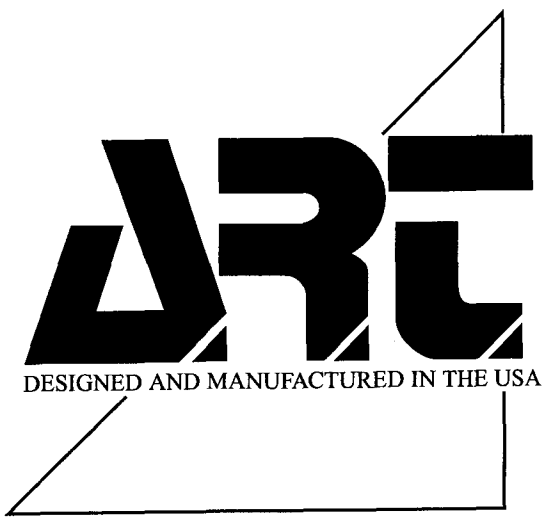
RXR ELITE



USER'S GUIDE

ART RXR Elite User's Guide Contents

Fill in the following information for your reference:

Date of purchase _____

Purchased from _____

Serial number _____

427-5004-101

Introduction

Thank you for purchasing an RXR Elite—and congratulations: You now own one of the most sophisticated pieces of audio signal-processing technology available. Offering a level of processing resolution and sound quality of units that can cost thousands of dollars, the RXR Elite uses specially designed integrated circuits and a straightforward user interface that quickly and easily gives you access to all of its features.

Features

- 128 studio reverb presets
- Two separate processors
- Stereo inputs and outputs
- Easy programming
- MIDI In and Out/Thru
- Programmable external switch functions
- Real-time control of two parameters per bank via MIDI
- MIDI mapping
- Room, chamber, and plate reverbs
- Dual ambient plate reverbs
- Dual ambient room reverbs
- Reverse reverbs
- Hall reverbs
- Gated reverbs
- Designed and manufactured in the United States of America

The RXR Elite provides you with 128 of the finest studio-quality reverbs and reverb-based effects, including reverse, gated, and ambient reverbs. It operates in stereo and dual-channel modes, plus it's incredibly simple to use. You can use your RXR Elite with either mono or stereo input sources and send the outputs to either mono or stereo equipment. ART designed a combination of powerful processing and ease of use into the RXR Elite. We strongly suggest that you read and refer to this manual while getting used to your new processor.

Quick Start Instructions

You've unpacked your RXR Elite and you're in a hurry to get it up and running. You probably would rather play with it than read the manual (at least, right now). Fair enough. But check out the basics, outlined here, just to get your RXR Elite on line. It should take only a couple of minutes for you to read through them, and then you'll be ready to fire up your RXR Elite. Refer to this section if you have any difficulty. And later, when you want to get into more of the details of your RXR Elite, check out the rest of the manual.

Quick Setup

Insert the supplied AC adapter's plug into the input labeled PWR on the RXR Elite's back panel.

Turn the Input and Output knobs to their full counterclockwise positions. Turn these knobs up only after all other setup steps are done.

With a mixer: Connect two cords with 1/4" plugs between your mixer's reverb sends and the RXR Elite's Line Inputs. Connect two more cords between the RXR Elite's Line Outputs and your mixer's returns. Note: One cable is sufficient for all but Dual Ambience banks (Bank G and Bank H).

Straight into an amp: If you're patching the RXR Elite into a guitar (or other instrument) amplifier, use one cord between the instrument and the RXR Elite's left Line Input. Run a second cord from the left Line Output to the amp's input. If the amp has stereo input capabilities, connect another cord between the RXR Elite's right Line Out and the amp's second-channel input. Note: In Banks G and H only, you can also plug a second output from your instrument (or the output from another instrument) into the RXR Elite's right Line In.

In an amp's effects loop: If you're patching the RXR Elite into a guitar (or other instrument) amplifier's effects loop, and it's mono, use one cord between the amp's effects send jack and the RXR Elite's left Line Input. Run a second cord from the left Line Output to the amp's Effects Return jack. (If the amp has stereo returns, use another cord to connect the RXR Elite's right Line Output to the amp's other effects return jack.)

Note: If you need further help doing your initial hook-up, refer to the diagrams and information on pages 29 through 34.

Plug the RXR Elite's AC adapter into the wall socket (the RXR Elite is now powered up). Now turn on your mixer or amp and your monitor amplifier.

Make sure that your mixer's or amp's send level control is turned up and that signal is being sent to the RXR Elite. Turn the RXR Elite's Input knob clockwise until the RXR Elite's Signal LEDs glow. If the RXR Elite's Clip LED glows constantly, turn down its Input level—the Clip LED should only glow when a really loud instantaneous signal reaches the RXR Elite.

Now turn up the RXR Elite's Output level, and raise the return level on your mixer or amp. You should be hearing the RXR Elite's effect. If not, check your connections and your monitor amp (you did remember to turn it on, didn't you?).

Select program banks with the Bank selector button (just to the right of the display) and presets with the Preset knob (on the far left side of the panel). For a list of the presets, arranged according to bank and number, see page 23.

Hammer your keyboard. Wail on your guitar. Mix your entire album. And, of course, try all of the presets. Don't hold back. And when you're ready, check out the rest of this manual.

INSTALLATION

The RXR Elite may be used in a variety of setups including: mixing consoles with reverb send and return facilities, and in the effects loop of an instrument or P.A. amplifier. Self-contained in an all-steel, single-height 19" rack-mount enclosure, the RXR Elite is designed for continuous professional use. Because the unit is compact and lightweight, mounting location is not critical. However, for greater reliability we recommend that you not place the RXR Elite on top of power amps, tube equipment, or other sources of heat.

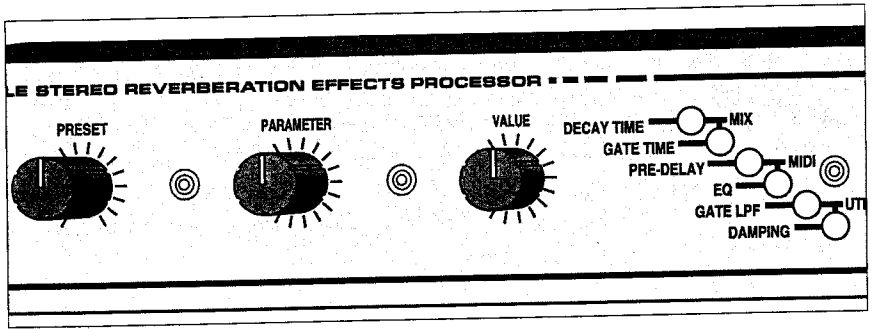
Powering The RXR Elite

The RXR Elite is powered by an external AC adapter. Always make sure that its output jack is securely plugged into the rear of the RXR Elite, and that the adapter is held firmly in an electrical outlet. Never operate the RXR Elite or AC adapter in the rain or in wet locations. If the AC adapter's cord is ever cut, discontinue using it and replace the adapter with a new one. To prolong its life, unplug the adapter when the RXR Elite is not in use. Alternatively, if the RXR Elite is mounted in a rack, plug the adapter into a switched power strip so that you can conveniently turn it off with your other gear. Refer to the label on the adapter for proper operating voltages.

FRONT PANEL CONTROLS & INDICATORS

Preset

The Preset selector knob on the left side of the front panel selects from the 16 preset programs of studio-quality reverb combinations in each Bank. Note that it doesn't stop turning once you reach the first or sixteenth Preset, so it continues counting up from 16 to 1 (13, 14, 15, 16, 1, 2, etc.) and from 1 down to 16 (3, 2, 1, 16, 15, etc.).



Parameter & Value

The Parameter knob selects a preset's adjustable parameters, indicated by one or two LEDs glowing in the diagonal slash of indicators. Whenever you turn the knob, one or two LEDs in the indicator slash glows and the numeric display changes from showing the current preset number to showing a parameter's value. You can scroll through the parameters, plus access MIDI and Utility functions (for details on these modes, see page 35). Turning the Value knob changes the selected parameter. Any changes you make with the Value knob can be saved in a preset by pressing the Store button twice to store it in the same location; to store a preset elsewhere in the Bank, press Store once, turn the Preset knob to the location in which you wish to store the preset, and then press Store again.

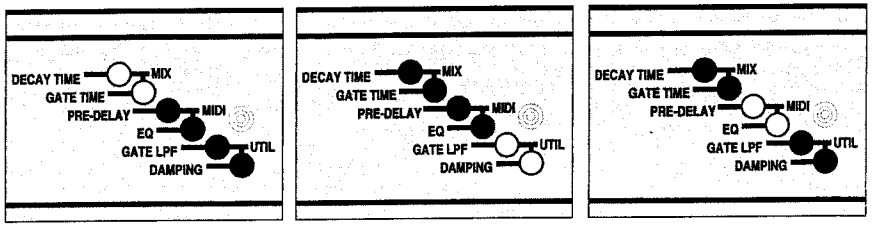
Note: You can store preset changes within a Bank, but you cannot store them in a different Bank from the one in which the preset originated. This makes it easier to organize your presets. Refer to the section titled Next Preset Selection on page 40 for details on remapping presets.

Note: About four seconds after you quit turning the Parameter or Value knob, if no other knobs are turned, the display returns to showing the preset number. Turning the Parameter or Value knob returns the display to showing the current Parameter and value.

LED Parameter Indicators

When you turn the Parameter knob, the "slash" of LEDs in the middle of the panel tells you which parameters can be changed via the Value knob. When only one LED glows, the label to its *left* tells you which parameter is selected (EQ, Decay Time, etc.). When two LEDs glow together, the text to the *right* of the LEDs tells you which parameters can be changed by turning the Value knob. The Mix function (two uppermost LEDs glowing simultaneously) affects the wet/dry mix

Mix *Utility Mode* *MIDI Mode*



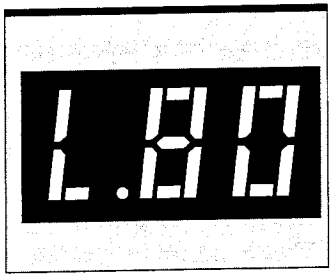
(0 for fully dry, 100 for fully wet, with 50 an even mix of both). When the two LEDs next to "Util" are lit, then the Utility Mode is active. When the two LEDs next to "MIDI" are lit, then you can make changes in MIDI Mode. Utility and MIDI modes are explained on page 35.

