Contents

Introduction

Aloha! And congratulations on your purchase of the E-mu Audity 2000. Audity 2000 is a new synthesizer/sound module with an array of new dynamic and rhythmic features not found in any other instrument. Audity 2000 was designed for live *performance*, so make sure to try out all the controller knobs on each preset. And as you'll soon discover, Audity 2000 is a total kick to play.

Product Description

Audity 2000's sound set consists primarily of analog, noise and modern synthesizer waveforms. These sounds are rich in harmonic texture and are perfectly matched to Audity's powerful filters.

Audity 2000 contains 640 ROM presets, 256 user presets and gives you the power to synthesize an almost infinite number of your own sounds. Audity's flexible yet straightforward 4-layer synthesizer voices create sounds of amazing depth and power. Layers can be switched or crossfaded using key position, velocity, real-time controllers or any modulation source. Audity 2000 also contains 50 different, 12th order resonant & modeling filters which are used to shape and modify over 200 waveforms contained in 16 megabytes (MB) of ROM. Another 16MB of ROM sounds can be added by simply plugging in a second internal SIMM card.

64 modulation sources include three multistage envelopes and two LFOs per layer, as well as full MIDI control over virtually every parameter. The digital patch bay, with 24 cords per layer, lets you connect modulation sources to 64 destinations in any imaginable way. The patch bay also contains a set of arithmetic modifiers, letting you create complex synthesis models.

Audity's revolutionary Rhythmic Pattern Generator/Arpeggiator can play up to 16 synchronized arpeggiator patterns at once using a different sound for each! Patterns can be edited using pattern flow commands such as: delay for 2 bars, play for 4 bars, hold for 2 beats and repeat. You can program or download 100 user patterns in addition to the 200 factory patterns.

Unique to Audity is its ability to control synth parameters as well as arpeggiator tempos from its internal clock (or an external MIDI clock). Up to 8 LFOs and 12 envelopes can be perfectly synchronized at different rates!

Four front panel real-time controllers give you control over 8 user-selectable parameters as well as four arpeggiator functions. The real-time knobs can adjust multiple synthesizer functions at once allowing complex levels of control. Virtually every synth parameter in the Audity 2000 is controllable using the real-time knobs or by any internal or external control source.

Six 18-bit analog outputs let you process separate sounds and integral effect sends externally. Returns allow the addition of external effects units without the need for a separate mixer.

Once you have created your preset, you can add richness to your sound using Audity 2000's 24-bit stereo effects. You can choose a different effects setup for each preset from over 60 algorithms. Audity's effects section is actually two separate effects processors with control over each wet/dry mix level. Effects Processor "A" contains primarily ambiance algorithms like reverb and delays, while effects processor "B" contains primarily spectral algorithms such as chorus, flange, phase, distortion, and delay. Effects can be linked to each preset or used globally to further enhance your sound. The S/PDIF digital stereo output lets you connect to other digital equipment, such as digital mixers or external effects devices.

Other features include multiple solo, voice assignment and performance modes for expressive control, user-definable alternate tuning, an extremely easy to use interface and, of course, an extensive MIDI implementation.

Overview

This is the Operations Manual for setting up and playing Audity 2000. The first part of the manual describes how to unpack and setup the hardware.

The next chapters provide step-by-step instructions for the most common and widely used features of Audity 2000. This section also defines each of the parameters (by menu) and provides information on how to use them.

The appendix provides technical information, product specifications and the Index.

Important Safety Instructions

Use in countries other than the U.S.A. may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer all servicing to qualified service personnel. Do not expose this product to rain or moisture. There are no user serviceable parts or adjustments inside the unit.

Grounding Instructions

This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current, reducing the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet properly installed and grounded in accordance with all local codes and ordinances.

Danger!

Improper connection of the equipment's grounding conductor can result in the risk of electric shock. Check with a qualified electrician or service personnel if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with this product. If it will not fit the outlet, have a proper outlet installed by a qualified technician.

Caution!

If your Audity 2000 is rack mounted, you must use a standard 19 inch open frame rack. Screw-on rack mount ears are provided for this purpose.

User Maintenance Instructions
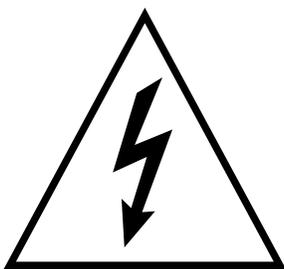
1. The Audity should be kept clean and dust free. Periodically wipe the unit with a clean, lint free cloth. Do not use solvents or cleaners.
2. There are no user lubrication or adjustment requirements.

Caution -. *These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in these operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.*

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS.

READ THESE INSTRUCTIONS: When using electric products, basic precautions should always be adhered to, including the following:

1. Read all instructions before using Audity 2000.
2. To reduce the risk of injury, close supervision is necessary when using Audity 2000 near children.
3. Do not use Audity 2000 near water — for example near a bathtub, washbowl, kitchen sink, in a wet basement, on a wet bar, or near or in a swimming pool. Do not expose the unit to drips or splashes.
4. The Audity 2000 should be situated so that its location or position does not interfere with its proper ventilation.
5. The Audity 2000 should be located away from heat sources such as radiators, heat registers, fireplaces, stoves, or ovens.
6. The Audity 2000 should be connected only to a power supply of the type described in the operating instructions and marked on the product.
7. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure of Audity 2000 through openings.
8. This Audity 2000 may be equipped with a polarized line plug (one blade wider that the other). This is a safety feature. If you are unable to insert this plug into the outlet, do not defeat the safety purpose of the plug. Contact an electrician to replace your obsolete outlet.
9. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the unit.
10. Unplug the Audity 2000 from the power outlet during lightning storms or when left unused for a long period of time.
11. This product, in combination with an amplifier and headphones and speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, consult an audiologist.
12. Only use attachments and accessories specified by E-mu Systems.

This symbol is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the unit.

This symbol is intended to alert you to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

13. The Audity 2000 should be serviced by qualified service personnel when:
    A. The power supply cord has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the unit; or
    C. The unit has been exposed to rain; or
    D. The unit has been dropped or the enclosure damaged; or
    E. The Audity 2000 does not operate normally or exhibits a marked change in performance.
14. All servicing should be referred to qualified service personnel.

Caution!

Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by E-mu. Discard used batteries according to the manufacturer's instructions.

Save These Instructions.

Radio and Television Interference

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly —that is, in strict accordance with our instructions— it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of the FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if a "rabbit ear" TV antenna is used.

If Audity 2000 does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

• Turn the television or radio antenna until the interference stops.
• Move Audity 2000 to one side or the other of the television or radio.
• Move Audity 2000 farther away from the television or radio.
• Plug Audity 2000 into an outlet on a different circuit than the television or radio.
• Consider installing a rooftop antenna with a coaxial lead-in between the antenna and television set.

Foreign Language Warnings - German

Wichtige Sicherheitsvorschriften

In Ländern ausserhalb den U.S.A. können andere Kabel oder Stecker notwendig werden. Zur Verminderung des Risikos von Feuer oder eines elektrischen Schlages übergebe man den Service an qualifizierte Fachleute. Das Gerät niemals Regen oder Nässe aussetzen.

Erdungsinstruktionen

Das Gerät muss geerdet sein. Bei einem Defekt oder Ausfall bietet Erdung dem elektrischen Strom den Weg des geringsten Widerstandes und reduziert das Risiko eines Schlages. Dieses Gerät ist mit einem geerdeten Kabel und Stecker ausgerüstet. Der Stecker muss in eine passende, einwandfrei montierte und geerdete Steckdose in Übereinstimmung mit den örtlichen Vorschriften eingeführt werden.

Gefahr

Unvorschriftsgemässer Anschluss des Gerätes kann zum Risiko eines elektrischen Schlages führen. Im Zweifelsfalle über die ordnungsgemässe Erdung soll ein qualifizierter Elektriker oder eine Serviecestelle beigezogen werden. Ändern Sie den mitgelieferten Stecker nicht. Sollte er nicht in die Steckdose passen, soll die einwandfreie Installation durch einen qualifizierten Techniker erfolgen.

Vorsicht

Wird der Audity 2000 (Modell Nummer 9093) in einem Rackgestell montiert, muss ein offener 19-Zollrahmen verwendet werden.

Unterhaltsin-struktionen für anwender
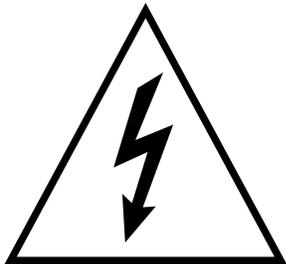
1. Audity 2000 soll sauber und staubfrei gehalten werden. Das Gerät mit einem sauberen und säurefreien Tuch periodisch abreiben. Keine Lösungs- oder Reinigungsmittel anwenden.
2. Schmieren und Justieren sind nicht notwendig.
3. Bei weiteren Servicefragen wende man sich an eine qualifizierte Service-stelle.

Vorsicht

Diese Gebrauchsanweisungen sind nur für qualifizierte Techniker beabsichtigt. Um die Gefahr eines elektrischen Schlages zu vermeiden, sollen Sie keine Arbeit unternehmen, die nicht in diesen Instruktionen vorgeschrieben ist. Wenden Sie Sich bei weiteren Servicefragen an eine qualifizierte Servicestelle.

INSTRUKTIONEN BETR. FEUERRISIKO, ELEKTROSCHOCK ODER VERLETZUNG VON PERSONEN

WARNUNG; Beim Einsatz elektrischer Geräte sollten folgende Vorsichtsmassregeln stets beachtet werden:

1. Lesen Sie vor dem Einschalten des Audity 2000 alle Instruktionen.
2. Zur Vermeidung von Verletzungsrisiken müssen Kinder bei einge-schaltetem Audity 2000 sorgfältig überwacht werden.
3. Audity 2000 nicht in der Nähe von Wasser in Betrieb nehmen -- z.B. in der Nähe von Badewannen, Waschschüsseln, auf nassen Gestellen oder am Swimmingpool.
4. Audity 2000 stets so aufstellen, dass seine Belüftung nicht beein-trächtigt wird.
5. Audity 2000 nicht in der Nähe von Hitze aufstellen, wie Heizkörper, offenem Feuer, Öfen oder von Backöfen.
6. Audity 2000 ausschliesslich mit einem Netzgerät gemäss Bedienungsan-leitung und Gerätemarkierung verwenden.
7. Dieses Gerät kann bei Verwendung von Kopfhörern und Verstärkern hohe Lautpegel erzeugen, welche zu bleibenden Gehörschäden führen. Arbeiten Sie nicht während längerer Zeit mit voller Lautstärke oder hohem Lautpegel. Stellen Sie Gehörverlust oder Ohrenläuten fest, wenden Sie sich an einen Ohrenarzt.
8. Audity 2000 kann mit einem polarisierten Kabelstecker (mit ungleichen Stiften) ausgerüstet sein. Das geschieht für Ihre Sicherheit. Können Sie den Stecker nicht in die Steckdose einführen, ändern Sie nicht den Stecker ab, sondern wenden Sie sich an einen Elektriker.
9. Das Netzkabel des Audity 2000 bei längerem Nichtgebrauch aus der Steckdose ziehen.

Dieses Symbol weist den Anwender auf wichtige Gebrauchs- und Service-Vorschriften in den beilieg-enden Drucksachen.

Dieses Symbol verweist auf nicht-isolierte Stromspan-nungen im Geräte-Innern, welche zu einem elektrischen Schlag führen könnten.

10. Vermeiden Sie sorgfältig das Eindringen von Gegenständen oder Flüssigkeiten durch die Gehäuseöffnungen.

11. Das Gerät soll durch qualifizierte Serviceleute gewartet werden, falls:

    A. das Netzkabel beschädigt wurde, oder

    B. Gegenstände oder Flüssigkeit in das Gerät gelangten,

    C. das Gerät Regen ausgesetzt war, oder

    D. das Gerät nicht normal oder einwandfrei arbeitet, oder

    E. das Gerät stürzte oder sein Gehäuse beschädigt wurde.

12. Servicearbeiten sollten nur qualifizierten Fachleuten anvertraut werden.

VORSICHT

Unvorschriftsgemässer einbau der Batterie kann zum Risiko einer Explosion führen. Ersetzen Sie die Batterie nur mit der gleichen oder einer von E-mu empfohlene Sorte. Werfen Sie die alten Batterien weg, wie es der Hersteller anweist.

DIESE INSTRUKTIONEN AUFBEWAHREN

Foreign Language Warnings
- French

Instructions de Sécurité Importantes

Une utilisation dans des pays autres que les U.S.A. peut nécessiter l'usage d'un cordon d'alimentation différent. Afin de réduire les risques d'incendie ou d'électrocution, référez-vous à un personnel de service qualifié, et n'exposez pas cet appareil à la pluie ou à l'humidité.

Instructions de Mise à la Terre

Cet appareil doit être relié à la terre. Dans le cas d'une malfonction éventuelle, la terre fournit un passage de moindre résistance pour le courant électrique, réduisant ainsi les risques d'électrocution. L'Audity 2000 est équipé d'un cordon muni d'un conducteur et d'une fiche devant être branchée dans une prise appropriée et reliée à la terre en conformité avec les normes locales.

Danger

Une connexion incorrecte peut résulter en des risques d'électrocution. Vérifiez avec un technicien qualifié si vous avez des doutes quant à la connexion. Ne modifiez pas vous-même le cordon d'alimentation livré avec cet appareil; s'il ne rentre pas dans la prise, faites-en installer un autre par un technicien qualifié.

Attention

Si l'Audity 2000 est installé dans un rack, utilisez un rack standard ouvert de 48.25cm.

Instructions de Maintenance

1. L'Audity 2000 doit être maintenu propre et sans poussière. Nettoyez-le périodiquement à l'aide d'un chiffon propre et non-pelucheux. N'utilisez pas de solvants, ou d'autres produits de nettoyage.
2. Aucune lubrification et aucun réglage ne sont nécessaires de votre part.
3. Pour tout autre service, référez-vous à un personnel qualifié.

Instructions Concernant les Risques d'Incendie, d'Electrocution, ou de Blessures Corporelles.

ATTENTION: Lorsque vous utilisez des appareils électriques, certaines précautions élémentaires doivent toujours être prises, incluant les suivantes:

Ces instructions de dépanage sont destinées uniquement aux personnes qualifiées. Afin d'éviter les risques d'électrocution, n'effectuez que les opérations décrites dans ce manuel, à moins que vous ne soyez qualifiê pour cela. Faites effectuer toute r'eparation par une personne qualifié.
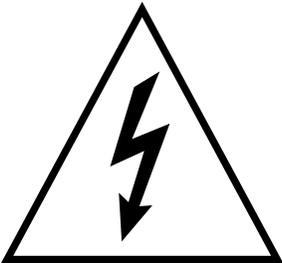
1. Lisez bien toutes les instructions avant d'utiliser l'Audity 2000.

2. Afin de réduire les risques de blessures, une attention particulière est nécessaire en la présence d'enfants en bas âge.

3. N'utilisez pas l'Audity 2000 dans ou près d'endroits humides - par exemple près d'une baignoire, d'un lavabo, dans les toilettes, dans une cave humide, sur un bar fréquenté, en présence d'un bull-dog en rut, ou dans une piscine pleine. Protégez cet appareil de tout liquide, éclaboussure ou fuite.

4. L'Audity 2000 doit être placé de façon à ce que sa position n'interfére pas avec sa propre ventilation.

5. L'Audity 2000 doit être placé loin de sources de chaleur telles que des radiateurs, cheminées, fours, ou groupies en chaleur.

6. L'Audity 2000 doit uniquement être connecté à une alimentation du type décrit dans les instructions d'opération et tel qu'indiqué sur l'appareil.

7. Une attention particulière doit être observée quant aux objets pouvant tomber et aux liquides pouvant être versés sur et à l'intérieur de l'Audity 2000.

8. L'Audity 2000 peut être équipé d'une fiche secteur polarisée (avec une broche plus large que l'autre). C'est une mesure de sécurité. Si vous ne pouvez pas brancher cette fiche dans une prise, ne neutralisez pas cette sécurité. Contactez plutôt un électricien pour remplacer la prise obsolète.

9. Evitez de marcher sur le cordon d'alimentation ou de le coincer, particulièrement près des prises de courant, des boitiers 'electriques dt du point de sortie de l'appareil.

10. Le cordon d'alimentation de l'Audity 2000 doit être débranché lorsque ce dernier n'est pas utilisé pendant une longue période.

11. Cet appareil, combiné avec un amplificateur, des haut-parleurs, et/ou un casque, est capable de générer des niveaux sonores pouvant occasionner une perte de l'ouïe permanente. Ne travaillez pas trop longtemps à un volume trop élevé ou même inconfortable. Si vous observez une perte de l'audition ou un bourdonnement dans les oreilles, consultez un O.R.L.

12. N'utilisez que les accessoires sp'ecifi'es par E-mu Systems.

Ce symbole vous alerte de la présence d'instructions importantes d'opération et de maintenance dans la notice accompagnant l'appareil.

Ce symbole vous alerte de la présence d'un voltage non-isolé dangereux à l'intérieur de l'appareil, pouvant être d'une magnitude suffisante pour constituer un risque d'électrocution.

13. Cet appareil doit être examiné par un personnel qualifié lorsque:

>   A. Le cordon d'alimentation a été endommagé, ou
>
>   B. Des objets sont tombés, ou du liquide a été versé sur/à l'intérieur de l'appareil, ou
>
>   C. L'Audity 2000 a été exposé à la pluie, ou
>
>   D. L'Audity 2000 est tombé, ou
>
>   E. L'Audity 2000 ne fonctionne pas normalement, ou affiche un changement radical de performance.

14. Tout service doit être effectué par un personnel qualifié.

Attention

Danger d'explosion si la etterie n'est pas correctement remplacée. Pour remplacer la batterie, utilisez une batterie de meme type, ou d'un type 'equivalent recommand'e par E-mu. Suivez les instructions du faricant pour vous d'earrasser de la etterie usée.

SAUVEGARDEZ CES INSTRUCTIONS

Interférences Radio et Télévision

L'appareil décrit dans cette notice génère et utilise une énergie de fréquence-radio. S'il n'est pas installé et utilisé correctement - c'est à dire en suivant strictement nos instructions - il peut occasionner des interférences avec la réception d'une radio ou d'une télévision.

Cet appareil a été testé et est conforme aux normes de Classe A en accord avec les spécifications du paragraphe J de la section 15 des lois FCC. Ces lois sont désignées pour fournir une protection raisonnable contre de telles interférences dans une installation résidentielle. Toutefois, il n'est pas garanti qu'aucune interférence n'apparaisse dans des installations particulières, et plus spécialement lorsqu'une antenne de télévision en «oreilles de lapin» est utilisée.

Si l'Audity 2000 occasionne des interférences , vous pouvez essayer de les corriger en utilisant une ou plusieurs des mesures suivantes:

• Tournez l'antenne de la télé ou de la radio jusqu'à ce que les interférences disparaissent.

• Déplacez l'Audity 2000 d'un côté ou de l'autre de la télé ou de la radio.

• Eloignez l'Audity 2000 de la télé ou de la radio.

• Branchez l'Audity 2000 sur une prise différente que la télé ou la radio.

• Installez une antenne sur le toit munie d'une connexion coaxiale entre elle et le poste de télévision.

Setup

This section thoroughly describes how to set up your new Audity 2000 for use. Setup includes unpacking instructions and how to connect the Audity 2000 cables.

Unpacking

Carefully remove Audity 2000 from the packaging material. Take care to save the packing materials in case you need to transport the unit. Check to make sure all components are included and in good condition. If there are missing or damaged components, contact E-mu Systems immediately for replacement or repair.

Your Audity 2000 should include the following components:

- Audity 2000 unit
- Power cable
- 10 ft. MIDI cable
- Rack mounting ears
- This Operations Manual

Connection Instructions

Basic Setup

✏️ *The headphone output monitors the main outputs only.*

The submix outputs do NOT feed into the headphone output.

✏️ *If Audity 2000 does not seem to be responding correctly, make sure that both Audity 2000 and your MIDI controller are set to the same MIDI channel.*
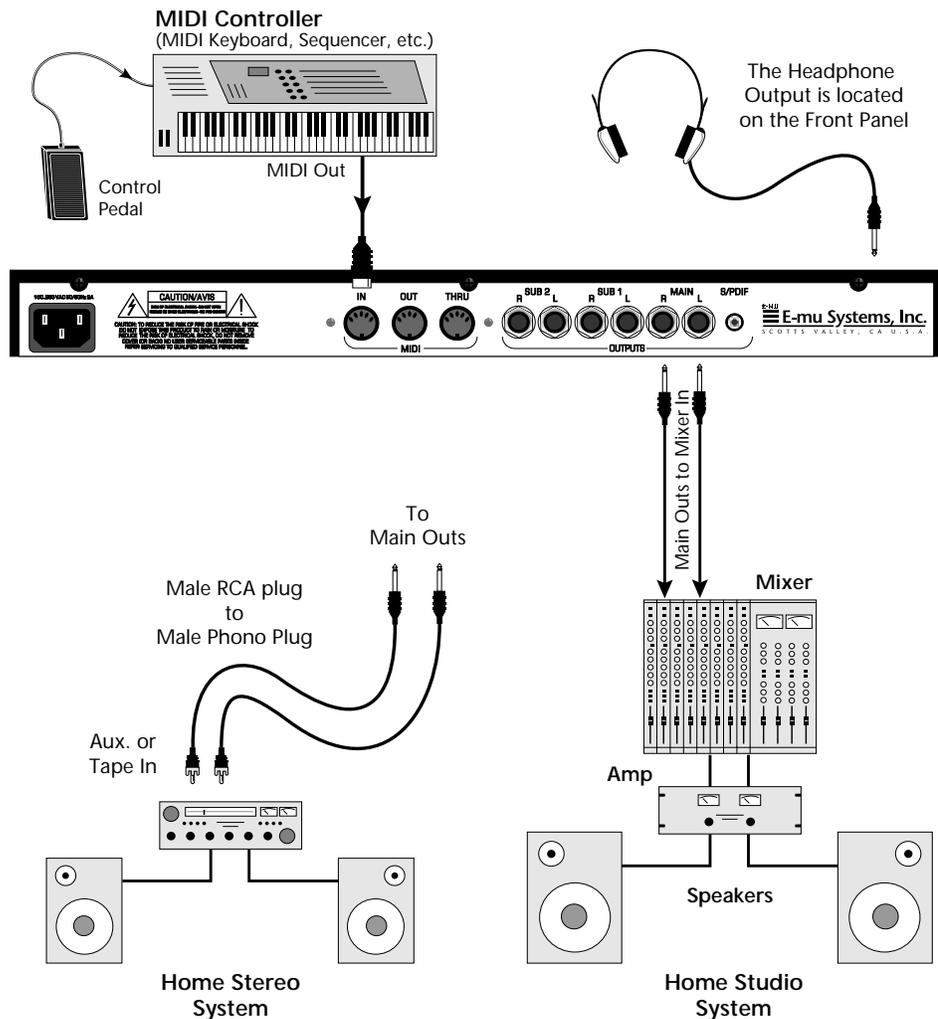
MIDI In
Audity 2000 is controlled by MIDI messages received at the MIDI In connector. Connect the MIDI In of the Audity 2000 to the MIDI Out connector of a controller such as a MIDI keyboard, MIDI wind controller or MIDI guitar controller.

Outputs
Audity 2000 is a high quality, stereo audio device. In order to reproduce its wide dynamic range and frequency response, use a high quality amplification and speaker system such as a keyboard amplifier or home stereo system. A stereo setup is highly desirable because of the added realism of stereophonic sound. Headphones can be used if an amplifier and speaker system is not available. Plug stereo headphones into the headphone jack located on the left side of the front panel. The Right Main output jack serves as a mono output when the Left Main plug is not plugged in. The S/PDIF output duplicates the function of the main output.

Studio Setup
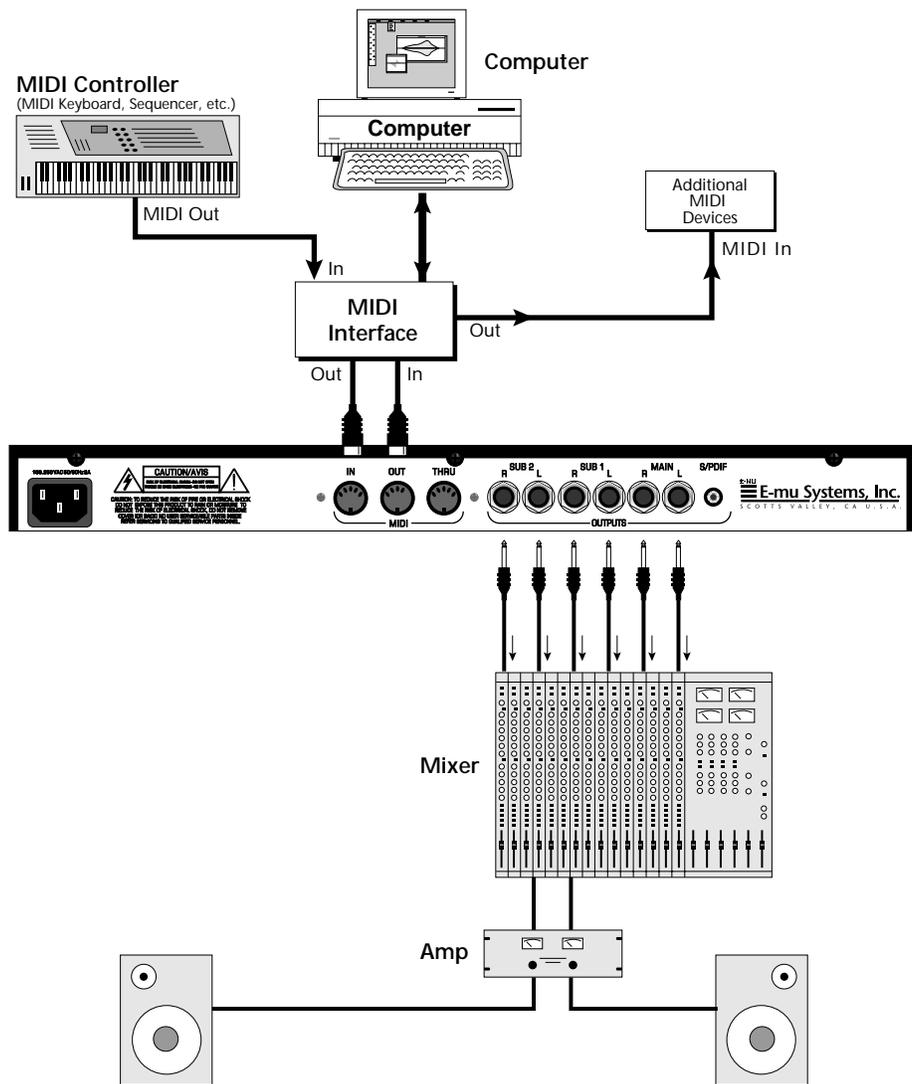
MIDI In
In this setup, Audity 2000 is controlled by MIDI messages, received at the MIDI In connector, which are routed by the MIDI interface. The MIDI interface allows any MIDI controller, such as a MIDI keyboard, MIDI wind controller or a computer to be connected to the module easily.

MIDI Out
The MIDI Out jack transmits program data to a computer or other device.

Outputs
Three sets of programmable stereo outputs (Main, Sub 1, and Sub 2) are provided. The internal effects are available only on the Main outputs. Specific presets (or MIDI channels) can be routed to one of these stereo pairs in order to be processed further or mixed separately. The S/PDIF output duplicates the function of the main output.

Performance Setup
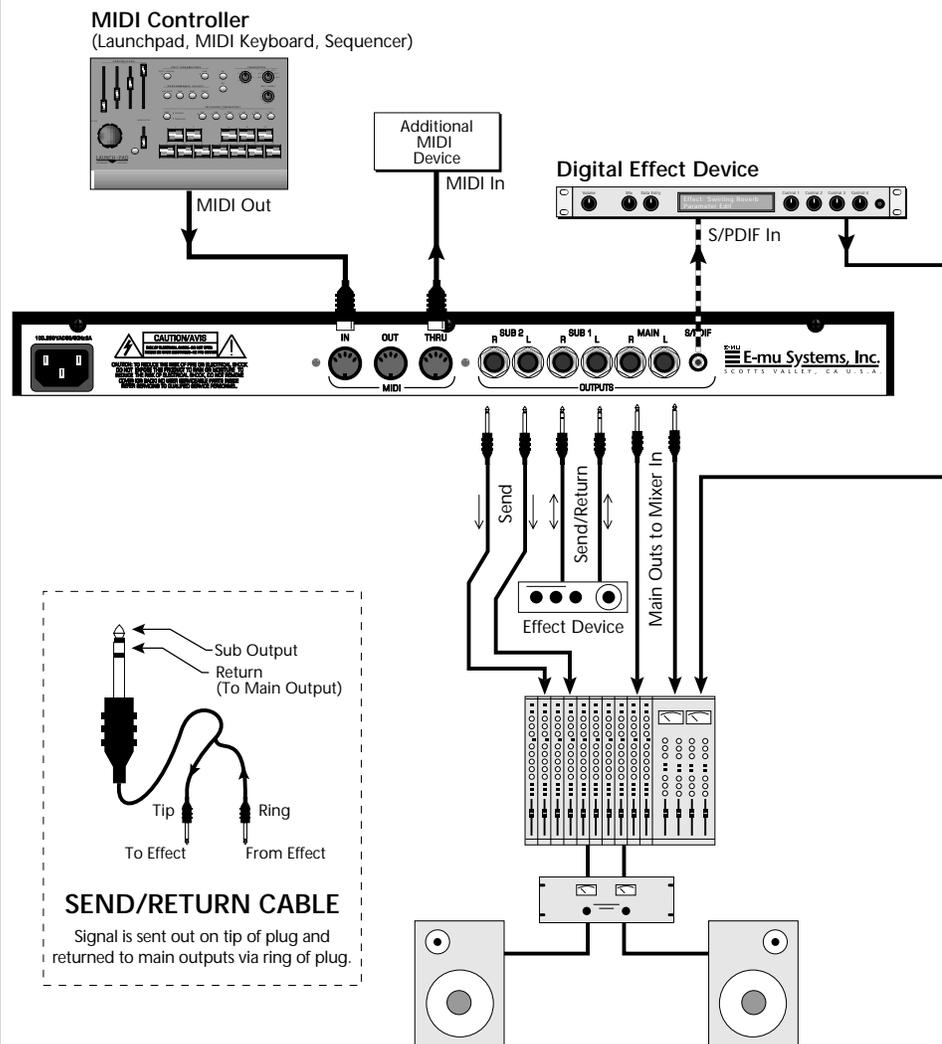
MIDI Controller
(Launchpad, MIDI Keyboard, Sequencer)

MIDI Out

Additional
MIDI
Device

MIDI In

Digital Effect Device

S/PDIF In

Send

Send/Return

Main Outs to Mixer In

Effect Device

Sub Output

Return
(To Main Output)

Tip   Ring

To Effect   From Effect

SEND/RETURN CABLE

Signal is sent out on tip of plug and
returned to main outputs via ring of plug.

MIDI In
Audity 2000 is controlled by MIDI messages received at the MIDI In
connector. Connect the MIDI In of Audity 2000 to the MIDI Out connector
of a MIDI controller such as E-mu's Launchpad, a MIDI keyboard, MIDI
drum pads or a MIDI sequencer.

MIDI Thru
The MIDI Thru jack is used to connect additional MIDI devices onto the
MIDI chain. MIDI Thru transmits an exact copy of the messages received at
the MIDI In jack.

Outputs
The Sub 1 and Sub 2 output jacks are stereo jacks. The tip of each jack
(accessed when a standard phone plug is inserted) connects to the left or
right output of that group. The S/PDIF output duplicates the function of
the main output.

If you insert a stereo plug, the ring of the plug serves as a signal Return which sums into the Main outputs.

Therefore, the Sub 1 and Sub 2 jacks can serve as effect sends and returns in order to further process selected instruments and then return them to the main mix.

You can use the Sub 1 and Sub 2 jacks as send/returns in order to further process selected Audity 2000 presets without using the effects bus on the mixing board. In a pinch, the effect returns can be used to sum additional instruments into the main outputs. It's like having an extra line mixer when you need just one more input.

Inserting a standard mono phone plug halfway into the jack allows you to sum into the main outputs without a special cable.

Output Section
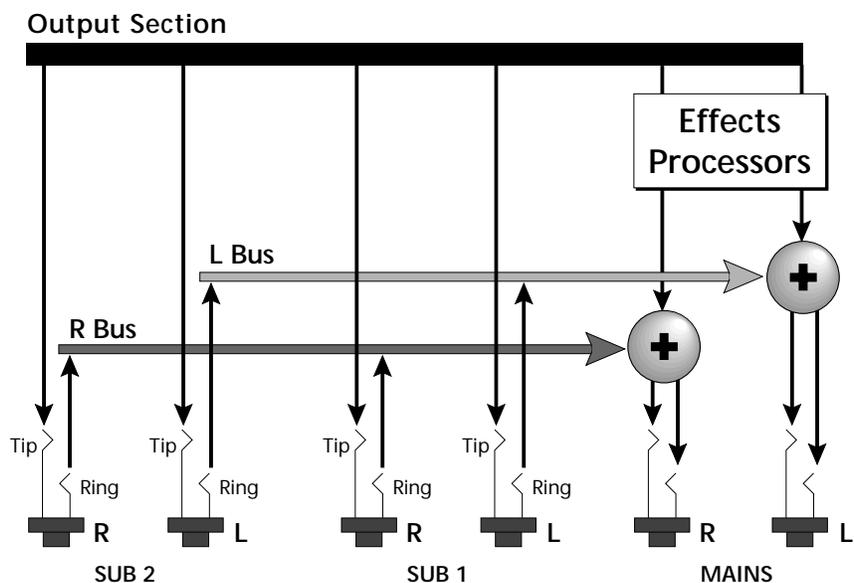
You can use the Sub 1 and Sub 2 jacks as effect returns to the Main Outputs. Note that the Effects Processors are only routed to the Main Outputs.

Power Up!

The power switch is located on the right side of the front panel. You can turn on the Audity 2000 and its MIDI controller in any order. When power is applied, the liquid crystal display will light, indicating that Audity 2000 is operating. You may have noticed that there is no 110/220 Volt power selector switch on Audity 2000.

Audity 2000 automatically switches itself to the proper line voltage.

Instant Gratification

This section presents step-by-step instructions for the most fundamental operations to get you up and making sounds quickly.

Playing the Demo Sequences

Audity 2000 has four factory demo sequences that let you hear what Audity can do. You can play any of these demo sequences using the Demo Sequence page of the Master menu.

```
┌─────────────────────────────────────┐
│  DEMO SEQUENCE         1  2  3  4    │
│                           ‾          │
│  Enter  =  Start        ->  =  Next  │
└─────────────────────────────────────┘
```

☞ **To Play a Demo Sequence**

1. Press the Master menu button on the front panel.
2. Use the Data Entry Control to scroll to the Demo Sequence screen.
3. Advance the cursor to the Sequence Number field and select a sequence number (from 1 to 4).
4. Press the Enter button to start playing the sequence.
5. Press the Enter button again to stop playing the sequence.
6. Press the right cursor key to advance to the next sequence.
7. Repeat steps 2, 3 and 4 to listen to all of the Demo Sequences.

The demos play continuously in sequential order until you press the Enter button to stop the Demo Sequence.

Selecting and Quick Editing Presets

The most fundamental operation with the Audity 2000 is to select and play the factory provided presets. Audity 2000 comes with 896 presets (you can create and save your own, but that comes later). Because of the standard MIDI specification which allows only 128 presets, Audity 2000 presets are organized into seven banks containing 128 presets each. The preset is identified in the bottom line of the main screen (the screen that appears when you first power up the unit). The preset number is three digits long and first in the line. The bank containing the preset is identified by a super-script number right after the preset number followed by the preset name as shown in the following illustration.

Preset Banks 0 and 1 are copies of Banks 5 and 6 so you can make changes to the presets in the first two banks without worrying about wrecking the factory presets.

