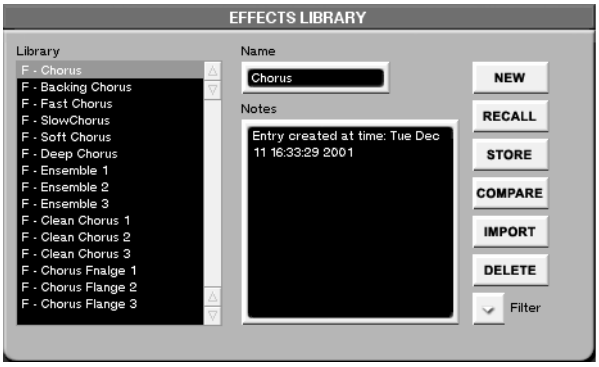
To record automation for an effect plug-in from the LCD, use the LCD screen's soft-knobs for the selected effect.

Effects Library Displays

Every effect plug-in can have its settings saved as a patch in the Effects Library. A single plug-in may have dozens of associated presets. Some plug-ins come with a set of factory presets, or you can always create your own.

SVGA "EFFECTS LIBRARY" Screen

The EFFECTS LIBRARY module is part of the Effects SVGA screen. From the **MAIN DISPLAY MODE** section, press **EFFECTS**. In this module you can name, store, and recall effect plug-in patches.



COMPARE Press this key to compare the current settings of a selected plug-in with the last saved settings of that same plug-in.

IMPORT Opens the Effect Plug-in Import dialog where you can bring effect plug-in presets from other projects into your current project.

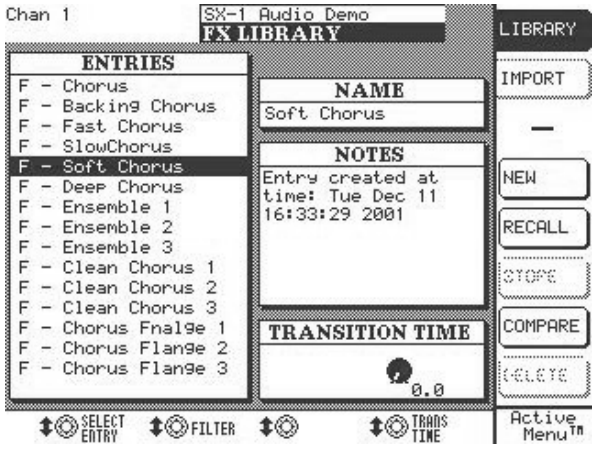
Filter This feature allows you to view effect presets by category, either effect type or effect plug-in. For example, if you are just looking for reverbs, select view only reverb patches. Or, if you only want to see the patches associated with a particular effect plug-in (such as Tascam Chorus, as in the screenshot above), select to filter out all other plug-in presets.

TIP

The recall of effects presets can be automated. See "Automating Library Recall" on page 78 for details.

LCD "FX LIBRARY" Screens

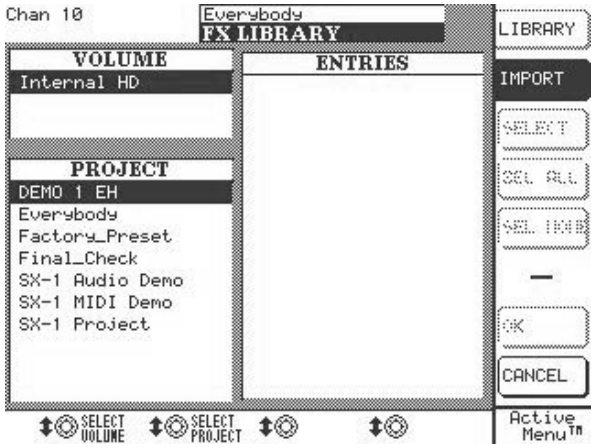
The FX LIBRARY screens mirror the EFFECTS LIBRARY module found in the SVGA Effects screen.



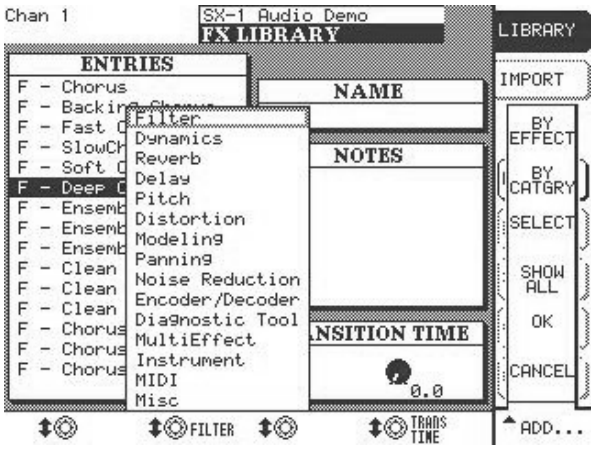
Press the **FX** key in the **LIBRARY** section and then press the LIBRARY soft-key to reach this screen.

TRANS TIME The amount of time it takes to move from the current effect settings to a setting that has just been recalled.