Note: If you employ the RXR Elite in a mixer's send/return loop, you'll probably want to turn the mix control to its effects-only setting (or enable the Dry Kill function), since you'll already have plenty of dry signal in the mixer to work with. If you patch the RXR Elite into one of the mixer's input-channel effects loops, though, you will likely need to use the RXR Elite's mix control, since most mixers are configured so that the channel's entire signal passes through this loop. Consult your mixer's manual for further information.

Note: When the RXR Elite is placed in a guitar or other instrument amp's effects loop, it may be necessary for some dry signal to be present in the RXR Elite's output. (Consult the amp's manual to determine the correct setting.)

Numeric Display

In Preset Mode, this display shows a 1-, 2-, or 3-digit letter/number combination that corresponds to the preset currently in use. When you're editing parameters or are in the MIDI/ Utility mode, the "slash" LED display tells you what values or parameters you are modifying, and the numerical display indicates the value.

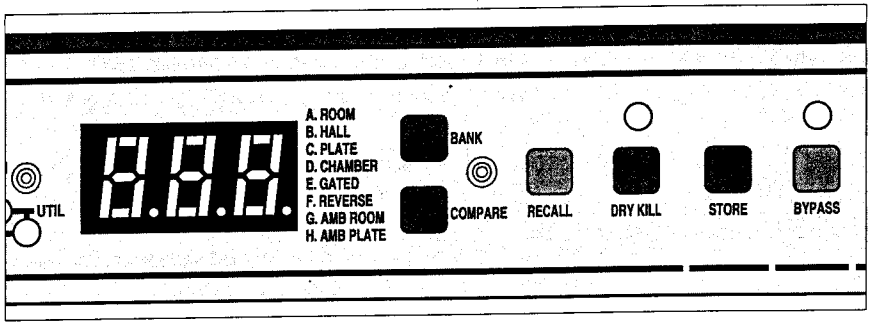


Bank Advance Button

The Bank button selects the next higher Bank each time you depress it. The corresponding Bank letter (A through H) shows in the display's left digit. Holding the button down makes the Bank's letter flash; this means that if you continue holding the button down and turn the Preset knob clockwise, you can rapidly advance through the Banks (A, B, C, D, etc.). Holding the button and turning the Preset knob counterclockwise steps downwards through the Banks (F, E,, D, C, etc.). Only after you release the button is the new preset loaded into the processor.

Compare

When you adjust the parameters in a Preset, you can compare the edited and unedited preset by pressing the Compare button, which toggles between the two settings. You can also toggle between two Presets selected by the Recall button by pushing the Compare button. For example: If you were using Preset A6 in a song and needed to switch to Preset G12 for the second verse, first recall Preset A6 and then G12 (see the section on the Recall button). Now each time you press Compare, you automatically switch between Presets A6 and G12.



Recall

The Recall button gives you a way to jump from one preset to any other preset, regardless of which Bank it's in. Select a preset and then press Recall. The display blinks on and off. Now select any other preset using the Bank selector button and/or the Preset knob. Press Recall again, and the new Preset is active.

Dry Kill

When you push the Dry Kill switch, the LED above it glows, letting you know that its function is activated. Pushing it again disengages the function and turns off the LED.

Dry Kill stops all direct signal from passing through the RXR Elite, allowing only the sound altered by the signal-processing circuitry to exit through the Line Outputs. This is especially useful when the RXR Elite is patched into a mixer's reverb loop, since using Dry Kill makes it unnecessary to individually change the wet/dry mix in every preset to 100.

Store

Once you've made changes to a preset, you can store the altered preset in its original location, or in any location within its Bank. This simplifies finding it later, since it keeps gated reverb presets with gated reverb presets, rooms with rooms, etc. After making changes using the Parameter and Value knobs, press the Store button. The program number will blink rapidly. If you want to store the changed program there, push Store again. The blinking stops, and your preset is stored.

If you want to save the preset in a different location, follow this procedure: Press Store, and when the numbers blink, turn the Preset knob to the location number where you want to store it. Then press Store again. The blinking will stop, and the RXR Elite will indicate that the new preset in the new location is active.

Note: You can organize your custom presets by placing them all in, for example, preset 16 on each Bank. Then to go from one to the next, you simply depress the Bank selector to go from Bank to Bank.

Restoring Presets To Original Factory Settings

If you want to restore *all* presets to their factory settings, press the Bank, Dry Kill, and Bypass buttons simultaneously. (The Numerical Display will go through a routine that lasts a few seconds before showing "A1.") Remember: Only do this if you want to restore *all* of the settings to their factory values. It erases all customized presets in the RXR Elite. If you have favorite customized presets, either scroll through their parameters and write them down, or use the MIDI Full Dump feature to offload your presets to a MIDI storage device before implementing a full reset. (See page 37 for information on RXR Elite MIDI functions.)

Bypass

When the Bypass switch is pressed, all "wet" (processed) signal is blocked from reaching the outputs, leaving only the dry signal. Pressing the Bypass button kills the effects signal in the mix. The LED above the Bypass switch glows continuously whenever the bypass mode is engaged. Pressing Bypass again returns the preset to active status.

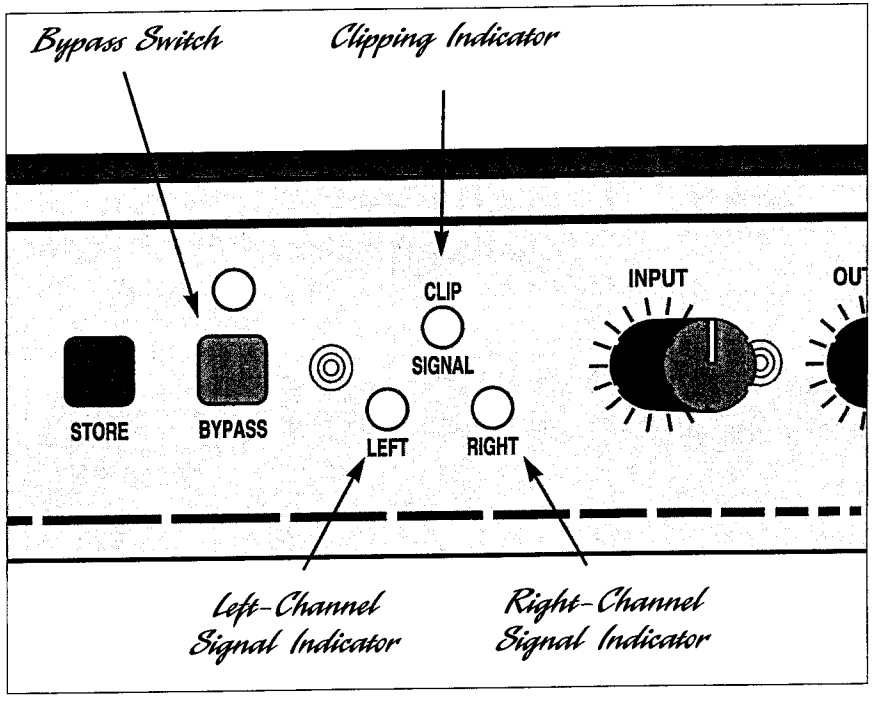
Another way to bypass the unit is to use the Ext. Switch jack on the rear panel. Most footswitches will work with the RXR Elite, as long as they can be connected

by a cord that has a 1/4" phone plug for insertion into the Ext. Switch jack. For further information, refer to the Jack Mode section on page 36.

Note: Activating Bypass while Dry Kill is selected stops all direct and all effect-processed signal from reaching the output. This can be used as a mute function—perfect for turning off all sound when you take a break or tune up. When you exit the Bypass mode, the Dry Kill function acts normally; if it's activated, it will allow only the effect-enhanced signal to reach the RXR Elite's output.

Clip & Left Channel/Right Channel Signal LEDs

Three front-panel LED indicators show the status of the input signal level as it enters the RXR Elite's digital processor. The Left Channel and Right Channel Signal LEDs indicate the presence of an audio signal. If the Clip LED is lit, it indicates that the digital processor is getting too much input, resulting in undesirable distortion, also known as clipping. For maximum dynamic range, the Signal LEDs should be on most of the time, with the Clip LED briefly flashing only on transients (high-energy bursts, such as loud snare drum hits).



Input

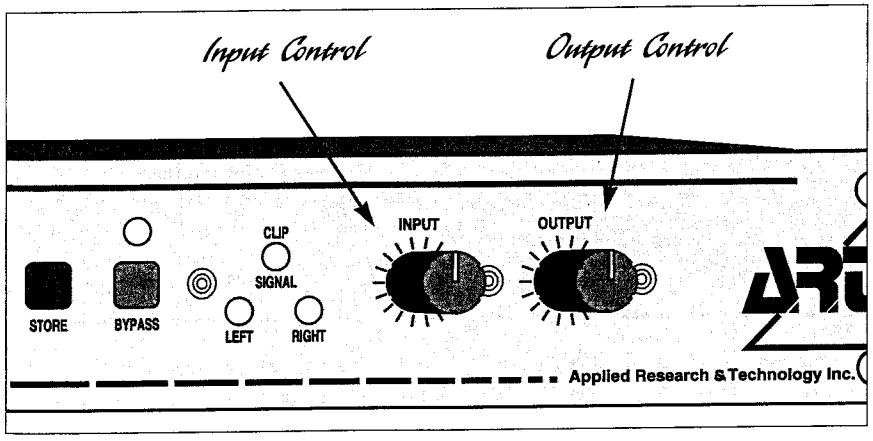
The Input knob lets you govern the signal intensity reaching the RXR Elite's input circuitry so that you can set the optimum level. This is important, since a signal's level at this stage has a bearing on the signal-to-noise ratio and the amount of distortion present in the final output. A little experimentation will give you a good feel for the controls. Too little signal results in a disproportionate amount of noise, while too much (indicated by a constantly glowing Clip LED) sounds distorted and gritty. Use the Signal and Clip LEDs to help guide you, but use your ears, too.