Channel Number · Initial Volume Setting · Initial Pan Setting · Arpeggiator Setting

C01   Vol127   Pan00   Arp:P
000⁰   - default preset -

Blinking Cursor · Preset Number · Bank Number · Preset Name
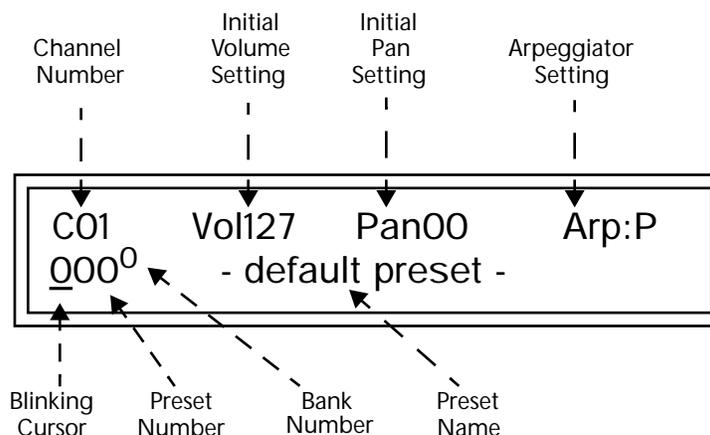
☞ **To Change the Preset**

1. Place the cursor under the first character in the Preset Number field. This is the "Home" position which is selected instantly when you press the Home/Enter button. Pressing either of the two cursor buttons also gets you there.

2. Turn the Data Entry Control knob on the front panel to select a new preset number. If you turn the knob slowly, the presets advance one number for each "click" of the knob. If you spin the knob quickly, the numbers advance much faster (more than one numer per click).

3. Play the keyboard and listen to the sounds made by your Audity 2000!

4. **TURN THE FOUR KNOBS** on the front panel and note how they change the sound of each preset! The button to the left of the knobs changes the knob's function. Don't worry about ruining the sound, the values are automatically reset as soon as you select a new preset.

Exploring the Master Arpeggiator

Audity's multi-channel Pattern Generator/Arpeggiator is one of the greatest features ever put in a synthesizer. Let's start by exploring the Master Arpeggiator.

☞ **To Arpeggiate a Single Preset:**

1. Select a preset. Note that the factory presets all have prefixes which describe the type of sound. For this investigation it might be best to choose a preset with the prefix "arp," for arpeggiator. These presets are optimized for use with the arpeggiator.

2. Set the Arp parameter in the main screen to "M" for Master Arpeggiator.

```
┌─────────────────────────────────────────────┐
│  C01      Vol127      Pan00        Arp:M      │
│  123⁴    arp:Breeder Dink                     │
└─────────────────────────────────────────────┘
```

3. Press the ARP menu button on the front panel to access the master Arpeggiator menu. The following screen appears.

```
┌─────────────────────────────────────────────┐
│  MASTER  ARPEGGIATOR                          │
│  _Status                           on         │
└─────────────────────────────────────────────┘
```

Try using the control knobs to change the arpeggiator parameters. The control knobs can be used to edit parameters in the Master, Arp and Edit menus.

4. Make sure the arpeggiator Status is "on." Play the keyboard to start arpeggiating.

5. Press either cursor key repeatedly to move the cursor below the Status field.

6. Turn the Data Entry Control clockwise one click. The Mode screen appears.

```
┌─────────────────────────────────────────────┐
│  MASTER  ARPEGGIATOR                          │
│  Mode              up                         │
└─────────────────────────────────────────────┘
```

7. Use the cursor keys to move the cursor to the *Mode* field (up, down, up/down, forw asgn, backw asgn, forw/backw, random, pattern). Try out the different modes as you play the keyboard.

8. Move the cursor back to the lower left position and explore the other parameters. The *Note Value* parameter changes the rate of the arpeggios. By the way, note value is a divisor based on the Master Tempo (which has its own front panel button). Try changing the tempo, but come right back.

9. Let's check out the pattern generator. Go back to the Mode screen and set the mode to "Pattern".

10. Now advance to the Pattern screen (shown below) and move the cursor to the Pattern Number field (the second field from the left).

```
┌─────────────────────────────────────────────┐
│  MASTER  ARPEGGIATOR                          │
│  Pattern _38⁰  Inversions                     │
└─────────────────────────────────────────────┘
```

See the Arpeggiator Chapter for detailed information on creating Patterns.

11. Try the various patterns. There are 200 permanent factory patterns and 100 user locations to store the patterns you create. Each pattern can have up to 32 notes.

Multi-Channel Arpeggiator

Audity 2000 is totally unique in its ability to run up to 16 arpeggiators at once! Even two or three patterns at once can create very complex sequences and dynamic landscapes of sound.

Here's one way to access this ultra-powerful feature. There is one arpeggiator for each MIDI channel. In order to arpeggiate on multiple channels, you'll need a controller that can output multiple MIDI channels at once.
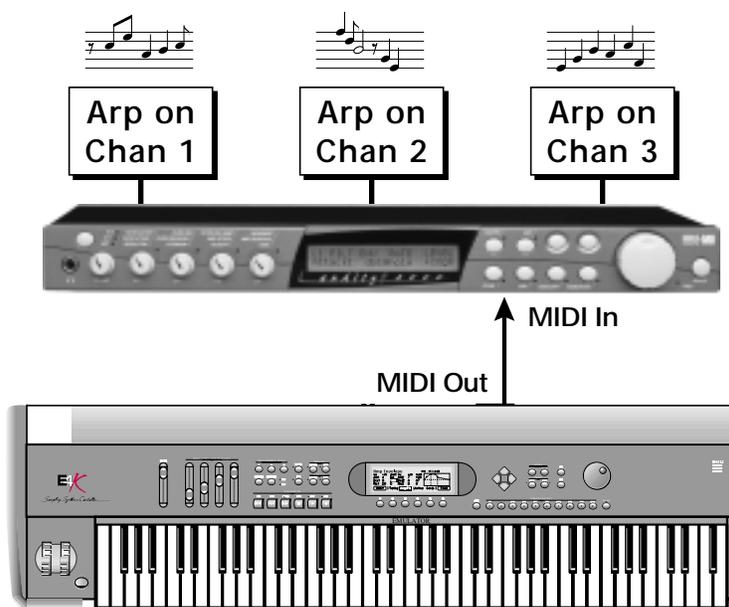
Master Keyboard transmitting on MIDI channels 1, 2, 3

Connect a multi-channel controller to Audity to unleash its true potential!

1. Set up your MIDI keyboard so that it outputs the entire keyboard range on MIDI channels 1, 2, and 3. This procedure varies with the type of keyboard you own.

2. Put Audity 2000 into Multi mode. This is located on the MIDI Mode page in the Master menu.

3. From the main screen, turn the arpeggiator "on" for MIDI channels 1 and 2. (We're only using two for now to keep it simple.) Select a different preset for each MIDI channel while you're at it.

```
┌──────────────────────────────────────────┐
│                                            │
│  C01      Vol127      Pan00       Arp:on   │
│  123³     wav:Super Saw                    │
│                                            │
└──────────────────────────────────────────┘
```
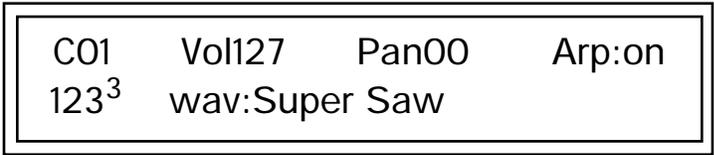
4. Start playing. You should be hearing two arpeggiators playing at once.

5. Change presets on one or both of the MIDI channels you are using (1 & 2). Since each factory preset has differently programmed arpeggiator settings, changing the preset not only changes the sound, but the arpeggiator as well.

Don't forget that you can adjust the volume and pan position for each channel. Sometimes a simple volume change will bring out hidden rhythms and patterns.

6. Press the Control Select button on the front panel so that the "ARP" LED is illuminated. Adjust the front panel control knobs. Remember that the knobs are controlling the arpeggiator on the channel displayed in the main screen.

7. Try changing one of the channel's arpeggiator setting to "M" instead of "on." Now press the Arpeggiator menu button on the front panel and adjust the arpeggiator parameters in real-time.

8. From the Master Arpeggiator menu, set the Mode to "Pattern" then explore the different patterns. There are 200 patterns available!

```
┌──────────────────────────────────────────┐
│                                            │
│  MASTER ARPEGGIATOR                        │
│  Pattern    99¹  Pattern Name              │
│                                            │
└──────────────────────────────────────────┘
```

You're starting to get the picture of how versatile and easy to use the Audity 2000 really is.

Operations

Control Button · Volume Control · Master Menu · Edit Menu · Cursor Controls · Power Switch · Display · Headphone Jack · Realtime/Arpeg. Control Knobs · Clock Menu · Arpeg. Menu · Save/ Copy · Home/ Enter · Data Entry
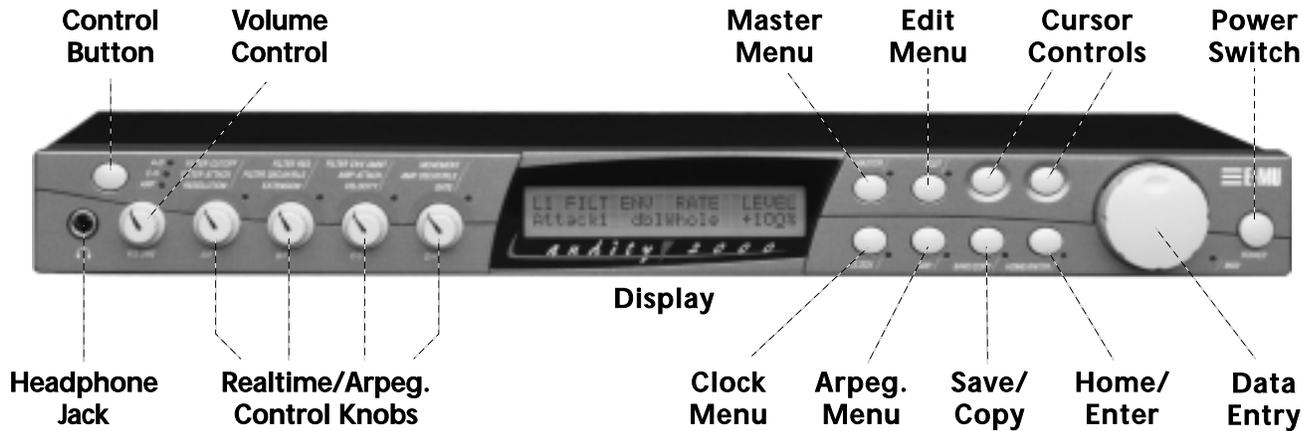
Front Panel

The Audity 2000 front panel contains an LCD screen, nine buttons and four real-time controllers. Functions are grouped logically and the controls are arranged for ease of use. Precisely because Audity is so simple to use, you might be tempted to skip this section. If you just can't help yourself, at least read the Real-time Controller inforamtion begining page 25. There are several "power user" features in the interface which make programming even easier and we wouldn't want you to miss them.

Volume Control

This control is the master volume control for all audio outputs. The Volume Control does not affect any editing or user interface operations.

Master Button

The Master menu contains parameters that affect the entire machine, not just certain presets. An illuminated LED to the right of the button indicates that you are in the Master menu.

Edit Button

Use the Edit menu when you want to create or modify a preset. An illuminated LED to the right of the button indicates that you are in the Edit menu.

Arpeggiator Button

The Arpeggiator menu contains parameters that affect the master arpeggiator. It also contains the User Pattern programming functions. An illuminated LED to the right of the button indicates that you are in the Arpeggiator menu.

Left/Right Cursor Buttons

These buttons move the cursor to the next parameter on the display. (The cursor is a little flashing line underneath one of the parameters in the display.) Press either cursor button until the cursor is underneath the desired parameter. The cursor buttons have an auto-repeat feature which advances the cursor when the button is held continuously.

• The cursor can be moved bidirectionally using the Data Entry Control while either cursor select button is held down (for example, press and hold the right cursor button and turn the Data Entry Control).

Clock Button

The Clock button allows you to change the Master Tempo of the unit. Rotate the Data Entry Control to change the Master Tempo. The flashing LED to the right of the button pulses steadily to indicate that you are in the Clock menu. At all other times, the LED displays the current clock tempo by flashing on every beat.

Save/Copy Button

The Save/Copy button is used to save or copy presets and to copy data. Selected groups of parameters, such as PatchCord settings, can be copied between Presets and/or between Layers using this menu.

The LED to the right of the button illuminates to indicate that you are in the Save/Copy menu. The LED also illuminates when any preset parameter has been changed in the Edit menu (or if the front panel knobs have been moved with Quick-Edit mode enabled).

Home/Enter Button

The Home/Enter button is dual purpose. In general, this button acts as the "Home" button. For example, when in an Edit menu, this button snaps the cursor to the page name field of the current screen. When viewing the Preset Select screen (we also call it the main screen), this button snaps the cursor to the preset number field. In these instances, the LED is not used.

Some screens and parameter fields use this button as the "Enter" button. In these cases, the LED blinks when the cursor is moved to one of these fields indicating that the module is waiting for your response to initiate the operation.

Data Entry Control

The Data Entry Control is a stepped, variable control switch used to change parameter values. The wheel increments or decrements the current value one unit with each click. This control incorporates acceleration, which advances the value faster if the Data Entry Control is turned quickly.

Control Button

The Control button is used to change the function of the Controller knobs (see the next section). Each time you press the Control button, the Control Mode toggles to select only one of the three Control Rows. The currently selected Control Row is indicated by one of the three LEDs to the right of the row's label.

Controller Knobs

Each of the four Real-time Controller knobs has a corresponding LED to its lower right side. The function of the Real-time Controllers depends on which row is currently selected and the programming of the preset.

Front Panel Controller Modes

The Real-time Controller Knobs serve three purposes.

1. Real-time control of synthesizer parameters
2. "Quick Editing" the initial settings of the real-time controllers
3. "Deep Editing" the parameters

This section describes each of the three uses.

Real-time Control

The Controller knobs provide direct control of the Audity 2000's synthesizer parameters. This mode is always active when on the Preset Select (main) screen. They can optionally be used to transmit MIDI controller messages.

The Control button changes the function of the real-time controller knobs. Each time the button is pressed, the Control Mode toggles to select one of the three Control Row groups. The currently selected Control Row is indicated by the illuminated LED to the right of the button. The control knob functions are determined by the selected Control Row.

The first two Control Rows generate MIDI A-H messages that can control the preset on the current MIDI channel (the channel showing on the Preset and main screen. The destination names (for example Filter Cutoff, Filter Attack) printed on these rows are only a template to show how the factory ROM presets are programmed to respond. You can chang the way a preset responds to MIDI A-H messages from the Edit menu (PatchCords).

There is an LED next to each of the control knobs which illuminates to indicate that the knob setting has been changed from the value programmed in the preset (when Quick Edit mode is enabled). If the knob position is returned to the original setting, the LED is extinguished.

If the "*Knobs MIDI Out*" parameter in the Master menu (see "Knobs MIDI Out" on page 61) is set to "transmit," the system sends a MIDI controller message when you turn off the Control knob. The MIDI controller message is sent on the current MIDI channel (also called the basic channel) using the controller number assigned in the Master menu (see "Real-time Controller Assignment" on page 58).

The third Control Row generates messages that control the Arpeggiator. Since the Arpeggiator is multi-channel, the knobs control the Arpeggiator on the *current* MIDI channel. If "Knobs transmit MIDI" in the Master menu is set to "transmit," a MIDI controller message is sent when you turn the Control knob.

The knobs only generate a message when you move a knob to a new value. The current value jumps to the new value sent.

Quick Edit

✎ *If Quick Edit is enabled, the Arpeggiator knobs will quick edit the preset.*

The Master Arpeggiator cannot be quick edited.

This mode uses the Controller knobs to "Quick-Edit" the currently selected preset without having to enter the Preset Edit menu. This mode is only active when on the Preset Select screen and when *"Quick-Edit"* is enabled in the Master menu (see "Knob Preset Quick-Edit" on page 60).

Initial controller values can be stored in every preset. When you move a knob with Quick-Edit enabled, the Initial Controller Value is updated with the knob's new value. The knob's LED lights indicating that the preset value has been changed. The first two Control Rows' MIDI A-H values are stored in the corresponding *Initial Controller Amount* parameter in the Edit menu (see "Initial Controller Amount" on page 126). The Save/Copy button LED illuminates to remind you that the preset has been edited. "Quick-Edits" made to a preset are lost if you select another preset before saving them.

👓 *Quick-Edit mode must be enabled in the Master menu.*

☞ **To Quick-Edit a Preset**

1. Use the Control Knobs to change the sound of the current preset as desired.
2. Press the Save/Copy button. The display reads, "Save Preset to."
3. Press the right cursor button to select the bottom row.
4. Optional: Select a new preset location if you don't want to overwrite the current preset, or if the current preset is a ROM preset.
5. Press the Enter button to save the preset.

Deep Edit

When in the Master, Edit, or Arpeggiator menus, you can use the Controller Knobs to edit parameters. This is called "Deep Edit" mode. Using the Controller Knobs is a faster method for entering data, but the Data Entry Control offers finer precision.

☞ **To Enable the Deep Edit Mode:**

1. Press the Master button and use the Data Entry Control to advance to the "Knobs Deep Edit" screen as shown in the following illustration.

```
KNOBS DEEP EDIT
disabled
```

2. Press either Cursor key to move the cursor to the bottom line in the display.

3. Use the Data Entry Control to change the value to "enabled."

4. Press the Master menu button to exit the Master menu.

When you enter any of the Edit menus:

1. The four Controller Knobs are used for editing.

2. All the Controller LEDs are off.

3. All the Control Row LEDS are off.

When you turn a knob, the field value jumps to the current knob value. You can still use the Data Entry Control for editing by moving the cursor to the desired field.
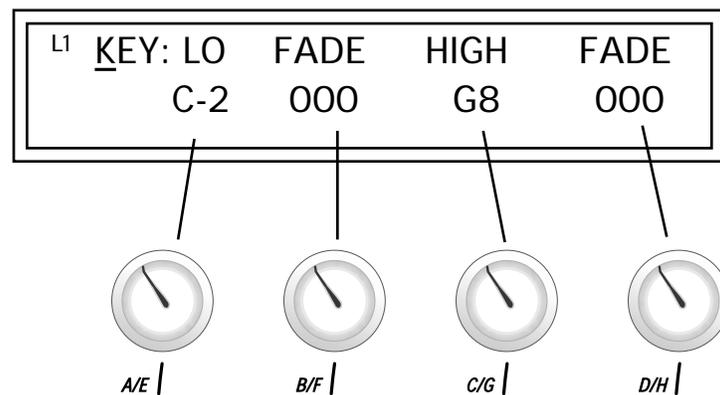
To move through menus horizontally, use the Data Entry Control (the page's title field is the default cursor position). To move through menus vertically (preset layers), press the left cursor to get to the layer field, then change layers with the Data Entry Control.

• Use the Data Entry Control to move through menus (horizontally) or layers (vertically).

• Use the Controller Knobs to change parameter values within each page.

Main Screen

The Preset Select screen is Audity 2000's default screen (sometimes called the main screen) and is active when you have not selected any of the other button-activated menus. From this screen you can change or examine the Preset, Volume, Pan position and Arpeggiator state for each of the 16 MIDI channels.

```
C01      Vol127         Pan=00        Arp:off
036⁶  pad: 2ManyDolphins
```

$$C0\underline{1} \quad Vol127 \quad Pan{=}00 \quad Arp{:}off$$
$$036^{6} \; pad{:}\; 2ManyDolphins$$
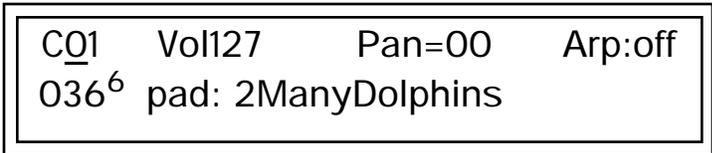
MIDI Channel Selection

✎ *The channel number shown in the main screen is the "basic MIDI channel" when in Omni or Poly modes.*

☞ **To Change the MIDI Channel**

1. Press either cursor button until the cursor is underneath the channel number. (The cursor is the little flashing line underneath one of the parameters in the display.)
2. Rotate the Data Entry Control to select a MIDI channel (01-16). As the channel number changes, the display changes to show the preset, volume, pan and arpeggiator state associated with the displayed channel.

Preset Selection

☞ **To Change the Preset**

1. Press either cursor key until the cursor is underneath the preset number. (The cursor is a little flashing line underneath one of the parameters in the display.) As you rotate the Data Entry Control, the preset number and name changes.
2. The displayed preset is assigned to the displayed MIDI channel. Presets are arranged into 7 banks of 128, as shown in the diagram at left.

• Select banks independently of the of the preset number by pressing the Home/Enter button while turning the Data Entry Control.

Bank	Contents
0 —	128 RAM Presets
1 —	128 RAM Presets
2 —	128 ROM Presets
3 —	128 ROM Presets
4 —	128 ROM Presets
5 —	128 ROM Presets
6 —	128 ROM Presets

```
C01      Vol127         Pan=00        Arp:off
000²  Preset Name
```

$$C01 \quad Vol127 \quad Pan{=}00 \quad Arp{:}off$$
$$\underline{0}00^{2} \; Preset\; Name$$
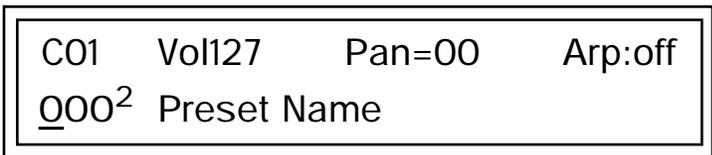
Using the screen above as an example, the superscripted number 2 in the second line of the display identifies the current bank number.

Channel Volume

Channel volume sets the volume of the selected MIDI channel in relation to the other channels. This is the same parameter as MIDI volume control #7, and changes made over MIDI are shown in the display.

☞ **To Change the Channel Volume**

1. Press either cursor key until the cursor is underneath the volume value.
2. Rotate the Data Entry Control to select a volume level. The Channel Volume range is 000-127.

Channel Pan

Channel Pan sets the stereo position of the selected MIDI channel. This control operates like the balance control on your home stereo system. Channel Pan is the same parameter as MIDI pan controller #10, and changes made over MIDI are shown in the display.

Note: Pan settings in the preset ADD algebraically with the Channel Pan setting. Therefore, if the pan setting in the preset were set to "63R," moving the Channel Pan setting full left would return the sound to the center position.

☞ **To Change the Channel Pan**

1. Press either cursor key until the cursor is underneath the pan field.
2. Rotate the Data Entry Control to select a pan value. 64L indicates a hard left pan, 63R indicates a hard right pan. With a setting of "00," the sound is centered in the stereo field.

Channel Arpeggiator

This function controls the arpeggiator for each MIDI channel. When the channel arpeggiator mode is set to Off, then there is no arpeggiation on that channel, regardless of what is setup in the master Arpeggiator menu or preset. If the channel arpeggiator is On, the preset's arpeggiator is used, regardless of whether or not it is turned on in the Edit menu. This lets you turn on arpeggiation from the main screen.

If the mode is set to "P" (for preset), the preset's arpeggiator settings and on/off status is used. If the mode is set to "M" (for master), the master arpeggiator settings and on/off status (located in the Arpeggiator menu) are used.

☞ **To Change the Channel Arpeggiator Status**

1. Press either cursor key repeatedly until the cursor is underneath the arpeggiator field.
2. Rotate the Data Entry Control to select arpeggiator status values "Off, On, P or M."

Multitimbral Operation

Multitimbral operation means that Audity 2000 can play more than one sound at the same time. Follow these instructions to access multiple presets on different MIDI channels simultaneously.

☞ **To Set Up Multitimbral Operation**

1. Set the MIDI mode to "multi mode," using the MIDI mode function in the Master menu.

2. Decide which MIDI channels you want the Audity 2000 to receive (you can select and play up to 16 channels simultaneously). Turn all other channels OFF using the MIDI Enable function in the Master menu.

3. Select the desired preset for each of the MIDI channels you want the Audity 2000 to receive using the MIDI Channel/Preset selection screen (see previous instructions).

4. Audity 2000 now responds multitimbrally on each of the MIDI channels you have specified. The volume and pan position parameters can be adjusted over MIDI (for each MIDI channel) or using the Cursor and Data Entry Control in the Preset Select screen.

```
                    ┌─────────┐
                    │ Volume  │
          Channel 01│  Pan    │────►  PRESET
                    │  Arp    │
                    └─────────┘

                    ┌─────────┐
                    │ Volume  │
          Channel 02│  Pan    │────►  PRESET
                    │  Arp    │
                    └─────────┘

                    ┌─────────┐
                    │ Volume  │
          Channel 03│  Pan    │────►  PRESET
                    │  Arp    │
                    └─────────┘
                         ●
                         ●
                         ●
                    ┌─────────┐
                    │ Volume  │
          Channel 16│  Pan    │────►  PRESET
                    │  Arp    │
                    └─────────┘
```
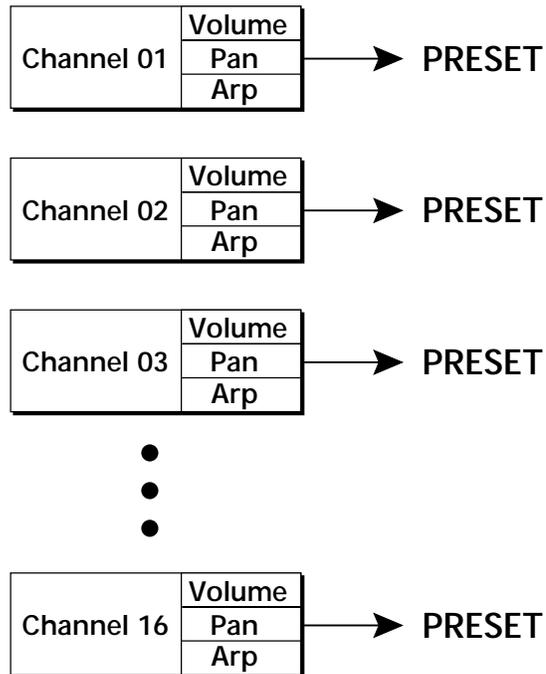
Each of the 16 MIDI channels can be assigned to play a specific Audity 2000 preset.

Arpeggiator Menu

An arpeggiator moves a pattern of notes sequentially over a range of the keyboard. Audity 2000 has the unique ability to play a different arpeggiator on each MIDI channel!

Arpeggiator settings can be defined as part of the preset (using the Arp parameters in the Edit menu), or globally in the Arpeggiator menu. The preset and master arpeggiators have the same parameters which we define in this chapter.

The Arp field in the main screen defines which arpeggiator settings will be used. "M" uses the master Arpeggiator settings and on/off status (as defined in the Arpeggiator menu). "P" uses the preset's arpeggiator settings and on/off status (as defined in the Edit menu). Choosing "On" uses the preset's arpeggiator settings regardless of whether or not it is turned on in the Edit menu and Off turns off the arpeggiator for that channel regardless of the settings and status specified in either menu.

```
C01     Vol127      Pan00      Arp:on
003³    nse:Modular Ring
```
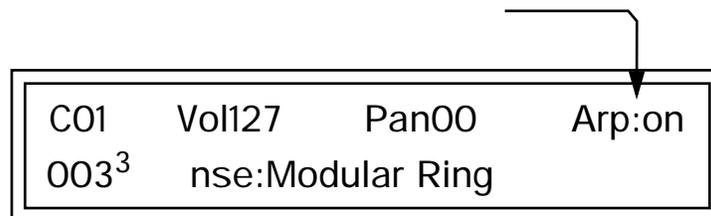
All arpeggiators share Audity 2000's master clock and its current setting. The master clock can be Audity 2000's internal clock or an external MIDI clock. Although the arpeggiators use the master clock setting, the tempo divisor can be unique for each arpeggiator setup.

Arpeggiator modes include up, up/down, forward assign, backward assign, forward/backward assign and random as well as play *Patterns*. Patterns are pre-recorded sequences of notes and rests. All key-on notes play the pattern. For example, if you play a chord, all the notes in the chord play the pattern in harmony. Audity 2000 contains 200 factory patterns and 100 user definable patterns.

Master Arpeggiator

☞ **To Access the Master Arpeggiator Parameters**

1. Press the Arpeggiator menu button lighting the LED. The Arpeggiator menu screen displays the menu page most recently selected since powering up Audity 2000. The cursor appears below the first character of the screen heading on line one.

2. Use the right cursor button to advance the cursor to the first field in the bottom line of the screen.

3. Now, use the Data Entry Control to access the various master Arpeggiator parameters.

Status

The Status parameter turns the Master Arpeggiator on and off. The Channel Arpeggiator setting in the main screen overrides this setting. For example, if you set the Arpeggiator in the main screen to "off," and turn it "on" here, it still will not play.

```
┌─────────────────────────────────┐
│  MASTER ARPEGGIATOR             │
│  Status                      off │
└─────────────────────────────────┘
```
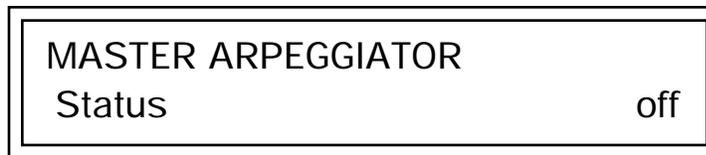
Mode

The Mode parameter determines the direction or pattern mode of the arpeggiated notes.

```
┌─────────────────────────────────┐
│  MASTER ARPEGGIATOR             │
│  Mode              up           │
└─────────────────────────────────┘
```

The eight arpeggiator modes are:

• **Up**   Held notes arpeggiate continuously from lowest to highest pitch.

• **Down**   Held notes arpeggiate continuously from highest to lowest pitch.

• **Up/Down**   Held notes arpeggiate continuously from lowest to highest pitch, then from highest to lowest, then repeat this cycle.

• **Fwd Assign** Held notes arpeggiate continuously in the order in which the keys were pressed.

- **Bkwd Assign**   Held notes arpeggiate continuously in the reverse order in which the keys were pressed.

- **Fwd/Bkwd**   Held notes arpeggiate continuously in the order in which the keys were pressed, then arpeggiate in the reverse order that they were pressed. The cycle is then repeated.

- **Random**   Held notes arpeggiate continuously in a random fashion.

- **Pattern**   Held notes play the selected pattern (see "Pattern" on page 34 for details).

Note Value

The Note Value determines the duration of each note played. This parameter is used in non-pattern mode only.

```
┌─────────────────────────────────────────┐
│                                           │
│   MASTER ARPEGGIATOR                      │
│   Note Value        1/8 dot               │
│                                           │
└─────────────────────────────────────────┘
```
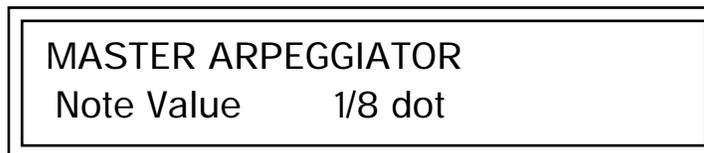
Following is a list of possible Note Values and the relative number of clocks used for each.

Note value has no effect when the mode is set to "pattern."

Note Value	MIDI Clock
Double Whole Note	**192**
Dotted Whole Note	144
Double Note Triplet	128
Whole Note	**96**
Dotted Half Note	72
Whole Note Triplet	64
Half Note	**48**
Dotted Quarter Note	36
Half Note Triplet	32
Quarter Note	**24**
Dotted Eighth Note	18
Quarter Note Triplet	16
8th Note	**12**
Dotted 16th Note	9
8th Note Triplet	8
16th Note	**6**
Dotted 32nd Note	4.5
16th Note Triplet	4
32nd Note	**3**

Arpeggiator Pattern Speed

✎ *The Front Panel knobs control the Arpeggiator on the Basic Channel.*

The Arpeggiator Pattern Speed parameter lets you change the playback rate of Patterns by 1/4x, 1/2x, 1x (normal), 2x or 4x normal speed. In addition, you can change the pattern speed from the front panel using the Arp A/E knob. This knob changes the note value when in Arpeggiator mode or the Pattern Speed when in Pattern mode. The Arpeggiator control knob functions are shown in the following diagram.

A-D
E-H
ARP

A/E	B/F	C/G	D/H
Note Value/ Pattern Speed	Extension	Velocity	Gate

```
MASTER ARPEGGIATOR
Pattern  Speed  2x
```
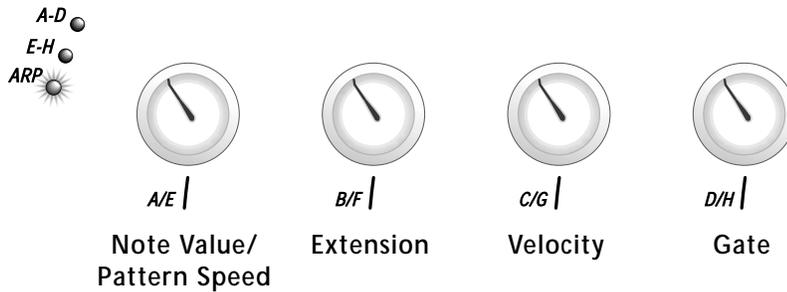
Pattern

This field lets you choose the pattern used when the arpeggiator Mode is set to "Pattern." There are 200 factory programmed patterns and you can create an additional 100 user definable patterns (see "Editing a User Arpeggiator Pattern" on page 41).

```
MASTER ARPEGGIATOR
Pattern     99¹   Pattern Name
```

Velocity

The Velocity parameter determines the velocity at which each note arpeggiates. Velocity can be defined by the velocity value specified (from 1 through 127), or by the actual velocity of the played note (played). Bear in mind that velocity values do not have an effect on the sound unless the preset is programmed to respond to velocity.

```
MASTER ARPEGGIATOR
 Velocity                    played
```

Gate Time

The Gate Time parameter works together with the Note Value parameter. Just as Note Value defines the length of a note, the Gate Time sets the percentage of the Note Value time played. This can have a dramatic effect on the sound depending on how the envelope generators are programmed.

```
┌─────────────────────────────────────┐
│  MASTER ARPEGGIATOR                   │
│  Gate                           100%  │
└─────────────────────────────────────┘
```

With a Gate Time setting of 100% the note is held on until the next note starts. The envelope generators never advance to the Release stages. With a Gate Time setting of 50%, the note is released halfway through the note cycle and the envelope generators proceed to their release stages until the next note occurs. Refer to the following illustration.

Selected Note Value *(8th notes, 16th notes, etc.)*

Gate
Time

100%   *key-on time*

75%   *key-on time*

50%   *key-on time*

25%
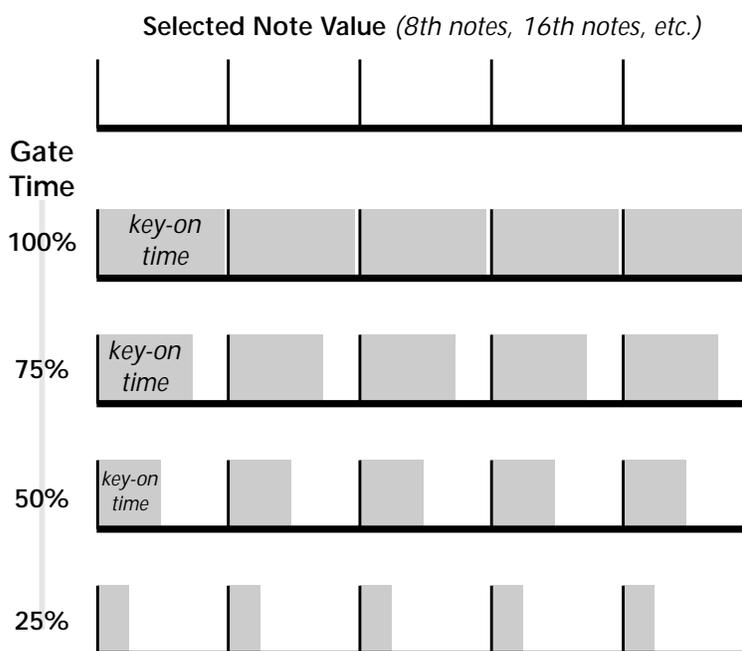
The ***note-on*** time is used for the start-of-time when calculating note durations. See "Duration" on page 38.