IMPORT From the FX LIBRARY screen, press the IMPORT soft-key. This opens the Import dialog where you can bring effect plug-in presets from other projects into your current project.



FILTER This feature allows you to view effect presets by category, either effect type or effect plug-in.



Turn the soft-knob below "**FILTER**" to reach these dialogs.

BY EFFECT View presets only by effect plug-in type.

BY CATEGORY View presets only by effect algorithm type.

SHOW ALL View all effect presets.

Routing Effect Examples

Below are step by step instructions for patching an effect plug-in into your mix. Both routing a plug-in to Aux Sends and Returns and inserting directly on a channel are covered.

Aux Send & Return

1. **Go to the SVGA** Effects **screen and add a TC Reverb on quadrant 1 (the** Effect Slot **field).**
2. **Using the** Input Routing **field to the right of the** Effect Slot **field, select Aux Send 1 as the left input. Select Aux Send 2 as the right input.**
3. **Using the** Output Routing **field, send the reverb's left output to Return 1, and the reverb's right output to Return 2.**
4. **On the** Mixer **screen, select the Return/Group Fader Bank (press MIXER from the MAIN DISPLAY MODE, then press RTN/ GRP in the LCD ACCESS section) and make sure that Returns 1 and 2 are assigned to the L/R Buss. If they are not linked, press the** Link **key on either return channel.**
5. **Select the fader bank for a channel that has audio playing back, and raise the level on Aux sends 1 and 2 until you can hear the reverb. That's it—repeat these steps to assign an effect to the other quadrants.**

Inserting an Effect

1. **Go to the SVGA** Effects **screen and add a TC Reverb on quadrant 1 (the** Effect Slot **field).**
2. **Go to the SVGA** Routing **screen and select the** Insert Preset **tab. In the** User Name **field for** Insert 1**, type in the name** Reverb**. Use your PS/2 keyboard to enter the text and then press [RETURN].**
3. **From the** Insert Send **pull down menu for Insert 1, select Effect/TC Reverb Left In.**

4 **From the** Insert Receive **pull down menu for Insert 1, select Effect/TC Reverb Left Out.**

5 **Go to the SVGA** Mixer **screen, and right-click on the** FX INSERT **key of the channel you want to use. From the menu that appears, select Insert 1 (Reverb) as the insert you would like to use.**

6 **Left-click on the Insert** FX INSERT **to enable Insert 1. You should now hear the TC Reverb on the inserted channel when you press PLAY. That's it—repeat these steps to insert an effect on other channels.**

Effects Monitoring

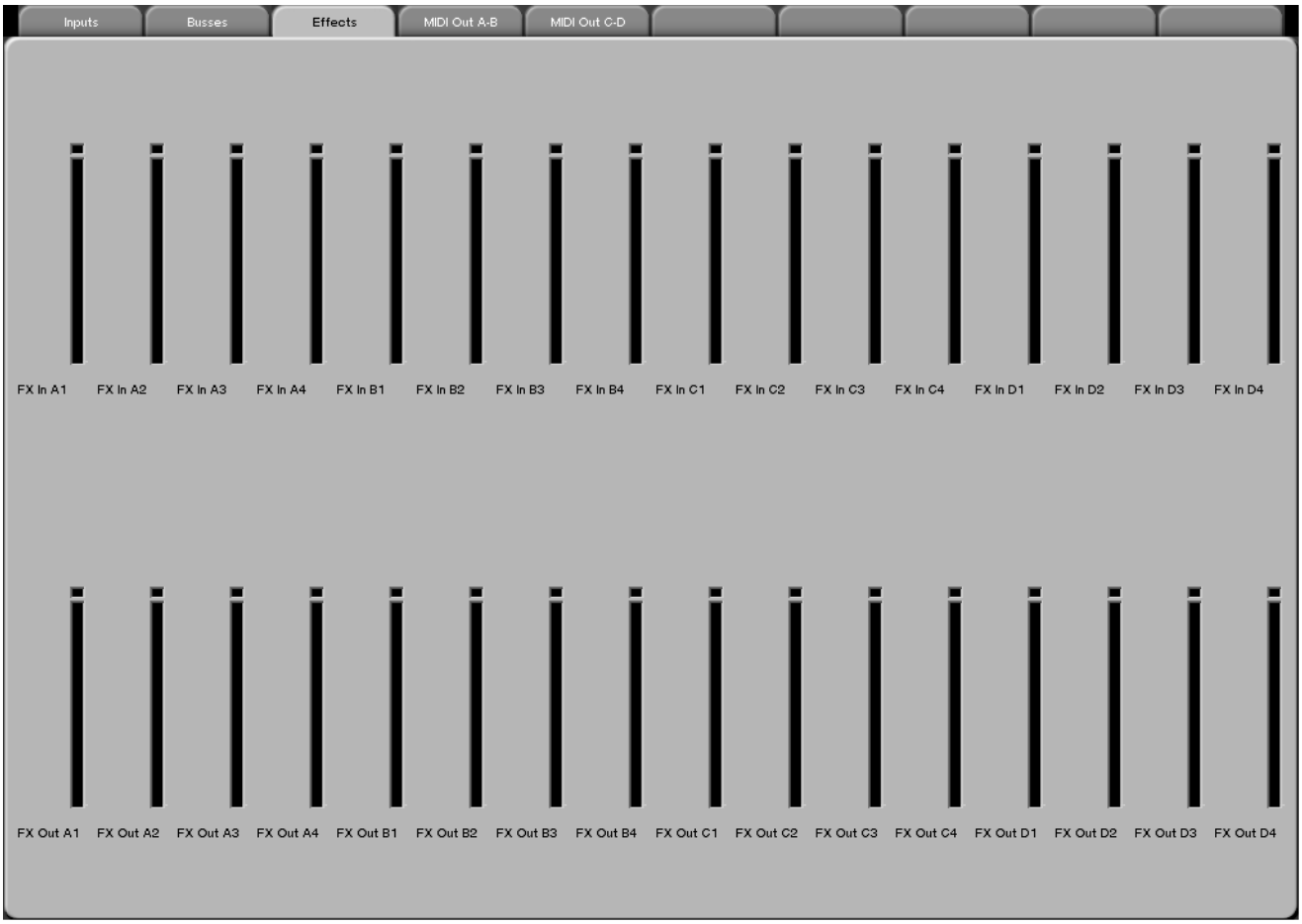
Overview screens are recalled by pressing the **OVERVIEW** key in the **MAIN DISPLAY MODE** section, and then clicking on the corresponding tab for the overview you want to see. These screens show all the signals running through the mixer and patch matrices at a glance.