Note: The Input knob's setting is global, meaning that it affects the RXR Elite's input level, regardless of what program is engaged.

Output

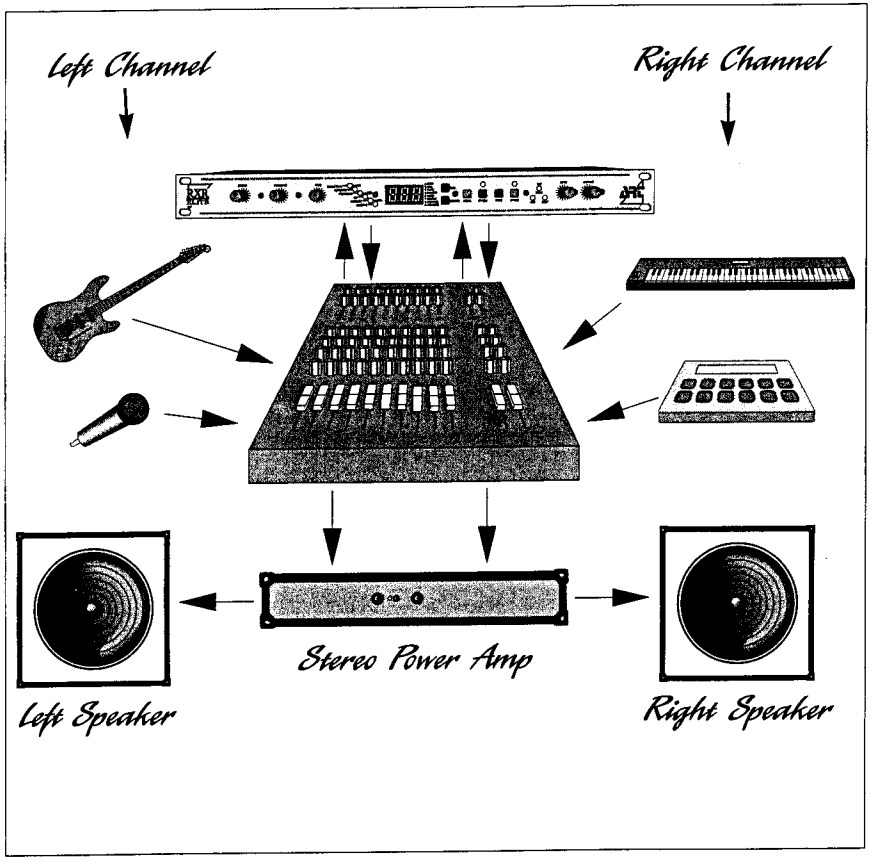
The Output control governs the amount of signal leaving the RXR Elite. Depending on the type of equipment connected to the unit, and its input needs, it's almost mandatory to experiment in order to find the optimum level. Check your other equipment's manual for hints on setting appropriate input levels, or follow the tips outlined in the section above. Use your ears as a guide, too.

Like the Input knob, the Output knob's setting is global, meaning that it affects the RXR Elite's output level, regardless of what preset is engaged.



DUAL & STEREO OPERATION

The RXR Elite is designed so that some of its presets operate in Dual (two discrete channels) mode. When in Dual mode (Banks G and H), each channel functions separately from the other, with no signal from one channel entering the other at any point. When used with a mixer, your RXR Elite becomes a very powerful tool for processing multiple instruments. For example, guitar can be routed through the left channel while the keyboard can pass through the right channel, and even though the processing is the same on both channels, their signals—including the added reverb—remain separate. For a single instrument that has stereo outputs feeding into the RXR Elite's two Line Inputs, the RXR Elite's ability to create stereo images adds space and apparent size.



The RXR Elite's other mode, Stereo, works in the following manner: The RXR Elite's input section mixes both inputs into a mono signal for processing, but the output signal is in stereo. The two dry signal paths (left and right) pass through their respective sides without being mixed. For example, if you plug the output from a keyboard into the left channel and a guitar into the right channel, their dry signals will appear in the left and right channels, respectively. However, the effect reaching both outputs along with the dry signal (depending on the Mix knob's setting) will be a combination of the two input signals.

INPUTS & OUTPUTS

Despite the RXR Elite's sophistication, it's easy to interface the unit with other equipment. All inputs and outputs are located on the rear panel. Standard 1/4" inputs and outputs make patching simple. Note: For best audio quality, always use high-quality cables.

Because the RXR Elite is designed for line-level or instrument operation, we don't recommended plugging microphones directly into it. Instead, either use a preamp, a mixer, or an amp's preamp section to boost the level first (use the effects loop output or reverb send from a mixer or amp). The higher signal level from a preamp or effects loop assures an optimum signal-to-noise ratio in the RXR Elite, keeping hiss and distortion to a minimum.

Line In L & R

The Left and Right Line inputs are single-ended (unbalanced) with an impedance of 500k ohms. Two modes of operation are available: Dual and Stereo. In Dual mode (Banks G and H), the left and right channels are processed separately. In Stereo mode (Banks A through F), the inputs are summed (added together) and stereo imaging is produced in the RXR Elite's circuitry, creating a stereo image in the Left and Right output channels. If only one input is used, plug into the left channel; then the signal is automatically routed to both channels' inputs, regardless of whether the RXR Elite's program is Dual or Stereo. However, if you send two separate signals to the Left and Right inputs (for example, guitar to the Left and keyboard to the Right), the RXR Elite will mix them and process them as one signal when Stereo programs are selected. If a Dual mode program is selected, then the two signals will not be mixed, and they will be processed separately.

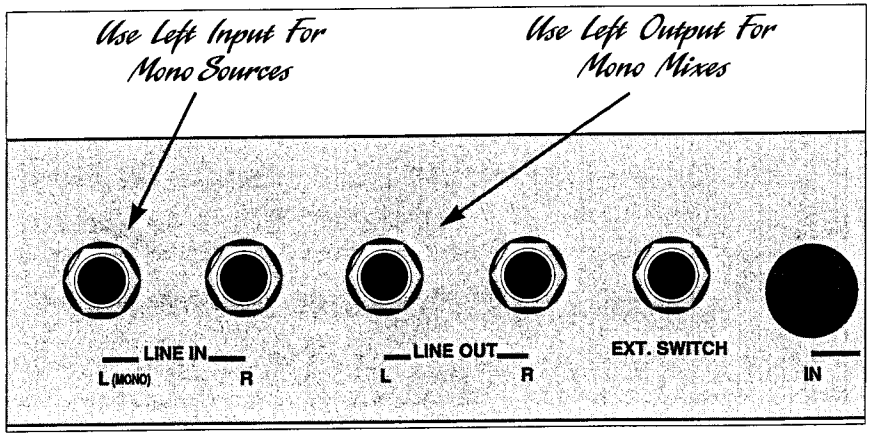
Note: When two separate signals are sent to the RXR Elite's inputs and a Stereo program is selected, the processed, or wet, signal will contain sound from both sources. The dry signals will remain separate; that is, the dry signal coming into the Left input will only go to the Left output, and the dry signal coming into the Right input will be present only at the Right output.

Line Out L & R

The Left and Right Line Outputs are single-ended (unbalanced) with a source impedance of 1k ohm, and can provide a stereo or mono output. When two separate signals are applied to the inputs and Dual program is selected, the resulting outputs are separately processed. That is, the left and right channels behave as if they were treated by two separate signal processors. If both outputs are used and the RXR Elite receives a mono input signal, a stereo image is produced. If you're only supplying the RXR Elite with a mono input, use the RXR Elite's Left input. And if you use only one output, choose the Left output, because using this output jack alone with either a mono or stereo input provides a signal combining the processed information from both outputs.

Note: When only the Left Line Out is used, the effect's output is a processed combination of both the left and right input signals (the outputs are summed).

In addition, regardless of whether the RXR Elite is operating in a Stereo or Dual program, if two separate inputs are used, then the dry signal at each output will be the same as its respective input (that is, Left dry in = Left dry out, Right dry in = Right dry out).



If you're only using one input and don't want an output that contains the combined effects from both channels, you can do the following: (1) Plug the cord coming from your audio source (mixer's reverb send, keyboard's output, etc.) into the RXR Elite's Left Line In. (2) Connect a cord between the RXR Elite's Left Line Out to wherever you want the signal to go (mixer's reverb return, an amp, etc.). (3) Insert a dummy plug into the RXR Elite's Right Line In. You can use a 1/4" phone plug with or without a cord attached as a dummy plug. By using a dummy plug in this way, the Left Line Out has only the left channel's effects.

If you want to use only the right channel instead of the left, follow the same directions, but run your signal through the RXR Elite's Right Line In and Right Line Out and place the dummy plug into the Left Line in.

Ext. Switch

The Ext. Switch (external switch) jack allows you to perform a variety of switching functions from a free-standing remote footswitch or the Bypass footswitch portion of an ART X-15 Ultrafoot.

A footswitch and any 2-conductor cable with 1/4" phone plugs may be used with this jack. The RXR Elite can be configured to accept three different types of footswitch: push/push (toggle), momentary normally closed, and momentary normally open. To access these options, turn the Parameter knob until you reach Util (Utility mode) and a "t" appears in the left digit of the display. Then turn the Value knob to select one of these switch-type options:

to	push/push (toggle)
nC	momentary open, normally closed
no	momentary closed, normally open

To use the Bypass output from an X-15 Ultrafoot to control any of the RXR Elite's footswitchable functions, connect the two units with a standard cord (shielded or unshielded) with 1/4" phone plugs at each end. Check your X-15's manual for setting its correct function.