Extension Count

The Extension Count parameter specifies how many times the Extension Interval is carried out. With an Extension Count of 0, the arpeggio plays only the notes pressed. With an Extension Count of 1, the arpeggio plays the notes pressed, then plays the same notes (in the same order), transposed by the Extension Interval amount. The cycle is then repeated.

```
MASTER ARPEGGIATOR
Extension Count                          4
```

For example, with the Extension Interval set to 12 (an octave) and an Extension Count of 2, and with the Arpeggiator Mode set to Fwd Assign, if you played E2, then C2, then G2, the arpeggiated sequence would consist of: E2, C2, G2, then E3, C3, G3, and then E4, C4, G4. The Extension Count values range from 0 through 15. Refer to the following illustration.
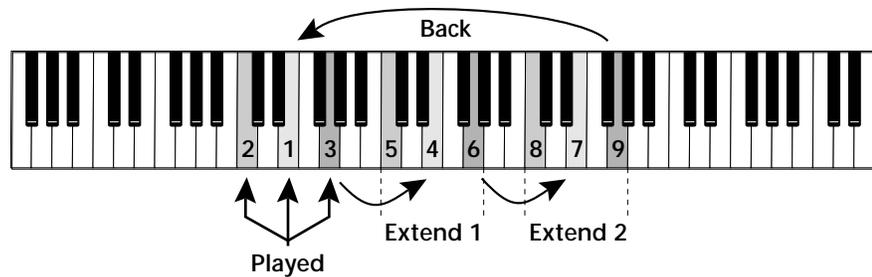
Extension Interval

The Extension Interval specifies the additional intervals played when you press a key. For example, suppose you played C2 with an Interval of 7 (a Major 5th), Up mode, and an Extension Count of 2. The arpeggio alternates between C2 and G2.

The Extension Interval values range from 1 through 16.

```
MASTER ARPEGGIATOR
Extension Interval                       7
```

Sync

The Sync parameter defines when a note is played in relation to when the key is pressed. When set to "Key Sync", the note sounds the instant a key is pressed. When set to "Quantized", the note does not sound until the next occurrence of the selected note value.

```
MASTER ARPEGGIATOR
Sync        key sync
```

The following diagram illustrates how Key Sync and Quantize work.

*Key
Pressed*

Note Sounds
Immediately

Key Sync

Quarter Notes

Note Doesn't Sound until
the Next Quarter Note

Quantize

Quarter Notes
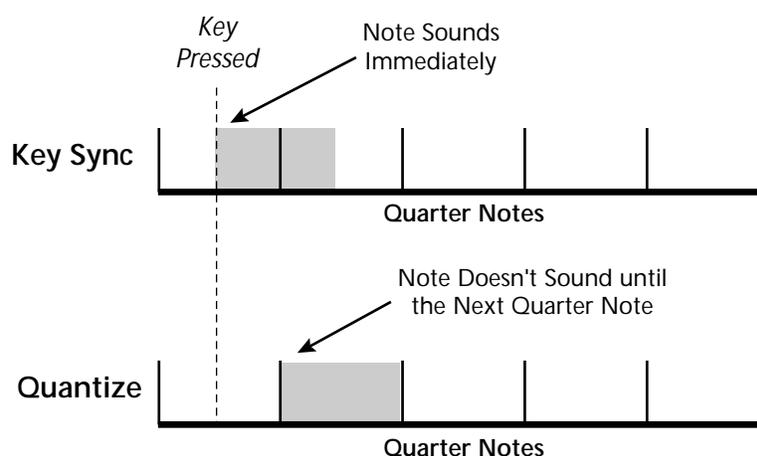
Delay

The Delay value determines how long the arpeggiator is delayed before becoming active after the first "note-on." During the delay period, notes are played normally (as if the arpeggiator was off). After the delay period has elapsed, the arpeggiator kicks in. Once you release all the keys on the controller, the delay starts over with the next note-on. In combination with the Duration parameter, Delay lets you change preprogrammed or played arpeggio patterns to create many more variations.

```
MASTER ARPEGGIATOR
Delay          off
```

Duration

This parameter defines how long the arpeggiator plays before stopping. The Duration is specified in note values. Therefore if an arpeggio were running at a 16th *Note Value* and the Duration were set to a whole note, the arpeggiator would play 16 steps before stopping. After the duration has elapsed, the arpeggiator remains inactive until the key is released.

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │  MASTER ARPEGGIATOR             │ │
│ │  Duration    1 / 1d             │ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```

Duration can be used to modify the patterns and increase the possible pattern combinations and variations. Because this parameter limits the length of arpeggiator play time, it can change the arpeggio pattern when the Duration is less than the length of the arpeggio. You can set the arpeggio to repeat continuously using the *Recycle* function described below.

Recycle

This parameter works together with the *Duration* and *Delay* parameters. When these are enabled without the Recycle parameter turned on, the pattern or arpeggio normally stops. The Recycle function instantly resets the pattern to the beginning after the duration value has elapsed and repeats the pattern or arpeggio.

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │  MASTER ARPEGGIATOR             │ │
│ │  Recycle                    off │ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```

Keyboard Thru

When enabled, Keyboard Thru merges the notes not arpeggiated with the arpeggiated notes. This gives the effect of two parts playing at once.

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │  MASTER ARPEGGIATOR             │ │
│ │  Keyboard Thru              off │ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```

Latch

With Latch mode On, any notes you play remain on until you press them again. Latched notes can be halted by turning Latch off in this screen, or by turning off the Arpeggiator for the channel in the main screen.

```
┌─────────────────────────────────────┐
│                                       │
│   MASTER ARPEGGIATOR                  │
│   Latch                          on   │
│                                       │
└─────────────────────────────────────┘
```

Key Range

Use the Key Range parameter to set the keyboard range for the arpeggiator. Notes inside the range will arpeggiate while notes outside the specified range will not arpeggiate. Use the Extensions parameters to exceed the upper boundary of the Key Range (see the information about Extensions beginning on page 36).

```
┌─────────────────────────────────────┐
│                                       │
│   MASTER ARPEGGIATOR                  │
│   Key Range              C-2->G8      │
│                                       │
└─────────────────────────────────────┘
```

Move the cursor under the first key and use the Data Entry Control to define the lowest key to be arpeggiated. Move the cursor under the second key value and use the Data Entry Control to define the highest key to be arpeggiated.

Arpeggiator MIDI Out

This parameter selects whether or not the Arpeggiator note data is sent to the MIDI out port. The MIDI Out feature lets you use the Audity 2000 as an arpeggiator for your other MIDI instruments. It also lets you record the arpeggios into a MIDI sequencer.

```
 ARP MIDI OUT
 don't transmit
```

MIDI Song Start

This function enables or disables MIDI Song Start for the arpeggiator. The MIDI Song Start option restarts the arpeggiator or pattern to the beginning when a MIDI Song Start command is received. This feature is useful for synchronizing arpeggios and pattern when recording into, or playing along with a sequencer.

```
 MIDI SONG START
 enabled
```

Send MIDI System Exclusive Data

Transmits the Arpeggiator Patterns via the MIDI out port as MIDI System Exclusive data to another Audity 2000 or to a computer/sequencer for backup. Using the cursor key and the Data Entry Control, select the MIDI data you want to transmit. See *Send MIDI System Exclusive Data* in the Master chapter for additional details about recording SysEx.

User Patterns
Transmits all the User patterns.

00^0 to 99^0
Transmits only the individual pattern you have selected.

✎ *Send data as you would a regular sequence. Sending data in one huge chunk may clog the MIDI input buffer on Audity 2000.*

```
 SEND  MIDI  SYSEX  DATA
 All User Arp Patterns
```

Editing a User Arpeggiator Pattern

Audity 2000 lets you create and edit your own arpeggiator patterns. Using the Edit User Pattern menu, you can create up to 100 user patterns and each pattern can be up to 32 steps in length.

When you edit a pattern, you are writing directly into memory—no Save command is required. This is different from the Edit menu where you must Save a preset before it will be overwritten. If you want to modify an existing pattern and keep the original, you must first COPY the pattern you want to edit to another location using the function in the Copy menu (see "Copy Arpeggiator Settings" on page 162). Refer to the instructions below and the following parameter descriptions to create your own patterns.

Bank 0 = User Patterns
Bank 1 = Factory Patterns
Bank 2 = Factory Patterns

```
┌─────────────────────────────────┐
│  EDIT USER PATTERN              │
│  00⁰  Mod Spinach               │
└─────────────────────────────────┘
```

☞ **To Select the Pattern to Edit**

✎ *Before editing a Pattern, select Master Arpeggiator (M) in the main screen and set the Arpeggiator to the Pattern you are editing. This lets you hear the Pattern as you edit it.*

1. From the Edit User Pattern screen shown above, move the cursor to the bottom line and select the pattern you want to edit. The Enter LED begins flashing.

2. Press the Enter button to confirm that you want to edit the selected pattern. The "User Pattern Edit" page appears.

```
┌──────────────────────────────────────────┐
│  PTRN    KEY    VEL    DUR    RPT          │
│  S01     +0     ply    1/8     2           │
│   ↑       ↑      ↑      ↑       ↑          │
│   ┆       ┆      ┆      ┆       ┆          │
│   ┆       ┆      ┆      ┆       ┆          │
│ Pattern Step  Key offset  Velocity  Duration  Repeat │
│  number                                     │
```
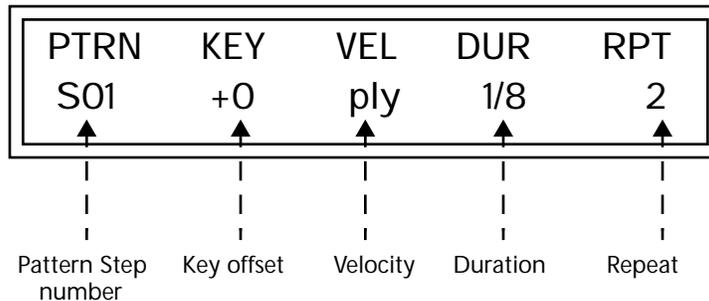
Pattern Step Number

You can setup up to 32 steps for each arpeggiator pattern. This field selects which step you will be editing from 1 to 32.

Key

This parameter defines what happens during the current step. The Key parameter can do one of five different operations. Following is a description of each of the key functions and how to use them.

Key Offset

This parameter defines not the actual note of the arpeggiator playback, but instead specifies the amount of offset, in semitones, from the original note played. You can set a Key Offset from -48 to +48 for each step. For example, if you play a "C" on the keyboard with the Key Offset amount for the first step set to "+1," the first step in the pattern will be "C#."


| -48 | -36 | -24 | -12 | 0 | +12 | +24 | +36 | +48 |

← – Offset   Played   + Offset →
                     Note
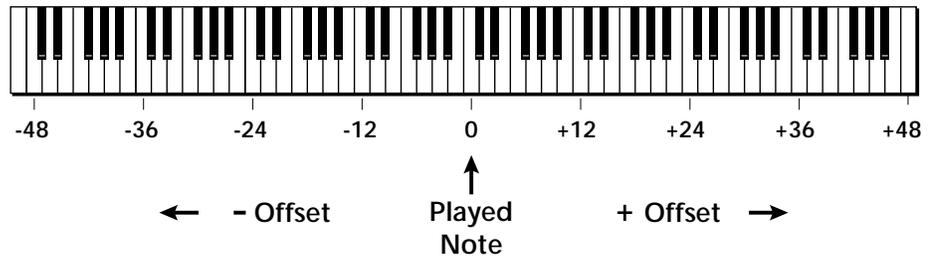
Tie

This function *extends* the duration of notes beyond the values given in the duration field by "tying" notes together. You can tie together any number of consecutive steps.

| +2 | tie | -5 |
| Step 1 | Step 2 | Step 3 |

Rest

Instead of playing a note, you can define the step as a Rest. The Duration parameter specifies the length of the rest. Rests can be tied together to form longer rests.

Skip

This command simply removes the step from the pattern. The Skip feature makes it easy to remove an unwanted step without rearranging the entire pattern. You'll be happy to know that the velocity, duration and repeat parameters are remembered if you decide to put the step back later.

End

This command signals the end of the pattern. Any steps programmed after the step containing the End command are ignored.

IMPORTANT: The Gate function in the arpeggiator MUST be set to 100% when using the tie function, otherwise the tied note is retriggered instead of extended.

Velocity

Each note in the pattern plays using either a preset velocity value (from 1 through 127), or using the actual velocity of the played note (ply).

Note: Velocity values will not have an effect on the sound unless velocity is programmed to do something in the preset.

Duration

This parameter sets the length of time for the current step, defined as a note value, based on the Master Tempo. The selectable note durations are described below.

1/32	32nd Note	**1/2t**	Half Note Triplet
1/16t	16th Note Triplet	**1/4d**	Dotted Quarter Note
1/32d	Dotted 32nd Note	**1/2**	Half Note
1/16	16th Note	**1/1d**	Dotted Whole Note
1/8t	8th Note Triplet	**1/1t**	Whole Note Triplet
1/16d	Dotted 16th Note	**1/2d**	Dotted Half Note
1/8	8th Note	**1/1**	Whole Note
1/4t	Quarter Note Triplet	**2/1t**	Double Whole Note Triplet
1/8d	Dotted Eighth Note		
1/4	Quarter Note	**2/1**	Double Whole Note

Repeat

Each step can be played from 1 to 32 times. A repeat setting of "1" indicates the step will be played one time (not repeated one time or played twice).

☞ **To Edit a User Pattern**

1. The first field in the Edit User Pattern field defines the pattern's step number. Start with the pattern Step 01.
2. Define the Key Offset, Velocity, Duration and Repeat values.
3. Repeat steps 1 and 2 until you have setup the desired number of steps in the pattern.
4. Set the Key Offset to "End" on the last step in the pattern.

User Pattern Name

The User Pattern Name page lets you enter a name for any User Arpeggiator Pattern.

```
┌──────────────────────────────────────────┐
│  PTRN     KEY     VEL     DUR     RPT      │
│  S01      +0      ply     1/8      2       │
└──────────────────────────────────────────┘
```

☞ **To Name a User Pattern**

1. From the Pattern Edit screen shown above, position the cursor under the PTRN field.

2. Turn the Data Entry Control clockwise. The following screen appears.

```
┌──────────────────────────────────────────┐
│  USER PATTERN NAME                         │
│  00⁰  Mod Spinach                          │
└──────────────────────────────────────────┘
```

3. Move the cursor to the bottom line and edit the Pattern name using the Data Entry Control and Cursor keys.

4. Move the cursor to the "Home" position (shown above) by pressing the Home/Enter button, then turn the Data Entry Control counterclockwise one click to return to the Pattern Edit screen.

5. Turn the Data Entry Control counterclockwise multiple clicks to jump back to the main Arpeggiator menu screen.

Multi-Channel Arpeggiating

One of the coolest features in Audity 2000 is its ability to run multiple arpeggiators at the same time. The interactions of multiple note sequences can be complex and fascinating. Audity 2000 lets you run up to sixteen arpeggiator patterns at once! Even two or three patterns at once can create very complex sequences and dynamic landscapes of sound.

Master Keyboard transmitting on
MIDI channels 1, 2, 3
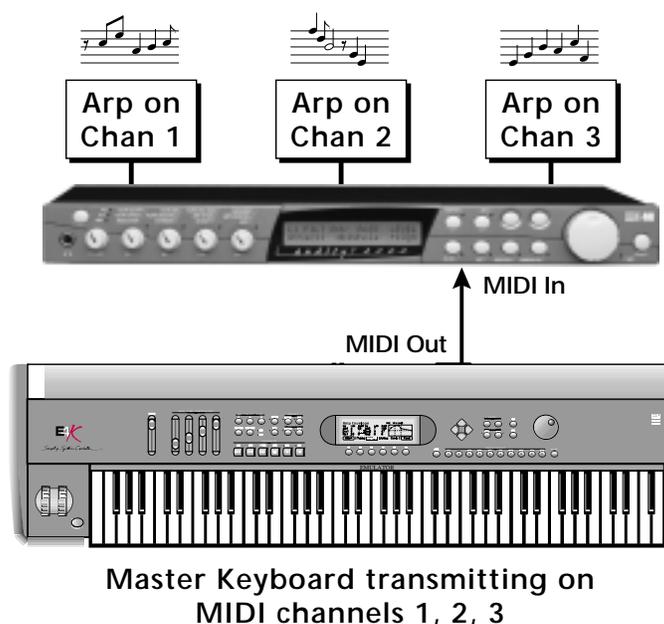
Here's one way to use this ultra-powerful feature. There is one arpeggiator for each MIDI channel. In order to arpeggiate on multiple channels, you need a controller that can output multiple MIDI channels at once.

1. Set up your MIDI keyboard so that it outputs the entire keyboard on MIDI channels 1 and 2. This procedure varies with the type of keyboard you own. Refer to the owner's manual that came with your keyboard for instructions.

2. Put Audity 2000 into Multi mode. This is located in the Master menu, MIDI Mode page.

3. On the main screen, turn the arpeggiator "on" for MIDI channels 1 and 2. (We're only using two channels for now to keep it simple.) Select a different preset for each MIDI channel while you're at it.

```
C01      Vol127      Pan00        Arp:on
123³     wav:Super Saw
```

4. Start playing. You should be hearing two arpeggiators playing at once.

Try experimenting with presets and settings. For example:

- Change presets on one or both of the MIDI channels you are using (1 & 2). Since each factory preset has differently programmed arpeggiator settings, changing the preset not only changes the sound, but the arpeggiator settings as well.
- Press the Control button on the front panel to select the "ARP" Control Mode (the LED in the third row is illuminated). Adjust the front panel control knobs. These knobs control the arpeggiator on the channel displayed in the main screen.
- Try changing one of the channel's arpeggiator setting to "M" instead of "on." Now press the Arpeggiator Menu button and adjust the arpeggiator parameters in real time.
- From the Master Arpeggiator menu, set the Mode to "Pattern" then explore the different patterns. There are 200 patterns available!

```
MASTER ARPEGGIATOR
Pattern    99¹   Pattern Name
```

Now you're getting the picture. This machine is beyond awesome!

Using a MIDI Interface to Channelize Data

Not all keyboards or controllers can transmit on multiple MIDI channels at once. If your MIDI controller only transmits on a single MIDI channel, there are other ways to use the Multi-Channel Arpeggiators. A MIDI interface such as Mark of the Unicorn's MIDI Time Piece®, or a MIDI switch box will convert data on one channel to any other channel or channels.

Data on Channels 1, 2, 3

MIDI In

MIDI Out

MIDI IN   MIDI OUT   MIDI INTER FACE

MIDI In   MIDI Interface

MIDI Out

Older Keyboard which only transmits on MIDI Channel 1.
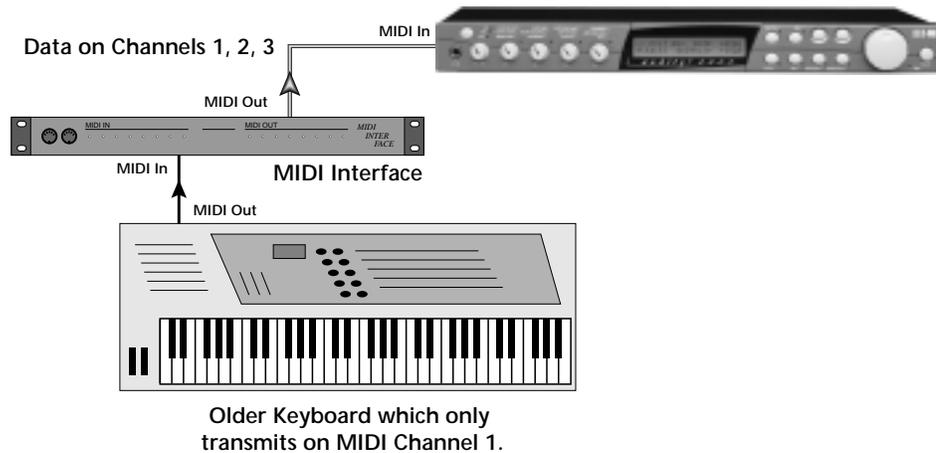
Your MIDI Interface may be able to output MIDI data on multiple channels at once.

Master Menu

The Master menu contains functions that affect the overall operation of Audity 2000. For example, changing the Master Tune parameter changes the tuning of all the presets, not just the one currently displayed.

☞ To enable the Master menu

Press the Master button, lighting the LED. The Master Menu screen displays the menu page most recently selected since powering up Audity 2000. The cursor appears below the first character of the screen heading on line one.

☞ To select a new screen

Press the Home/Enter button or press the Cursor button repeatedly until the cursor is below the screen title heading. Rotate the Data Entry Control to select another screen.

☞ To modify a parameter

Press either Cursor button repeatedly (or hold down the right cursor button while turning the Data Entry Control) until the cursor is below the desired parameter value. Rotate the Data Entry Control to change the value.

☞ To return to the main screen

Press the Master button, turning off the LED.

Defining Master Parameters

Master setup parameters affect overall performance, range, and global effects. This section describes the Master parameters and how to define them.

Transpose/Tune

The Transpose parameter transposes the key of all presets, in semitone intervals. The transpose range is ± 24 semitones.

Master Tune adjusts the fine tuning of all presets so that you can tune Audity 2000 to other instruments. The master tuning range is ± 1 semitone in 1/64th semitone increments (1.56 cents). A master tune setting of "+00" indicates that Audity 2000 is perfectly tuned to concert pitch (A=440 Hz).

```
MASTER  TRANSPOSE        TUNE
+00 semitones             +00
```

Bend Range

The Bend Range parameter sets the range of the pitch wheel. This affects only presets that have their individual Pitch Bend range (defined in the Edit menu) set to Master. The maximum pitch bend range is ±12 semitones or one octave in each direction.

```
MASTER BEND RANGE
+/- 7 semitones
```

Velocity Curve

You can modify incoming velocity data by a velocity curve in order to provide different types of dynamics in response to your playing, or to better adapt to a MIDI controller. The Master Velocity Curve page lets you select one of thirteen master velocity curves or to leave the data unaltered (linear).

```
┌─────────────────────────────────────┐
│  MASTER VELOCITY CURVE               │
│  13                                  │
└─────────────────────────────────────┘
```
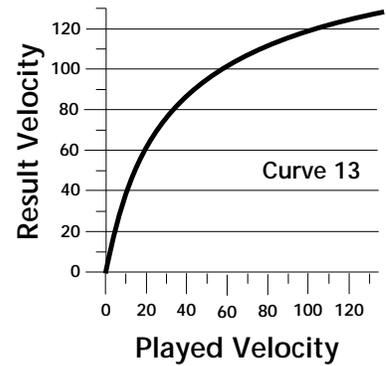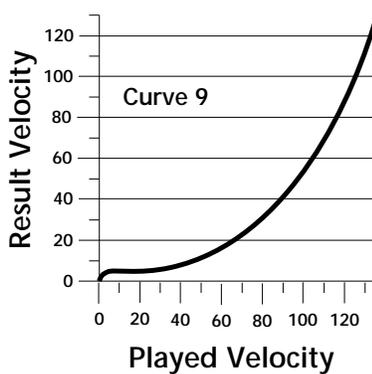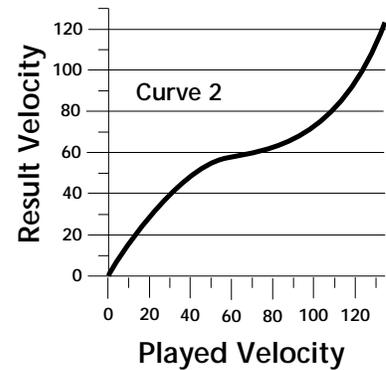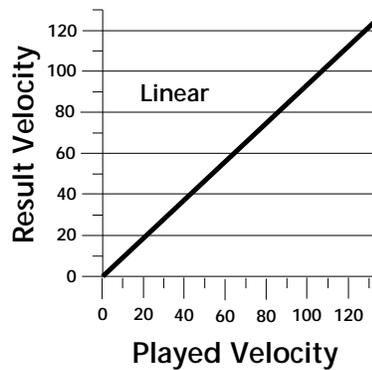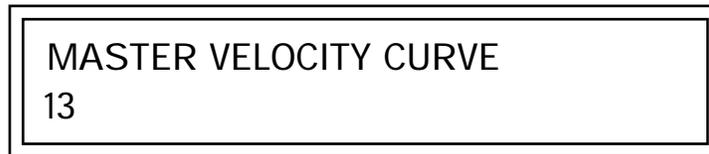

For a complete list of all available velocity curves, see "Velocity Curves" on page 166 of the Appendix.

Mix Output

The Mix Output parameter assigns the outputs according to MIDI channel instead of using the output assignments made in each preset. You can select the Main, Sub1 or Sub2 outputs, or Preset. When Preset is selected, the output assignment defined in the Preset Edit menu is used.

The Mix Output function is very useful when sequencing because it lets you route specific MIDI channels to specific Submix outputs. From there they can be processed externally with EQ or other outboard effects.

```
MIX OUTPUT
channel 01 : use preset
```
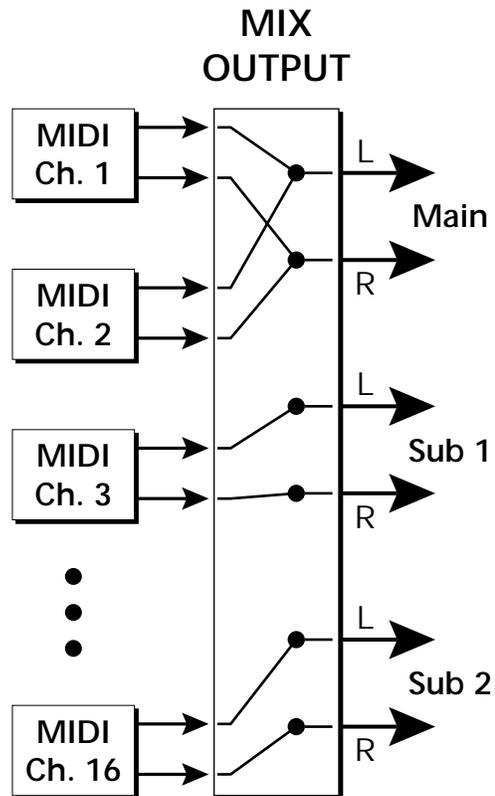
Master Effects

The digital effect processors can be programmed as part of the preset (using the Edit menu) or in the Master menu to affect all presets. Since there are only two effect processors, you cannot assign a different effect to each preset when in Multi mode.

The Master Effects settings assign the effect processors "globally" for all presets. They provide a way to use the effects in Multi mode or let you use the built-in effects as you would an external effects device.

You might want to program the effects on a global basis when in Omni or Poly modes. For example, you can choose your favorite reverb and have it apply to every preset you select. Detailed information is presented in the Effects chapter (see Effects on page 145).

Effects Mode

The FX Mode page enables or bypasses the effects. When the FX Mode is set to "bypass," the effects are turned off on a global scale. This includes Effects programmed in the preset.
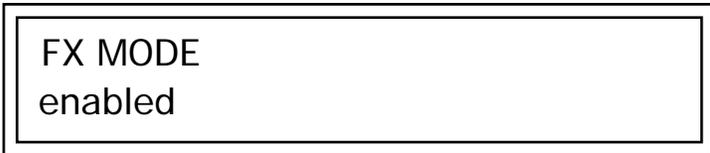
```
FX MODE
enabled
```

Effects Multi Mode Control

There are two effects engines in the Audity 2000 which provide a lot of versatility. When in multi mode, you can "use master settings" which applies the Master menu effects settings to all 16 channels.

```
FX multi mode CONTROL
use master settings
```

If you want more control, you can use the "channel" setting which applies the effects settings of the preset on a specified channel to all the other channels.

```
FX multi mode CONTROL
preset on channel 1
```

Master FXA Algorithm

This function selects the type of effect used for the "A" effect. The following effect types are available.

```
┌─────────────────────────────────┐
│ MASTER FXA ALGORITHM            │
│ Room 1                          │
└─────────────────────────────────┘
```

A Effect Types

1.	Room 1	23.	BBall Court
2.	Room 2	24.	Gymnasium
3.	Room 3	25.	Cavern
4.	Hall 1	26.	Concert 9
5.	Hall 2	27.	Concert 10 Pan
6.	Plate	28.	Reverse Gate
7.	Delay	29.	Gate 2
8.	Panning Delay	30.	Gate Pan
9.	Multitap 1	31.	Concert 11
10.	Multitap Pan	32.	Medium Concert
11.	3 Tap	33.	Large Concert
12.	3 Tap Pan	34.	Large Concert Pan
13.	Soft Room	35.	Canyon
14.	Warm Room	36.	DelayVerb 1
15.	Perfect Room	37.	DelayVerb 2
16.	Tiled Room	38.	DelayVerb 3
17.	Hard Plate	39.	DelayVerb 4 Pan
18.	Warm Hall	40.	DelayVerb 5 Pan
19.	Spacious Hall	41.	DelayVerb 6
20.	Bright Hall	42.	DelayVerb 7
21.	Bright Hall Pan	43.	DelayVerb 8
22.	Bright Plate	44.	DelayVerb 9

FXA Parameters: Decay/HF Damping FxB -> FxA

This page lets you define the parameters of the selected Effects algorithm. Use this page to setup the effect decay, high frequency damping amount and to route "B" effects through the "A" effects. See "Effect Parameters" on page 147 for more details.

```
┌──────────────────────────────────────────────┐
│  FXA    DECAY      HFDAMP    FxB>FxA           │
│          040         096         001           │
└──────────────────────────────────────────────┘
```

FXA Submix Routing

These parameters set the effects amounts for each of the three stereo effects busses. See "Master Effects" on page 150 for detailed information.

```
┌──────────────────────────────────────────────┐
│  FXA                        Main : 10%         │
│  Sub1 : 20%                 Sub2 : 30%         │
└──────────────────────────────────────────────┘
```

Master FXB Algorithm

This parameter selects the type of effect used for the "B" effect. The following effect types are available.

```
┌──────────────────────────────────────────────┐
│    MASTER FXB ALGORITHM                        │
│    Chorus 1                                    │
└──────────────────────────────────────────────┘
```

B Effect Types

1.	Chorus 1	17.	Ensemble
2.	Chorus 2	18.	Delay
3.	Chorus 3	19.	Delay Stereo
4.	Chorus 4	20.	Delay Stereo 2
5.	Chorus 5	21.	Panning Delay
6.	Doubling	22.	Delay Chorus
7.	Slapback	23.	Pan Delay Chorus 1
8.	Flange 1	24.	Pan Delay Chorus 2
9.	Flange 2	25.	Dual Tap 1/3
10.	Flange 3	26.	Dual Tap 1/4
11.	Flange 4	27.	Vibrato
12.	Flange 5	28.	Distortion 1
13.	Flange 6	29.	Distortion 2
14.	Flange 7	30.	Distorted Flange
15.	Big Chorus	31.	Distorted Chorus
16.	Symphonic	32.	Distorted Double

FXB Parameters:
Feedback/LFO Rate
Delay Time

The FXB parameters setup the characteristics of the effect. Use this page to define the feedback amount, the LFO rate and delay amount for the selected type "B" effect. See "Effect Parameters" on page 147 for details.

```
┌──────────────────────────────────────────┐
│  FXB    FEEDBK     LFORATE     DELAY       │
│           000        003           0       │
└──────────────────────────────────────────┘
```

FXB Submix Routing

These parameters set the effects amounts for each of the three stereo effects busses. See the Effects chapter for detailed information.

```
┌──────────────────────────────────────────┐
│  FXB                        Main : 10%     │
│  Sub1 : 20%                 Sub2 : 30%     │
└──────────────────────────────────────────┘
```

MIDI Parameters

MIDI parameters control how the Audity 2000 sends and receives MIDI data.

MIDI Mode

MIDI Mode selects one of the three MIDI modes: Omni, Poly or Multi mode.

```
┌─────────────────────────────────────────────┐
│  MIDI MODE                    CHANGE          │
│  omni                         ignored         │
└─────────────────────────────────────────────┘
```

The MIDI Mode Change parameter specifies whether mode changes made through an external MIDI controller are accepted or ignored.

The MIDI modes are as follows:

Omni
Responds to note information on all MIDI channels and plays the preset currently displayed in the main screen.

Poly
Responds only to note information received on the currently selected MIDI channel (on the preset selection screen) and plays that channel's associated preset.

Multi
Responds to data on any combination of MIDI channels and plays the specific preset associated with each of the MIDI channels. You must select multi mode for multitimbral operation.

MIDI SysEx ID

This page defines the MIDI system exclusive (SysEx) device ID number. The SysEx ID lets an external programming unit to distinguish between multiple Audity 2000 units connected to the same preset editor. In this case each unit must have a unique SysEx ID number.

WARNING: When transferring SysEx data from one Audity 2000 to another, the ID numbers of both units must be the same.

```
┌─────────────────────────────────────────────┐
│  MIDI SYSEX ID                                │
│  000                                          │
└─────────────────────────────────────────────┘
```

MIDI Enable

MIDI Enable lets you turn each MIDI channel on and off independently when in Multi mode. This feature is helpful when you have other devices connected to the same MIDI line and do not want the Audity 2000 unit to respond to the MIDI channels reserved for the other devices.

```
 MIDI ENABLE
 channel 01 : On
```

Because the MIDI Enable function only makes sense in you are in Multi mode, Audity 2000 disables this feature when in Omni or Poly mode.

In Multi Mode
```
 MIDI   ENABLE
 channel  01   :  on
```

In Omni Mode
```
 MIDI   ENABLE
 (using  Omni  mode)
```

MIDI Bank

Audity has seven banks of 128 presets each. The MIDI specification allows for 128 presets (without using a MIDI Bank Select command). This function lets you select which bank of 128 presets is used for incoming **MIDI Program Change** commands. Each MIDI channel can be set to any one of Audity 2000's 7 preset banks.

Audity 2000's MIDI Bank parameter lets you access all 896 presets without having to send a "MIDI Bank Select" command from an external MIDI source such as your controller or sequencer.

✎ *The MIDI Bank Select command (See MIDI Specs in the Appendix) is recognized by Audity 2000 and can also be used to change banks.*

```
 MIDI BANK
 channel 01 : 4
```

MIDI Program -> Preset

✎ *The Program Change only works for program changes received in Bank 0.*

✐ *Programs and presets are the same thing. "Preset" is the E-mu term for MIDI program.*

You can remap incoming MIDI program changes to a different numbered preset. This is a handy feature when your master keyboard cannot send a bank change. Any preset can be mapped to any incoming MIDI program change number.

For example, you could set up the Program -> Preset map to call up preset #12 whenever Audity 2000 receives MIDI program change #26.

```
┌─────────────────────────────────────────┐
│  MIDI  PROG  CHNG    ->    PRESET         │
│                 000         000⁰          │
└─────────────────────────────────────────┘
```

	0	1	2	3	4	5	6	7	8	9
0	00^0	01^0	02^0	03^0	04^0	05^0	06^0	07^0	08^0	09^0
10	44^2	91^0	50^1	01^0	15^0	88^0	99^1	78^0	32^4	88^0
20	34^1	73^0	106^0	55^0	43^2	75^0	12^0	120^0	121^1	100^2
30	30^0	31^0	32^0	33^0	34^0	35^0	36^0	37^0	38^0	39^0
40	40^0	41^0	42^0	43^0	44^0	45^0	46^0	47^0	48^0	49^0
50	50^0	51^0	52^0	53^0	54^0	55^0	56^0	57^0	58^0	59^0
60	60^0	61^0	62^0	63^0	64^0	65^0	66^0	67^0	68^0	69^0
70	70^0	71^0	72^0	73^0	74^0	75^0	76^0	77^0	78^0	79^0
80	80^0	81^0	82^0	83^0	84^0	85^0	86^0	87^0	88^0	89^0
90	90^0	91^0	92^0	93^0	94^0	95^0	96^0	97^0	98^0	99^0
100	100^0	101^0	102^0	103^0	104^0	105^0	106^0	107^0	108^0	109^0
110	110^0	111^0	112^0	113^0	114^0	115^0	116^0	117^0	118^0	119^0
120	120^0	121^0	122^0	123^0	124^0	125^0	126^0	127^0		

26 → Selected Program

12 → Mapped Program

In this chart, program changes 10-29 have been remapped to new preset numbers. All other presets are selected normally.