TIP

The Overview screens can also be recalled from the View *menu on the SVGA screen's Main Menu Bar.*

Effects Overview Screen

Use this screen to view all the signals running in and out of the SX-1's four effect quadrants.



Chapter 15 – Examples of Effect Algorithms

Categories

The SX-1 comes stock with over 15 native plug-in effects (and many more are planned for the future). Below is a list of these effects grouped by category:

Distortion

- Tascam Distortion

Dynamics

- Tascam Guitar Compressor
- Tascam Soft-Knee
- Compressor
- Tascam DeEssor

Enhancer

- Tascam Exciter

Modeling

- Antares Mic Modeler
- Antares Speaker Modeler

Modulation

- Tascam Chorus
- Tascam Delay
- Tascam Phaser
- Tascam Flanger

Pitch Shift

- Tascam Pitch Shifter

Reverb

- TC SX1 Reverb

Utilities

- Tascam/Nemesys HD1 Dither
- Tascam Test Tone

Common Effect Parameters

There are several effect parameters which are common to many of the plug-ins. How these controls operate are always identical, even if the parameters which they adjust, or select, are different.

TIP

Describing the common effect parameters here means that not every parameter is explained for all the example effects. If you are looking at an SVGA or LCD effect screen and don't see all the items explained next to the manual's illustration, the missing controls are likely explained here.

Input This controls the input level going to the effect plug-in.

Mix This controls the wet to dry mix ratio of the effect. If you are using the effect on a Return, start with this value at 100% to avoid phasing.

Output This controls the output level coming from the effect plug-in.

L/R Balance This controls the left to right balance of the effect plug-in's output.

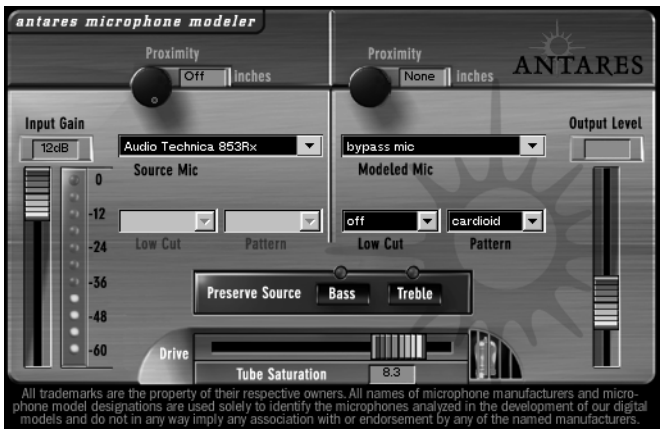
COMPARE Press this key to compare your current settings with your last saved settings.

BYPASS Press this key to bypass the effect. In the case of an insert, the source signal will pass through the plug-in without being effected (remaining completely dry).

Examples

Since many of the SX-1's effects are recording studio standards (such as, chorus, distortion, delay, etc.), not all of the plug-ins are explained here. If you are unfamiliar with such standard types of effects, you should refer to a beginning recording engineering handbook. What are explained on the following pages are the SX-1's more unique plug-ins.

Antares Mic Modeler



Antares Audio Technologies has created precise digital models of a wide variety of microphones using their patented Spectral Shaping Tool™ technology. TASCAM has licensed their popular Mic Modeler plug-in, which is based on this technology, for the SX-1. With this plug-in assigned to one of the SX-1's four effect quadrants (and properly routed), you can simply tell Mic Modeler what microphone you are actually recording with and what microphone you would like it to sound like. You can easily turn an inexpensive dynamic mic into an expensive sounding condenser, or *vice versa*.