The Ext. Switch can be programmed to provide Dry Kill, Bypass, Compare

Preset, and Next Preset functions. See page 16 for information on programming the Ext. Switch in Utility Mode to access these functions.

MIDI In & MIDI Out/Thru

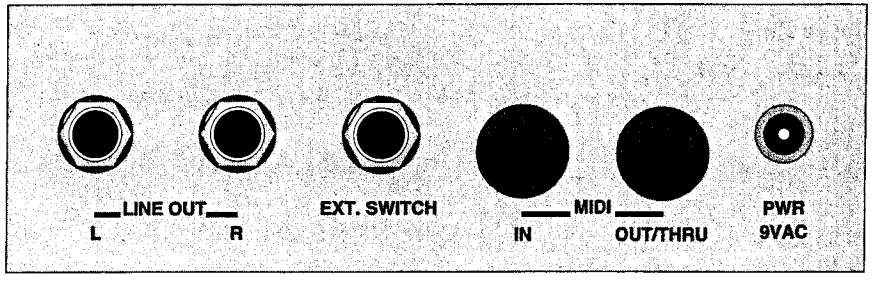
The jack labeled MIDI In receives the MIDI signal containing MIDI Program Change messages or real-time control for up to two parameters per Bank. It enables you to "talk" to the RXR Elite from an external source such as an X-11 or X-15 Ultrafoot, a computer equipped with MIDI ports and associated software, or a sequencer

The MIDI Out/Thru jack operates in two ways. As a MIDI Out, it transmits MIDI information from the RXR Elite to other MIDI-controllable gear such as sequencers, synthesizers, etc. As a MIDI Thru, it passes the information reaching the MIDI In, acting as a relay. The factory default for this jack is MIDI Thru. To change it to a MIDI Out, see the section on page 37 called MIDI Parameters.

Note: The MIDI Thru function is created through software. It therefore acts like a MIDI Merger, and all MIDI Mergers impart a small but noticeable delay. This is no problem when you are passing data such as a Program Change command through the system, but it can cause difficulty with equipment that is critically time-sensitive, such as synchronizers, drum machines, etc. If you plan to pass time-sensitive MIDI data along to other equipment, we suggest that you do not pass it through the RXR Elite's MIDI In and MIDI Thru.

Power Input

See "Powering The RXR Elite," on page 6.



The RXR Elite's Adjustable Parameters

Each of the RXR Elite's eight preset Banks has its own set of adjustable parameters. Here they are, arranged by Bank and showing the range of adjustment options for each one, followed by a description of how they work:

Bank A Room Reverb

Displayed Parameter	Range
Decay Time	0.1 s—5.0 s
Pre-Delay Time	0 ms—127 ms
EQ	L0.8—L16./Bypass/H.08—H15.
Damping	1—12
Mix	0—100

Bank B Hall Reverb

Displayed Parameter	Range
Decay Time	0.2 s—12.8 s
Pre-Delay Time	0 ms—127 ms
EQ	L0.8—L16./Bypass/H.08—H15.
Damping	1—12
Mix	0—100

Bank C Plate Reverb

Displayed Parameter	Range
Decay Time	0.2 s—5.0 s
Pre-Delay Time	0 ms—127 ms
EQ	L0.8—L16./Bypass/H.08—H15.
Damping	1—12
Mix	0—100

Bank D Chambers

Displayed Parameter	Range
Decay Time	0.2 s—12.8 s
Pre-Delay Time	0 ms—127 ms
EQ	L0.8—L16./Bypass/H.08—H15.
Damping	1—12
Mix	0—100

Bank E Gated Reverb

Displayed Parameter	Range
Decay Time	0.2 s—12.8 s
Gate Time	50 ms—400 ms
Pre-Delay Time	0 ms—127 ms
EQ	L0.8—L16./Bypass/H.08—H15.
Mix	0—100

Bank F Reverse Reverb

Displayed Parameter	Range
Decay Time	0.2 s—12.8 s
Gate Time	50 ms—400 ms
Pre-Delay Time	0 ms—127 ms
EQ	L0.8—L16./Bypass/H.08—H15.
Gate LPF	L.08—L16./Bypass
Mix	0—100

Bank G Dual Ambient Rooms

Displayed Parameter	Range
Decay Time	0.2 s—1.2 s
Pre-Delay Time	0 ms—127 ms
EQ	L0.8—L16./Bypass/H.08—H15.
Damping	1—12
Mix	0—100

Bank H Dual Ambient Plates

Displayed Parameter	Range
Decay Time	0.2 s—2.0 s
Pre-Delay Time	0 ms—127 ms
EQ	L0.8—L16./Bypass/H.08—H15.
Damping	1—12
Mix	0—100

Description Of Parameters

Parameters for each Bank's Presets are selected using the Parameter knob; the Value knob sets amounts and times, and selects values for damping, wet/dry mix, etc.

Decay time. This is the amount of time that it takes for the reverb to die away. Although each bank's presets have different minimum and maximum decay times, all are adjustable in increments of 0.1 seconds (1/10th of a second, or 100 milliseconds). Note: The apparent length of the decay time is affected by other factors, notably EQ and Damping.

Gate Time. As its name implies, a gate opens and shuts, and in the case of the RXR Elite, the gate opens to let reverberated sound through and shuts to stop reverberated sound from passing. (Gate Time is adjustable in 25 ms increments) Adjusting the Gate Time allows you to set the time the signal gate is open. In simple terms, a short gate time abruptly cuts off the reverb before it has a chance to fully decay.

Pre-Delay Time. In natural settings, reverb doesn't occur immediately after a sound is produced. Instead, the sound has to bounce off things, and as the reflections build up, reverb is created. You can simulate that effect by adjusting the Pre-Delay Time function, plus you can tailor "room" characteristics that seem to defy the laws of physics (reverb with no pre-delay, for example). A common use of pre-delay is to leave a little "air" between the creation of a sound and its reverb. This is valuable for vocals, bass, and drums, where you want as much punch and intelligibility as possible. Pre-Delay Time in all eight banks of the RXR Elite is adjustable in 1 ms increments from 0 ms (no pre-delay) to 127 ms (approximately 1/8 of a second).

EQ. The RXR Elite lets you tailor the reverb's frequency range—or not—according to your taste. It offers highpass and lowpass filtering and a bypass mode. Lowpass filtering works like this: All sounds below a certain frequency is allowed to pass freely through a filter, but any sounds above that frequency are filtered out. Think of a lowpass filter as the equivalent of a simple tone control, like on a guitar or TV. The highpass filter works in the exact opposite way: All frequencies above a certain frequency pass without modification, but all frequencies below that point are filtered out.

How do you use these filters? Lowpass is good for removing unwanted treble, such as in simulations of dark-sounding places. It's also good for creating low-end reverb devoid of highs to extend the time of a kick drum or other bottom-dwelling sound. You can also use lowpass filtering to tailor the reverb's frequency response to be less shiny, like many vintage spring reverbs (but without that awful sproing!).

The highpass filter lets you add reverb without taking the punch out of a mix, or to produce a brighter-sounding reverb. For example, if you compare the sound of a dry mix to one where *everything* goes through the reverb, you'll hear how muddy and diffused the mix becomes with the reverb. Now, if you cut the lower frequencies out of the reverb using the highpass filter, you get all the punch of the lower frequencies (bass, drums, etc.), and reverb simply adds spaciousness.

The RXR Elite lets you set the cutoff frequency for the lowpass filter from .08kHz (80 Hz) to 16kHz. The highpass filter operates over the range of

.08kHz (80 Hz) to 15kHz. Here are the symbols that appear in the Numeric Display for these filters:

Filter	Display
Lowpass	L.08 to L16.
Bypass (no filtering)	Byp
Highpass	H.08 to H15.

In Bypass mode, neither the lowpass filter nor the highpass filter is active, leaving the signal to pass through unfiltered.

Gate LPF. This dedicated lowpass filter follows the EQ filter in line. This allows tailoring of both low end and high end simultaneously, or add more rolloff of highs.

Damping. Damping is the amount by which sound is absorbed by objects in a room. A Chamber with a Damping value of 2 should sound like a tiled bathroom, or like concrete walls enclosing a room. The higher values are intended to simulate the additional damping of people, carpets, drapes, or other sound-absorbing objects in a room.

Mix. The wet/dry (effect/straight) signal mix is set by this, from 0 (dry only) to 50 (equal parts wet and dry signals) to 100 (wet only).

RXR Elite Preset List

Programs are organized into 8 banks, each with 16 presets. Each line of the following list is laid out as follows ("Dual" means two fully independent channels, while "Mono" denotes a summed mono input and stereo output):

Bank Name (Bank A-H)

Preset Left channel (or mono) process Right channel process

The Bank Name is selected with the Bank Switch; the preset is selected with the Preset knob.

Many of the names for the various reverb Presets are self-explanatory, but a few less-apparent ones are described below. Abbreviations and descriptions in the list include:

Ambient	Wide-open and airy
Chamber	This is a simulation of an enclosure (perhaps made of wood or concrete) with a sound source at one end and a microphone at the other. It's more reflective with a more defined echo characteristic than halls or rooms.
Dual	The left and right channels are processed separately, and the signals from the left and right channels neither mix at the input nor are combined at the output.
Gate	A signal gate that allows signal to pass through at a rate set by the Gate Time parameter.
Hall	A simulation of an auditorium-sized building's interior. The Halls in the RXR Elite approximate a real-world concert hall with about 1,000,000 cubic-feet of air space.