*Receive Program
Change*

Use this function to instruct the Audity 2000 to utilize or ignore incoming MIDI preset changes or Bank Select commands for each channel. Use the cursor buttons to select the channel number field, then use the Data Entry Control to select a channel number. Use the cursor button again to select the On/Off field and the Data Entry Control to change the value.

```
 RECEIVE PROGRAM CHANGE
 channel 01 : On
```

*Real-time Controller
Assignment*

Use these two pages to assign eight real-time control sources. Each MIDI Controller is assigned a letter (A - H). The front panel Controller Knobs *and* eight MIDI controller numbers share the A-H controller routings. MIDI real-time controllers are numbered from 1 to 31. **In this screen you set up which controllers will be received over MIDI.** The Real-time Controller assignment also specifies which controller numbers are transmitted when the "Knobs MIDI Out" is enabled (see "Knobs MIDI Out" on page 61). The PatchCord parameters in the Edit menu define the effect the controller has on each preset.

```
 REALTIME CONTROLLER #
 A: 21    B: 22   C: 23    D: 24
```

```
 REALTIME CONTROLLER #
 E: 25    F: 26    G: 27    H: 28
```
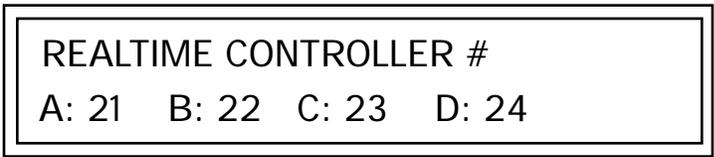
Note: Controllers 7 and 10 are already assigned to Volume and Pan for each MIDI channel.

Following are a few of the standardized MIDI Controller numbers.

1 - Modulation Wheel
2 - Breath Controller
3 - Aftertouch
4 - Foot Pedal
5 - Portamento Time
6 - Data Entry

7 - Volume
8 - Balance
9 - Undefined
10 - Pan
11 - Expression

Arpeggiator Controller Assign

Use this page to assign four MIDI real-time control sources to the four front panel arpeggiator functions. The arpeggiator controllers use the "single byte" MIDI real-time controller message format and use controllers numbered from 70 to 95. **In this screen you set up which controller numbers will be received over MIDI and which controller numbers will be transmitted if the arpeggiator controls are turned.** The "Knobs MIDI Out" feature must be enabled in order to transmit the Arp controllers (see "Knobs Deep Edit" on page 60).

```
ARP CONTROLLER#
1: 95     2: 81     3: 82     4: 83
```

MIDI Footswitch Assign

Like the MIDI Controllers, you can assign three MIDI footswitches to MIDI footswitch numbers. Footswitches numbers are from 64-79. Destinations for the footswitch controllers are programmed in the PatchCord section of the Edit menu.

```
FOOTSWITCH  CONTROLLER #
1: 64      2: 65      3: 66
```

Following are a few of the standardized MIDI Switch numbers.

64 - Sustain Switch (on/off)   67 - Soft Pedal (on/off)

65 - Portamento (on/off)   69 - Hold Pedal 2 (on/off)

66 - Sostenuto (on/off)

Tempo Controller

This function lets a MIDI controller change the Global Tempo. The Global Tempo is used for the arpeggiators, tempo-based envelopes, clock divisors and synced LFOs. You can assign any controller number from 0-31, mono key pressure, or the pitch wheel to change the Global Tempo. A different controller can be used to change the tempo up or down. The Pitch Wheel can be assigned to both the up and down parameters to vary the tempo up and down from a single controller. If any other controller is assigned to both the up and down parameters, Audity 2000 redefines the center of the controller's range as zero.

MIDI Controller values are added to the Global Tempo with an offset range of ±64. When the controller is set to "off" the tempo returns to its original setting. This control has no effect when using an external clock.

```
┌─────────────────────────────────────────────┐
│  TEMPO CONTROLLER#              CHAN          │
│  Up:  03      Down: O9              16        │
└─────────────────────────────────────────────┘
```

Knob Preset Quick-Edit

✎ *Quick Edit does not work while in the Edit menu with "Knobs Deep Edit" enabled.*

"Quick-Edit" changes the initial controller setting in the preset whenever you move a Control Knob. This parameter selects whether or not the front panel Controller Knobs are used to Quick-Edit the currently selected preset. See "Controller Knobs" on page 25 in the Operations chapter for more details.

```
┌─────────────────────────────────────────────┐
│  KNOBS PRESET QUICK-EDIT                      │
│  disabled                                     │
└─────────────────────────────────────────────┘
```

Knobs Deep Edit

✎ *Knobs Deep Edit "disabled" is included in the **Master Settings** SysEx data dump.*

This parameter specifies whether or not the front panel controller knobs can be used to edit parameter values in the Master or Edit menus. This is called "Deep-Editing." With Knob Deep Edit disabled, the front panel controller knobs retain their function as real-time controllers even when in the Master or Edit modes.

```
┌─────────────────────────────────────────────┐
│  KNOBS DEEP EDIT                              │
│  disabled                                     │
└─────────────────────────────────────────────┘
```

Knobs MIDI Out

This function allows you to select whether or not MIDI controller data is transmitted when you turn the front panel Controller knobs. The knobs transmit on the controller numbers defined by the Real-time Controller Assign parameter (see page 58) or the Arpeggiator Controller Assign parameter on page 59 if using the knobs as Arpeggiator Controllers.

✎ *Knobs MIDI Out does not work while in any of the editing menus (Master, Edit, Clock, Save/Copy).*

```
KNOBS MIDI OUT
don't transmit
```

Front Panel Knob Calibration

This function calibrates the minimum and maximum values for the five front panel knobs. The controls should be calibrated periodically in order to compensate for normal wear and tear on the controls themselves or if the controls behave strangely. Before calibration, it's usually a good idea to let the unit warm up for about half an hour to ensure you have the maximum range on all the front panel controls.

☞ **To Calibrate the Front Panel Control Knobs**

1. Press the Master menu button and advance to the Calibrate Knobs page.

```
CALIBRATE KNOBS
Press Enter to Begin Calibration
```

2. Press the Enter button to begin the calibration process. The following screen appears.

```
Turn all knobs to MIN
Press Enter when ready
```

3. Turn all knobs to their minimum value (which is pegged in the counter-clockwise direction), then press the Enter button. The screen briefly flashes, "Reading Values…," then displays:

```
┌─────────────────────────────────────────┐
│  ┌────────────────────────────────────┐ │
│  │                                    │ │
│  │  Turn all knobs to MAX             │ │
│  │  Press Enter when ready            │ │
│  │                                    │ │
│  └────────────────────────────────────┘ │
└─────────────────────────────────────────┘
```

4. Turn all knobs to their maximum value (pegged in the clockwise position), then press the Enter button. The display shows, "Reading Values… Done." Calibration is complete.

MIDI SysEx Packet Delay

Sometimes errors occur if the computer or sequencer to which you are sending MIDI SysEx data is faster or slower than the Audity 2000. The MIDI SysEx Packet Delay command lets you specify the amount of delay between MIDI SysEx packets so the input buffer of your computer does not overflow causing an error. The value range is from 0 through 8000 milliseconds. A Delay value of zero allows full speed MIDI transfer. If you are experiencing data transmission errors, try increasing the delay value until the problem disappears.

```
┌─────────────────────────────────────────┐
│  ┌────────────────────────────────────┐ │
│  │                                    │ │
│  │  MIDI SYSEX PACKET DELAY           │ │
│  │  300   milliseconds                │ │
│  │                                    │ │
│  └────────────────────────────────────┘ │
└─────────────────────────────────────────┘
```

Send MIDI System Exclusive Data

This command transmits MIDI System Exclusive (SysEx) data to the MIDI Out port of Audity 2000. The MIDI data can be sent to a computer, sequencer or to another Audity 2000. When transferring data between two Audity 2000s be sure both units have the same SysEx ID number! See "MIDI SysEx ID" on page 55 to learn how to change the SysEx ID.

Using the cursor key and the Data Entry Control, select the type of MIDI data you want to transmit. Following are descriptions of the types of MIDI data that can be transmitted.

Master Settings
Transmits all parameters in the Master menu except Tuning Table, Program/Preset Map, Multi mode Map settings *(see below),* and Viewing Angle.

Program /Preset Map
Transmits the MIDI Program -> Preset Map.

Tuning Table
Transmits only the User Tuning Table.

✎ The Preset, Volume, and Pan information for all 16 channels is included when the Multi mode Map settings are transmitted or received.

Multi Mode Map

Transmits the following parameters:

- Multi Mode Basic Channel
- Multi Mode Effects Control Channel
- Multi Mode Tempo Control Channel

and for each MIDI Channel…

- Preset, Volume, & Pan
- Mix Output
- Multi Mode Channel Enable
- Multi Mode Bank Map
- Multi Mode Receive Program Change

👓 WARNING: When transferring SysEx data from one Audity 2000 to another, the ID numbers of both units must match.

Bank 0 User Presets

Transmits all the user defined presets in Bank 0.

Bank 1 User Presets

Transmits all the user defined presets in Bank 1.

Any Individual Preset

Transmits only the selected preset.

The Enter LED will be flashing. Press the Enter button to confirm the operation. To receive MIDI data, simply send the MIDI data into Audity 2000 from another Audity or from a computer/sequencer.

```
SEND MIDI SYSEX DATA
bank 1 user presets
```

☞ **To Record MIDI SysEx Data into a Sequencer:**

1. Setup the sequencer to receive system exclusive data.
2. Place the sequencer into record mode, then Send MIDI Data.

☞ **To Receive MIDI SysEx Data from a Sequencer:**

Simply play back the sequence into Audity 2000.

User Key Tuning

User Key Tuning lets you modify the user definable tuning table. The initial frequency of every key can be individually tuned, facilitating the creation of alternate or microtonal scales. Using the cursor key and the Data Entry Control, select the key name, the coarse tuning and the fine tuning. The key name is variable from C-2 to G8. Coarse Tuning is variable from 0 to 127 semitones. The fine tuning is variable from 00 to 63 in increments of 1/64 of a semitone (approx. 1.56 cents). For each preset, the specific tuning table (Equal, Just C, Vallotti, 19-Tone, Gamelan or User) is selected in the Edit menu.

The user key tuning can be used to tune individual percussion instruments.

```
USER KEY TUNING
Key: C1   Crs: 036   Fine: 00
```
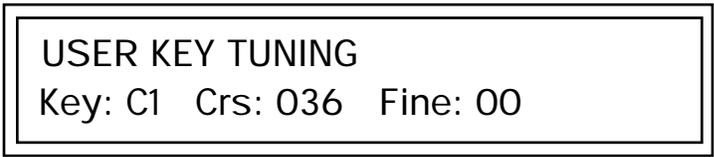
Output Format

The Output Format parameter sets the audio output format and optimizes the audio output to whichever format is selected. The three available formats are analog, S/PDIF, and AES pro. Choose analog if you primarily use the analog audio outputs. If you are using the digital output, choose either S/PDIF or AES pro to match the format of the receiving device.

```
OUTPUT FORMAT
analog
```
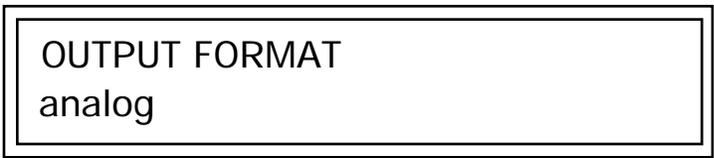
The Audity 2000 contains a S/PDIF digital output. The diagram below shows how an adapter cable for AES pro should be wired.
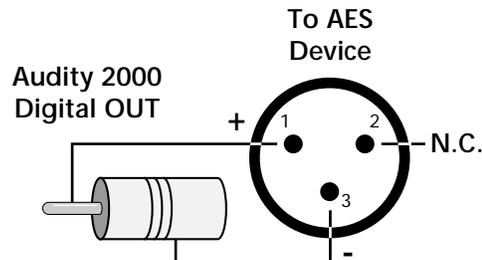
If you use an adapter cable to connect the S/PDIF digital audio output to AES gear, make sure to use high quality, low capacitance cable.

Playing Demo Sequences

Audity 2000 has four factory demonstration sequences that let you hear what this incredible machine can do. You can play these demo sequences by accessing the Demo Sequence page.

```
┌─────────────────────────────────────┐
│                                      │
│  DEMO SEQUENCE         1  2  3  4    │
│  Enter  =  Start        ->  =  Next  │
│                                      │
└─────────────────────────────────────┘
```

☞ **To Play a Demo Sequence**

1. Advance the cursor to the Sequence Number field and select a sequence number (from 1 to 4).
2. Press the Enter button to start playing the sequence.
3. Press the Enter button again to stop playing the sequence.
4. Press the right cursor key to advance to the next sequence.
5. Repeat steps 2, 3 and 4 to listen to all of the Demo Sequences.
6. Press the Enter button to stop playing the sequence. Press the Master menu button to return to the main screen.

Screen Viewing Angle

This function changes the viewing angle of the display so that you can read it easily from either above or below the unit. The angle is adjustable from +7 to -8. Positive values will make the display easier to read when viewed from above. Negative values make the display easier to read from below.

```
┌─────────────────────────────────────┐
│                                      │
│  VIEWING ANGLE                       │
│  +0                                  │
│                                      │
└─────────────────────────────────────┘
```

Clock Menu

Although the Clock has its own button on the front panel, we have included its instructions here in the Master Menu chapter because it is a global control.

☞ **To Enable the Clock menu**

Press the Clock button, lighting the LED. Change the tempo using the Data Entry Control.

☞ **To Return to the Main Screen**

Press the Clock button, turning off the LED.

Master Tempo

The Master Tempo controls the speed of Audity's master clock. The master clock controls all the arpeggiators, the synced LFOs, and the Envelope Generators when they are in Tempo-based Mode. The master clock is also available as a modulation source in the PatchCord section in the Edit Menu chapter. Rotate the Data Entry Control to change the Master Tempo. The LED to the right of the button blinks at the current tempo.

```
 MASTER TEMPO
 120 bpm
```

The Master Tempo values range from 1 through 300 beats per second (BPS) or you can select "use MIDI clock" to use an external MIDI clock source.

Programming Basics

This chapter explains how Audity 2000 sounds are constructed and contains important background information on how to create your own custom presets.

Your initial involvement with Audity 2000 will most likely be using the existing presets and selecting MIDI channels. While the factory presets are very good, there are some things you will probably want to change eventually, perhaps the LFO speed, the filter frequency or the attack time. You may also want to make your own custom presets using complex modulation routings. There are 256 user locations (Banks 0 & 1) available to store your own creations or edited factory presets. Best of all, it's easy to edit or create new presets using the Edit menu.

Each preset can consist of up to four instrument layers. Each of the four layers can be placed any where on the keyboard and can be crossfaded or switched according to key position, velocity, or by using a real-time control such as a wheel, slider, pedal, LFO or envelope generator. A preset can also be "linked" with up to 2 more presets creating additional layering or splits.

Audity 2000 has an extensive modulation implementation using two multi-wave LFO's (Low Frequency Oscillators), three multi-stage envelope generators and the ability to respond to multiple MIDI controllers. You can simultaneously route any combination of these control sources to multiple destinations.

Modulation

To modulate means to dynamically change a parameter, whether it be the volume (amplitude modulation), the pitch (frequency modulation), and so on. Turning the volume control on your home stereo rapidly back and forth is an example of amplitude modulation. To modulate something we need a modulation source and a modulation destination. In this case, the source is your hand turning the knob, and the destination is the volume control. If we had a device that could turn the volume control automatically, we would call that device a modulation source.
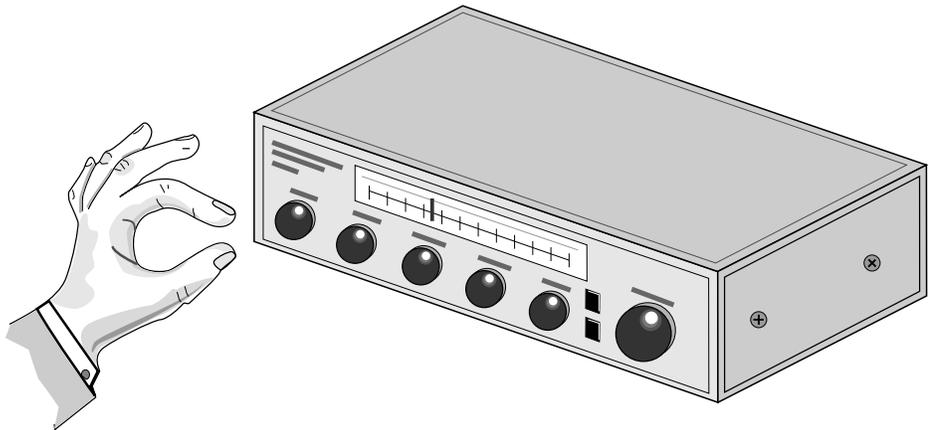
Turning the volume control back and forth on your home stereo is an example of Amplitude Modulation.

Audity 2000 is designed so that each of the variable parameters, such as the volume, has an initial setting which is changed by a modulation source. Therefore in the case of volume, we have an initial volume that we can change or modulate with a modulation source. Positive modulation adds to the initial amount. Negative modulation subtracts from the initial amount.

Modulation Sources

Modulation sources include *Envelope Generators, Performance Controllers* and *Low Frequency Oscillators.* In the previous example, an envelope generator could be routed to automatically turn the volume control as programmed by the envelope, or, a low frequency oscillator could be routed to turn the volume control up and down in a repeating fashion. The following is a list of the modulation sources used in Audity 2000.

Keyboard Key
Which key is pressed.

Key Velocity
How fast the key is pressed.

Release Velocity
How fast the key is released.

Gate
High if the key is pressed, low when the key is released.

Tip: *Try routing Key Glide to Filter Frequency if you want the filter to smoothly follow pitch in solo mode. Routing Key Glide to Pan creates another interesting effect.*

Key Glide
A smoothly changing control source based on the Glide Rate and the interval between the last two notes played.

Pitch and Mod Wheels
Synthesizer pitch bend and modulation wheels.

Keyboard Pressure (mono aftertouch)
Key Pressure applied after the key is initially pressed.

Pedal
A continuously variable pedal controller.

Miscellaneous Controllers A -H
Any type of MIDI continuous controller data.

Low Frequency Oscillators (2 per layer)
Generate repeating waves.

Envelope Generators (3 per layer)
Generate a programmable "contour" which changes over time when a key is pressed.

Noise & Random Generators
Generate spectrums of noise and random signals.

Footswitches
Change a parameter when the switch is pressed.

Clock Divisor
The master tempo clock can be divided and used as a modulation source.

Random Sources

Random modulation sources can be used when you want the timbre of the sound to be "animated" in a random or non-consistent manner.

• **Key Random 1 & 2** generate different random values for each layer which do not change during the note.

• The **White & Pink Noise** Generators produce varying random values. Both white and pink noise sources are low frequency noise designed for control purposes. Either noise source can be filtered even more by passing it through a lag processor.

• The **Crossfade Random** function generates the same random value for all layers in a preset. This source is designed to be used for cross-fading layers, although you may find other uses.

Modulation PatchCords

✎ *The controller Knobs assignments printed on the front panel are the system defaults. You can change any of these assignments using the Real-time Controller Assignment page in the Master menu (see page 58 for details).*

When setting up modulation with the Audity 2000, you define a modulation source and a modulation destination. Then, you connect the source to the destination using "PatchCords." Audity 2000's PatchCords are connected in the software. Audity 2000 has 24 general purpose PatchCords for each layer.

You can connect the modulation sources in almost any possible way to the modulation destinations. You can even modulate other modulators. Each PatchCord also has an amount parameter which determines "how much" modulation is applied to the destination. The modulation amount can be positive or negative. Negative values invert the modulation source.

Modulation Source   **Amount +/-**   **Destination**

LFO 1   - +   Amp Volume

Modulation Source

LFO 1
LFO 2
Amp Env
Filt Env
Aux Env
Wheel
Pressure
etc.

Destination

Amp Vol
Pitch
Pan
LFO Rate
Aux Env
Env Atk
Glide
etc.
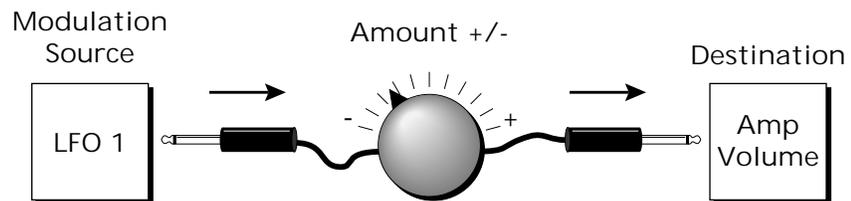
Envelope Generators

An envelope can be described as a "contour" which is used to shape the sound over time in a pre-programmed manner. There are three envelope generators per layer and all of them are the rate/level type.

This is how the rate/level envelopes work: When a key is pressed, envelope starts from zero and moves toward the Attack 1 Level at the Attack 1 Rate. As soon as it reaches this first level, it immediately begins the next phase and moves toward the Attack 2 level at the Attack 2 rate. As long as the key is held down, the envelope continues on through the Decay 1 and Decay 2 stages. If the key is still held when the envelope reaches the end of Decay 2, it simply waits there for you to release the key. When you release the key, the envelope continues into the Release 1 and Release 2 stages, stopping at the end of the Release 2 stage. Audity 2000's envelope generators provide great flexibility for programming both complex and simple envelopes.
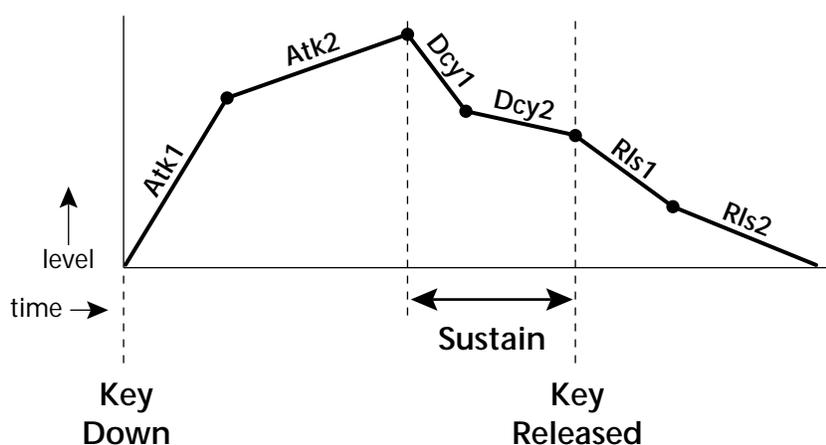
All three envelope generators have the six stages described above. The Volume Envelope generator controls the volume of the voice over time. The Filter Envelope generator is a general purpose envelope most often used to control the filter frequency. Unlike the Volume Envelope, however, the Filter Envelope can have a negative level value as well as a positive level. There is also an Auxiliary Envelope generator which is a general purpose envelope. The Auxiliary Envelope is identical to the Filter Envelope and can have negative as well as positive levels. You can adjust the time of each stage to create myriad envelope shapes, which in turn shape the sound over time.

By routing the Auxiliary Envelope to control the pitch (PatchCords) you can easily hear the shape of the envelopes you are creating.

- Volume envelopes contour the way the volume of a sound changes over time determining how we perceive that sound. For example, a bell struck with a hammer is instantly at full volume, then slowly dies away. A bowed violin sound fades in more slowly and dies away slowly. Using Audity 2000's Volume Envelope, you can simulate the different types of natural instrument volume envelopes by programming them appropriately.

Low Frequency Oscillators (LFOs)

A Low Frequency Oscillator or LFO is simply a wave which repeats at a slow rate. The Audity 2000 has two multi-wave LFOs for each channel. The LFO waveforms are shown in the following illustration.

Triangle

Sawtooth

Sine

Square

33% Pulse

25% Pulse

16% Pulse

12% Pulse
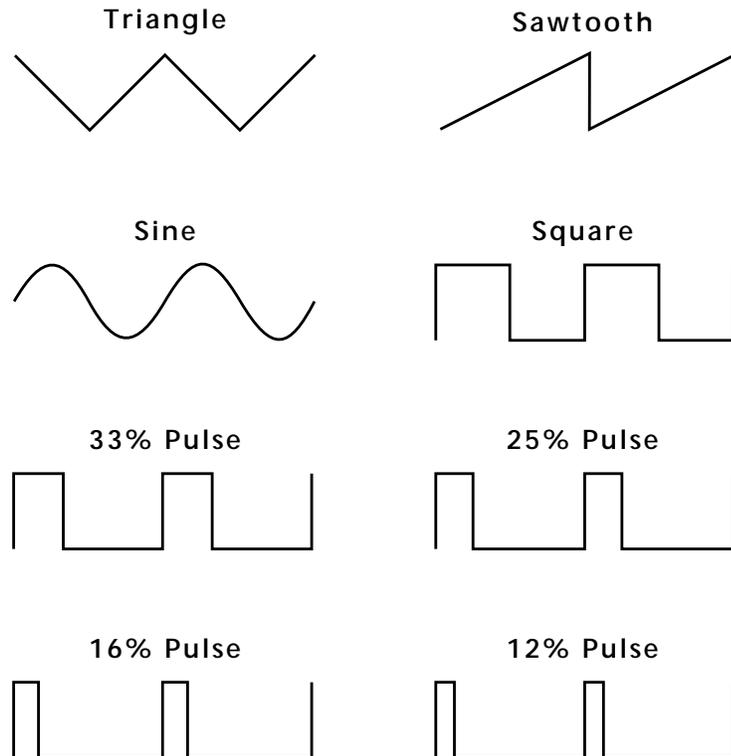
By examining the diagram of the LFO waveforms, you can see how an LFO affects a modulation destination. The shape of the waveform determines the result. Suppose we are modulating the pitch of an instrument. The sine wave looks smooth, and changes the pitch smoothly. The square wave changes abruptly and abruptly changes from one pitch to another. The sawtooth wave increases smoothly, then changes back abruptly. The sound's pitch follows the same course. Controlling the pitch of an instrument is an easy way to hear the effects of the LFO waves.

Like the Auxiliary Envelope, LFOs can be routed to control any real-time function such as Pitch, Filter, Panning, or Volume. A common use for the LFO is to control the pitch of the sound (LFO -> Pitch). This effect is called vibrato and is an important performance effect. Many presets use this routing with the modulation wheel controlling "how much" LFO modulation is applied. Another common effect, Tremolo, is created by controlling the volume of a sound with the LFO (LFO -> Volume).

You might use the LFOs to add a slight bit of animation to the sound by routing the LFO to control the filter. For this effect, set the LFO "amount" low for a subtle effect.

When a PatchCord amount is a negative value, the LFO shape is inverted. For example, inverting the sawtooth wave produces a wave that increases smoothly, then abruptly resets down.

Negative Amount

Sawtooth   Inverted Sawtooth
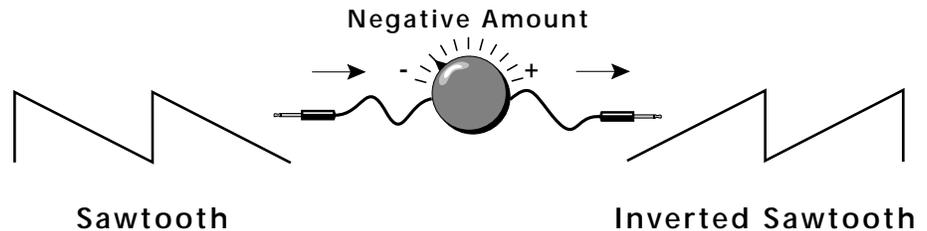
Clock Modulation

✎ *Envelopes are triggered on the positive going edge of the clock. LFOs are triggered on the negative going edge of the clock.*

You can use the Master Clock as a modulation source, to trigger the Filter or Auxiliary Envelope generators, trigger Sample Start, synchronize the LFOs, or directly as a square wave modulation source. The Clock source is available in eight divisions (octal whole note, quad whole note, double whole note, whole note, half note, quarter note, eighth note, sixteenth note). You can use the different rates separately or in conjunction to create complex "synchro-sonic" rhythm patterns. You can also use a MIDI Clock as the Master Clock to synchronize to an external MIDI device such as a drum machine or sequencer.

Clocks are routed exactly like the other modulations sources using the PatchCords. The PatchCord Amount MUST be positive (+) for the clock to pass. By modulating the PatchCord Amount, you can route the divided clocks using real-time controllers or other modulation sources.

When an LFO is triggered by a clock, the LFO wave resets to zero every time the clock wave goes low. If the LFO rate is close to the clock rate, the LFO virtually synchronizes with the clock. If the two rates are far apart, the waveform of the LFO will be mildly or radically altered.

Triggered LFO

LFO Wave
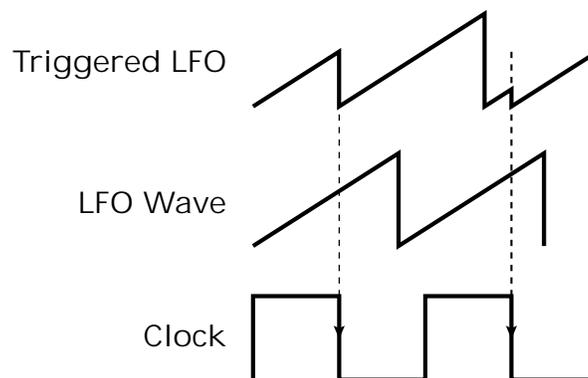
Clock

LFO Trigger causes the LFO to reset each time the clock waveform goes low.

LFO Synced to 1/4 Note Clock

LFOs can also be perfectly synchronized with the clock at any of 25 note divisions. This allows you to create very cool "synchro-sonic" effects that work perfectly with the arpeggiators at any tempo. Choosing one of the note divisors in the LFO rate screen selects the synced LFO function.

There are many possibilities for clock modulation and retrigger. For example, you can create a repeating six segment curve of any shape by triggering the Filter or Auxiliary Envelope generators with the clock. A few other possibilities are listed below.

• Turn different voice layers on and off using different clock divisors.

• Switch between Auxiliary and Filter Envelope retriggering using a slider or footswitch.

• Retrigger LFOs or Envelopes using noise or other LFOs to create random or semi random effects.

• Alter the LFO waveform by modulating the rate of triggered LFO.

• Route multiple clocks with different divisors to the same destination (such as pitch) to create complex patterns. *(Hint: Adjust the PatchCord Amounts.)*
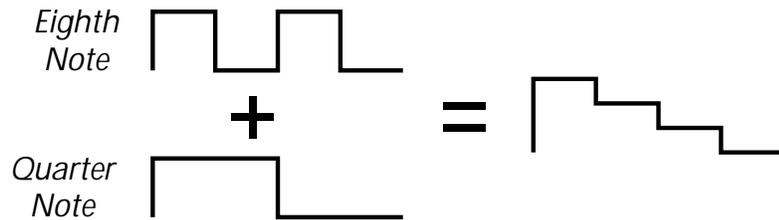
Adding these two clocks together in equal amounts produces a stairstep waveform.
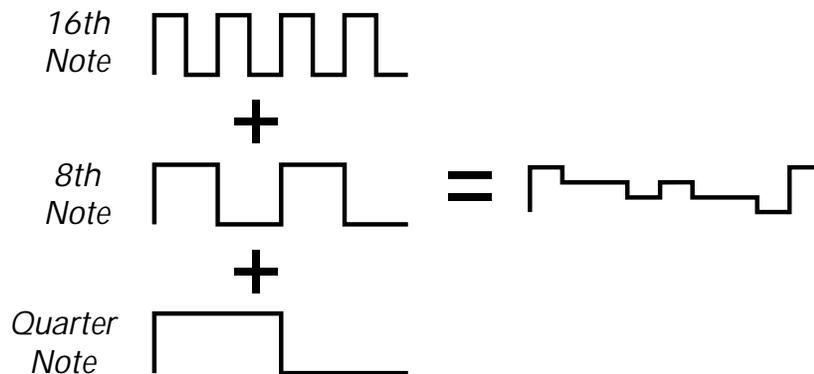
Adding multiple clocks with unequal amounts produces complex repeating patterns.

Modulation Destinations

The PatchCords section of the Edit menu is where you connect sources to destinations. Each PatchCord has an amount associated with it which controls how much modulation is applied.

```
┌─────────────────────────────────────────┐
│ L1  PATCHCORD                      #01    │
│ ModWhl  ->  RTXfade               +036    │
└─────────────────────────────────────────┘
```

The PatchCords screen above and the diagram below show how modulation sources are connected to destinations. The modulation sources can control any of the destinations in the layer.
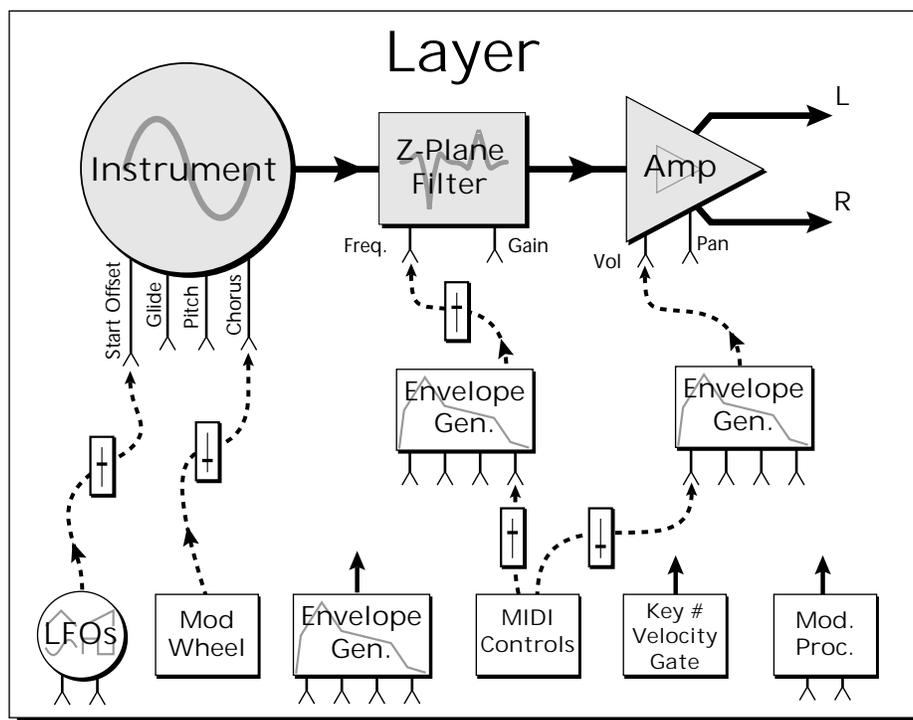
- Note-on modulation sources, such as key, velocity and gate output a single value at note-on time. Realtime modulation sources such as LFOs, envelope generators and modulation wheels can be varied continuously.

The possible modulation routings are completely flexible as shown in the diagram above. Multiple sources can control the same destination, or a single source can control multiple destinations.

Modulation Processors

Modulation processors are devices which can modify modulation sources such as LFOs and envelope generators before they are applied to a destination. Modulation processors let you create patches and do tricks which would not be possible otherwise. Audity 2000 implements the following modulation processors:

Switch
Outputs a digital "1" when the input is greater than "0".
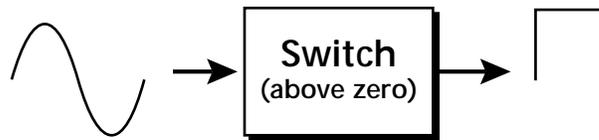
Summing Amp
Lets you add several modulation signals together before applying them to a destination. This processor can save PatchCords when routing the output to multiple destinations.
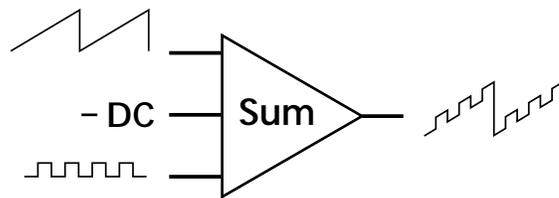
Lag Processors
Slows down rapid changes in the input signal. The output "lags" behind the input at a pre-programmed rate. There are two lag processors, Lag 0 and Lag 1. Lag 1 has a longer lag time than Lag 0.
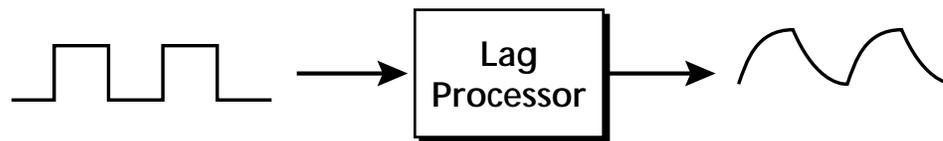
Absolute Value
This function inverts negative input values and outputs only positive values.
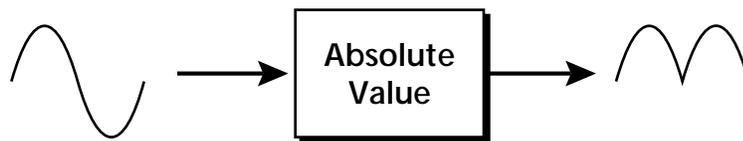
Diode

The diode blocks negative input values, passing only positive values.