Not only do the modeling choices reproduce all of the subtle sonic characteristics that make each microphone unique, but they also give you control of each mic's specific options and recording characteristics: low cut filter, wind screen, and placement. Each option produces the same sonic effect that it would have with the actual modeled mic. And for that final touch of perfection, you can even add some tasty tube saturation.

TIP

With Mic Modeler, you can record each track through a model of the specific mic that will best produce the ideal sound you're looking for. You can also use it during mixdown to change the perceived mic sound on an already recorded track.

Signal Flow Mic Modeler is divided into a number of discreet functional blocks as follows (in the order of signal flow):

Input For setting the input level of the audio to be processed.

Source Mic For indicating the mic (and the state of its various parameters) that was actually used to record the audio.

Modeled Mic For selecting the mic (and the state of its various parameters) whose sound you would like to model.

Tube Saturation For adding a model of analog tube saturation distortion.

Input Section The Input Gain slider is used to set the level of the incoming audio. The exact amount of gain or attenuation is displayed numerically above the slider. In most instances, the input gain should be set at the highest level that does not cause the 0 dB "LED" of the graphic level meter to light.

Level Meter The Level Meter displays the level of the audio as it is being processed by both the Source and Modeled Mic models. Because some models (or combinations of models) can result in increased amplitude at various frequencies, changing to a different mic model or changing a model's settings may

require an adjustment of the Input Gain to avoid clipping. In practice, you should start out by setting the Input Gain at a bit under the optimum level. Once you're confident that you've found the right mic settings for your track, you should go back and fine tune the gain for maximum level without clipping.

Source Mic Section The Source Mic section is where you specify the mic and the settings that were (or will be) used to capture the input sound. The purpose of these selections is to remove the effect of the source microphone, resulting in the signal that would have been recorded by an ideal instrumentation microphone with no proximity effect.

Source Mic Menu The Source Mic pop-up menu is used to select a specific model of mic. In some cases a mic will have a second listing with (W) appended to the mic's name. This indicates that the mic that was modeled was supplied with a windscreen and this is the model of the mic with the windscreen attached. If your audio was captured using the windscreen, you should select this version of the model.

The menu also offers a selection called Bypass. With Bypass selected, the source signal is passed unmodified to the Modeled Mic section. You should select Bypass when your source was not recorded with a microphone (such as a guitar via direct box or a direct synth input). If your desired mic is not listed in the menu, you can try one of the following (in order of preference):

1) Use a different mic that is listed—this is, of course, only an option if you've not yet recorded the audio and do, in fact, have another listed mic.

2) Select another mic on the list whose characteristics are known to be similar to your mic (a similar model from the same manufacturer, for example).

3) Select another mic of the same general type as your mic (such as, dynamic, large diaphragm condenser, etc.).

4) Select Bypass from the menu. It must be stressed that selecting option 2, 3, or especially, 4, will compromise the Microphone Modeler's ability to accurately reproduce the sound of the desired modeled mic. That's not to say that you won't be able to get something that sounds great, just that it's unlikely to be an accurate simulation of whichever mic you chose in the Modeled Mic section.

Low-Cut Menu If the mic you select in the Source Mic menu is equipped with a user-selectable low-cut filter, the Low-Cut pop-up menu will allow you to select from among the actual filter settings available on that mic. (If the selected mic does not have a low-cut filter, the menu will be grayed out.)

If the source mic does include a low-cut filter, select the low-cut setting that was (or will be) used when capturing your audio.

NOTE

It is important to keep in mind that the purpose of this setting is to "undo" the effect of any low-cut filter that was used to capture your audio. You may initially think that it's working "backwards" because changing the menu selection from OFF to any filter setting will actually cause a bass boost in the monitored audio. However, the purpose of all the controls in the Source Mic section is to neutralize the effects of the source mic. To do this the model must now boost the bass an equal amount to remove the source mic's sonic coloration.

Pattern If the mic you select in the Source Mic menu is equipped with user-selectable pick-up patterns (e.g., omni, cardioid, hypercardioid, etc.), the Pattern pop-up menu will allow you to select from the actual pattern settings available on that mic. (If the source mic does not have selectable patterns, the menu will be grayed out.)

If the source mic does include multiple patterns, select the pattern that was (or will be) used when capturing your audio.

TIP

The purpose of the Pattern selection is to neutralize the varying frequency characteristics that result from each of the available pattern settings, with the assumption that the audio was recorded on axis (i.e., from the front of the microphone). Since the Microphone Modeler has no way of knowing the actual placement of the signal source, it does not attempt to simulate off-axis performance.

Proximity The Proximity knob in the Source Mic section should be used to set the average distance that separated the mic and the signal source during the recording of the audio. The purpose of this control is to allow the model to remove any Proximity Effect that may have been introduced by the source mic.

Mics operating in omnidirectional mode do not exhibit a proximity effect. Consequently, if the source mic is an omni mic, or the source mic has selectable patterns and omni is chosen, the Proximity control will be disabled.