Inverse	Gated reverse reverb
ms	milliseconds (1/1000ths of 1 second)
Plate	Before the advent of digital reverbs, large metal plates with transducers attached were suspended in frames to create reverb. The tone is distinctive, with lots of highs and lows. The Plate presets re-create the great classic reverb textures.
Pre-Delayed	A short delay time is placed between the incoming sound and the reverb. This can create a slap effect or simply make the overall sound tighter. Vocals are often more intelligible with a pre-delay before the reverb.
Reverse	Backwards reverb that goes from diffused and quiet to less diffused and louder.
Room	A simulation of a large room such as a ballroom or a nightclub and smaller spaces. The rooms in the RXR Elite approximate a real-world room with about 30,000 cubic-feet of air space.
s	seconds
Stereo	Both input signals are combined and processed as a combined sound. The effect-enhanced sound appears at both the left and the right outputs. The input mono signals follow from input to output (Left dry input = Left dry output; Right dry input = Right dry output).

Bank A (Room Reverb)

1	Live Room
2	Warm Room
3	Bright Small Room
4	Tight Room
5	Large & Bright Room
6	Guitar Room
7	Bright Tiled Room
8	Live Guitar Room
9	Isolation Booth
10	Dead Room
11	Sparkling Room
12	Huge Room
13	Bright Isolation Booth
14	Ambient Space
15	Warm Pre-Delayed
16	Tom Slap

Bank B (Hall Reverb)

1	Large Hall
2	Small Hall
3	Dark Hall
4	Soft Hall
5	Bright hall
6	Dark Corridor
7	Percussion Hall
8	Recital Hall
9	Dense Hall
10	Reflective Hall
11	Ambient & Bright
12	Practice Spot
13	1.0 s Hall
14	1.2 s Hall
15	1.7 s Hall
16	2.1 s Hall

Bank C (Plate Reverb)

1 Gold Plate
2 Short Gold Plate
3 Long Gold Plate
4 Percussion Plate
5 Vocal Plate
6 Dark Plate
7 Steel Plate
8 Bright Plate
9 Pre-Delay Plate
10 Brass Plate
11 Long Brass Plate
12 Guitar Plate
13 Short Vocal Plate
14 Long Vocal Plate
15 1.0 s Plate
16 1.6 s Plate

Bank D (Chambers)

1 Chamber
2 Large Vocal Chamber
3 Bright Vocal
4 Small Vocal
5 Concrete Chamber
6 String Chamber
7 Medium Reflective Chamber
8 Dark Chamber
9 Shimmer Chamber
10 Pre-Delay Chamber
11 Dense Chamber
12 Metal-Lined Chamber
13 Warm Vocal
14 Large Delayed Vocal
15 Small Delay-Fed Chamber
16 Cavern

Bank E (Gated Reverb)

1 150 ms Gate
2 175 ms Gate
3 325 ms Gate
4 Ambient Gate
5 Pre-Delay Gate
6 Warm Gate
7 Dark Gate
8 400 ms Bright Gate
9 Snare Gate
10 Vocal Space
11 Pre-Delayed Vocal
12 Vocal Enhance
13 150 ms Delayed Gate
14 Fat Snare
15 Thick Snare
16 Dense Gate

Bank F (Reverse Reverbs)

1 Inverse Room
2 325 ms
3 75 ms
4 400 ms
5 325 ms Pre-Delayed
6 175 ms Bright
7 75 ms Ambient
8 100 ms Ambient
9 125 ms Thick
10 225 ms Inverse
11 300 ms Dead
12 225 ms Crispy
13 50 ms Pre-Delayed
14 375 ms Pre-Delayed
15 900 ms Bright Slap
16 200 ms Slap Ambience

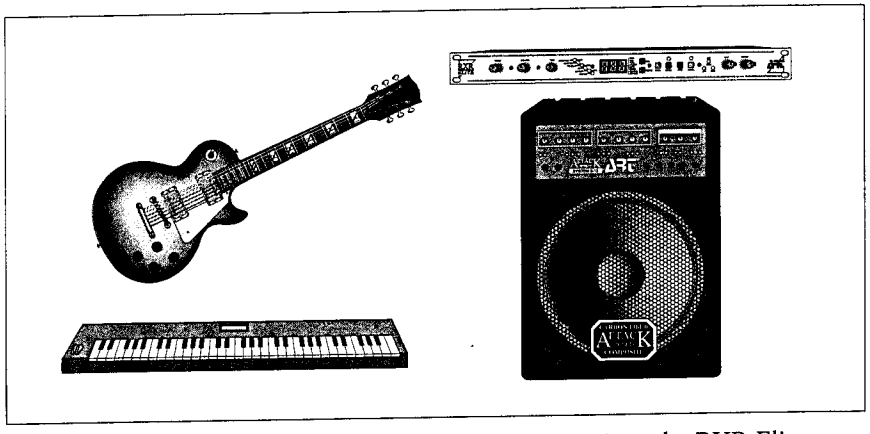
Bank G (Dual Ambient Rooms)

1	100 ms Ambient
2	1.0 s Dark
3	300 ms Bright
4	400 ms Ambient
5	300 ms with Pre-Delay
6	600 ms Bright
7	1.2 s Dark
8	600 ms Warm
9	300 ms Ambient
10	600 ms Pre-Delay Warm
11	100 ms Pre-Delay Bright
12	100 ms Smooth
13	200 ms Pre-Delay Warm
14	1.0 s Slap
15	900 ms Bright Slap
16	200 ms Slap Ambience

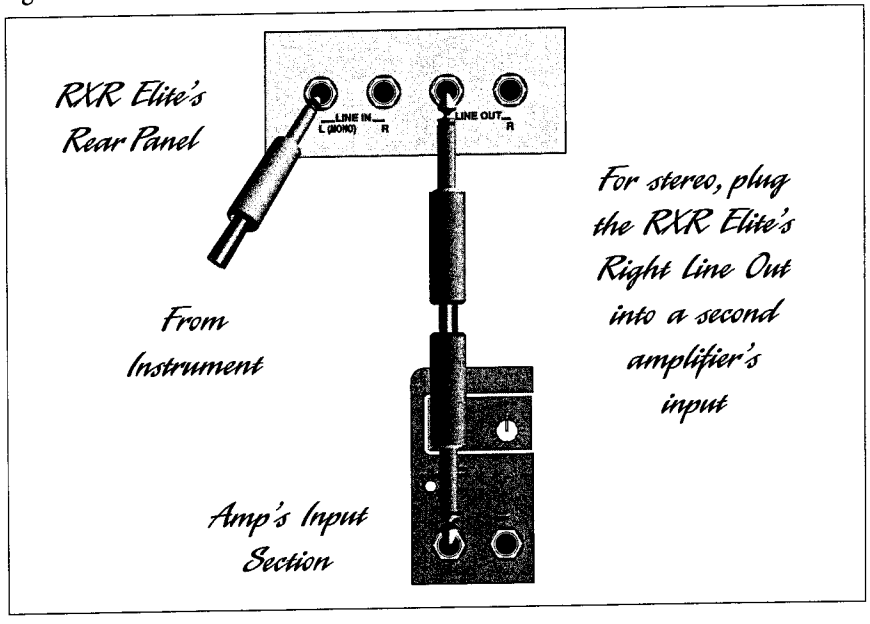
Bank H (Dual Ambient Plates)

1	200 ms
2	1.10 s
3	500 ms Smooth
4	200 ms Warm
5	200 ms Pre-Delayed
6	500 ms Warm
7	700 ms Pre-Delayed
8	300 ms Pre-Delayed
9	600 ms Bright
10	1.2 s Sizzle
11	800 ms Warm
12	400 ms
13	600 ms
14	900 ms Dark
15	900 ms Sizzle
16	200 ms Bright

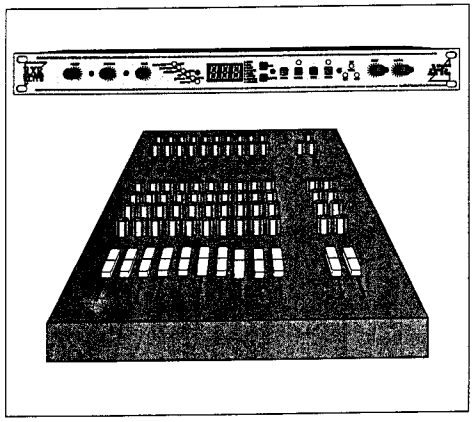
PLUGGING DIRECTLY INTO AN RXR ELITE AND AMP



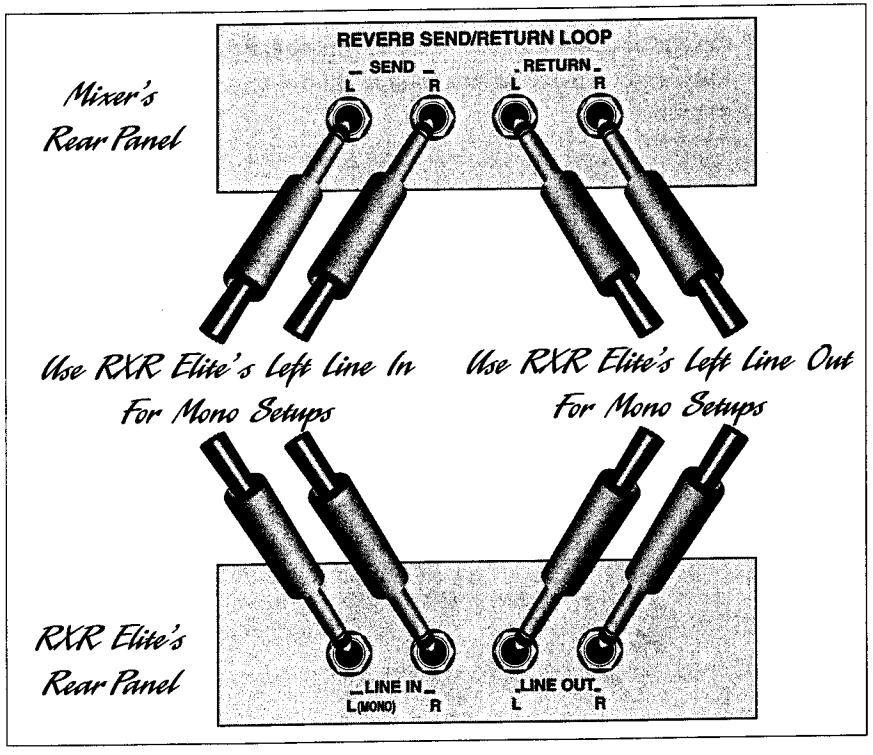
When plugging a guitar, keyboard, or other instrument into the RXR Elite, make sure that there is sufficient signal level coming from the instrument. Pay attention to the Signal LEDs on the RXR Elite's front panel, and use the RXR Elite's Input knob and the instrument's volume control to get the best level and signal-to-noise ratio.