The value of a digital "1" is equal to the PatchCord amount.
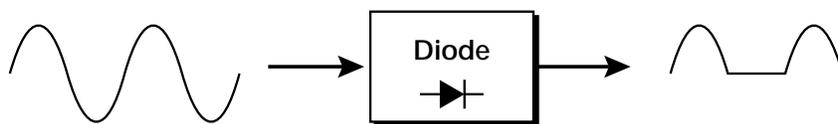
Flip-Flop

The output of this processor alternates between a digital "1" and digital "0" each time the input goes positive from zero or a negative value. With an LFO input, the output will be a square wave of half the input frequency.

Quantizer

With the input PatchCord set to 100%, the output value is limited to 16 discrete values. The value of the input PatchCord controls the number of steps. The value of the output PatchCord controls the size of the steps.
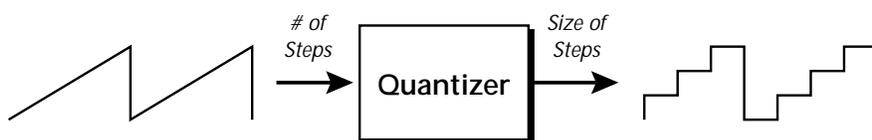
4x Gain

This processor amplifies the modulation source by a factor of 4.
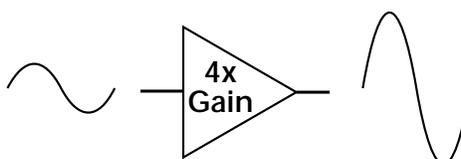
Lag Inputs

The Lag processors can be used as 2 additional summing amps. Lag0sum and Lag1sum are modulation sources which equal the sum of PatchCords connected to the Lag in destination. The summing amp is located before the lag processor as shown in the following illustration.
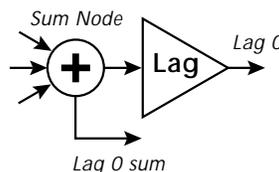
Using the Modulation Processors

Modulation processors are inserted into a modulation routing as shown in the following diagram.

The modular analog synthesizers of yesteryear were incredibly flexible, partly because processing devices could be connected in any order. Modulation processors are designed according to this modular concept. They can be linked and used in a wide variety of ways limited only by your imagination. Consider the following example:
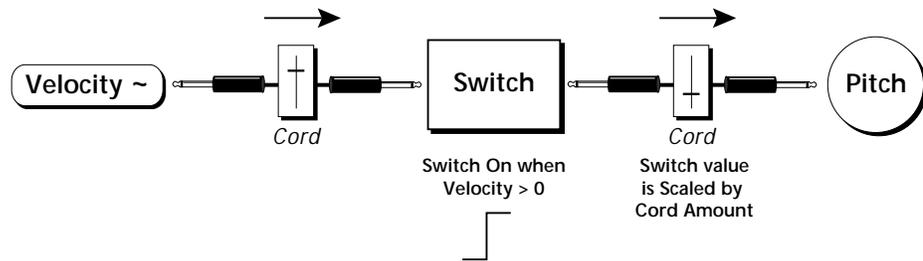
The patch illustrated above is programmed by setting the PatchCord screens as shown below.

```
 L1 PATCHCORD                    #01
Vel+-  ->   Switch             +100
```

```
 L1 PATCHCORD                    #02
Switch  ->  Pitch              +022
```

This particular modulation shifts the overall pitch up a fifth when the key velocity exceeds 64. Velocities below 64 play at normal pitch. Velocities of 64 and above are raised a perfect fifth. The Velocity "~" source scales the played velocity around zero. In other words, low velocities (below 64) will have negative values and high velocities (64 and above) will be positive. A velocity of 64 would be zero. The Switch module only outputs a "1" if the input value is greater than zero. This digital "1" value can be scaled through the attenuator on the PatchCord to raise or lower the pitch by any amount. In this case, a scaling value of +22 raises the pitch by a perfect fifth. The amount of the PatchCord on the input to the switch is unimportant because ANY velocity value equal or greater than 64 will flip the switch. If the input PatchCord amount were a negative value however, the action of the velocity would be reversed and velocities less than 64 would raise the pitch and velocities equal or greater than 64 would play the original pitch.

But what if you want the velocity switch point to be something other than 64? Thanks to modulation processors, it can be done. Here's how.
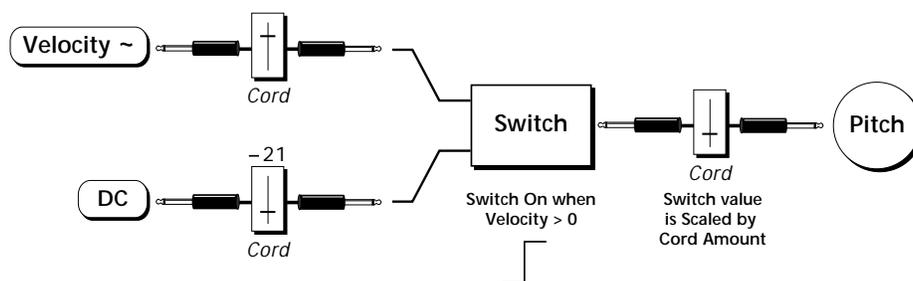
Connect the DC level to the input of the switch along with the velocity value. Note that more than one modulation source can be applied to the input of a processor.

DC offset adds a fixed value based on the PatchCord Amount setting. If applied to the switch along with the velocity, it changes the velocity value required to trip the switch. By setting the DC amount to a negative amount, higher velocity values are required to trip the switch. Setting the DC value to a positive value would bring the velocity switch point down. The PatchCord screens for this patch are shown below.

```
L1 PATCHCORD                    #01
Vel+-  ->   Switch             +100
```

```
L1 PATCHCORD                    #02
DC    ->    Switch             -021
```

```
L1 PATCHCORD                    #03
Switch   ->   Pitch            +022
```

More Examples

To derive a smooth random function you could route the Pink Noise generator through one of the Lag Processors. A smooth random wave is useful in small amounts to add a degree of natural variation to timbre when routed to filter cutoff. Normal pink noise is low pass filtered audio frequency noise with a 3 dB/octave slope to give equal energy per octave.

Audity pink noise is actually more like very low frequency filtered noise, but it is perfect for use as a random control source.
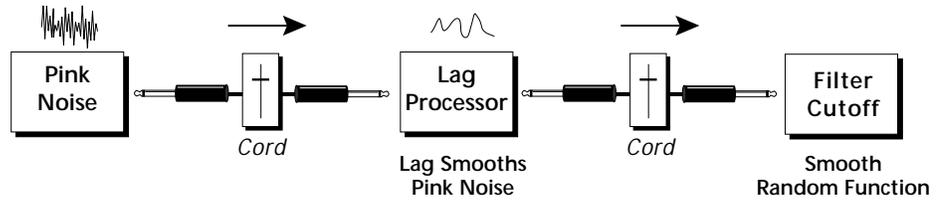
The **Quantizer** can generate interesting whole-tone scales when envelope generators or LFOs are routed to the input. The quantizer turns a smoothly changing input signal into a series of steps. By routing the output of the quantizer to Pitch and adjusting the PatchCord amounts, you can control both the number of steps and the pitch interval of each step.
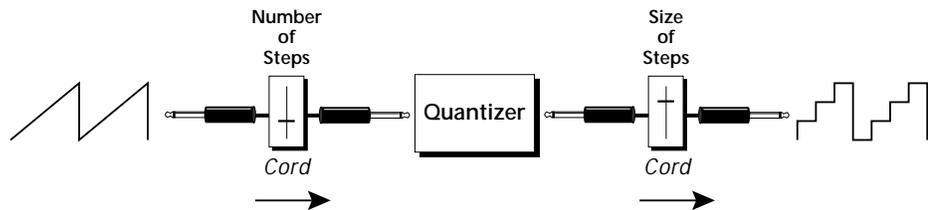
The input PatchCord amount controls how many steps will be generated. With a sawtooth wave (LFO+) feeding the input and the PatchCord amount set to 100%, sixteen steps are generated. The output PatchCord amount controls the size (or interval) of the steps.

Try setting up the following patch exactly as shown below using your favorite preset as a starting point.

```
L1  LFO1     SHAPE              SYNC
            sawtooth          key sync
```

```
L1  LFO1     RATE      DELAY     VAR
            0.35Hz      000       000
```

```
┌──────────────────────────────────────────────┐
│  L1  PatchCord                          #01    │
│  LFO1+   ->    Quantize                +030    │
└──────────────────────────────────────────────┘
```

```
┌──────────────────────────────────────────────┐
│  L1  PatchCord                          #02    │
│  Quantize   ->   Pitch                 +100    │
└──────────────────────────────────────────────┘
```

```
┌──────────────────────────────────────────────┐
│  L1  PatchCord                          #03    │
│  DC   ->    Pitch                      -050    │
└──────────────────────────────────────────────┘
```

This patch generates an ascending arpeggio every time a key is pressed. A diagram of the patch is shown below. The patch is very straightforward except for the DC offset which was added to bring the pitch down into tune. (Sometimes you have to fix a problem, but using the mod processors there's usually a way around it to achieve the desired result.)
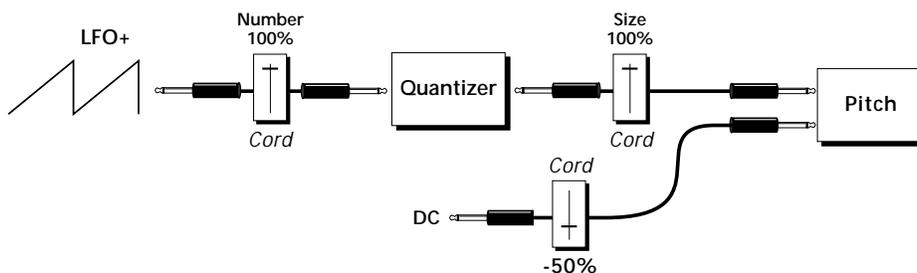
You can start to see some of the possibilities (and there are many). Whenever you find yourself wishing for some esoteric type of control, take a minute to think and see if there is a way to achieve the desired result using the modulation processors.

Now, using what you've learned about modulating processors, see if you can make the Filter Envelope automatically loop.

Dynamic Filters

The block diagram of the Audity 2000's signal path is shown below.
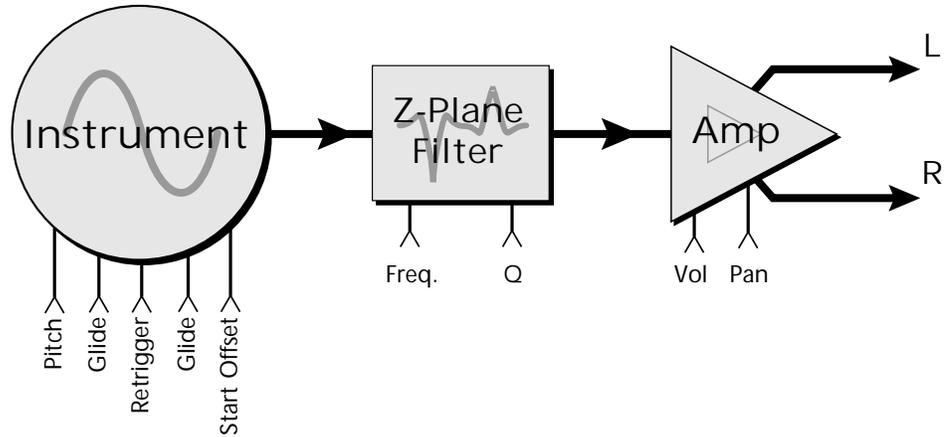
To understand how a filter works, we need to understand what makes up a sound wave. A sine wave is the simplest form of sound wave. Any waveform, except a sine wave, can be analyzed as a mix of sine waves at specific frequencies and amplitudes.
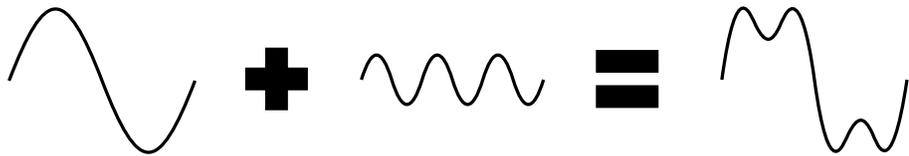
Any waveform can be analyzed as a mixture of sine waves.

One way to represent complex waveforms is to use a chart with frequency on one axis and amplitude on the other. Each vertical line of the chart represents one sine wave at a specific amplitude and frequency.
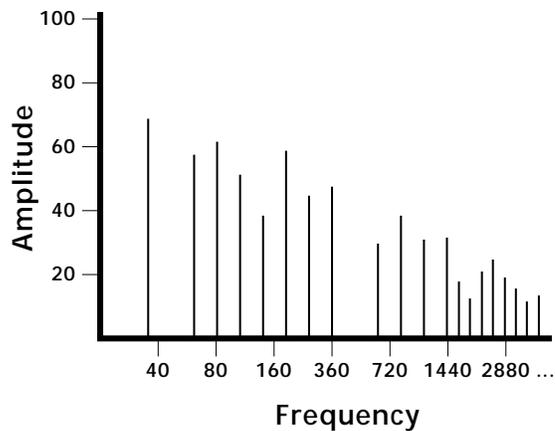
What is a Filter?

Most sounds are complex waves containing many sine waves of various amplitudes and frequencies. **A filter is a device which allows us to remove certain components of a sound depending on its frequency.** For example, a *low-pass filter* lets the low frequencies pass and removes only the high frequencies as illustrated in the following diagram.
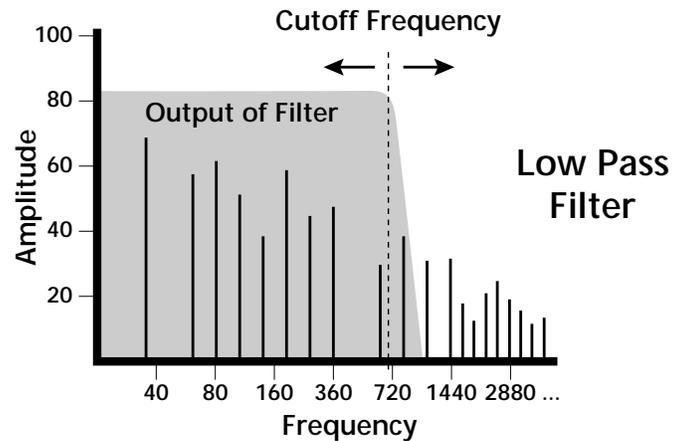
A filter that lets only the high frequencies pass is called a *high-pass filter* as illustrated in the following diagram.
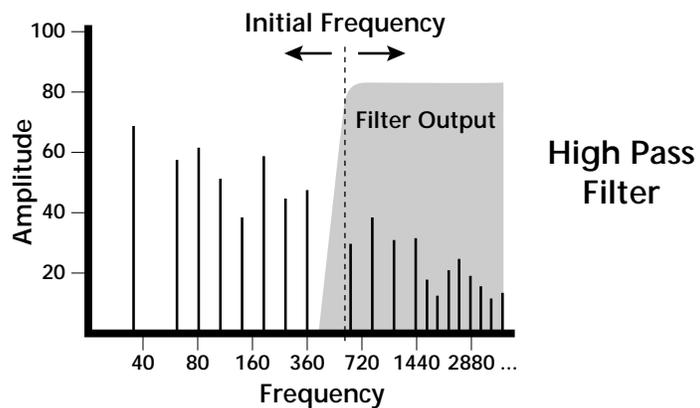
A filter which only lets a certain band of frequencies pass is called a *band-pass filter.*
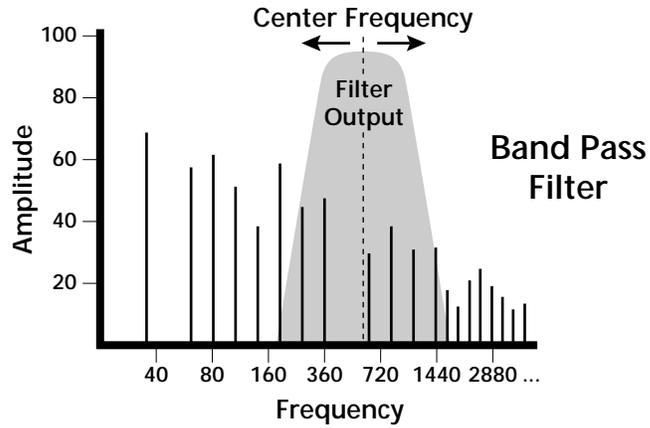
A *notch filter* is just the opposite of a band-pass filter and is used to eliminate a narrow band of frequencies.

Another control found on traditional filters is called Q or resonance. A lowpass filter with a high Q emphasizes the frequencies around the cutoff frequency. The following chart shows how different amounts of Q affect the low-pass filter response. In terms of sound, frequencies around the cutoff tend to "ring" with high Q settings. If a filter with high Q is slowly swept back and forth, various overtones are "picked out" of the sound and amplified as the resonant peak sweeps over them. Bells and gongs are real world examples of sounds which have a high Q.
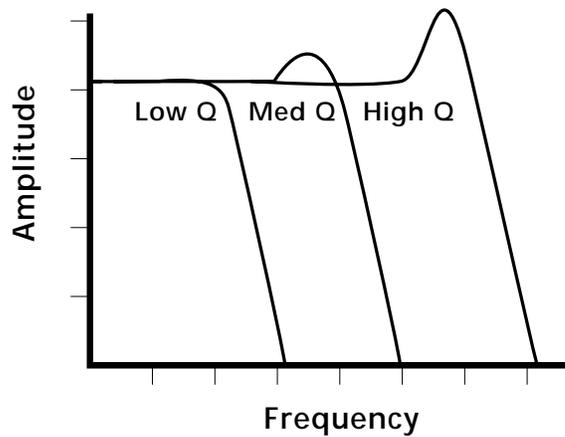
Another characteristic of a filter is the number of poles it contains. Traditional synthesizer filters were usually either 2-pole or 4-pole filters. The Audity 2000 has selectable 2, 4, 6, and even 12-pole low-pass filters. The number of poles in a filter describes the steepness of its slope. The more poles, the steeper the filter's slope and the stronger the filtering action. The tone controls on your home stereo are probably one-pole or two-pole filters. Parametric equalizers are usually either two-pole or three-pole filters.

In terms of vintage synthesizers, Moog and ARP synthesizers used 4-pole filters, Oberheim and E-mu synthesizers were famous for their 2-pole filter sound.
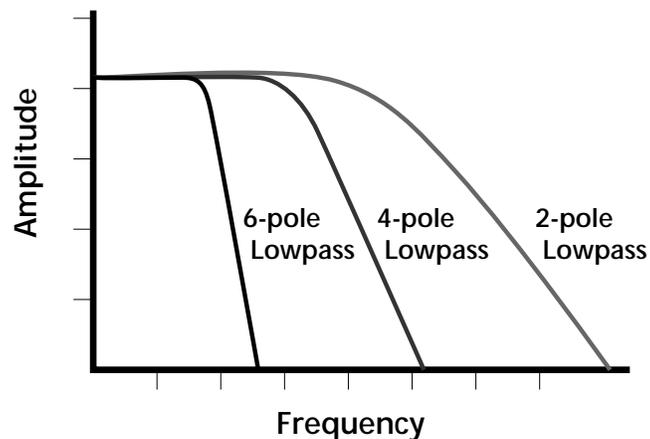
Using a filter, we have a way to control the harmonic content of a sound. As it turns out, even a simple low-pass filter can simulate the response of many natural sounds.

For example, when a piano string is struck by its hammer, there are initially a lot of high frequencies present. If the same note is played softer, there are fewer high frequencies generated by the string. We can simulate this effect by routing keyboard velocity to control the low-pass filter. The result is expressive, natural control over the sound.

If you use an envelope generator to control the cutoff frequency of a filter, the frequency content can be varied dynamically over the course of the note. This adds animation to the sound as well as simulates the response of many natural instruments.

Parametric Filters

A more complex type of filter is called a parametric filter or *Swept EQ*. A parametric filter allows control over three basic parameters of the filter. The three parameters are: *Bandwidth, Frequency* and *Gain*. The Bandwidth allows you to select the width of the range of frequencies to be boosted or cut, the Frequency defines the center frequency of the bandwidth, and the Gain parameter either boosts or cuts the frequencies within the selected band by a specified amount. Frequencies not included in the selected band are left unaltered. This is different from a band-pass filter which attenuates (reduces) frequencies outside the selected band.
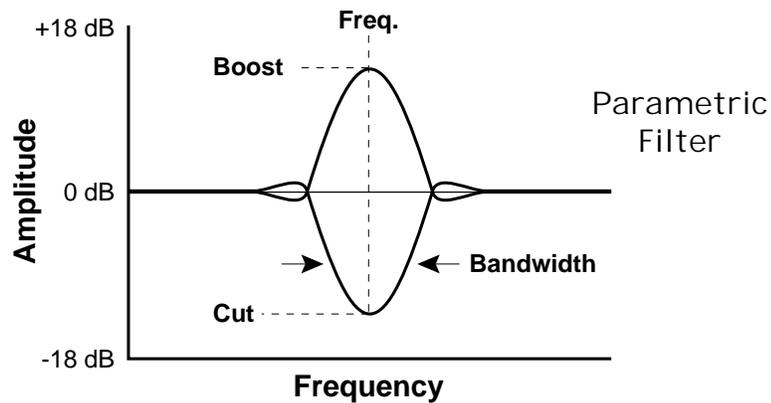
The parametric filter is quite flexible. Any range of frequencies can be either amplified or attenuated. Several parametric sections are often cascaded in order to create complex filter response curves.

If four parametric filter sections were cascaded, it would be possible to create the following complex filter response.
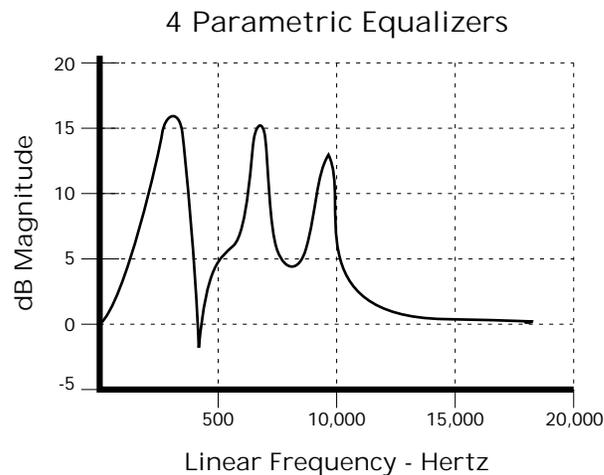
Many natural instruments have complex resonances which are based on their soundboard or tube size. The resonance shown above would be impossible to create using a normal synthesizer filter.

The Audity 2000 Filter

The filter in Audity 2000 is actually much more complex than the four parametric sections described in the last section. As an example of its power, the diagram below shows one of the various ways that the filter can be configured. This amount of filtering is unprecedented in all of electronic music history. (Especially when you consider that we are talking about only one of the 32 channels.)
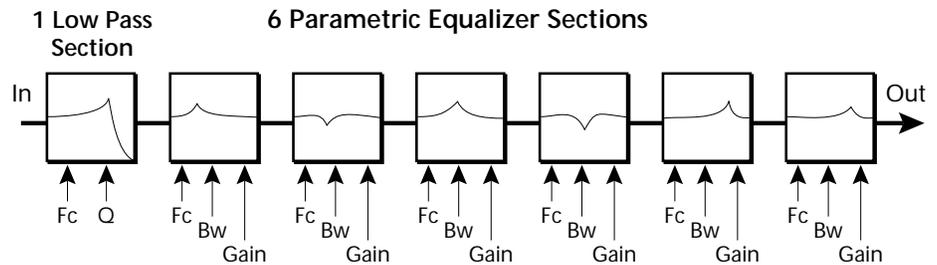
Right away you can see that we now have 20 different parameters to control. Ah, there's the catch. How can all these parameters be controlled effectively? 20 envelope generators? We don't think so.

The Z-Plane Filter

A Z-plane filter is a filter which can change its function over time. In a Z-plane filter, we start with two complex filter types and interpolate between them using a single parameter. See the following diagram.
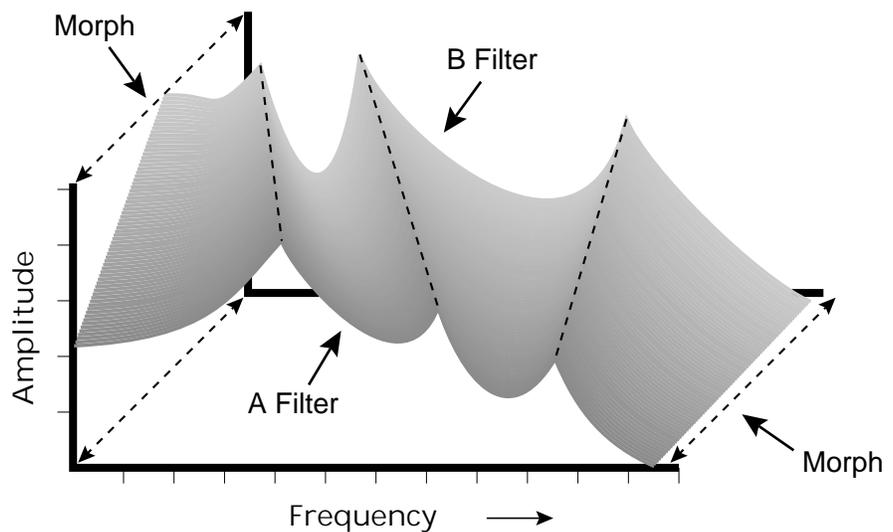
The Z-plane filter has the unique ability to change its function over time.

Filters A and B represent two different complex filters or "frames." Changing a single parameter, the Morph, changes many complex filter parameters simultaneously. Following along the Morph axis you can see

that the filter response smoothly interpolates between the two filters. This is the essence of the Z-plane filter. Through the use of interpolation, many complex parameters are condensed into one manageable entity.

Consider, as an example, the human vocal tract, which is a type of complex filter or resonator. There are dozens of different muscles controlling the shape of the vocal tract. When speaking, however, we don't think of the muscles, we just remember how it feels to form the vowels. A vowel is really a configuration of many muscles, but we consider it a single object. In changing from one vowel to another, we don't need to consider the frequencies of the resonant peaks. You remember the shape of your mouth for each sound and interpolate between them.

This Z-plane filter sweep can be controlled by an envelope generator, an LFO, modulation wheels or pedals, keyboard velocity, key pressure, and so on. In fact, any of the modulation sources can control the Z-plane filter.

Because creating the complex filtering is difficult and very time consuming, we have created 50 different filters and installed them permanently in ROM for your use. You simply select and use the filters in a manner similar to choosing an instrument. Because there are so many types of filters to choose from, the number of possible permutations is staggering.

Signal Flow

Going back to the Signal Path diagram for a single channel we can reexamine the complete signal path.
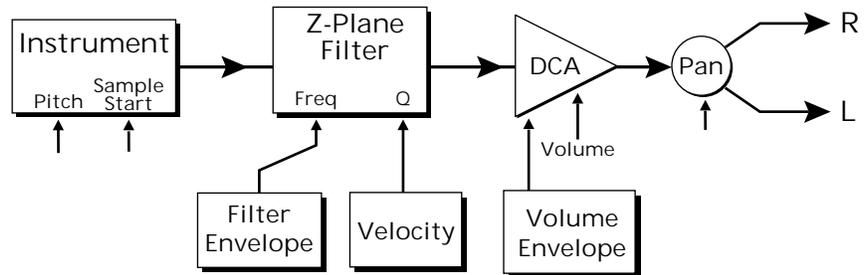
Instrument

This is the sampled sound wave. The pitch of the instrument can be modulated by any modulation source. The sample start point can be changed only at the time the note is played.

Z-Plane Filter

The Z-Plane Filter is used to shape the harmonic content of an instrument. The filter envelope is commonly used to shape the harmonic content dynamically over time but the filter frequency can be modulated by any source. The Q parameter can be modulated only at note-on time. There are 50 types of filters available. See "Filter Types" on page 111 for a complete list of the filters.

Digitally Controlled Amplifier (DCA)

Together with the Volume Envelope, the DCA is used to shape the volume contour of a sound. The DCA can be controlled by any modulation source. Velocity is often used as a modulation source for the DCA so that the harder you play, the louder the sound becomes.

Pan

Adjusts the balance of sound to the left and right channels. Pan can be modulated by any modulation source.

MIDI Channels and Real-time Controls

The MIDI real-time controllers may seem confusing at first, but they are really very simple once you understand them. You already know that there are 16 MIDI channels to use. Each of the 16 MIDI channels uses three basic types of messages; note on/off, preset changes, and continuous controller messages. Your MIDI keyboard, in addition to telling the Audity which note was played, can also send real-time control information which simply means control occurring in real-time or "live." (You may be using a MIDI device other than a keyboard, but for simplicity's sake we'll presume that you are using a keyboard.) Real-time control sources include such things as pitch wheels or levers, modulation wheels or levers, control pedals and aftertouch and are used to add more expression or control.

Your MIDI keyboard sends out real-time controller information on separate continuous controller numbers. There is a set of 32 continuous controller numbers for each of the 16 MIDI channels. Some of the controllers, such as the modulation wheel, volume, and pan have standardized numbers. For example, volume is usually sent on continuous controller #7. Your keyboard may have other real-time controls such as a control pedal or data sliders which can also be programmed to control the Audity 2000.

✎ *The following MIDI controls are automatically routed in Audity 2000:*

Pitch Wheel	*pwh*
Modulation Wheel	*01*
Aftertouch	*03*
Pedal	*04*
Volume	*07*
Pan	*10*

MIDI Channel 1
- Note On/Off
- Program Change
- Continuous Controllers

MIDI Channel 2
- Note On/Off
- Program Change
- Continuous Controllers

MIDI Channel 3
- Note On/Off
- Program Change
- Continuous Controllers

• • •

MIDI Channel 16
- Note On/Off
- Program Change
- Continuous Controllers

Any MIDI controller can be routed to any modulation destination. First, you have to know which controller numbers your keyboard transmits. Most modern MIDI keyboards let you select a controller number for each control on the keyboard. For example, it may let you select a number from 0-31 for the data slider. The realtime controller numbers that the keyboard transmits must match the numbers Audity 2000 is receiving, otherwise nothing will happen when you move the controls.

Suppose you wanted to send the four data sliders on your master keyboard. Audity can handle 8 MIDI controllers (A-H) of your choosing. "MIDI A-H" are simply names for the internal connections that link external MIDI continuous controllers to the PatchCord section of Audity. There are two parts to the connection. First, MIDI controller numbers are assigned to the letters A-H in the Master menu. Next, the letters A-H are connected to synthesizer control parameters in the PatchCord section of the Edit menu. The PatchCord Amount scales the amount of each controller by a positive or negative value.

The factory presets have the MIDI A-H controls connected to standard synthesizer functions (marked on the front panel of Audity 2000). By choosing any four of the eight standard functions, your four sliders will work the same on every preset. The chart below shows how this might work if your keyboard transmitted the slider settings on MIDI controllers 12-15.

Control	MIDI Controller #	Routing	Audity Standard Function
Slider 1	12	A	Controls Filter Frequency
Slider 2	13	B	Controls Filter Resonance
Slider 3	14	G	Controls Volume Attack
Slider 4	15	H	Controls Volume Decay/Rel.
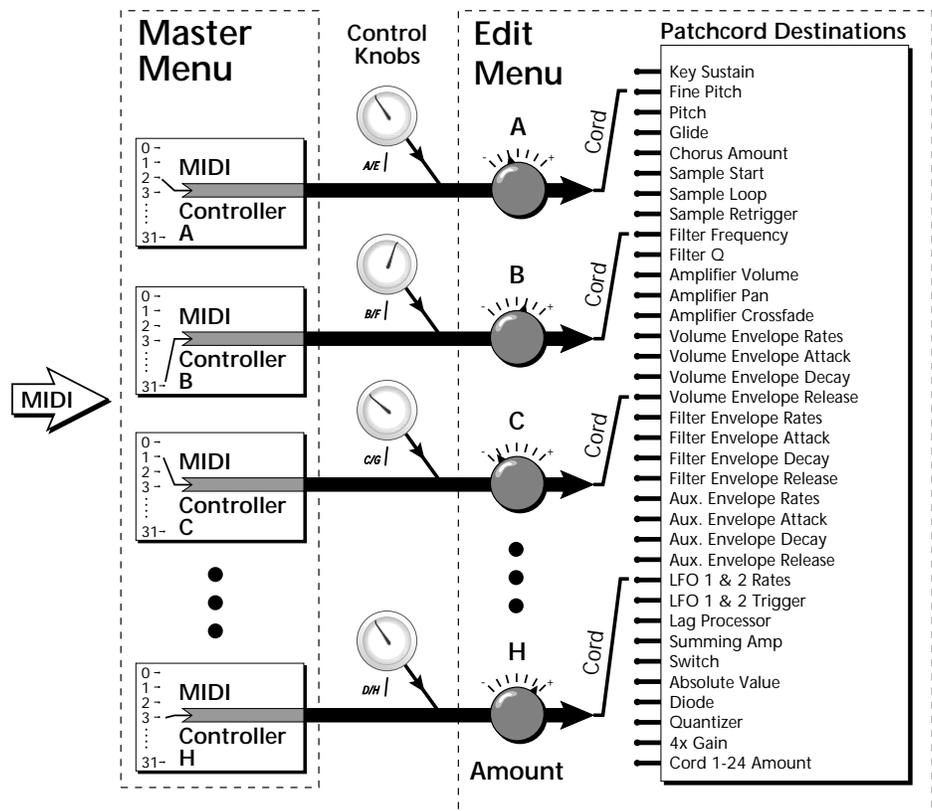
MIDI A-H are internal connections which simultaneously carry front panel controller knob data and MIDI continuous controller data.

The four controller knobs on the Audity 2000 front panel work just like MIDI real-time controllers. The four controller knobs are permanently assigned to controllers A-H. Pressing the control button adjacent to the row of knobs selects A-D, E-H or Arpeggiator functions for the knobs. The front panel knob (A-H) and the MIDI controller number assigned to that letter, both control the same parameter that you select in the PatchCord screen.

Stereo Mix Outputs

Audity 2000 has three sets of polyphonic stereo outputs (Main, Sub 1 and Sub 2). The channels used by a particular preset or a particular MIDI channel can be directed to appear at any one of these three stereo outputs. This feature is useful for adding signal processing (EQ, reverb, etc.) of individual sounds prior to final mixdown. By panning a preset completely left or right, it can be routed to a single output jack.

All presets are routed to the Main outputs automatically unless plugs are inserted into the Sub 1 or Sub 2 outputs.
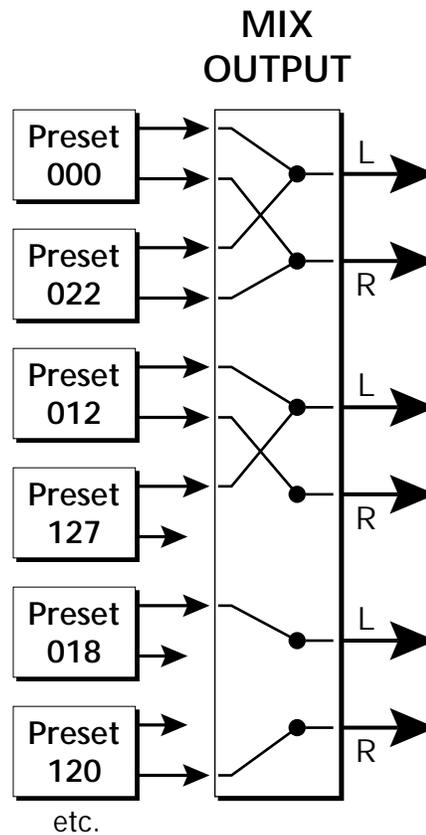
Each preset can be routed to one (and only one) set of stereo outputs.