TIP

Proximity Effect is a boost in bass frequencies resulting from placing a directional mic in close proximity to a signal source. The amount of the effect varies from mic to mic, and is inversely proportional to the distance from the mic to the source (for example, the smaller the distance, the greater the bass boost).

Modeled Mic Section Here's where the magic really starts. The Modeled Mic section is where you select the mic (and its settings) whose characteristics you want to apply to your audio.

Modeled Mic Menu The Modeled Mic pop-up menu is used to select your desired mic. In some cases a mic will have a second listing with (W) appended to the mic's name. This indicates that the mic modeled was supplied with a windscreen and this is the model of the mic with the windscreen attached. If you wish to simulate the use of the windscreen, you should select this version of the model. Additionally, the menu offers a selection called Bypass. When Bypass is selected, no mic model is applied. The net sonic effect of selecting Bypass here depends on the setting of the Source Mic menu:

- If the correct source mic is selected in the Source Mic menu, and Bypass is selected in the Modeled Mic menu, the final output of the Microphone Modeler will be stripped of the characteristics of the source mic. This results in a signal that would have been recorded by an ideal instrumentation microphone with no proximity effect.
- If Bypass is selected in the Source Mic menu and Bypass is selected in the Modeled Mic menu, the final output of the Microphone Modeler will be identical to the original input signal (with the exception of any added tube saturation).

Low-Cut Menu If the mic you select in the Modeled Mic menu is equipped with a user-selectable low-cut filter, the Low-Cut pop-up menu will allow you to select from among the filter settings available on that mic. (If the selected mic does not have a low-cut filter, the menu will be grayed out.) If the modeled mic does include a low-cut filter, selecting a low-cut setting will reproduce the same effect that selecting that setting would have on the actual modeled mic.

TIP

The setting labels that appear in the menu are those that appear on the physical mic. In some cases, the label is the cut-off frequency of the low-cut filter as specified by the mic's manufacturer. However, the Microphone Modeler does not simply apply a generic low-cut filter at the stated frequency, but instead models the actual filter performance of each modeled mic. In other words, a stated cut-off frequency is only as accurate as the filter on the actual mic.

Pattern If the mic you select in the Modeled Mic menu is equipped with userselectable pick-up patterns (e.g., omni, cardioid, hypercardioid, etc.), the Pattern pop-up menu will allow you to select from the actual pattern settings available on that mic. (If the modeled mic does not have selectable patterns, the menu will be grayed out.) If the modeled mic does include multiple patterns, select the pattern whose characteristics produce the effect you desire.

TIP

The purpose of the Pattern selection is to model the varying frequency characteristics that result from each of the available pattern settings, with the assumption that the audio was recorded on axis (that is, from the front of the microphone). Since the Microphone Modeler has no way of knowing the actual placement of the signal source, it does not attempt to simulate off-axis performance.

Proximity The Proximity knob in the Modeled Mic section can be used to select a desired amount of proximity effect. Using the Proximity knob to set a particular distance will result in the amount of proximity effect that would be produced by the actual modeled mic when placed at that distance from the signal source.

The effect of the Proximity control is unique for each model of microphone. The Microphone Modeler does not use a generalized approximation of proximity effect. Each model reflects the specific physical properties that create the individual proximity effect for that mic.

Mics operating in omnidirectional mode do not exhibit a proximity effect. Consequently, if the modeled mic is an omni mic, or the modeled mic has selectable patterns and omni is chosen, the Proximity control will be disabled.

NOTE

A secondary effect of mic-to-source distance is the extent to which environmental ambience is picked up by a mic. For example, as a mic is moved away from the source, the proximity effect decreases, but the amount

of "room tone" increases (assuming that you are not in an anechoic chamber). The Micro-hone Modeler does not model this effect. However, judicious use of the Proximity control in combination with some appropriately programmed reverb will allow you to create the same effect, with the additional bonus of being able to control the exact nature of the room tone.

Preserve Source The Preserve Source controls allows you to split your audio into its bass and treble ranges and process each range separately. This lets you create hybrid mics that combine the bass characteristics of one mic and the treble characteristics of another. One of the two mics will be your actual source mic and the other can be selected from any of the available models.

Say, for example, that you have a mic whose bass response is great for a particular track, but whose treble response just doesn't sound right. With this feature you can preserve the bass response of your source mic while replacing its treble characteristics with that of any of the modeled mics.

Here's how it works:

1 **Make all the appropriate settings in the** Source Mic **section. (Do not select** Bypass **unless you are going for some special effect, as it will defeat the normal function of this feature.)**

2 **Choose the other mic for your hybrid and make all the appropriate settings in the** Modeled Mic **section. (Again, do not select** Bypass **unless you are going for some special effect.)**

3 **3) In the** Preserve Source **section, click on either the** Bass **or** Treble **button (its associated "LED" will light) depending on whether you want to preserve the bass or treble characteristics of your source mic.**

There are four possible states of the two Preserve Source buttons. Here's what each does (☼ = LED lit, ● = LED not lit):

Preserve Source: Bass ●, Treble ●With neither button pressed, frequency splitting does not take place and the Microphone Modeler operates in its normal manner according to the settings in the Source and Modeled Mic sections.