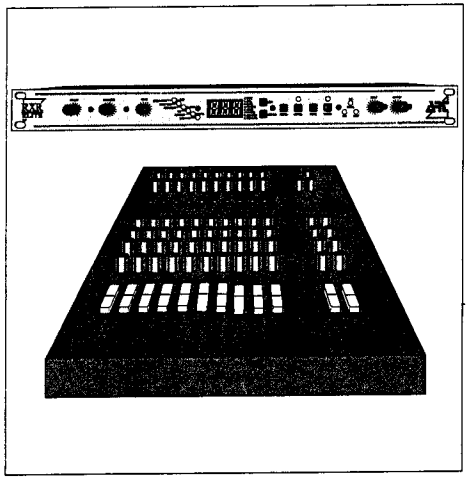
PATCHING THE RXR ELITE INTO A MIXER'S SEND/RETURN LOOP



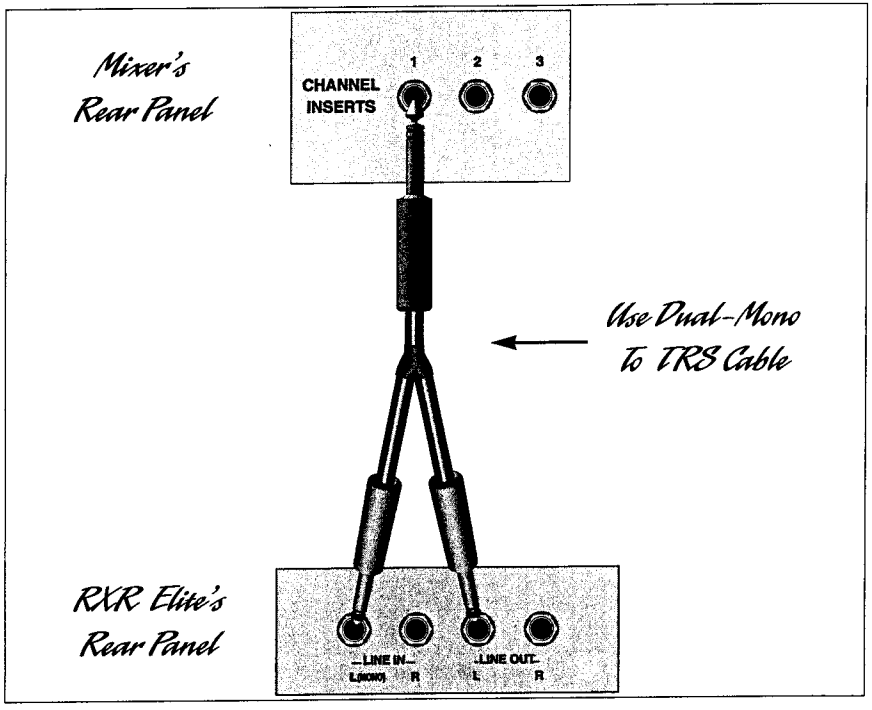
To connect the RXR Elite into the send/return loop of a mixer, follow the diagram below. If the mixer has only one input and one output (mono), connect them to the RXR Elite's Left Line In and Left Line Out only. If the mixer has two reverb return jacks for stereo operation, you may connect a second cord between the RXR Elite's Right Line Out and the mixer's second return jack.



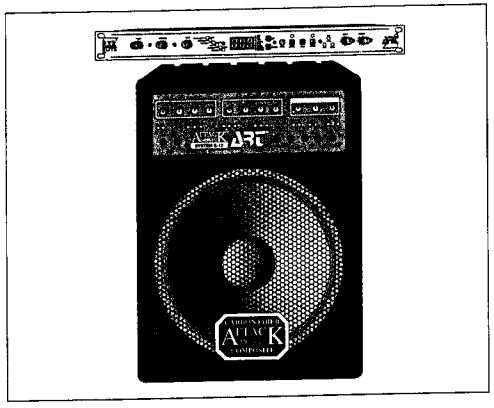
PATCHING THE RXR ELITE INTO A MIXER'S INPUT CHANNEL LOOP



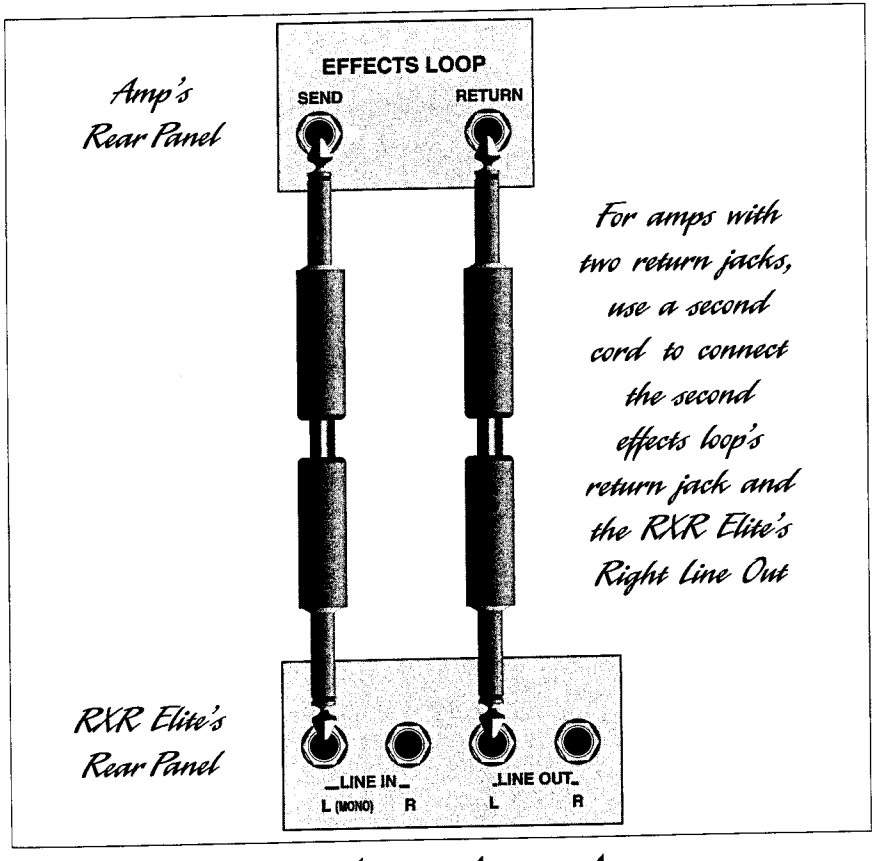
Some mixers are designed to accommodate effects on each input channel via "channel inserts," or "patch points." These often consist of a single 1/4" phone jack acting as both send and return, requiring a dual-mono-to-TRS (tip/ring/sleeve) plug configuration. Check your mixer's owner's manual to determine which plug of the dual-mono-to-TRS cable acts as a send, and which acts as a return. If the mixer has individual send and return jacks, simply use two standard cables.



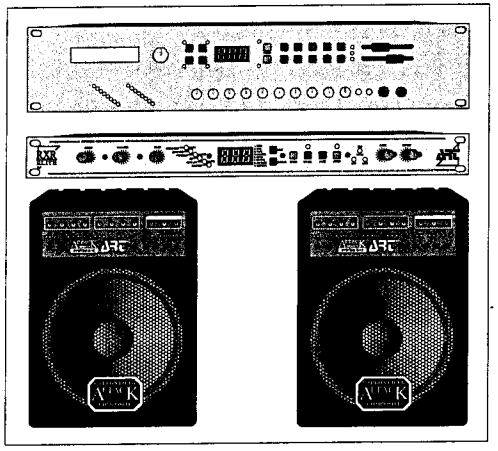
USING THE RXR ELITE IN AN AMP'S EFFECTS LOOP



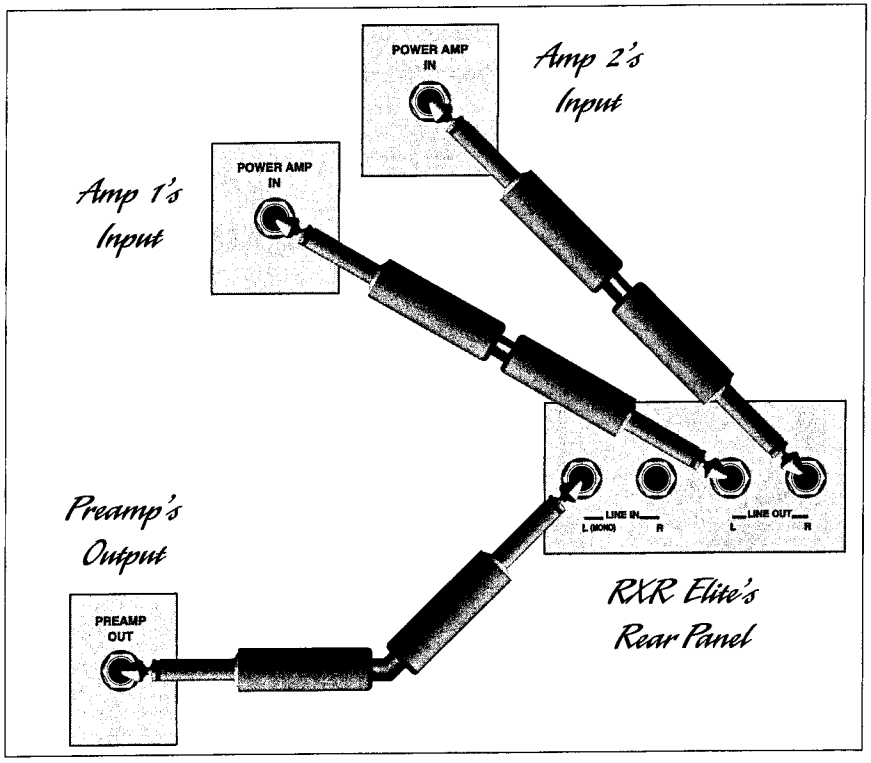
Patch the RXR Elite into the effects loop of an instrument amplifier as shown below (for mono setups, use the RXR Elite's Left Line In and Left Line Out jacks). If the amp has two effects-loop return jacks for stereo operation, you may connect a second cord between the RXR Elite's Right Line Out and the amp's second return jack.