Edit Menu

The Edit Menu contains four layers of preset parameters that you can modify and then save as preset information in one of the user preset locations.

There are four instrument layers in the Edit menu. See the illustration on the next page for a description of the Preset Layer model.

While the Edit menu is activated, all incoming MIDI preset changes on the selected channel are ignored.

☞ **To Access the Edit Menu**

Press the Edit button, lighting the LED. The Edit Menu screen displays the menu page most recently selected since powering up Audity 2000. The cursor appears below the first character of the screen heading on line one.

☞ **To Scroll through Layers**

Place the cursor below the layer field. Rotate the Data Entry Control to scroll through the layers.

☞ **To Scroll through Pages**

Place the cursor below the page title field. This will automatically be done when you press the Home/Enter button. Rotate the Data Entry Control to scroll through the pages.

☞ **To Change a Parameter**

Place the cursor below the parameter field. Rotate the Data Entry Control to change the parameter value.

Four Layer Architecture

Audity 2000 provides a 4 layer instrument structure. Each layer is a complete synthesizer voice with 50 types of filters, over 64 modulation sources, more than 64 modulation destinations and 24 patchcords to connect everything together. In addition, the four layers can be crossfaded or switched by key position, velocity or any real-time modulation source.

Layer 1

Instrument → Z-Plane Filter → DCA → Pan → R, L

Layer 2

Instrument → Z-Plane Filter → DCA → Pan → R, L

Layer 3

Instrument → Z-Plane Filter → DCA → Pan → R, L

Layer 4

Instrument → Z-Plane Filter → DCA → Pan → R, L
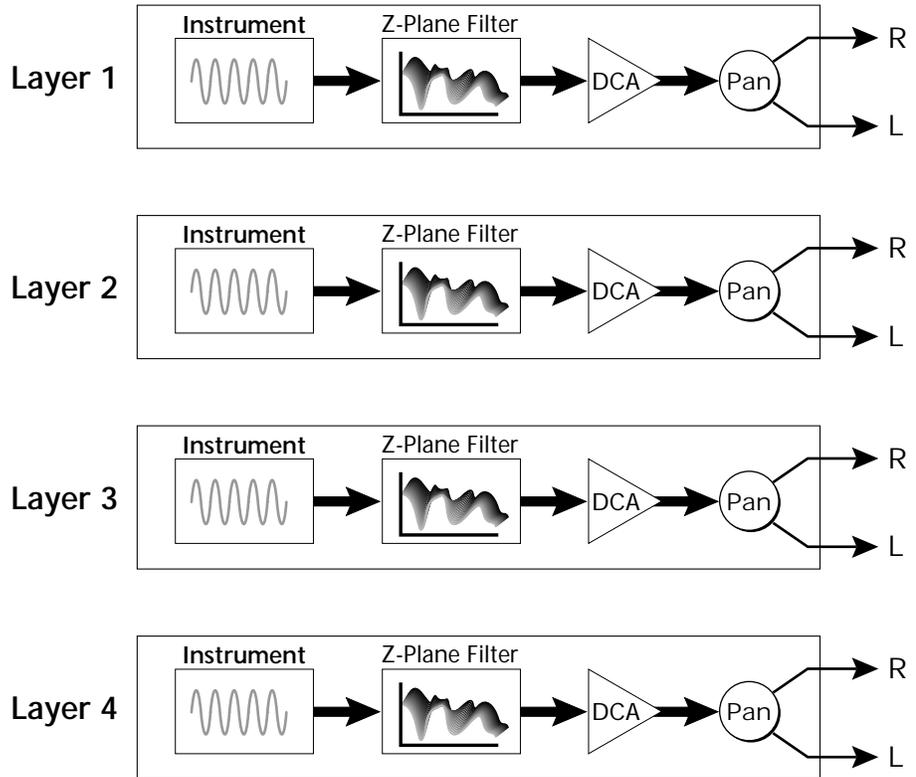
Defining Layer Parameters

The Edit menu parameters define the four layers and include the instrument assigned to the layer, the ranges of the layer, tuning, envelopes, filters, and patch cords. These parameters are defined for each layer on an individual basis (based on the currently selected layer). See "Common Preset Parameters" on page 125 for global preset settings.

Selecting an Instrument

The Instrument parameter defines which of the available instrument sounds is played by the current layer.

```
 L1  INSTRUMENT
000 –default preset–
```

Defining Key Range

The Key parameter defines the range on the keyboard used by the current layer. The Key range is from C-2 through G8.

Middle C

C-2   C-1   C0   C1   C2   C3   C4   C5   C6   C7   C8   G8
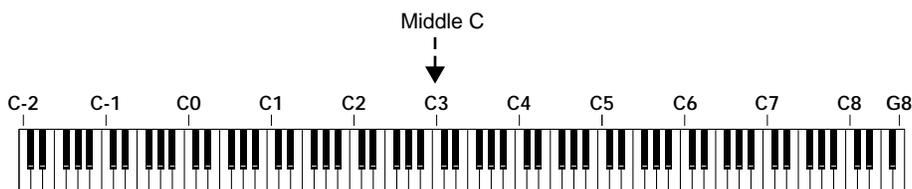
To define the range, set the low key value and the high key value.

Fade In   Fade Out

```
 L1 KEY:   LO    FADE    HIGH    FADE
           C-2    000     C2      012
```
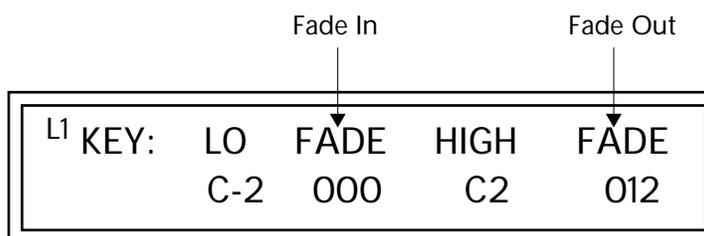
Layers can be crossfaded according to key position by adjusting the Low and High Fade parameters. The first Fade field determines how many semitones it takes the layer to Fade In from the low key. The second Fade field determines how many semitones it takes the layer to Fade Out to the high key. The screen shot above and the diagram below show Layer 1 being faded out over a one octave range.
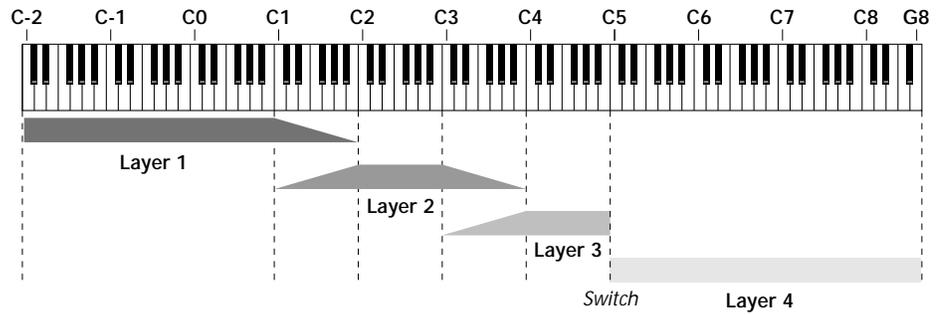
With a High Fade value of zero (as in layer 3 of the diagram), the layer simply switches off at the high key.

☞ To Switch Layers According to Key Position

The Key Range parameter allows you to create a "split" keyboard with up to four sounds adjacent to each other on the keyboard. This is shown in the diagram below.
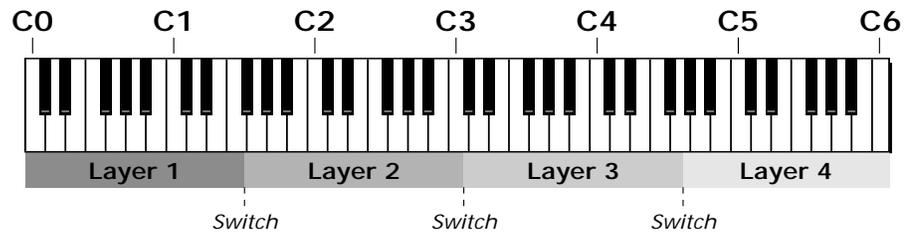
Just assign the low and high key range for each of the four layers with Fade set to zero. Set the Low and High Keys so they don't overlap other layers.

```
┌─────────────────────────────────────────────┐
│  L3 KEY:   LO      FADE      HIGH      FADE   │
│            C#3     000       F#4       000    │
└─────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────┐
│  L4 KEY:   LO      FADE      HIGH      FADE   │
│            G4      000       C6        000    │
└─────────────────────────────────────────────┘
```

If two layers do overlap, both will play as shown in the next example.

☞ To Stack Layers

If the ranges of two or more Layers overlap it is called *stacking layers*. All Layers assigned to a key sound when the key is played. This is shown in the following diagram. It's very easy to stack layers. Simply duplicate the key ranges for any layers you want to stack.
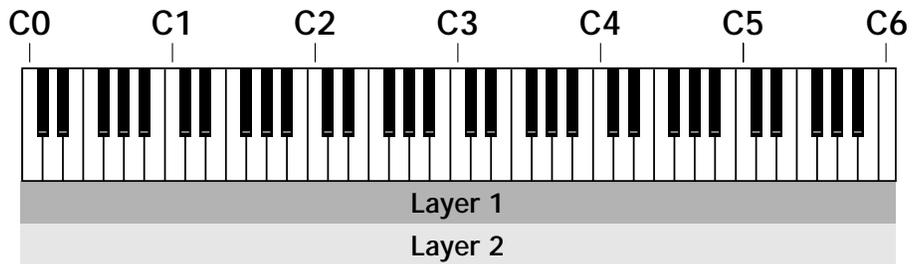

```
┌─────────────────────────────────────────────┐
│  L1 KEY:   LO      FADE      HIGH      FADE   │
│            C0      000       C6        000    │
└─────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────┐
│  L2 KEY:   LO      FADE      HIGH      FADE   │
│            C0      000       C6        000    │
└─────────────────────────────────────────────┘
```

Defining the Velocity Crossfade Range

Velocity is a measure of how hard the key is pressed. Velocity Range lets you control the volume of the layers using velocity. Using this function you can crossfade or cross-switch between layers according to how hard you play the keyboard.

Set the velocity range of the layer by defining the high and low velocity values. Values range from 0 (off) to 127 (hardest)

```
L2 VEL:   LO     FADE     HIGH     FADE
          36      012      96       012
```

The Fade fields define the velocity crossfade range for the currently selected layer. The first Fade field defines the Fade In range for the low velocity value. The second defines the Fade Out range for the high velocity value.
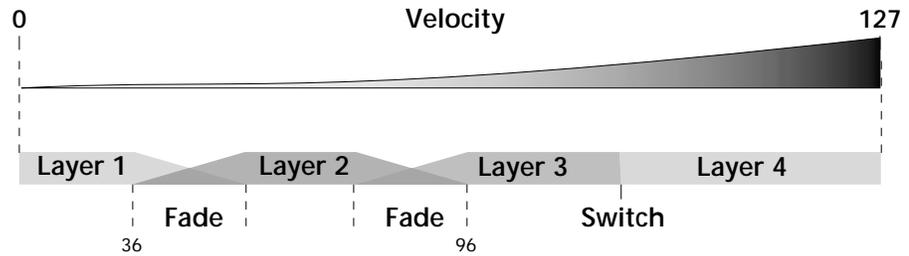
With soft playing, Layer 1 sounds. As you play harder, Layer 1 gradually fades out and Layer 2 fades in. When the keyboard is played hard, Layer 3 plays.

☞ **To Set Up a Velocity Crossfade Between Layers**

Set the velocity fades so that layer 1 fades out with higher key velocity, while layer 2 fades in. At a velocity of 64, the two sounds are equal volume. You may want to adjust the fade in and fade out points to achieve a natural sounding crossfade. These parameters vary depending on the sounds.


```
L1 VEL:   LO      FADE      HIGH      FADE
          000      000       127       127
```

```
L2 VEL:   LO      FADE      HIGH      FADE
          000      127       127       000
```

Defining the Real-time Crossfade Range

The Real-time Crossfade window lets you control the volume of the four layers using a real-time controller such as a front panel knob, a pedal or an LFO or Envelope generator. The controller is defined by the PatchCord parameter (see "PatchCords" on page 121).

The Fade fields define the crossfade range in velocity for the currently selected layer. The first Fade field defines the Fade In amount for the low Real-time Control value. The second defines the Fade Out amount for the high Real-time Control value. The Fade value range is from 0 to 127.
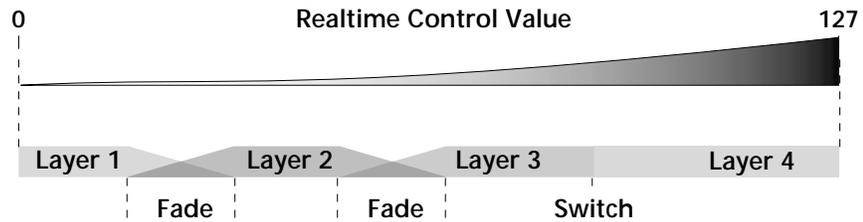
After the Ranges and Fades have been adjusted for each layer in the Real-time Crossfade screen, you must assign a real-time controller to RTXfade (Real-time Crossfade) **on each Layer** in the PatchCord screen. Set the PatchCord Amounts to +100.

☞ **To Set Up a Real-time Crossfade Between Two Layers**

As the real-time control (knob, pedal, LFO, etc.) is increased, Layer 1 fades out as Layer 2 fades in. This example only uses two of the possible four layers. Refer to the screen diagrams below.

```
L1  RT:  LO      FADE     HIGH     FADE
         000     000      127      127
```

```
L2  RT:  LO      FADE     HIGH     FADE
         000     127      127      000
```

1. Select a preset.
2. Press the Edit button to access the Edit menu.
3. Go to the Instrument page and select instruments for Layers 1 and 2.

4. Press Enter, then use the Data Entry Control to advance to the Real-time Crossfade page.

5. Define the High and Low range of each Layer. In this example the entire range of 0-127 is used.

6. Define the Fades for each Layer. This is just an initial setting. The Range and Fade parameters may have to be adjusted later to get a smooth crossfade.

7. Press Home/Enter and use the Data Entry Control to advance to the PatchCord page. Select Layer 1.

8. Select the modulation source for the crossfade (knob, pedal, LFO, Envelope) and set the destination to RTXfade. Set the Cord Amount to +100.

9. Select Layer 2. Select the same source and destination for the crossfade and set the Cord Amount to +127.

```
L1 PATCHCORD                    #01
MidiA    ->     RTXfade         +100
```

10. Play the keyboard while adjusting the real-time controller. Go back to the Real-time Crossfade screens to fine tune the crossfade if necessary. Decreasing the fade size will narrow the region where both layers are sounding.

☞ To Randomly Cross-Switch Between Four Layers

In certain situations, you may want to switch between several layers randomly. **Crossfade Random** is a modulation source specifically designed to handle this situation. Unlike the other random sources, Crossfade Random generates one random number for all layers each time a key is pressed.

To set up a four layer Cross-Switch, simply assign each of the four layers to a different Real-time Crossfade range, then assign XfdRnd to RTXfade in the PatchCords for each layer.

Realtime Control Value


```
0      16      32      48      64      80      96      112     127
|       |       |       |       |       |       |       |       |
```

| Layer 1 | Layer 2 | Layer 3 | Layer 4 |

Switch   *Switch*   *Switch*
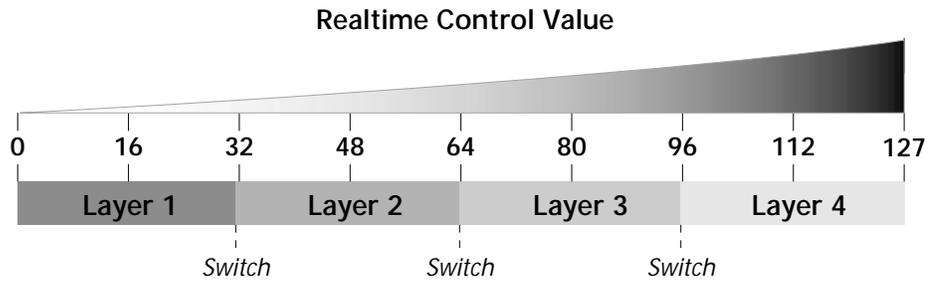
1. Press the Edit button to access the Edit menu.

2. Go to the Instrument screen and select Instruments for Layers 1 through 4.

3. Press Enter, then use the Data Entry Control to advance to the Real-time Crossfade page.

```
 L1  RT:  LO      FADE     HIGH     FADE
          000      000      031      000
```

```
 L2  RT:  LO      FADE     HIGH     FADE
          032      000      063      000
```

```
 L3  RT:  LO      FADE     HIGH     FADE
          064      000      095      000
```

```
 L4  RT:  LO      FADE     HIGH     FADE
          096      000      127      000
```

4. Define the High and Low range of each Layer as shown above.

5. Press Home/Enter and use the Data Entry Control to advance to the PatchCord page. Select Layer 1.

6. Select XfdRnd as the modulation source and RTXfade as the destination. Set the Cord Amount to +100.

7. Repeat step 6 for the remaining three layers

```
┌─────────────────────────────────────────┐
│ L1 PATCHCORD                    #01       │
│ XfdRand  ->  RTXfade          +100        │
└─────────────────────────────────────────┘
```

8. That's it! Now set each Layer up the way you want. Try radically different instruments, filter settings, or tunings. Or you can make each layer just slightly different for a more natural effect. Try adjusting the Fades or overlapping the ranges if you want more than one layer to play at once.

Transposing the Instrument

The Transpose parameter lets you transpose the key of the current layer's Instrument. Transpose works by shifting the keyboard position in semitone intervals relative to middle C. Use this parameter to transpose different layers apart by semitone intervals. For example, by transposing one layer by +7 semitones, it will track other layers at a perfect fifth interval.

C-2   C-1   C0   C1   C2   C3   C4   C5   C6   C7   C8   G8
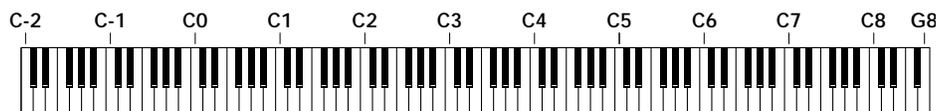
The range of transposition is -36 to +36 semitones.

```
┌─────────────────────────────────────────┐
│ L1 TRANSPOSE                              │
│ +36 semitones                             │
└─────────────────────────────────────────┘
```

Tuning

The Tuning parameter changes the pitch of the key in semitone and 1/64 semitone intervals.

```
┌─────────────────────────────────────────┐
│ L1 TUNING                                 │
│ Coarse:     +36         Fine:      +64    │
└─────────────────────────────────────────┘
```

Use the Coarse field to shift the tuning by semitone intervals. Use the Fine field to shift tuning by 1/64 semitones (or 1.56 cents) intervals.

Background: Transpose vs. Coarse Tuning

Transpose works by shifting the keyboard assignment of the Instrument (as if you were sliding the keyboard up and down with the Instrument remaining in the same position). Coarse Tuning keeps the instrument placement on the keyboard and actually tunes the samples up using a digital process called interpolation. Use Course Tuning on drum instruments to change the pitch while keeping sample placement constant. Coarse Tuning can also be useful to slightly change the timbre of the instrument.

Amplifier

This parameter sets the initial volume and pan position of the current layer. These values can be changed using any Real-time Controller set up in the PatchCords. The value range for the volume is from -96 dB to +10 dB. 0 dB is the default setting. Routinely turning the volume up to +10 dB is not recommended because it doesn't allow other modulation sources to increase the volume further.

```
┌─────────────────────────────────────────┐
│ L1 AMPLIFIER                              │
│ Volume:   +10dB            Pan:   48L     │
└─────────────────────────────────────────┘
```

This field determines the initial Pan value for the current layer. The value range for Pan is from 64L to 0 (left) and 0 to 63R (right). Pan adjusts the volume into the left and right output channels relative to the Pan setting in the main Preset Select screen (see "Channel Pan" on page 29). So, if you, for example, set the Pan value in the Preset Select screen to 64L and set this Pan value to 63R, the actual pan amount would be 0 as these two pan parameters are relative to each other.

Volume Envelope

An envelope can be described as a "contour" which is used to shape the sound over time. The *Volume Envelope* controls the volume of the sound in the current layer over time. The way the volume of a sound evolves has a profound effect on how we perceive the sound.

Each instrument has its own Factory preset Volume Envelope setting. The Volume Envelope allows you to program your own envelope settings.

Selecting the Mode

The Mode field determines whether the layer will use the instrument's default envelope (Factory) or use the user-programmed Volume Envelope. There are three mode options:

- **Factory**: Uses the factory preset envelope contained in each instrument. If you select the "Factory" mode, the Volume Envelope parameters are disabled and the factory defined settings are used instead.

Factory Mode is useful for Instruments containing multiple drums, since each drum can have its own envelope settings.

```
L1 VOLUME ENVELOPE
Mode:  factory
```
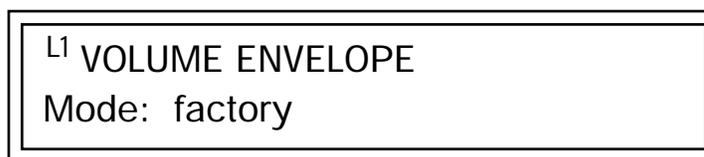
- **Time-based**: Defines the Volume Envelope rates from 0 to 127 (approximately 1 ms to 160 seconds). The Master clock has no affect on time-based rates.

```
L1  VOL ENV        RATE        LEVEL
Attack 1            84          100%
```
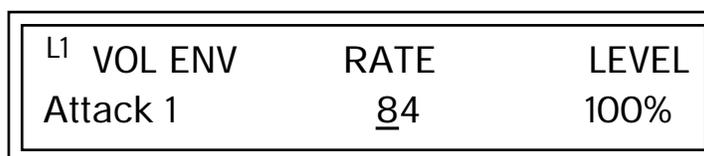
- **Tempo-based**: The Volume Envelope times vary based on the master tempo setting. Note values are displayed instead of a number when the time corresponds to an exact note value. Tempo-based envelopes are useful when using the arpeggiator because the envelope rates compress and expand according to the Master Tempo setting, keeping the envelopes in sync with the arpeggio.

Tempo-Based Envelopes

- = Initial Setting
- = Increase Master Tempo
- = Decrease Master Tempo
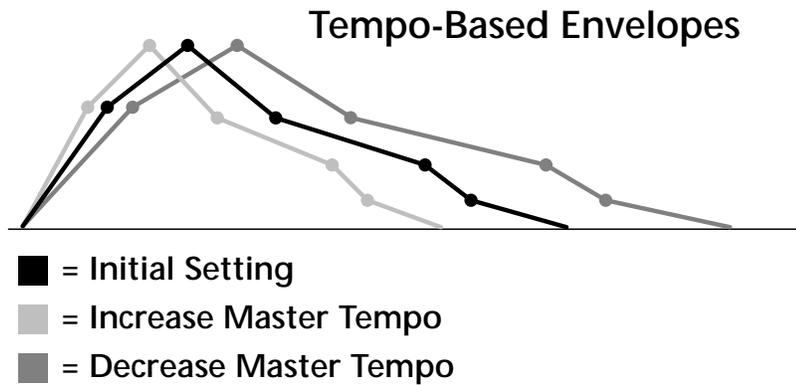
Tempo-based envelope rates change according to the Master Tempo rate.

See the Programming Basics section of this manual for detailed information about how the Envelopes work.

Defining the Volume Envelope

The Volume Envelope controls the volume of the layer over time. The Volume Envelope has six stages to the contour: Attack 1, Attack 2, Decay 1, Decay 2, Release 1 and Release 2. When a key is pressed, the Envelope goes through the first four stages. If you continue to hold down the key, the envelope holds at the Decay 2 level. When the key is released, the envelope continues through the Release stages ending at the Release 2 level.

```
L1  VOL ENV          RATE          LEVEL
Attack 1              84           100%
```

As soon as the Attack 1 level is reached, the Attack 2 phase begins. When the Attack 2 Level is reached, the Decay 1 phase begins. When the key is released, the envelope immediately jumps to the Release 1 stage, then the Release 2 stage finally ending at the Release 2 level.

If you have selected the factory mode, the Volume Envelope parameter screen looks like the following illustration.

```
L1  VOL ENV          RATE          LEVEL
using factory envelope
```

Key Down **Key Released**
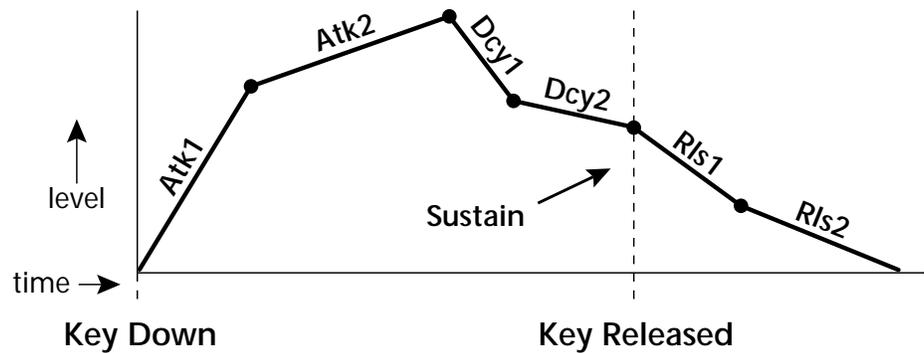
On the Volume Envelope levels can only be set to positive values. The value range is from 0 to +100.

Chorusing the Layer

Chorusing "thickens" the sound by doubling the sound in stereo and then detuning it. Every layer with chorus turned on uses twice the polyphony for that layer.

```
L1 CHORUS                    WIDTH
   off                        100%
```

The first field in this screen turns Chorus On or Off and allows you to adjust the amount of detuning (1 to 100%). The **Width** parameter controls the stereo spread. 0% reduces the chorus to mono and 100% provides the most stereo separation.

Sound Start Offset and Delay

Sound Start sets where the instrument begins playing when you hit a key. Setting the Start Offset amount to "0" plays the sample from the beginning. Higher values move the Sample Start Point further into the sample toward the end. There is also a PatchCord source which can be used to change the Sound Start point at note-on time.

```
L1  SOUND       START       DELAY
                 127          127
```
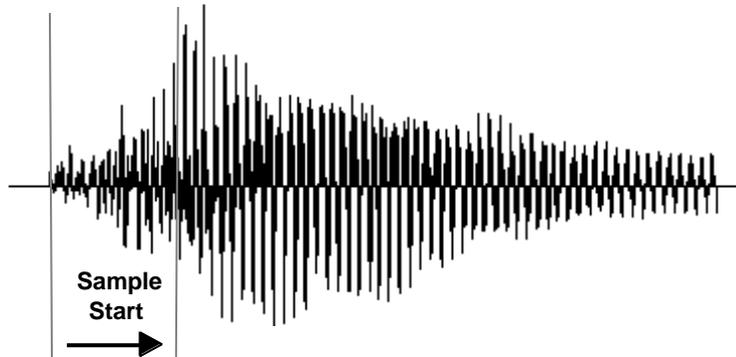
Controlling the Sound Start using Key Velocity (< Amt -) brings in the attack of the wave only when you play hard. This is especially effective with percussion instruments.

Delay defines the time between when you hit a key (note-on) and the onset of the current layer's note and the start of the envelopes (if applicable). Delay values below zero are *Tempo-based* values, meaning the time is based on the Master Tempo setting. Note values are displayed by adjusting the Delay Time value below zero. The sound will be delayed by the selected note value based on the master clock.

Non-Transpose Mode

This function turns keyboard transposition On or Off for the current layer. With Nontranspose "on," the keyboard will not control the pitch of the instrument. This is a useful function for drones, attack "chiffs," or other sound effects which you may not want to track the keyboard.

```
  L1  NONTRANSPOSE
off
```

Solo Mode

Provides the playing action of a monophonic instrument such as a lead synthesizer by preventing more than one note from sounding at once. There are eight different solo modes provided. Try setting up different layers with different solo mode and glide rates or combine solo mode with polyphonic playing modes.

> ^{L1} SOLO MODE
> synth (low)

✎ *In order to define a monophonic glide (see the Portamento parameter), you must be in Solo mode.*

The Solo modes are:

Multiple Trigger: Last note priority. No key-up action. Retriggers envelopes and samples when a key is pressed.

Melody (last): Last note priority. No key-up action.

   First solo note: Envelopes start at Attack segment from zero. Samples start at the beginning.

   If previous note is releasing: Envelopes start at Attack segment, but from current level. Samples start at the beginning.

   When playing "Legato": Envelopes continue from current segment and level. Samples start at the loop or the beginning if unlooped.

Melody (low): Same as Melody (last), but with low note priority. Newly played keys which are higher than the lowest solo key held do not sound.

Melody (high): Same as Melody (last), but with high note priority. Newly played keys which are lower than the highest solo key held do not sound.

Synth (last): Similar to Melody (last) but this mode has key-up action. When you release the currently sounding solo key while holding other keys down, the highest held solo key sounds in a Legato fashion.

Synth (low): Same as Synth (last) but with low note priority. When you release the currently sounding solo key while holding other keys down, the lowest held solo key sounds in a Legato fashion (MiniMoog).

Synth (high): Same as Synth (last) but with high note priority. When you release the currently sounding solo key while holding other keys down, the highest held solo key sounds in a Legato fashion.

Fingered Glide: Same as Synth (last), except that Glide is disabled when playing Staccato, enabled when playing Legato.

Assign Group

Use the Assign Group parameter to assign a certain number of channels to each layer. By assigning all voices in the preset to assign groups, important parts are protected from being "stolen" by more recently played keys. Or you can assign a voice, such as an open high hat, to a mono channel so it is cancelled by a closed high hat on the same mono channel. Layers rotate within their assigned "bin" of channels, not interfering with other bins.

```
┌─────────────────────────────────────────────┐
│  L1  ASSIGN GROUP                             │
│  poly all                                     │
└─────────────────────────────────────────────┘
```

The modes are:

Poly All: Notes are played polyphonically with dynamic channel assignment using all 32 channels.

Poly 16 A-B: Two bins of 16 channels each. Notes are played polyphonically with dynamic channel assignment using no more than 16 channels.

Poly 8 A-D: Four bins of 8 channels each. Notes are played polyphonically with dynamic channel assignment using no more than 8 channels each.

Poly 4 A-D: Four bins of 4 channels each. Notes are played polyphonically with dynamic channel assignment using no more than 4 channels each.

Poly 2 A-D: Four bins of 2 channels each. Notes are played polyphonically with dynamic channel assignment using no more than 2 channels each.

Mono A-I: Nine monophonic channels, Any layers assigned to the same letter interrupt each other without affecting other layers.

Glide

Glide creates a smooth transition from one note to the next instead of the normal instantaneous change in pitch when a new key is pressed. This effect is commonly heard on slide guitars, synthesizers and violins.

The **Glide Rate** parameter defines the time it takes to glide to the new pitch (the larger the value, the slower the glide rate) The glide rate value range is from 0 through 32.738 seconds (zero means off).

The **Glide Curve** describes how the glide accelerates as it slides between notes. A linear glide sounds slow at the beginning and speeds up toward the end. Exponential curves actually sound smoother and more linear. Eight exponential curves are provided. Choose one that suits your style.
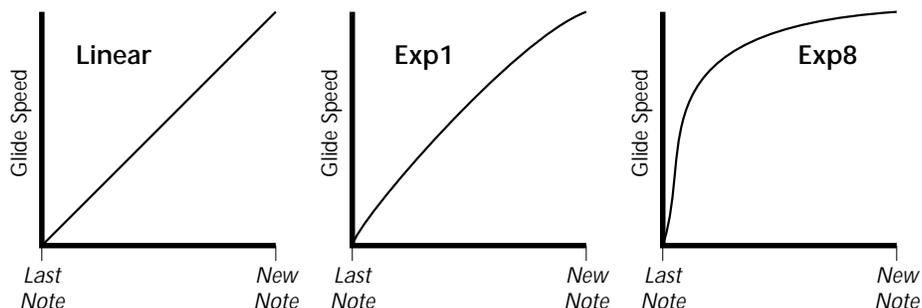
Glide can be either polyphonic or monophonic depending of the state of **Solo Mode**.

Z-Plane Filters

A filter is a device which changes the output of a signal (sound) by removing certain elements of the signal based on the frequency and amplitude. The "Order" of a filter defines the number of filter elements it contains. The more elements, the more complex the filter.

Audity 2000 contains 50 different types of E-mu's celebrated Z-plane filters. In addition to the standard Low pass, High pass and Band pass filters, Audity 2000 contains Swept Octave Equalizers, Phasers, Flangers, Vocal Formant Filters, and digital models of classic synthesizer filters.

Filter Types
The Filter Type parameter defines the filter for the current layer. Filter Frequency and Q are defined in **Filter Parameters.**

```
 L1  FILTER          Ord        Type
Phazer 2 E4           06         PHA
```

Audity 2000 Filter Types

Type Key:

LPF .... Low-pass filter   **PHA** .... Phaser
HPF........... High-pass filter   **FLG**........... Flanger
BPF .... Band-pass filter   **REZ**........... Special resonance
EQ+........... EQ boost   **WAH**......... Wah-wah
EQ− .... EQ cut   **DST**.......... Distortion
VOW .... Vowel/ formant   **SFX** .... Special Effect

Filter Name	Order	Type	Description
Smooth	02	LPF	Typical OB type low-pass filter with a shallow 12 dB/octave slope.
Classic	04	LPF	4-pole low-pass filter, the standard filter on classic analog synths. 24 dB/octave rolloff.
Steeper	06	LPF	6-pole low-pass filter which has a steeper slope than a 4-pole low-pass filter. 36 dB/octave rolloff!
MegaSweepz	12	LPF	"Loud" LPF with a hard Q. Tweeters beware!
EarlyRizer	12	LPF	Classic analog sweeping with hot Q and Lo-end.
Millennium	12	LPF	Aggressive low-pass filter. Q gives you a variety of spiky tonal peaks.
KlubKlassik	12	LPF	Responsive low-pass filter sweep with a wide spectrum of Q sounds
BassBox-303	12	LPF	Pumped up lows with TB-like squelchy Q factor.
Shallow	02	HPF	2-pole high-pass filter. 12 dB/octave slope.
Deeper	04	HPF	Classic 4-pole high-pass filter. Cutoff sweep progressively cuts 4th Order High-pass.
Band-pass1	02	BPF	Band-pass filter with 6 dB/octave rolloff on either side of the passband and Q control.
Band-pass2	04	BPF	Band-pass filter with 12 dB/octave rolloff on either side of the passband and Q control.
ContraBand	06	BPF	A novel band-pass filter where the frequency peaks and dips midway in the frequency range.
Swept1>1oct	06	EQ+	Parametric filter with 24 dB of boost or cut and a one octave bandwidth.
Swept2>1oct	06	EQ+	Parametric filter with 24 dB of boost or cut. The bandwidth of the filter is two octaves wide at the low end of the audio spectrum, gradually changing to one octave wide at the upper end of the spectrum.