2) Preserve Source: Bass ☼, Treble ● With the Bass button pressed, the source mic's bass characteristics are allowed through unchanged while the treble characteristics are neutralized. Then, at the model end, only the model's treble characteristics are applied to the signal. The net effect is that you get the source mic's bass characteristics and the modeled mic's treble characteristics.

Preserve Source: Bass ●, Treble ☼ This, as you've probably guessed, is the reverse of the previous arrangement. With the Treble button pressed, the source mic's bass characteristics are neutralized while the treble characteristics are allowed through unchanged. Then, at the model end, only the model's bass characteristics are applied to the signal. The net effect is that you get the source mic's treble characteristics and the modeled mic's bass characteristics

Preserve Source: Bass ☼, Treble ☼ With both buttons pressed, both the source's bass and treble characteristics are allowed through unchanged and no model is applied to either range. This is equivalent to selecting Bypass in both the Source Mic and Modeled Mic menus, with the exception that the Proximity controls for both the source and modeled mics remain active.

Tube Saturation The Tube Saturation section is designed to model the distortion that is typical of a high-quality tube pre-amp.

When tube pre-amps are operated in their linear range, there is virtually no signal distortion and their audio qualities are essentially identical to solid state pre-amps. However, it commonly occurs that transients exceed the linear voltage range, resulting in distortion. The distortion characteristics of a vacuum tube pre-amp are vastly different from that of solid state amplifiers and are often described as adding a certain "warmth" to a sound (in contrast to what is often described as the "brittleness" of the solid state sound).

The amount of tube saturation effect applied to your audio is controlled by the Tube Saturation Drive control in combination with the Input Gain control.

The Drive control determines the amplification factor of the modeled tube pre-amp with the numeric display indicating the amplifi-cation in dB. At 0 dB , no distortion occurs, even for full amplitude (+1 or -1) signal levels. These levels represent the "rails" of the amplifier. As the Drive is increased, the amplification is increased. Any regions of the signal that increase beyond the rails generate distortion. (But instead of the usual ugly digital clipping, they are distorted the same way the tube pre-amp would distort the sound.)

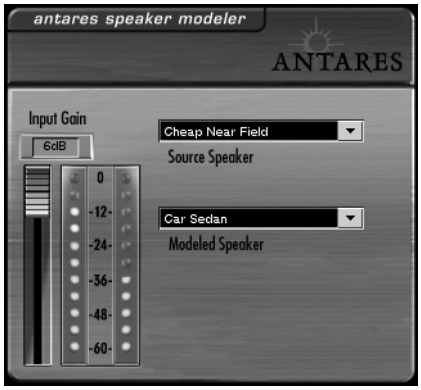
TIP

If you want to add tube saturation distortion without otherwise affecting your sound, set both the Source Mic and Modeled Mic menus to Bypass.

Output Level The **Output Level** control is used to fine-tune the Microphone Modeler's output level. This control is strictly an attenuator (i.e., no gain is available). You should always start with it at 0dB (the top of its range) and then reduce level as necessary. It is particularly useful when adding large amounts of tube saturation.

Antares Speaker Modeler

More of Antares Audio Technologies patented modeling technology is found in the Speaker Modeler plug-in (which is, we're proud to say, being debuted in the SX-1). This plug-in lets you sonically morph one type of studio monitor into a completely different speaker. For example, let's say you want an audio track to sound like it is coming out of a car stereo; or, perhaps you just need to hear what your entire mix would sound like out of a TV speaker. This plug-in will help you achieve these effects. Its uses range from creative sound effects (when inserted on a channel or fed an aux send) to simulating different sound systems during reference monitoring (when fed an entire mix).

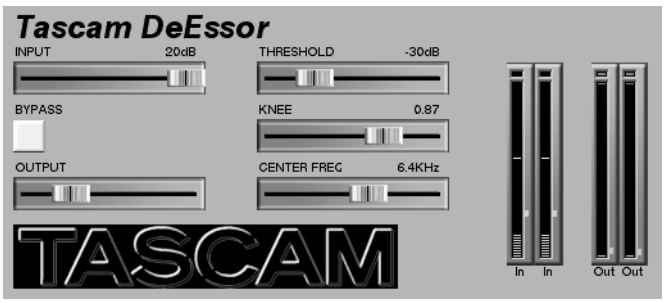


Source Speaker Use this field to select the type of speaker that your source material was recorded from. Or, select Bypass to leave your source material dry. Use this setting when you want the audio coming from your studio monitors to accurately emulate the speakers selected in the Modeled Speaker field.

Modeled Speaker Use this field to define the type of speaker you want to emulate.

Tascam DeEssor

This plug-in is used to limit sibilance in vocal recordings (for example, over exaggerated "sss" sounds). It is based on a frequency dependent limiter that only affects high frequncies at a very narrow bandwidth.