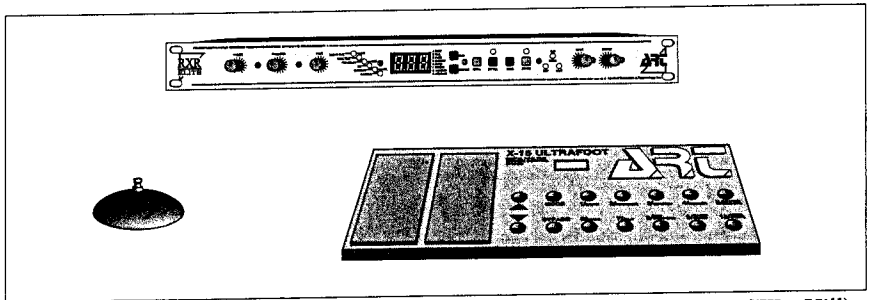
USING THE RXR ELITE IN STEREO WITH A PREAMP & TWO AMPS



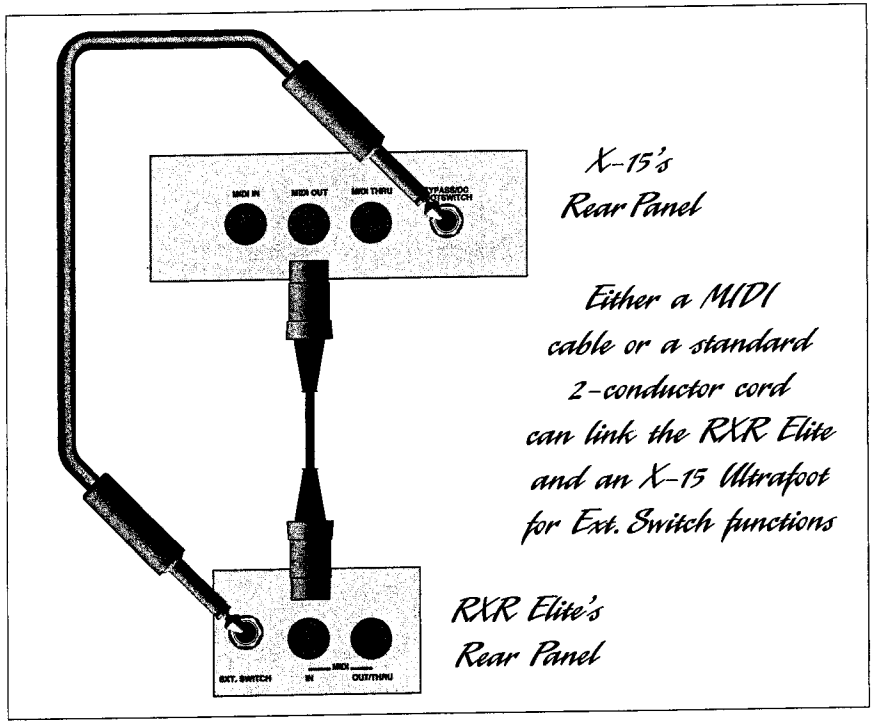
Patch the line output from a preamp such as an ART SGX 2000 into the RXR Elite's Left Line In (if the preamp has stereo outputs, patch the second into the RXR Elite's Right Line In). Connect the RXR Elite's Line Outs to the power amp inputs of two instrument amplifiers. You can also plug directly into the amps' front-panel inputs, but you will need to adjust the RXR Elite's output level and the amps' gain controls accordingly.



CONTROLLING THE RXR ELITE'S EXT. SWITCH FUNCTIONS WITH A FOOTSWITCH OR X-15



A standard footswitch can be used to activate the RXR Elite's Bypass (Wet Kill) or other switching operations through its programmable Jack functions. In addition, the X-15 Ultrafoot's Bypass output can be connected to the RXR Elite's Ext. Switch input. If you are using MIDI control, the RXR Elite and the X-15 are factory configured with default settings that allow bypassing.



Utility & MIDI Modes

Turning the Parameter knob steps you through the various parameters for the currently selected preset, and turning the Value knob changes the current parameter's setting.

Turning the Parameter knob past the parameters takes you into Utility mode (indicated by two LEDs in the slash labeled Util glowing simultaneously). Turning the knob further places you in MIDI mode (indicated by the two LEDs labeled MIDI glowing). Both of these modes work globally.

Give it a try! Turn the Parameter knob slowly clockwise. After the Mix parameter of the preset, you'll enter the Utility parameters, followed by the MIDI parameters. If you switch Banks, you'll find that the Preset parameters change, but the Utility and MIDI parameters stay the same.

Each Utility and MIDI parameter has an associated letter code that appears in the first digit of the numeric display, informing you which Utility or MIDI parameter you have selected. These letter codes contain two letters; each Utility code is shown in the following chart:

UTILITY PARAMETER CODES

Letter Code	Function	Values	
J	Jack Mode	dr	Dry kill (default)
		Et	Bypass
		CP	Compare Preset
		nP	Next Preset
t	Jack Type	to	Toggle (default)
		nC	Normally Closed
		no	Normally Open

Here's what these options mean.

Jack Mode

You can program the Ext. Switch jack on the RXR Elite's rear panel so that you can perform a number of different switching operations with a stand-alone footswitch or the Bypass switch built into ART's X-15 Ultrafoot. Make sure you set the Jack Type to match the type of footswitch you're using. Here are your Jack Mode options:

Dry Kill stops the dry signal from reaching the RXR Elite's outputs. This can be an effect in itself. If you're using, say, a long reverb, you can activate Dry Kill—via the Bypass or a footswitch plugged into the Ext. Switch jack—and then leave only the reverb without the initial sound coming through.

Bypass allows only the dry signal to reach the output.

Compare Preset acts like the front-panel Compare switch. See page 9 for an explanation of this function.

Next Preset lets you advance through the RXR Elite presets of your own selection. You must edit the MIDI Program Table (MTP) to program a number of presets in the order of your choice to step through via a footswitch. For more on this, see the section covering the MIDI Program Table, page 39.

Note: When you perform a factory reset of all programs, Next Preset data reverts to its factory setting, too (1:1 mapping).

Jack Type

You can program the Ext. Switch jack to perform a number of functions when a footswitch is plugged into it. The RXR Elite can accommodate three different footswitch configurations. A toggle switch is the type that is turned on by clicking it one time and turned off by clicking it again. The others are *momentary* switches that change their state only when you depress them. When the pressure is off, these switches return to their normal states. A normally closed switch is opened when you step on it, and a normally open switch is closed when you step on it. If you're not sure if a switch is normally open or closed, experiment by setting the RXR Elite's Jack Type to one way to see if it works. If it doesn't, try the other way.

Note: A momentary switch is preferable to a toggle switch for most Jack Mode functions.

The Global Nature Of Utility & MIDI Settings

Utility and MIDI parameters are set globally. That is, regardless of how they're set, they affect every program in the RXR Elite.

MIDI Parameters

When you enter MIDI mode (the two LEDs in the slash light up to tell you that's where you are), you are confronted by a lot of information in the numeric display. The first digit (far left) contains a letter or number that tells you what function is selected. The two remaining digits tell you the value. If a value exceeds 99, then the letter code disappears, and the three-digit number fills the display. When you stop turning the knob, the letter reappears in the far left position, followed by the first two digits of the three-digit number. If you turn the Value knob one click, the three-digit number is displayed again. Turning past that one click changes the value.

MIDI PARAMETERS CODES

Defaults are listed in parentheses.

Letter Code	Function	Values
t	MIDI thru	off, on (on)
c	System channel	off, 1 to 16 (01)
o	Omni mode	off, on (off)
L	Volume controller	Controller No. 0—113 (MC7)
d	Dry kill controller	Controller No. 0—113 (MC70)
b	Bypass controller	Controller No. 0—113 (MC84)
F	Dump all settings	- -
P	MIDI Program Table	- -

Here is an explanation of each letter code:

Letter Code	Function	Explanation
t	MIDI Thru	This function allows you to change the RXR Elite's MIDI Out into a MIDI Thru, which echoes what comes into the MIDI In jack. When this parameter is on, the unit merges its own messages with the incoming MIDI stream. When this parameter is off, only the RXR Elite's own messages exit through the MIDI Out (dumping only).
c	System channel	System channel either makes the unit ignore MIDI entirely (when the value "off" is set) or selects a specific channel—1 through 16—to send and receive MIDI messages on.
o	Omni mode	Turning Omni mode on causes the unit to respond to Program Change and Controller Change messages on any channel. System Exclusive messages are not affected by this parameter; they must always be sent on the system channel.
L	volume controller	This acts as an overall output volume control for the RXR Elite.
d	Dry Kill	This toggles the Dry Kill function on and off via MIDI.
b	Bypass	This toggles the Bypass function on and off via MIDI.
F	Dump settings	Unlike the other MIDI parameters, this performs an immediate function, rather than setting a value. When "F" appears in the window, if you turn the Value knob one tick clockwise, the RXR dumps all of its memory to the MIDI Out jack.
P	MIDI Program Table	The MPT is intended to "map" incoming MIDI Program Change messages to Bank and Preset numbers. An explanation of its functions follows:

THE MIDI PROGRAM TABLE (MPT)

The MPT's primary job is to map incoming MIDI Program Change messages to Bank and Preset numbers. Why would you want to do this? For example, you might want to make the RXR Elite change to a specific preset when you recall a specific patch on a synthesizer. Most synthesizers send out a MIDI Program Change message indicating which patch has been recalled. You can then use the MPT to map that patch number to a desired preset number in the RXR Elite.