Filter Name	Order	Type	Description
Swept3>1oct	06	EQ+	Parametric filter with 24 dB of boost or cut. The bandwidth of the filter is three octaves wide at the low end of the audio spectrum, gradually changing to one octave wide at the upper end of the spectrum.
DJAlkaline	12	EQ+	Band accentuating filter, Q shifts "ring" frequency.
AceOfBass	12	EQ+	Bass-boost to bass-cut morph
TB-OrNot-TB	12	EQ+	Great Bassline "Processor."
BolandBass	12	EQ+	Constant bass boost with mid-tone Q control.
BassTracer	12	EQ+	Low Q boosts bass. Try sawtooth or square waveform with Q set to 115.
RogueHertz	12	EQ+	Bass with mid-range boost and smooth Q. Sweep cutoff with Q at 127.
RazorBlades	12	EQ-	Cuts a series of frequency bands. Q selects different bands.
RadioCraze	12	EQ-	Band limited for a cheap radio-like EQ
AahAyEeh	06	VOW	Vowel formant filter which sweeps from "Ah" sound, through "Ay" sound to "Ee" sound at maximum frequency setting. Q varies the apparent size of the mouth cavity.
Ooh-To-Aah	06	VOW	Vowel formant filter which sweeps from "Oo" sound, through "Oh" sound to "Ah" sound at maximum frequency setting. Q varies the apparent size of mouth cavity.
MultiQVox	12	VOW	Multi-Formant, Map Q To velocity.
Ooh-To-Eee	12	VOW	Oooh to Eeee formant morph.
TalkingHedz	12	VOW	"Oui" morphing filter. Q adds peaks.
Eeh-To-Aah	12	VOW	"E" to "Ah" formant movement. Q accentuates "peakiness."
UbuOrator	12	VOW	Aah-Uuh vowel with no Q. Raise Q for throaty vocals.
DeepBouche	12	VOW	French vowels! "Ou-Est" vowel at low Q.
PhazeShift1	06	PHA	Recreates a comb filter effect typical of phase shifters. Frequency moves position of notches. Q varies the depth of the notches.
PhazeShift2	06	PHA	Comb filter with slightly different notch frequency moving the frequency of notches. Q varies the depth of the notches.
FreakShifta	12	PHA	Phasey movement. Try major 6 interval and maximum Q.

Filter Name	Order	Type	Description
CruzPusher	12	PHA	Accentuates harmonics at high Q. Try with a sawtooth LFO.
FlangerLite	06	FLG	Contains three notches. Frequency moves frequency and spacing of notches. Q increases flanging depth.
AngelzHairz	12	FLG	Smooth sweep flanger. Good with vox waves. eg. I094, Q =60
DreamWeava	12	FLG	Directional Flanger. Poles shift down at low Q and up at high Q.
MeatyGizmo	12	REZ	Filter inverts at mid-Q.
DeadRinger	12	REZ	Permanent "Ringy" Q response. Many Q variations.
ZoomPeaks	12	REZ	High resonance nasal filter.
AcidRavage	12	REZ	Great analog Q response. Wide tonal range. Try with a sawtooth LFO.
BassOMatic	12	REZ	Low boost for basslines. Q goes to distortion at the maximum level.
LucifersQ	12	REZ	Violent mid Q filter! Take care with Q values 40-90.
ToothComb	12	REZ	Highly resonant harmonic peaks shift in unison. Try mid Q.
EarBender	12	WAH	Midway between wah & vowel. Strong mid-boost. Nasty at high Q settings.
FuzziFace	12	DST	Nasty clipped distortion. Q functions as mid-frequency tone control.
BlissBatz	06	SFX	Bat phaser from the Emulator 4.
KlangKling	12	SFX	Ringing Flange filter. Q "tunes" the ring frequency.

Filter Parameters

The Freq and Q parameters control various elements of the filter depending on the type of filter used. See the table in the **Filter Types** section for details about what the Freq and Q fields control in each filter.

```
┌─────────────────────────────────────────┐
│ L1  FILTER                                │
│                                           │
│ Freq:    255              Q:    019       │
└─────────────────────────────────────────┘
```

Filter Envelope

The Filter Envelope is normally used to control the filter frequency and has six stages. Unlike the Volume Envelope, the Filter Envelope must be patched to the Filter Frequency using a PatchCord. In this respect, it can be thought of as a general purpose envelope generator which is normally patched to control the filter. The Filter Envelope Levels can be negative as well as positive.

There are two mode options:

• **Time-based**: Defines the Filter Envelope rates from 0 to 127 (approximately 1 ms to 160 seconds). The Master clock has no affect on time-based rates.

```
┌─────────────────────────────────────────┐
│ L1  FILT ENV      RATE        LEVEL       │
│ Attack 1           84         100%        │
└─────────────────────────────────────────┘
```

• **Tempo-based:** The Filter Envelope times vary based on the master tempo setting and are displayed in values such as 1, 2, 3, etc. Note values are displayed instead of a number when the time corresponds to an exact note value. Tempo-based envelopes are useful when using the arpeggiator because the envelope rates compress and expand according to the Master Tempo setting, keeping the envelopes in sync with the arpeggio. See the illustration on page 105.

```
┌─────────────────────────────────────────┐
│ L1  FILT ENV      RATE        LEVEL       │
│ Attack 1          1/4         100%        │
└─────────────────────────────────────────┘
```

The default PatchCord settings connect the Filter Envelope to Filter Frequency but the envelope can be routed to any real-time control destination using a PatchCord.

Defining the Filter Envelope

The Filter Envelope controls the filter frequency of the layer over time. The Envelope has six stages to the contour: Attack 1, Attack 2, Decay 1, Decay 2, Release 1 and Release 2. When a key is pressed, the Envelope goes through the first four stages. If the key continues to be held, the envelope holds at the Decay 2 level. When the key is released, the envelope immediately jumps to the Release 1 stage, then the Release 2 stage finally ending at the Release 2 level.
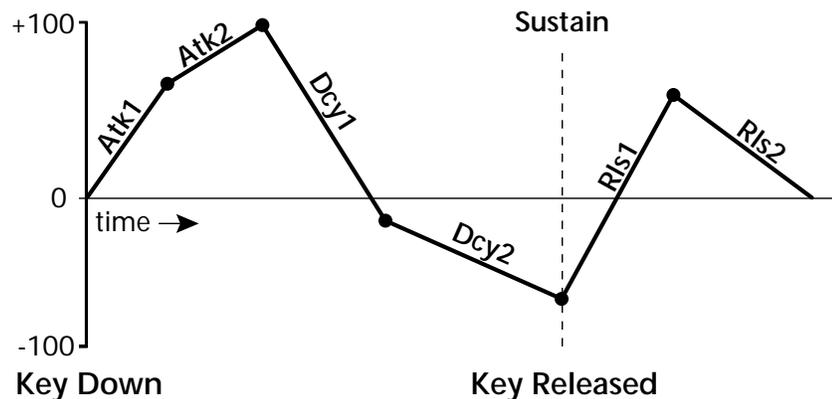
Auxiliary Envelope

The Auxiliary Envelope is a supplementary general purpose envelope that can be routed to any real-time control destination in the PatchCords. It is identical to the filter envelope generator. See "Filter Envelope" on page 115 for full details.

Low Frequency Oscillators (LFOs)

A Low Frequency Oscillator or LFO, is simply a wave that repeats at a slow speed. Audity 2000 has two LFOs per layer identified on the display as LFO1 and LFO2.

An LFO can be routed to any real-time control destination using a PatchCord. LFOs have a myriad of uses. The following examples show a few common uses.

- Control the pitch of the sound (LFO -> Pitch). This effect is called "vibrato" and is an important performance tool. Many presets use this routing with the modulation wheel controlling "how much" modulation is applied.
- Create a "tremolo" effect by routing the LFO to control the volume (LFO -> AmpVolume).
- Add a bit of animation to the sound by routing the LFO to control the filter. Set the PatchCord amount low for a subtle effect.

The LFOs have five parameters: Shape, Sync, Rate, Delay and Variation.

Shape

Shape defines the LFO waveform. There are four different waveforms to choose from: Sine, Triangle, Sawtooth, Square and four Pulse waves. The shape of the waveform determines the effect of the LFO.

If you modulate the pitch of an instrument, it's easy to visualize the shape of the waveform. For example, the sine wave has a smooth, rolling shape that changes the pitch smoothly. The square waveform changes between two pitches abruptly. A sawtooth waveform increases the pitch smoothly, then abruptly changes back down. The following illustration shows the eight available wave forms.

Triangle

Sawtooth

Sine

Square

33% Pulse

25% Pulse

16% Pulse

12% Pulse
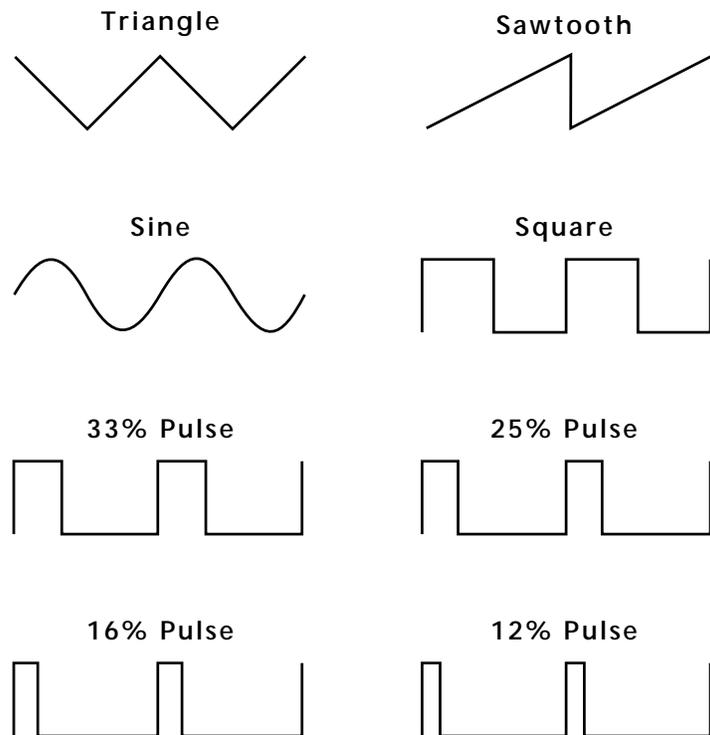
```
L1  LFO1          SHAPE          SYNC
                sawtooth      key sync
```

Sync

The Sync field specifies whether the LFO is synchronized to a key stroke or is Free Running. Key Sync starts the LFO wave at the beginning of its cycle each time you press a key on the controller. In Free Run mode, the LFO wave begins at a random point in its cycle each time you press a key on the controller.

Rate

The Rate field determines the LFO speed in absolute frequency rate values or tempo-based note values. All values equal to or greater than zero specify absolute frequency values from 0.08 Hz to 18.14 Hz. Values less than zero specify Tempo-based rates. Refer to the following table for Tempo-based rate values.

```
L1  LFO1     RATE     DELAY      VAR
         0.08Hz        60       020
```


LFO Synced to 1/4 Note Clock

Tempo-based Rates (based on Master Tempo)	Display
octal whole note	8/1
dotted quad whole note	4/1d
octal whole note triplet	8/1t
quad whole note	4/1
dotted double whole note	2/1d
quad whole note triplet	4/1t
double whole note	2/1
dotted whole note	1/1d
double note triplet	2/1t
whole note	1/1
dotted half note	1/2d
whole note triplet	1/1t
half note	1/2
dotted quarter note	1/4d
half note triplet	1/2t
quarter note	1/4
dotted 8th note	1/8d
quarter note triplet	1/4t
8th note	1/8

Tempo-based Rates (based on Master Tempo)	Display
dotted 16th note	1/16d
8th note triplet	1/8t
16th note	1/16
dotted 32nd note	1/32d
16th note triplet	1/16t
32nd Note	1/32

Delay

The Delay parameter defines the amount of time between hitting a key on the controller and the onset of the LFO modulation. Delay can be used to simulate an effect often used by acoustic instrument players where the vibrato is brought in only after the initial note pitch is established. The following illustration demonstrates how delay works.
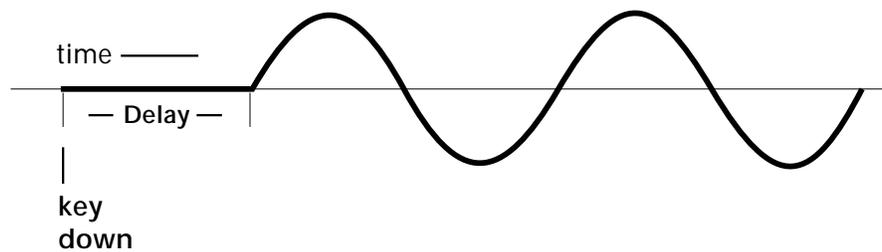
All Delay values equal to or greater than zero specify absolute time rates from 0 to 127. Values less than zero specify Tempo-based mode. Refer to the previous table for times and tempo-based rates.

Variation

LFO Variation sets the amount of random variation of the LFO each time you press a key on the controller. This creates a chorus or ensemble effect since each note played has a slightly different modulation rate. The higher the value entered, the greater the note to note variation in the LFO.

The Variation value range is from 0 through 100.
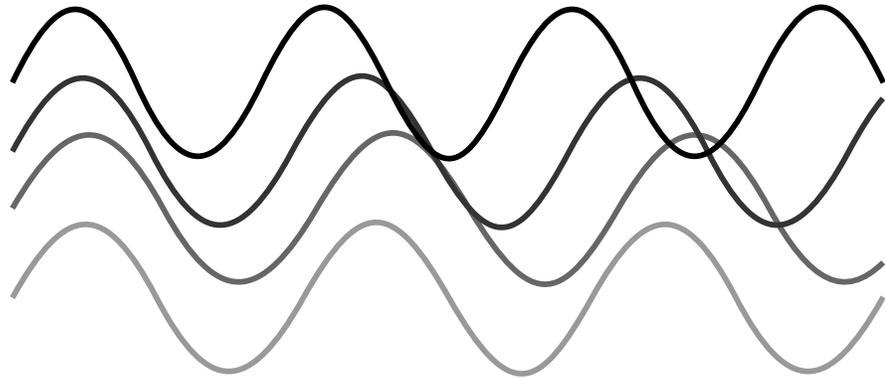
LFO variation changes the rate of each note to create an "ensemble" effect.

PatchCords

PatchCords tie everything together by connecting modulation sources to destinations. Each PatchCord has its own *Amount* control which can be positive or negative (negative amounts invert the signal). In addition, the PatchCord amounts themselves can be controlled by any modulation source. Audity 2000 provides 24 patches for each layer.

There are three permanently connected control routings: volume envelope to amplifier, pitch wheel to pitch and key to pitch. All other connections must be made using the PatchCords.

Modulation
Source   **Amount +/-**   **Destination**

LFO 1   **-   +**   **Amp Volume**

Modulation
Source   **Destination**

LFO 1	**Amp Vol**
LFO 2	**Pitch**
Amp Env	**Pan**
Filt Env	**LFO Rate**
Aux Env	**Aux Env**
Wheel	**Env Atk**
Pressure	**Glide**
etc.	**etc.**
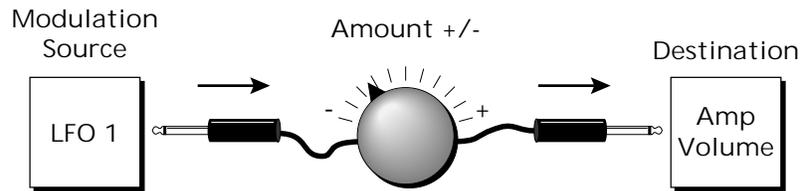
Each patch has an amount field which determines how much modulation is applied to the destination. The modulation amount can be positive or negative. Negative values invert the input. The amount value range is from -100 to +100.

```
L1  PATCHCORD                    #01

RlsVel    ->      AmpVol         +100
```

```
L1  PATCHCORD                    #24

Key+     ->      FiltRes          -27
```

Modulator Polarity

You will notice that some of the modulation sources have symbols following their names. For example, there are three Velocity modulation sources, Vel +, Vel ±, and Vel <.

Control Value −

```
├────────┼────────┤
0        63       127
```

Control Value Applied

+
```
├────────┼────────┤
0        63       127
```
+ modulation ADDS to the initial value. (Normal)

±
```
├────────┼────────┤
-63      0        +64
```
± centers around Zero. (Use for LFOs, Filt. Freq.)

<
```
├────────┼────────┤
-127     -63      0
```
< modulation SUBTRACTS from the initial value
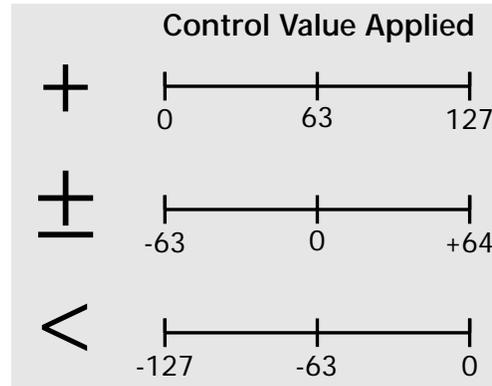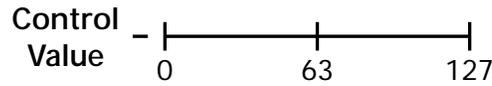
"+" Modulation: Uses only the positive half of the range, adding to the current value. For example, if the filter frequency were set to 100 and you patched Vel+ to the filter, the filter frequency would increase from 100 as velocity was applied.

"±" Modulation: Uses both sides (full) range and both adding and subtracting from the current value. For example, if the filter frequency were set to 100 and you patched Vel ± to the filter, the filter frequency would decrease from 100 with key velocities of 63 or less and increase from 100 with key velocities of 64 and above. Therefore with medium velocity, the Filter frequency is approximately where you set it at 100.

An LFO ± works the same way; on the positive half of the cycle it increases the initial amount and on the negative half of the cycle it decreases the initial amount. With a ± modulation source, a value of 64 equals 0.

"<" Modulation: Uses only the negative half of the range, subtracting from the current value. For example, if the Amplifier Volume were set to +3 dB and you patched Vel < to AmpVol, the volume would be at +3 dB only when maximum key velocity were applied. Lower key velocities would scale back the volume. In general, < modulation is the proper choice when modulating Volume.

Refer to the following table for a list of modulation sources and
destinations available in the Audity 2000.

Modulation Sources:	Modulation Destinations
Off	Off
Key (+, +)	KeySust (Key Sustain)
Velocity (+, +, <)	FinePtch (Fine Pitch)
RlsVel (Release Velocity)	Pitch
Gate	Glide
Pressure	ChrsAmt (Chorus Amount)
PitchWhl (Pitch Wheel)	'SStart (Sample Start) -note-on)
ModWhl (Modulation Wheel)	SLoop (Sample Loop)
Pedal	SRetrig (Sample Retrigger)
MIDIVol (MIDI Volume)	FiltFreq (Filter Frequency)
MIDIPan	'FiltRes (Filter Resonance -note-on)
MIDI A-H	AmpVol (Amplifier Volume)
FootSw1 - 3 (Foot Switch 1-3)	AmpPan (Amplifier Pan)
FootnFF (Flip-Flop Foot Switch 1 -3)	RTXfade (Real-time Crossfade)
MIDI Volume (Controller 7)	VEnvRts (Volume Envelope Rates -all)
MIDI Pan (Controller 10)	VEnvAtk (Volume Envelope Attack)
KeyGlide	VEnvDcy (Volume Envelope Decay)
VolEnv +, +, < (Volume Envelope)	VEnvRls (Volume Envelope Release)
FilEnv +, +, < (Filter Envelope)	FEnvRts (Filter Envelope Rates -all)
AuxEnv +, +, < (Auxiliary Envelope)	FEnvAtk (Filter Envelope Attack)
LFO 1 & 2 (+, +)	FEnvDcy (Filter Envelope Decay)
White (White Noise)	FEnvRls (Filter Envelope Release)
Pink (Pink Noise)	FEnvTrig (Filter Envelope Trigger)
XfdRand (Crossfade Random)	AEnvRts (Auxiliary Envelope Rates -all)
KeyRand 1 & 2 (Key Random)	AEnvAtk (Auxiliary Envelope Attack)
Lag 0 sum (summing amp out)	AEnvDcy (Auxiliary Envelope Decay)
Lag 1 sum (summing amp out)	AEnvRls (Auxiliary Envelope Release)
Lag 0 & 1 (Lag Processor)	AEnvTrig (Auxiliary Envelope Trigger)
Clk Divisors (Octal, Quad, Double Whole, Whole, Half, Qtr, 8th,16th)	LFO 1 & 2 Rate LFO 1 & 2 Trigger
DC (DC Offset)	Lag Processor In 0 & 1
Summing Amp	Sum (Summing Amp)
Sum	Switch
Switch	Abs (Absolute Value)
Absolute Value	Diode
Diode	Quantize
Flip-Flop	Flip-Flop
Quantizer	Gain 4x
4x Gain	Cord 1-24 Amount

Pitch Bend Range

Specifies the Pitch Wheel range in semitones for the current layer. Pitch Wheel is a standard synthesizer control which is transmitted as a MIDI continuous controller message used (normally) to bend the pitch up and down.

The PitchBend range is from 0 to ±12 semitones or "Master." A setting of "0" turns the pitch wheel Off for the current layer. The Master setting uses the Pitch Bend range defined in the **Master menu**.

```
 L1   PITCHBEND RANGE
      +/-  12 semitones
```

Mix Output

Directs the layer to the main, sub1 or sub2 stereo outputs. Use this parameter to change outputs each time you change a preset. If you want to define output routing by MIDI channel, set it up using the Mix Output page in the Master menu. See "Mix Output" on page 50.

```
 L1  MIX OUTPUT
 main
```

Common Preset Parameters

This section of the Edit menu chapter describes parameters that affect all layers in the preset.

Preset Effects

Audity 2000 has two stereo effects processors. When playing presets one at a time, the two processors can be programmed as part of the preset. The diagram below shows how the effects are integrated into the signal path using a parallel effects send/return model, similar to a mixing console.
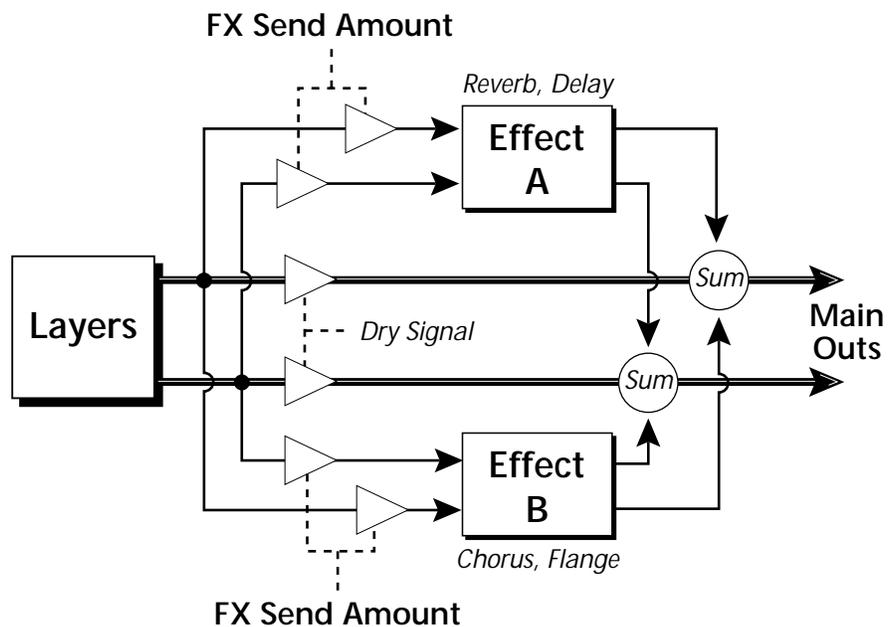
Refer to the Effects chapter for detailed information and instructions for setting up both the Preset Effects and the Master Effects.

Initial Controller Amount

This parameter sets the initial value of MIDI controllers A-H when the preset is first selected. The front panel Control Knobs can be thought of as front panel MIDI controllers because in the Audity 2000, they are treated just as if they originated from an external MIDI device. Refer to the following diagram.
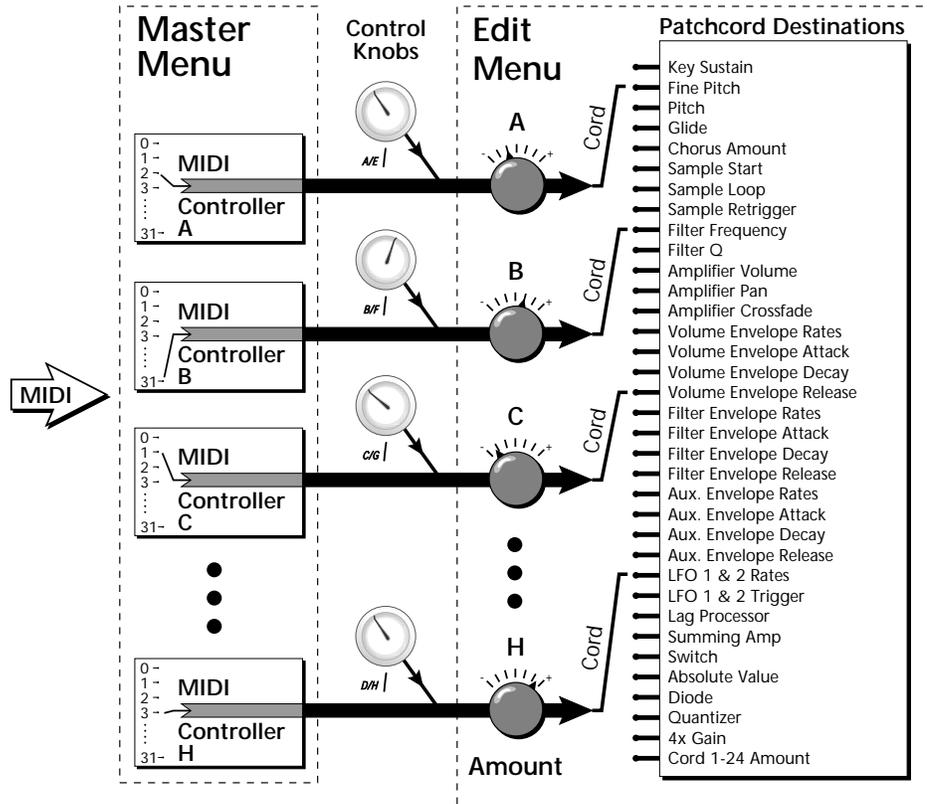
External MIDI controller numbers are assigned to the Letters A-H in the Master menu. The Initial Controller Amount value is sent to the PatchCord destination when the Preset is first selected. If you move the Control Knob, then that value replaces the initial value. If MIDI controller data is received it will similarly replace the knob or initial setting.

```
INITIAL  CONTROLLER  AMT
A:017       B:112       C:127       D: off
```

The Initial controller amounts can be set from 000-127 or they can be turned Off. If set to Off, the current controller value is used when the preset is first selected. Setting the Initial Amount to "off" uses the values from the previously selected preset.

Keyboard Tuning

In addition to the standard equally divided octave tuning, Audity 2000 contains four additional types of tuning and one user-definable tuning. The Keyboard Tuning parameter selects which tuning is used by the current preset. The User Tuning table is defined in the Master menu.

The Keyboard Tuning values are described in the following table.

Keyboard Tuning Options	Description
Equal Temperament	Standard Western tuning (12 octave, equal temperament.)
Just C	Just intonation. (Based on small interval ratios. Sweet and pure, non-beating intervals.)
Vallotti	Valotti & Young non-equal temperament. (Similar to 12 tone equal temperament. Each key has a different character for a given scale.)
19-Tone	19 tone equal temperament. (19 notes per octave. Difficult to play, but works well with a sequencer.)
Gamelan	5 tone Slendro and 7 tone Pelog. (Javanese. Pelog are white keys, Slendro are black keys. Exotic tunings of Gamelan flavor.
User	Defined in the Master menu.

Refer to "User Key Tuning" on page 64 in the Master Menu chapter for instructions on how to define your own Keyboard Tuning.

Preset Links

You can link presets to other presets to create layering or keyboard splits. The current preset can be linked with up to two other presets (Links 1 & 2). Each linked preset can be assigned to a specific range in order to create keyboard splits or can be assigned a velocity range to switch links according to key velocity. In addition, you can specify Volume and Pan settings for each Link. The modulation parameters specified in each preset remain in effect for each preset in the link.

```
LINK  1  Preset
000² Preset Name
```

```
LINK   1              KEY              VEL
RANGE      C-2      G8       000-127
```

```
LINK  1           VOLUME           PAN
                    +00              00
```

```
LINK  1        TRANSPOSE         DELAY
                  +00               000
```

Arpeggiator

In addition to the Master Arpeggiator, each preset can have its own Arpeggiator settings. Since Audity 2000 is 16 part multitimbral, you can play up to 16 presets at once and each of these presets can have its own arpeggiator running a different path or pattern!

```
ARPEGGIATOR
Status                                    on
```

Two of the arpeggiator selections in the main screen (shown in the following diagram) use the arpeggiator settings specified in the preset. When the main screen Arp field is set to "P," the Arpeggiator uses the setting and on/off status specified in the preset. With the Arp field set to On, the arpeggiator is turned on and uses the arpeggiator settings in the preset regardless of the on/off status in the preset.

```
┌──────────────────────────────────────────┐
│  C01     Vol127      Pan00       Arp:P     │
│  052²    edg:Growly Glide                  │
└──────────────────────────────────────────┘
```

☞ **To Access the Preset Arpeggiator Menu**

1. Press the Edit button, lighting the LED. The Cursor appears below the first character of the screen heading on line one.

2. Rotate the Data Entry Control clockwise. The Arpeggiator is the very last screen in the menu. The screen displays the Arpeggiator parameter most recently selected since powering up Audity 2000.

3. Press either cursor key until the cursor is located at the bottom-left parameter field.

4. Rotate the Data Entry Control to select Arpeggiator parameters.

Detailed descriptions of the various Arpeggiator parameters are given in the Arpeggiator menu. For more information, refer to the Arpeggiator Menu chapter beginning on page 31.

Programming Tutorial

There is so much you can do with the Audity 2000 it's impossible to describe it all. This chapter is will give you some ideas for programming your own custom sounds and contains step-by-step instructions to help you get started. In order to get the most from this chapter, we recommend you actually try each example. Have fun!

Editing Presets

One of the easiest ways to make a new preset is to edit an existing preset. This is also an excellent way of becoming familiar with Audity 2000. If you don't like what you hear, simply select a new preset, then Audity 2000 reverts to the original sound. Changes are not permanent until you Save them (see "Saving a Preset" on page 159).

Let's experiment and modify a few parameters of an existing preset. We'll start with functions that have an obvious effect on the sound: Instrument select, Tuning, and Chorus.

Changing the Instrument

Changing the instrument is the easiest and most dramatic way to modify an existing preset.

☞ **To Change the Instrument for the Current Layer**

1. Choose any cool preset, then press the Edit button.
2. Scroll through the Edit menu until you come to the Instrument page.

```
L1 INSTRUMENT
I007 Audity Blend
```
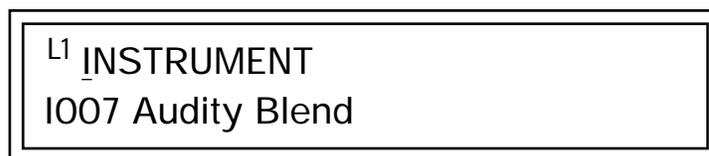
3. Move the cursor down to the bottom line (using a Cursor button).
4. Use the Data Entry Control to change the instrument. This changes the instrument for the current layer (in this case it's L1).
5. Play the keyboard as you scroll through the various instruments.

☞ **To Change the Instrument for any of the Other Layers in the Preset**

6. Move the cursor back up to the first field in the first line.

7. Use the Data Entry Control to select the layer you want.

```
 L2 INSTRUMENT
 I050 Audity Synth 11
```
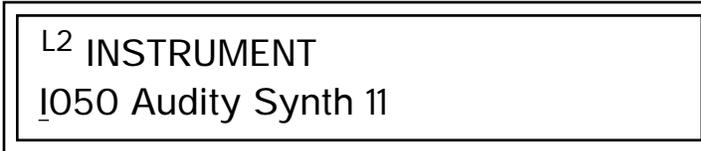
8. Repeat steps 3 and 4 for each selected layer. Find an instrument that sounds good when combined with the previous instruments selected.

With all these great instruments to work with, you really can't go wrong. Now let's play with the tuning.

Changing the Tuning of an Instrument

Tuning the selected layer of the preset changes the pitch of the key on the controller. If the numbers are "00," it means that the instruments are tuned to concert pitch (A=440 Hz). The Coarse tuning value represents whole semitone intervals. The Fine tuning value shifts the pitch in 1/64 semitones (or 1.56 cents).

☞ **To Tune the Instrument of the Current Layer**

1. Scroll through the Edit menu until you come to the Tuning page.

```
 L1  TUNING
     Coarse:   +36          Fine:    +6
```
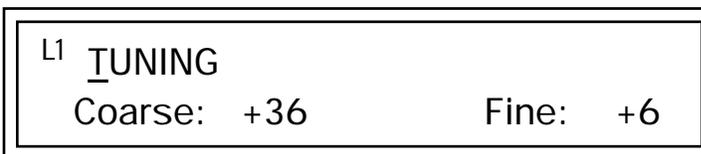
2. Move the cursor to the Coarse field (using the cursor button).

3. Set the value to +12 to shift the pitch up a whole octave. To shift the pitch in smaller units than a semitone, use the Fine field.

Try tuning one of the instruments to a perfect fifth above the other by setting the Coarse value to +7.

Tuning an instrument far out of its normal range completely changes the character of the sound. For example, if you tune a bass guitar up 2 octaves, it's going to sound rather petite. On the other hand, if you tune it down 2 octaves, you can probably rattle plaster off the walls! Experiment with radical pitch shifting. You'll be surprised at the results.

Chorus

This is an easy one. Chorus works by doubling the instruments and detuning them slightly. The larger the chorus value, the more detuning occurs. The Width parameter controls the stereo spread. A Width value of 0% reduces the chorus to mono, a value of 100% provides the most stereo separation. Chorus is useful when you want to "fatten up" a part quickly and easily.

☞ **To Chorus a Layer**

WARNING: *Since it works by doubling the instruments, Chorusing halves the number of notes you can play on Audity 2000.*

1. With the cursor on the top line of the display, turn the Data Entry Control until you find the Chorus page.

2. Use the cursor buttons to advance the cursor to the Chorus field (the first field in the bottom line of the display). Use the Data Entry Control to turn on chorus.

```
┌─────────────────────────────────┐
│ L1  CHORUS              WIDTH    │
│     off                  100%    │
└─────────────────────────────────┘
```

3. Select a Width value based on the amount of detuning you want. Smaller numbers mean less detuning, larger ones more.

You can select various amounts of chorusing for each of the instruments, just play around with the Chorus and Width parameter until you like what you hear.

Volume Envelope

Every sound you hear, whether it's a piano note, a drum, or a bell, has a characteristic volume curve or envelope. This Volume Envelope shapes the volume of the sound which grows louder or softer in various ways during the course of the sound. The volume envelope of a sound is one of the clues our brain uses to determine what type of sound is being produced.

An envelope shapes the sound or volume of the sound over time. The envelope generators in Audity 2000 all have six stages to the contour: Attack 1, Attack 2, Decay 1, Decay 2, Release 1 and Release 2. When you press a key on the keyboard, the envelope goes through each of the first four stages, advancing to the next stage when the defined Level for each is reached. As long as you continue to hold the key down, the envelope continues through the first four stages holding at the end of the Decay 2 level until the key is released. When you release the key, the envelope jumps to the Release stages (no matter where the envelope is when you release the key) ending at the Release 2 level.
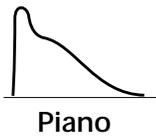
Piano

Organ

Strings
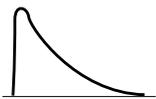
Percussion
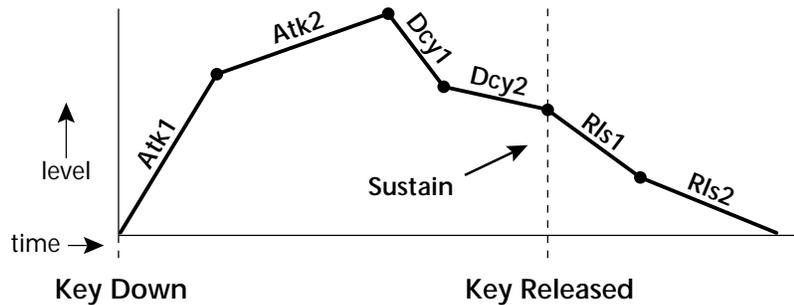
Every instrument in Audity 2000 has it's own predetermined volume envelope which is used when the Volume Envelope parameter is set to "factory." By setting the Volume Envelope to "time-based" or "tempo-based," we can reshape the instrument's natural volume envelope any way we want. By reshaping the volume envelope of a instrument, you can dramatically change the way the sound is perceived. For example, you can make "bowed" pianos or backward gongs. The diagrams to the left show the characteristic volume envelopes of a few common sounds.