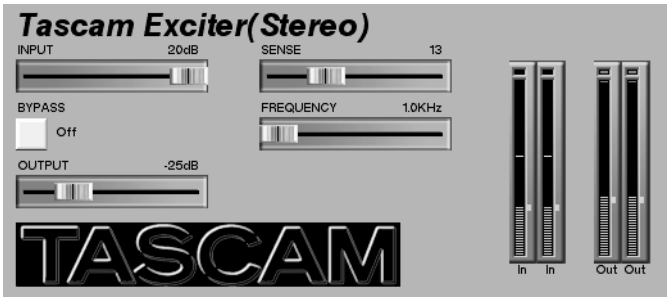
THRESHOLD This control sets the level at which you want processing to begin. The higher the Threshold setting, the less often de-essing will occur.

KNEE This control determines the curve, or steepness, at which the limiting occurs.

CNTR FREQ Use this slider to define the center frequency around which limiting will occur. Depending on the person singing or talking, excessive sibilance often occurs between 7 and 8 kHz. Try a value in this range as a starting point.

Tascam Exciter (Stereo)

Use this plug-in to add extra high frequency punch to your tracks. It is especially useful for improving the clarity of poorly recorded vocals. However, be careful not to overdo it - because too much of this effect can be harsh sounding.



SENSE This control determines how often the exciter effect will occur.

FREQUENCY This control defines the frequency above which exciting occurs.

Tascam/Nemesys HD1 Dither

This plug-in is for changing and enhancing the resolution of digital recordings. Its dithering algorithm boasts an extremely flat, low noise spectrum. Use it to convert bit resolutions, to dither, and to truncate.

TIP

This plug-in is best used post-fader (either on inserts or busses), as the last processor in a signal chain. If it is placed in a position where DSP processing happens afterwards, you lose the bit resolution effect.

Bit Depth Select the bit depth you want to convert to in this field (16, 18, 20, or 24).

Type In this field there are three choices: HD1, Truncate, or Bypass.

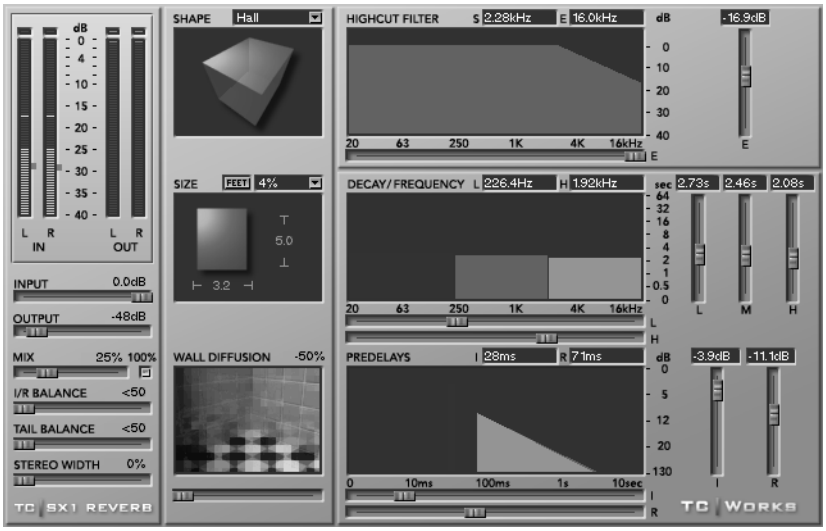
HD1 This setting uses the TASCAM/Nemesys high-definition dithering algorithm to improve the low amplitude fidelity of your digital signal.

Truncate This setting cuts off the bottom least significant bits in your digital recording. This might prove useful when using the Bypass key to compare sound quality between 24 bit versions and 16 bit versions of your mix.

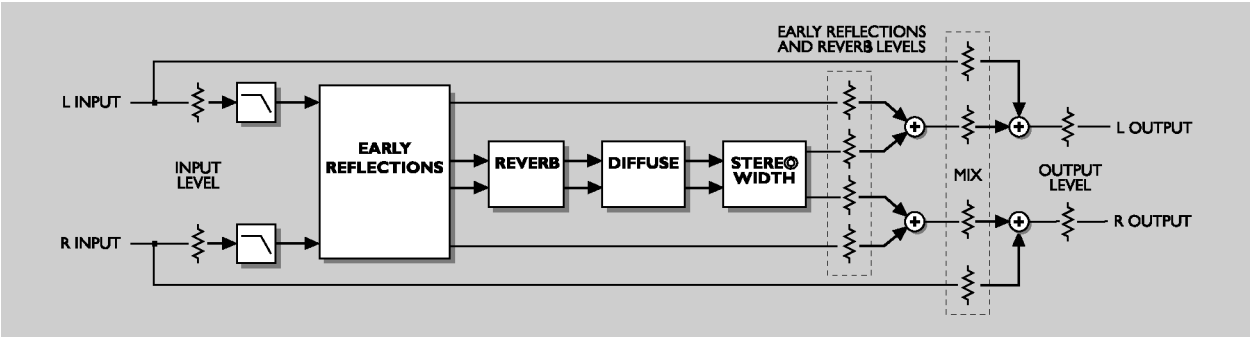
Bypass Select bypass when you only want to convert bit resolution without truncating or dithering.