By default, the MPT has a one-to-one mapping. That is, when the RXR Elite receives a Program Change message of 0 (zero), it recalls Bank/Preset A1. A Program Change message of 1 recalls Bank/Preset A2, and so on, in order up to Program Change number 127, which recalls Bank/Preset H16.

This can be changed by entering MPT editing mode. To enter this mode, turn the Parameter knob fully clockwise until you see "P- -" in the display. In MPT editing mode, you use the Value knob to select the incoming Program Change number and the Preset knob to select the corresponding internal Bank/Preset to recall.

Example: Let's say you want to have the RXR Elite recall Bank/Preset F7 whenever Program Change 4 is received. First, rotate the Value knob until you see "3" in the display (note: the first decimal point LED flashes to remind you that you are editing the incoming Program Change number). Then, rotate the Preset knob until you see "F7" in the display (the second decimal point LED flashes to remind you that you are editing the mapped preset number). Now, whenever the RXR Elite receives Program Change number 4, it will recall preset F7.

Note: Changes in the MIDI Program Table are global, meaning that they affect every Preset in the RXR Elite. The table's value range is 0 to 127. When you make MPT changes, you do not have to save them; they are automatically saved in memory.

Next Preset Selection

The MIDI Programming Table has another purpose, unrelated to MIDI. Using the footswitch, you can step through a list of favorite presets. Press the footswitch when you are on a MIDI Program Table entry that has a favorite preset. The leftmost decimal point will blink, indicating this MPT table entry will be in the list of recallable presets from the footswitch. To arrange your presets for Next Preset selection, follow the procedure in the MIDI Program Table section for a full description.

Note: To use a footswitch to recall presets via Next Preset mode, you must program the Ext. Switch jack for Next Preset selection. See the section on Jack Mode, page 36, for details.

Loading Presets From A Remote Source

If you have saved the contents from your RXR Elite in another MIDI device, you can load the data into your RXR Elite or another RXR Elite by connecting a MIDI cable between the other device's MIDI Out and the RXR Elite's MIDI In, and then performing a Full Dump from the other device. The RXR Elite will accept the data at any time; you don't need to set any parameters or values on the RXR Elite for it to accept the data transfer.

MIDI Controllers & Numbers

Here's a list of MIDI Controllers and their numbers, which will help you avoid conflicts if you control the RXR Elite and other MIDI gear in the same setup. The RXR Elite displays controller numbers in hexadecimal. Don't panic! The following table lists hexadecimal numbers, their equivalent decimal numbers, and the common uses for these controller numbers in MIDI. The RXR Elite's default controller parameters are intended to work with the X-15's default values. No changes to either unit should be necessary. Connect a MIDI cable from the X-15's MIDI Out to the RXR Elite's MIDI In, and you're ready to go.

Decimal	Hexadecimal	Controller Description
0	00	Reserved for Bank Select
1	01	Mod Wheel
2	02	Breath Controller
3	03	Undefined
4	04	Foot Controller
5	05	Portamento Time
6	06	Data Entry (MSB)
7	07	Main Volume
8	08	Balance
9	09	Undefined
10	0A	Pan
11	0B	Expression Controller
12-15	0C-0F	Undefined
16-19	10-13	General Purpose Numbers 1-4
20-31	14-1F	Undefined
32	20	Reserved for Bank Select
33-63	21-3F	LSB For Values 0-31
64	40	Damper Pedal (Sustain)
65	41	Portamento
66	42	Sostenuto
67	43	Soft Pedal
68	44	Undefined
69	45	Hold 2
70-79	46-4F	Undefined
80-83	50-53	General Purpose Numbers 5-8

Decimal	Hexadecimal	Controller Description
84-90	54-5A	Undefined
91	5B	External Effects Depth
92	5C	Tremolo Depth
93	5D	Chorus Depth
94	5E	Celeste (Detune) Depth
95	5F	Phaser Depth
96	60	Data Increment
97	61	Data Decrement
98	62	Non-Registered Parameter Number LSB
99	63	Non-Registered Parameter Number MSB
100	64	Registered Parameter Number LSB
101	65	Registered Parameter Number MSB
102-120	66-78	Undefined

MIDI IMPLEMENTATION IN THE RXR ELITE

Channel Voice Messages

The RXR Elite ignores all Channel Voice messages via MIDI, except Control Change and Program Change messages. These messages are only acted upon when the RXR Elite's MIDI channel matches the incoming Channel Voice message or the RXR Elite is set to Omni On mode.

Program Change

Presets can be changed via MIDI with a Program Change message. The default is a one-to-one mapping of Program Change request number to preset number, but this may be changed by the user.

Channel Mode Messages

The RXR Elite responds to the Omni On and Omni Off Channel Mode messages. These must match the RXR Elite's MIDI channel to be recognized.

System Exclusive (SysEx) Messages

The following chart shows the SysEx messages in the RXR Elite:

Byte	Value (in hex)	Description
1	10	Start of SysEx message
2	1a	ART manufacturer's ID
3	0x	MIDI channel
4	17	RXR Elite product ID
5	??	Function ID
. . .	??	Data
(last)	F7	End of SysEx message

The function ID is taken from one of the following:

Unit Handshake	
Inbound	41
Outbound	01

This function ID may be used to see if an RXR Elite is present on a channel of a MIDI network. There are no data bytes associated with this message.

Parameter Exchange

Inbound	4b (request)
Inbound	0b (receive)
Outbound	0b (send)

This function ID is used to send or receive the operating state of the RXR Elite.

There are no data bytes in the inbound request for a Parameter Exchange request.

Unit Status

Inbound	4d
Outbound	0d

This function ID can be used to check the RXR Elite's operating status. There are no data bytes in the inbound message, and two data bytes in the outbound message. The value of the Unit Status is in the second byte, which is the version number of the software.

Other MIDI Notes

- The RXR Elite ignores inbound Active Sensing messages.
- The RXR Elite does not generate Active Sensing messages.
- The System Reset message is ignored.

ART RXR Elite Specifications

Dimensions		1.75" H x 19" W x 4.25" D, all-steel case
Weight		4 lbs., 7.6 oz
Connections		Stereo In/Out 1/4" phone
Presets		128
Input impedance		500k ohms
Output impedance		1k ohm
Maximum input level		>+14dBv
Maximum output level		>+14dBv
Dynamic range	wet	>80dB (A-weighted)
Total harmonic distortion (THD)	dry	<.015% @ 1kHz
	wet	<.04% @ 1kHz
Channel separation		>65dB
Safety compliance		U.L. Listed

ART retains a policy of constant product improvement. Therefore, specifications are subject to change without notice.

Designed and manufactured in the United States of America.

Applied Research & Technology, Inc.
215 Tremont Street
Rochester, NY 14608

(716) 436-2720
(716) 436-3942 (FAX)

OUR NEW AREA CODE IS 585

WARRANTY & SERVICE INFORMATION

LIMITED WARRANTY

Warranty service for this unit will be provided by Applied Research & Technology, Inc. in accordance with the following warrant statement.

Applied Research & Technology, Inc. (ART) warrants to the original purchaser that this product and the components thereof will be free from defects in workmanship and materials for a period of one year from the date of purchase. Applied Research & Technology, Inc. will, without charge, repair or replace, at its option, defective product or component parts upon prepaid delivery to the factory service department or authorized service center, accompanied by proof of purchase date in the form of a valid sales receipt.

EXCLUSIONS: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. This warranty is void if the serial number is altered, defaced, or removed.

ART reserves the right to make changes in design or make additions to or improvements upon this product without any obligation to install the same on products previously manufactured.

ART shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific rights and you may also have other rights which vary from state to state.

For units purchased outside the United States, service will be provided by an authorized distributor of Applied Research & Technology, Inc.

SERVICE

The following information is provided in the unlikely event that your unit requires service.

1) Be sure that the unit is the cause of the problem. Check to make sure the unit has power supplied, all cables are connected correctly, and the cables themselves are in working condition.

2) If you find the unit to be at fault, write down a description of the problem, including how and when the problem occurs.

3) Call the factory for a Return Authorization (RA) number.

4) Pack the unit in its original carton or a reasonable substitute. The packing box is not recommended for a shipping carton. Put the packaged unit in another box for shipping. Print the RA number clearly under the address.

5) Include with your unit: a return shipping address (we cannot ship to a P.O. Box), a copy of your purchase receipt, a daytime phone number, and a description of the problem.

6) Ship only your unit and its power supply (keep your manual!) to:
APPLIED RESEARCH & TECHNOLOGY, INC.
215 TREMONT STREET
ROCHESTER, NY 14608
ATTN: REPAIR DEPARTMENT
OUR NEW AREA CODE IS 585
RA # _____

7) Contact our customer service department at (716) 436-2720 for your Return Authorization number or questions regarding repairs. Customer Service hours are 8:30 AM to 5:00 PM Eastern Time, Monday through Friday.

Customer Service

You may contact ART's Customer Service Department between the hours of 8:30 AM and 5:00 PM Eastern Time Monday through Friday. The Customer Service Department will answer technical questions about ART products and provide information concerning service.