TC SX1 Reverb

The TC Reverb plug-in is a very comprehensive and high-quality reverb algorithm. It mainly consists of 4 functional blocks: Level Mix Controls, Space Editor, Highcut Filter, and Time Editor.



The TC SX1 Reverb has a very powerful reverb algorithm core. Take a look at the block diagram below to get a better idea of the signal flow:



Level Mix Controls

"MIX" This parameter sets the balance between the source signal and the processed signal. At 0%, you will only hear the source, while at 100% you will only hear the processed signal. When you are using the reverb in a send/return configuration, you will usually want to check the 100% box. This disables the MIX slider and locks the mix ratio at 100% wet.

L/R BALANCE Use this control to set the left/right balance of the Initial Reflections.

TAIL BALANCE With this fader you can set the left/right balance of the Reverb Tail.

STEREO WIDTH Stereo Width determines how "wide" the reverb should be: 0% is the same as mono, and 100% is wide stereo.

Space Editor The Space Editor defines the basic structure of the room. In natural reverberation, the early reflection happens within the first second of the response. This is where the sound is very clearly reflected by the walls and floors, and you can "feel" which type of room you are in. The second stage is the reverb process; here, the original sound is almost 'lost' within millions of chain reflections—so that even two very different rooms often sound much alike. The early reflection is actually the part of the reverberation process that defines the room characteristics.

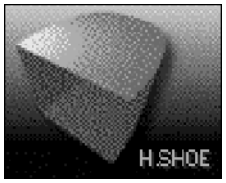
SHAPE Shape defines the basic room type and early reflection pattern. By clicking on the Shape label above the display you will get a pop-up window where you can choose the reverb's shape directly. These shapes are available:

Hall

Simulates the early reflection measured in the Boston Symphony Hall.

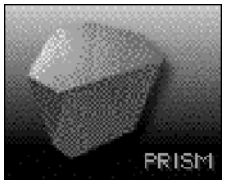
Horseshoe

Incorporates some ideas from the design of the Musikvereinssaal in Austria.



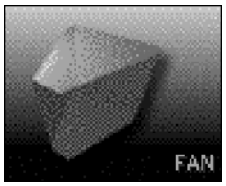
Prism

Has a pattern based on the conceptual 'golden ratio' shoe box hall.



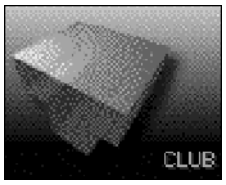
Fan

Is based on the basic structure of the La Scala Concert Hall.



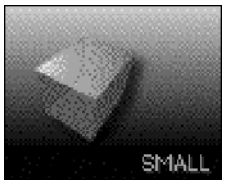
Club

Is based on a regular small club room.



Small

Simulates a small domestic room.



TIP

Always adjust the predelay according to the basic shape you have chosen. Small rooms with a long predelay, for example, sound very unusual.

SIZE Size sets the size of the room by scaling the early reflection pattern. By clicking on the Size label above the display you will get a pop-up window. Here you can choose a scaling factor for the room size. A scaling factor of 1.0 is the original room size.

WALL DIFFUSSION Wall Diffusion determines how much coloration the walls add to the sound. This parameter is used to increase the reverb decay's density. A Diffusion of 0% determines a value related to the original sound character of the room settings (including decay). You can change the Diffusion with an offset of up to ±50%.

High Cut Filter The input to the TC SX1 Reverb algorithm is processed with a low pass filter which allows you to "roll off" the high frequencies of your reverb effect. In general, you will want to make your reverb effect a bit darker than the source signal, as it might otherwise sound unnatural or even unpleasant.

HIGHCUT FILTER Above the HIGHCUT FILTER window, there are two frequency values displayed. The S value is the start frequency of the high cut filter, which is the lowest frequency influenced by the filter. The E value is the end value. This frequency is where you have reached the determined attenuation. The slider to the window's right adjusts the actual high frequency cut. And, the slider at the bottom of the window adjusts the frequency position where S meets E.

Time Editor

DECAY/FREQUENCY The reverb decay is a long tail of reverberation that happens after the initial burst. The Decay block receives its input from the early reflection. Decay time can be edited distinctly in 3 frequency ranges: low (L), mid (M), and high (H). And the frequency-ranges themselves can also be modified.

For each band you can set the decay time between 0.25 and 64 seconds. The sliders to the right of the window adjust each band's decay time. The two sliders at the bottom of the window set the 2 crossover points between the 3 frequency-ranges.

TIP

When designing your reverb, keep in mind that room acoustics lose their high frequency energy more easily over time. Setting the High Decay to a large amount of time will usually make the room sound more artificial.

"PREDELAYS" The predelays determine the starting point for when the actual reverb effect will begin. This is broken into two components, the reverb's early reflection (I) and it's decay curve (R). The individual start times and levels of both components are adjustable. The sliders to the right of the window adjust the early reflection and decay curve levels. The sliders below the window adjust the early reflection and decay curve start times (the amount of time each is initially delayed). The decay curve's start time is directly related to the early reflection's start. The maximum early reflection delay is 160 ms. And the decay curve's start time can be set no later than 100 ms from this initial first predelay.