In preparation for this experiment choose a fairly "normal" preset (like an organ or synth) which continues to sustain when the key is held down. Go to the Instrument page and set it to "None" on all layers except Layer 1. Now you're ready to play with the Volume Envelope.

☞ **To Setup the Volume Envelope**

1. Go to the Volume Envelope mode screen and set the Volume Envelope mode to "time-based."

```
L1  VOLUME ENVELOPE
Mode:  t̲ime-based
```

2. Now move on to the next screen to set the Volume Envelope parameters.

```
L1  VOL  ENV       TIME           LEVEL
Attack 1            5̲0             100%
```

3. Increase the Attack 1 time value and play a note. The attack controls the time it takes for the sound to reach the Attack level when a key is pressed and held.

4. Move the cursor to the first field in the bottom line and use the cursor buttons to advance to the Release pages.

5. Increase the Release 1 and 2 times. Note the effect as you release the key on the controller. The Release stages controls the time it takes for the sound to die away when a note is released.

Working with Filters

The filters make it possible to remove certain components of the sound. A low pass filter removes the high frequency components or put another way, it "lets the low frequencies pass." A high-pass filter removes the low frequency components from the sound letting only the high frequencies pass. See "Filter Types" on page 111 for a complete list of Audity 2000's filters and their descriptions.

In preparation for the next tutorial, select preset 127[3] "Blank Preset".

1. Go to the Instrument screen and select Instrument #140 - Looped Perc 3. This is a really buzzy sound. Since filters work by removing or accentuating certain frequencies, we want to make sure that we have a lot of frequencies to start with.

1. Advance to the Filter Type screen using the Data Entry Control. Select the VCF Classic filter.

```
┌─────────────────────────────────────────┐
│ L1  FILTER          Ord      Type        │
│ VCF Classic          4       LPF         │
└─────────────────────────────────────────┘
```

2. Go to the Filter Frequency and Q screen. Position the cursor in the Freq: field as shown in the following illustration.

```
┌─────────────────────────────────────────┐
│ L1 FILTER                                │
│ Freq:   255             Q:   000         │
└─────────────────────────────────────────┘
```

The Frequency parameter determines the filter cutoff frequency or the frequency the filter uses as the highest frequency allowed to pass.

If you play the keyboard now, you should hear the raw Looped Perc 1 sound. Slowly decrease the filter cutoff frequency value as you play the keyboard. The sound gets more and more dull as you remove more and more high frequencies from the sound. At some point, the sound completely disappears. (You have filtered out everything.) The chart on the following page illustrates what you just did.
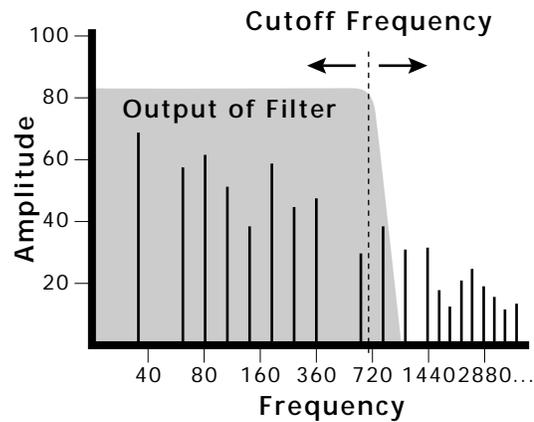
3. Open the filter back up to 255, then move the cursor to the Q field.

4. Set the Q to 10, then move the cursor back under the Freq value. As you change the frequency, notice that the sound now has a sharp, nasal quality. A high Q boosts or amplifies the frequencies at the cutoff frequency (Fc).

5. Reset the cutoff frequency to the lowest setting (0.08Hz) and the Q to 00.

Adding the Filter Envelope

Now let's modulate the Filter Frequency with the Filter Envelope. The Filter Envelope is a device that can automatically change the filter frequency during the course of the note. Before we define the Filter Envelope, we need to patch the Filter Envelope to the Filter Frequency.

☞ **To Setup the Filter Envelope**

1. Go to the PatchCord screen.

```
ᴸ¹ PATCHCORD                    #01
RlsVel   ->    AmpVol          +100
```

2. Move the cursor below the first field in the bottom line of the display. This is the Source field. Use the Data Entry Control to change the Source to "FiltEnv" as shown in the following illustration.

3. Advance the cursor to the next field. This is the Destination field. Use the Data Entry Control to change the destination to "FiltFreq."

4. Move the cursor to the last field in the line. This is the Amount field. The Amount field determines the amount of modulation applied. Set this value to "+100."

```
L1  PATCHCORD                    #01
FiltEnv+    ->      FiltFreq        +100
```

This setup connects the Filter Envelope Generator to the Filter Cutoff as shown in the following diagram.
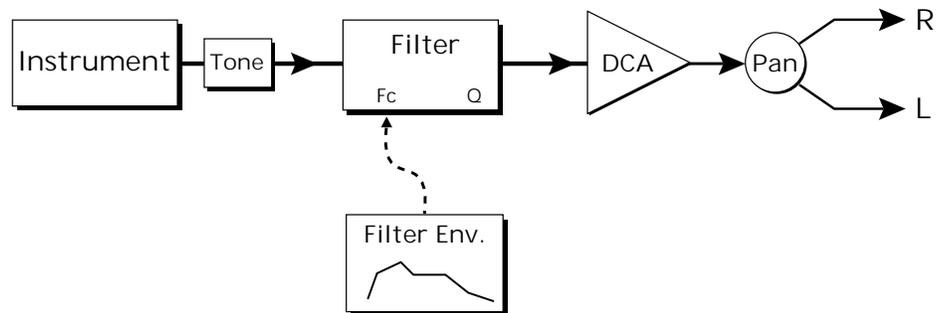
5. Now, return to the Filter Envelope Mode screen. Set the Mode to "time-based."

```
L1  FILTER ENVELOPE
Mode:    time-based
```

6. Advance to the Filter Envelope parameter page.

```
L1  FILT ENV          RATE          LEVEL
Attack1               50             100%
```

7. Move the cursor underneath the time field and change the value to about +50. Now when you press a key the filter slowly sweeps up.

```
L1 FILT ENV        RATE           LEVEL
Attack1            050            088%
```

8. Change the attack rate and note the change in the sound.

9. Set the envelope parameters as shown in the following table.

Envelope Phase	Time	Level %
Attack 1	40	65
Attack 2	65	100
Decay 1	80	85
Decay 2	25	50
Release 1	97	20
Release 2	73	0

With the above setup, the filter sweeps up, then Decays back down to the Decay 2 Level until you release the key. Then it sweeps down at the Release rates. Play with the envelope parameters for awhile to get a feel for their function. (If you're having trouble understanding the Envelope Generators, please refer to the Programming Basics section in this manual.)

Changing Filter Types

Go back to the Filter Type screen shown below and move the cursor down the lower line of the display. Change the filter type while playing the keyboard. There are 50 different filter types!

```
L1 FILTER           Ord    Type
Mega Sweepz         02     LPF
```

These filters are extremely powerful and have been carefully crafted to offer maximum flexibility and musical control. You may want to change the Envelope (PatchCord) Amount, Q and/or the Filter Frequency to get the right sound for each filter and instrument. These three controls, coupled with the Filter Envelope, are perhaps the most important controls on Audity 2000. Take the time to learn how they interact with each other and you will be able to create sounds beyond imagination.

Practice Modulating

- Try modulating the pitch with the Filter Envelope generator
- Use Velocity to modulate the Filter Envelope PatchCord or the Filter Frequency. This brightens the sound as you play harder.
- Program the LFO to modulate Filter Frequency and Volume (Patch-Cord screen).
- Modulate the LFO with the other LFO, with Velocity, and with the Modulation Wheel.
- Think of ten different modulation routings, then try them out. The key to learning Audity 2000 is to experiment.

Troubleshooting

A common source of confusion when working with the filter envelope is that the Attack or Release parameters might not seem to be working correctly. If you are not getting the expected result, try to analyze the situation. There will be many times when you will have to stop for a minute and think, "What am I trying to do and why isn't it working?" When this happens (and it will), don't panic. Troubleshooting is a normal part of the synthesis process. Simply examine the various parameters and try to be as analytical as possible as you solve the problem. The solution is usually simple (the filter is already wide open and can't open any more). Learning to play any instrument takes a little patience and practice.

Referring to the diagram below which shows the Audity 2000 signal flow, notice that the DCA comes after the Filter. The DCA controls the final volume of the sound, so if the filter's release is longer than the release for the DCA, you won't hear it, because the DCA has already shut off the sound.
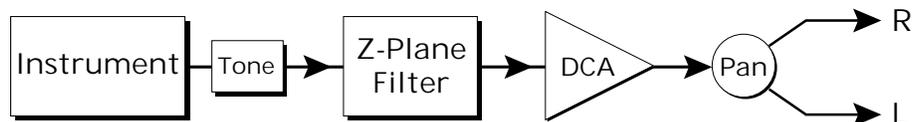
- You're getting the general idea by now. Remember not to select a new preset before saving the current one or all your changes will be lost (the preset reverts to the last saved version). If you want to save your creation, select the Save/Copy menu and select a destination preset location for your masterpiece, then press Enter.

Linking Presets

Using the Link pages in the Edit menu is a quick and easy way to create new sounds. Use the Links to "layer" presets and to "split" a keyboard into sections containing different sounds.

☞ **To Layer Two Presets**

1. Select the first preset you want to layer.

2. Press the Edit button. Use the Data Entry Control to move through the screens until you find either the "LINK 1" or "LINK 2" screen shown below.

See "Preset Links" on page 128 for more information.

```
LINK  1    PRESET
off
```

3. Move the cursor to the second line of the display. Select the preset you want to link with the preset you selected in step 1. Play the keyboard as you scroll through the various presets to hear the results.

4. If you want the link to be a permanent part of the preset, be sure to save the preset. Otherwise, simply change the preset to erase your work.

☞ **To Create a Split Keyboard Using Links**

1. Follow steps 1 through 4 above.

2. Press Enter and use the Data Entry Control to advance to the next page.

```
LINK  1              KEY          VEL
RANGE      C-2   B4        000  127
```

3. Set the keyboard range of the linked preset as desired.

4. Press Enter and use the Data Entry Control to go to the Key Range page (It's one of the first Edit menu pages).

```
L1  KEY:LO    FADE    HIGH    FADE
          C5      000      G8      000
```

5. Set the range of the original preset so it fills the remaining keyboard area. Save the preset.

Multitimbral Sequencing

We thought you'd never ask! Audity 2000 was designed from its conception with multitimbral sequencing in mind. Just take a look at the main screen.

```
C01      Vol 127     Pan  00      Arp : P
000⁰  Plain Factory
```

The preset for each MIDI channel is defined in the main screen. Press the cursor button to move the cursor up so that it is underneath the channel number.

Audity has 16 channels and each one can have a different preset assigned to it. Turn the Data Entry Control to change the Channel numbers. Notice that the MIDI channels each have a preset assigned.

☞ **To Setup Multitimbral Sequencing**

1. Move the cursor to the Channel number field. Select the desired channel.

2. Advance the cursor to the Preset field. Use the Data Entry Control to select a new preset.

3. Repeat steps 1 and 2 for each channel number.

4. In order to respond to multiple MIDI channels, Audity 2000 must be in Multi mode.

   Press the Master menu button and use the Data Entry Control to scroll through the screens until you find MIDI MODE.

```
MIDI MODE                    CHANGE
multi                        ignored
```
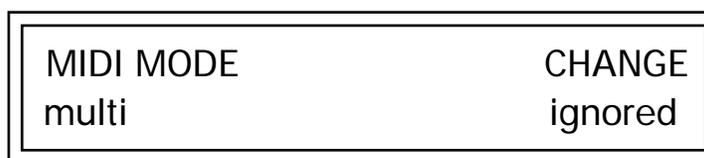
5. Move the cursor down to the second line and change the mode to "multi" as shown. Audity 2000 now responds to multiple MIDI channels.

Using the 32 Channels

As stated earlier, Audity 2000 has 32 independent audio channels which are utilized dynamically. With 32 channels and 640 presets, you have a wealth of sonic textures at your disposal. Some of the very big sounding presets in Audity 2000 use multiple layers and chorusing. While this is fine when the preset is played solo, you may run out of channels when playing the multi-timbrally. Linking and chorusing cause the preset to use many more channels. Learn to "budget" your output channels for maximum efficiency.

Channel Ripoff

When Audity 2000 uses up all its 32 channels and needs more, it steals a channel from the key that has been in the release phase longest (see "Volume Envelope" on page 133 for a description of the different envelope phases). This is commonly known as "channel ripoff." You will most commonly encounter "ripoff" when using Audity 2000 in multitimbral mode or when using massive preset links. Since Audity 2000 allocates channels dynamically as needed, you must either play fewer notes, use simpler sounds, turn off doubling (chorus, or linked presets) or use assign groups to eliminate ripoff.

Using External Processing

Don't be afraid to use external processing on specific sounds. The submix sends and returns on Audity 2000 are there for just that reason. In many instances, a bit of reverb or EQ will be just the thing an instrument needs to give it a distinct identity. Incidentally, an external fuzz box can work wonders on otherwise harmless sounds. By dedicating one of your old fuzz boxes to a submix out/in, you can have programmable distortion for use on basses, organs, whatever!
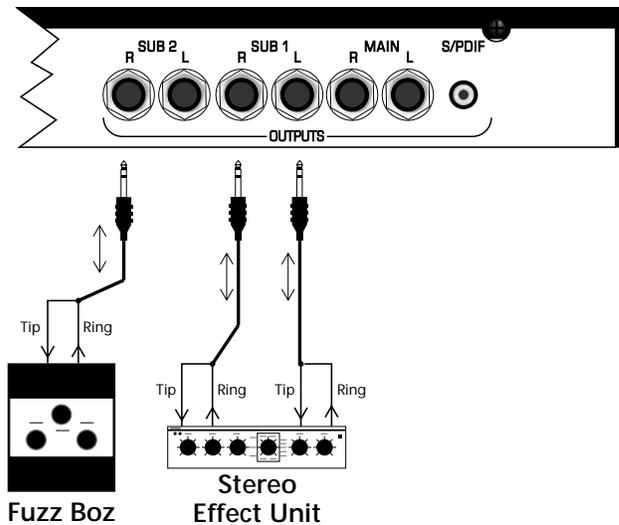
Using the submix outputs and returns, specific presets can be routed through your favorite effects without using up precious mixer channels.

Advanced Sequencing

This section shows you how to set up Audity 2000 for sequencing.

Pre-Sequence Setup

Suppose that you want to have your sequencer set up everything for you before the start of the song. Good idea. This makes the Audity 2000 setup procedure automatic and prevents the wrong presets from playing.

The basic idea of a pre-sequence setup is to send out MIDI SysEx information just before the start of the song. This MIDI information selects all the proper presets and adjusts the mix and pan positions of each preset.

Note: Audity 2000 setup information should be transmitted from the sequencer before the song actually starts, perhaps during a lead-in measure or countdown. DO NOT send setup information just before the first beat of the song or MIDI timing errors could result.

Initial Setup

Audity 2000 includes a feature that was developed especially for pre-sequence setup. By storing the Multimode Map settings in the beginning of your sequence, you can be sure that all the correct presets and MIDI settings are retained during playback. It is a good idea to send the Master settings as well since the MIDI mode is information is contained there.

1. Set up the Audity 2000 for sequence play back. Take care that the presets are on the appropriate channels, the MIDI mode is set to "Multi," and the Change field is set to "ignored."

2. Prepare your sequencer to receive MIDI SysEx data. This procedure varies with the type of sequencer you are using. See the instructions that came with your sequencer for detailed instructions.

3. Set your sequencer to the "record" mode.

4. Begin transmitting the Multimode Map from the Audity 2000.

5. Cut and paste the SysEx data into the lead-in measure of your sequence, leaving at least a 300 mSec gap between the Multimode Map and the Master settings. Allow more time after the last SysEx data burst to allow Audity 2000 enough time to "digest" the data.

6. Send MIDI volume information (controller #7) for each MIDI channel used on Audity 2000.

7. Send MIDI pan information (controller #10) for each MIDI channel used on Audity 2000.

✎ *Note: If the wrong presets are being selected, check the MIDI Program -> Preset map.*

Now your song will play perfectly every time using the proper presets, volumes and pan positions. In addition, presets, volumes and pan positions (or anything else for that matter) can be adjusted in real-time during the song.

Effects

Effects Overview

Audity 2000 has two stereo effects processors. When playing presets one at a time, the two processors can be programmed as part of the preset. When the MIDI Mode is set to "multi," the Audity uses a global effects assignment (Master Effects). The diagram below shows how the effects are integrated into the signal path using a parallel effects send/return model, similar to a mixing console.

FX Send Amount

Reverb, Delay

Effect A

Preset

Dry Signal

Sum

Sum

Main Outs

Effect B

Chorus, Flange

FX Send Amount
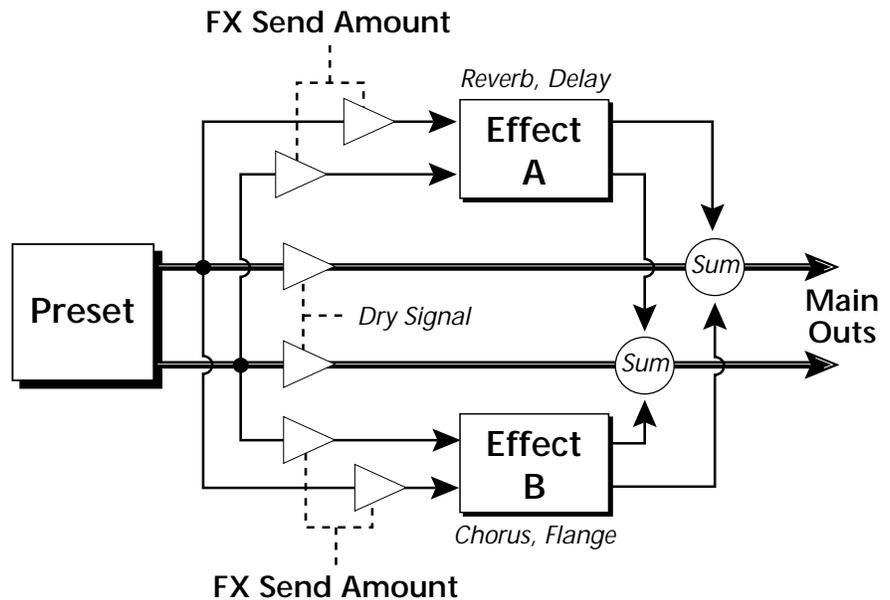
The Effects Sends

On a mixing console you can control the amount of signal each channel Sends to the effect bus. This allows each channel to be placed in a slightly different "sonic space" which creates an airy, open sound.

Audity 2000 uses this basic concept, but works in a slightly different manner. There are three effects busses: Main, Sub 1 and Sub 2. Each preset or each MIDI channel (you determine which), can be directed to one of the three busses. Each effect processor contains three Send Amounts which

allow you to set the wet/dry mix on each of the three busses going into the effect. A setting of 0% is completely dry (no effect). A setting of 50% contains an equal mix of affected and normal (dry) signal.

The submix bus selection is programmed for each layer in the Edit menu. These settings can be overwritten in the Master menu *Mix Output* screen by changing the submix setting from "Main" to "Sub 1 or 2" which routes the preset on that MIDI channel to the selected submix bus. In the screen below, MIDI channel 2 is programmed to the submix 1 bus.

The submix bus routings are also available at the Sub Output jacks on the rear panel. Note that these outputs contain only *dry* signal. The Effects Processors are ONLY connected to the Main Outputs.
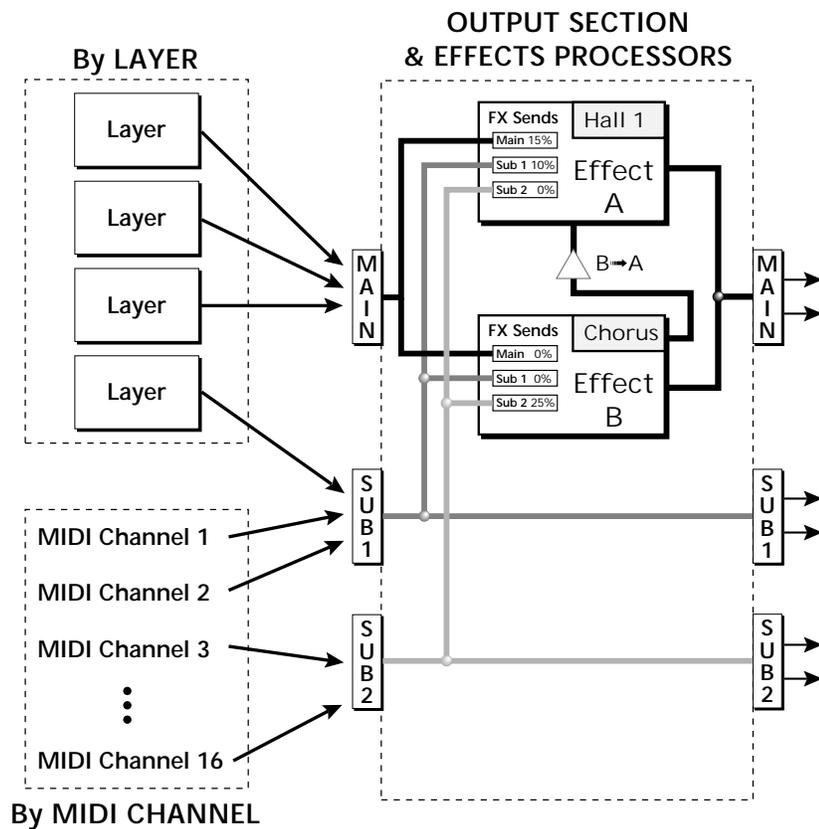
Individual presets or MIDI channels can be routed to the three busses. Note that the signal lines represent stereo signals.

If a plug is inserted into a Sub Output jack, the dry signal from that bus is removed from the effects processor. This feature allows you to have two dry mixes from the Sub Outputs and an "Effects Only" mix from the Main Outputs.

Effect Types

A Effect Types
Room 1-3
Hall 1 & 2
Plate
Delay
Panning Delay
Multitap 1
Multitap Pan
3 Tap
3 Tap Pan
Soft Room
Warm Room
Perfect Room
Tiled Room
Hard Plate
Warm Hall
Spacious Hall
Bright Hall
Bright Hall Pan
Bright Plate
BBall Court
Gymnasium
Cavern
Concert 9
Concert 10 Pan
Reverse Gate
Gate 2
Gate Pan
Concert 11

Medium Concert
Large Concert
Large Concert Pan
Canyon
DelayVerb 1-3
DelayVerb 4-5 Pan
DelayVerb 6-9

B Effect Types
Chorus 1-5
Doubling
Slapback
Flange 1-7
Big Chorus
Symphonic
Ensemble
Delay
Delay Stereo
Delay Stereo 2
Panning Delay
Delay Chorus
Pan Delay Chorus 1 & 2
Dual Tap 1/3
Dual Tap 1/4
Vibrato
Distortion 1 & 2
Distorted Flange
Distorted Chorus
Distorted Double

Effect Parameters

"A" Effect types contain Reverb and Delay effects. "B" Effect types contain Chorus, Flange and Distortion effects. There are 44 "A" effects and 32 "B" effects. In addition to the effect type, there are user adjustable parameters for each effect. The "A" effects have programmable Decay and High Frequency Damping. The "B" effects have user programmable Feedback, LFO Rate, and Delay Time.

Decay

The Decay parameter is used when setting "A" type effects. Decay sets the length of time it takes an effect to fade out. When setting up reverb effects, Decay controls the room size and the reflectivity of the room. For larger room sizes and greater reflectivity, set the Decay value higher. When setting up delay effects, the Decay parameter controls how many echoes are produced or how long the echoes last. The greater the value, the more echoes and longer lengths of time.

The Decay value range is from 0 through 90.

High Frequency Damping

The HF Damping parameter is used when setting "A" type effects. High Frequency energy tends to fade away first as a sound is dissipated in a room. the HF Damping parameter adjusts the amount of damping applied to the signal's high frequency elements which, in turn, changes the characteristics of the room. Rooms with smooth, hard surfaces are more reflective and have less high frequency damping. Rooms filled with sound absorbing materials, such as curtains or people, have more high frequency damping.

The value range for High Frequency Damping is from 0 through 127.

Feedback

The Feedback parameter is used when setting "B" type effects. The Chorus and Flange effects have a controllable feedback loop after the delay element. Feeding back a small amount of the signal intensifies the effect by creating multiple cancellations or images. Higher feedback values increase the amount of the Feedback loop.

The Feedback value range is from 0 to 127.

LFO Rate

The LFO Rate parameter is used when setting "B" type effects. Both Chorus and Flange effects use a Low Frequency Oscillator (LFO) to animate the effect. LFO applied to a chorus effect creates the slight changes necessary for a realistic choral effect. Applied to a flanger effect, the LFO moves the comb filter notches and adds animation to the sound.

The LFO Rate value range is from 0 to 127.

Delay

Flanging, chorus and echoes are all based on a delay line where the signal is delayed by some time period and then mixed back with the unaltered signal. This parameter specifies the how much time passes before you hear the delayed signal. On some effects, this value cannot be changed. In this case, the field contains a dash.

The Delay value range is from 0ms to 635ms.

Effects Programmed in the Preset

Effects are normally programmed as part of the preset allowing you to have a different effect for each. This section describes how to program and modify Audity 2000's preset effects.

☞ **To Program the Effects as Part of the Preset:**

1. Press the Edit button. The LED illuminates and the Edit screen appears.
2. Use the Data Entry Control to select the FXA Algorithm screen.

```
FXA ALGORITHM
 Lg Concert Pan
```

3. Select an Effect. Do not select the "Master Effect" setting or the global effects set up in the Master menu will be used instead of the Preset Effect settings.
4. Use the Data Entry Control to select the FXA parameter screen.

```
FXA    DECAY    HFDAMP    FxB>FxA
          90       127        127
```

The FxB -> FxA parameter lets you route the B effect through the A effect. See "Effect B Into Effect A" on page 154.

5. Set the other effect parameters to your preference. Refer to the information in the last section for detailed descriptions of these parameters.
6. Use the Data Entry Control to select the FXB Algorithm screen.

```
FXB ALGORITHM
 Distorted Flange
```

7. Select an Effect. Do not select the "Master Effect" setting or the global effects set up in the Master menu will be used instead of the Preset Effect settings.
8. Use the Data Entry Control to select the FXB parameter screen.

```
┌─────────────────────────────────────────┐
│ FXB    FEEDBK   LFORATE    DELAY          │
│            127        127   635ms         │
└─────────────────────────────────────────┘
```

9. Set the other effect parameters to your preference. Refer to the information in the last section for detailed descriptions of these parameters.

10. Save the preset. The programmed effects setting will be saved along with the preset.

Master Effects

You might want the effects to be programmed on a global basis when in Omni or Poly modes. You could choose your favorite reverb, for example, and have it applied to any preset you select.

When playing single presets, the effects are normally programmed as part of the preset.

☞ **To Program the Master Effects**

1. Press the Master menu button. The LED illuminates and the Master screen appears.

2. Use the Data Entry Control to select the FXA Algorithm screen.

```
┌─────────────────────────────────────────┐
│ FXA ALGORITHM                             │
│ Lg Concert Pan                            │
└─────────────────────────────────────────┘
```

3. Select an Effect.

4. Use the Data Entry Control to select the FXA parameter screen.

```
┌─────────────────────────────────────────┐
│ FXA    DECAY     HFDAMP    FxB>FxA        │
│            90        127        127       │
└─────────────────────────────────────────┘
```

The FxB -> FxA parameter lets you route the B effect through the A effect. See "Effect B Into Effect A" on page 154.

5. Set the other effect parameters to your preference. Refer to the information in the last section for detailed descriptions of these parameters.

6. Use the Data Entry Control to select the FXB Algorithm screen.

```
FXB ALGORITHM
Distorted Flange
```

7. Select an Effect.

8. Use the Data Entry Control to select the FXB parameter screen.

```
FXB    FEEDBK   LFORATE    DELAY
        127        127     145ms
```

9. Set the other effect parameters to your preference. Refer to the information in the last section for detailed descriptions of these parameters.

10. Press the Edit menu button. The LED illuminates and the Edit menu displays the last screen used.

11. Use the Data Entry Control to access the FXA Algorithm page and select "Master Effect A."

✎ *Audity 2000 must be set to Omni or Poly mode in the MIDI Mode parameter in the Master menu.*

```
FXA ALGORITHM
Master Effect A
```

12. Repeat step 11 for the FXB Algorithm

13. Save the preset. The programmed effects setting will be saved along with the preset.

Effects Mode

This control provides a true bypass of the effects engine. Bypass is a useful feature if you are using external effects at the mixing console and want to turn the effects off for all presets.

☞ **To Bypass the Effects:**

1. Press the Master menu button. The LED lights and the last Master parameter screen used is displayed.
2. Use the Data Entry Control to select the Effects Mode screen.

```
FX MODE
enabled
```
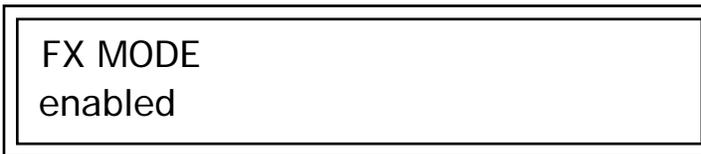
3. Use the cursor button to advance the cursor to the bottom line in the screen.
4. Use the Data Entry Control to change the value.
5. Press the Enter key to save the settings.

The Effects Mode values are "enabled" and "bypassed." Enabling the Effects Mode turns on effects. Selecting "bypassed" turns off the effects.

Effects Multi Mode Control

The effects processor controls are very flexible. The effects can be controlled in three different ways to suit your personal preference and to adapt to different situations.

When in Omni or Poly mode, effects are normally programmed as part of the preset. In Multi mode, the two effects processors can be controlled using the Master settings or by using the effects settings of a preset on a specific MIDI channel. The effects control is as follows:

1. Programmed as part of the preset when playing single presets (Omni or Poly Modes).
2. Programmed from the Master Effects Section when playing either single presets (preset Effect Type set to "Master") or when in Multi Mode.
3. Programmed from the designated control preset when in Multi Mode.

Refer to the following diagram for a look at how effects are programmed.

✎ *You can create special "Effects Presets" which are assigned to the FX Multi mode Control channel, then use standard MIDI Program Change commands to switch effects during sequence playback.*

1
Master
⊠

⌨⌨⌨⌨⌨⌨⌨⌨⌨⌨

(Omni or Poly Mode)

Preset
FX

**Effects are part
of the Preset**

2
Master
FX

⌨⌨⌨⌨⌨⌨⌨⌨⌨⌨

(Omni, Poly or Multi modes)

Preset
Ch 1 ⊠

•
•
•

Preset
Ch 16 ⊠

Master Effects

3
Master
⊠

⌨⌨⌨⌨⌨⌨⌨⌨⌨⌨

(Multi mode)

Selected FX Control Channel ➞

Preset
Ch 1 ⊠

•
•
•

Preset
Ch 16 FX

**One Channel's
Preset determines
the Effect Settings**
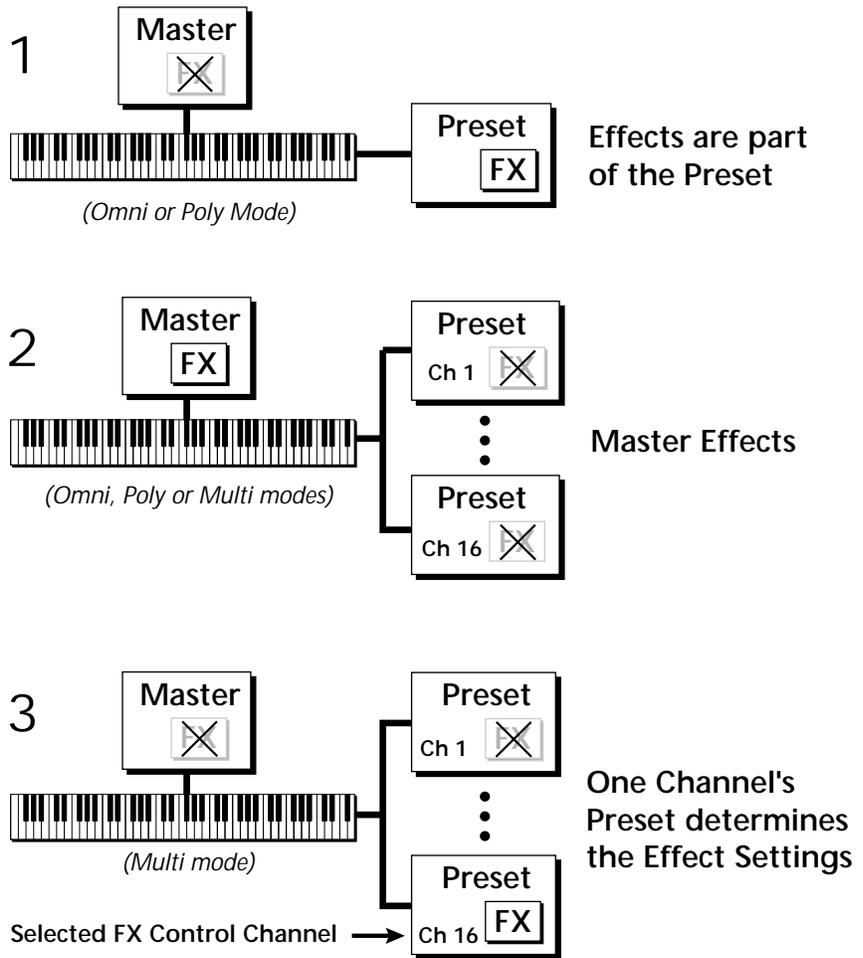
☞ **To Program the Effects Globally for all Presets in Multi Mode:**

1. Press the Master menu button. The LED illuminates and the Master menu screen appears.

2. Use the Data Entry Control to select the MIDI mode page. Choose "multi" for the mode.

```
MIDI MODE                    CHANGE
multi                        accepted
```
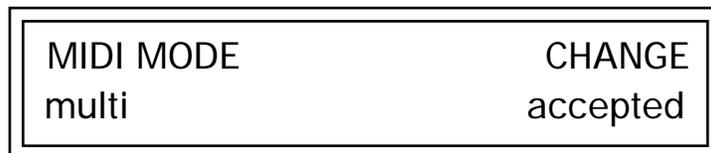
3. Move the cursor to the Multi mode Effects Control page using the Data Entry Control.

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │ FX MULTIMODE CONTROL            │ │
│ │ use master settings             │ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```

4. Set the Effect Control channel to *use master settings* using the Data Entry Control.
5. Press the Enter key to save the settings and return to the main screen.

Using the Effects Channel Settings in Multi Mode

In Multi mode, the two effects processors can be controlled from the Master Effects settings or they can follow the effects settings of the preset on a special MIDI channel. Because up to 16 channels can play at once in multi mode, the effects cannot be programmed at the preset level. There are only two effects processors!

☞ **To Program the Effects by Channel Number in Multi Mode**

1. Press the Master menu button. The LED illuminates and the Master menu screen appears.
2. Use the Data Entry Control to select the MIDI mode page. Choose "multi" for the mode.
3. Move the cursor to the Multi mode Effects Control field using the Data Entry Control
4. Set the Effect Control to "preset on Channel #" (where # is replaced by the actual channel number from 1 through 16) using the Data Entry Control.
5. Press Enter to save the settings and return to the main screen.

Effect B Into Effect A

The output of effects processor B can be routed into effects processor A. This connects the effects in series instead of their normal parallel configuration. Two effects connected in series sound very different than the same two effects in parallel. For example, a chorus patched through reverb can turn a bland string section into a lush wall of sound. The B –>A amount can also be controlled for even more flexibility.

☞ **To Send the Output of Effect B through Effect A:**

In this example, 100% of Effect B will be sent into Effect A.

1. Access the FXA parameter screen (in either the Master or Edit menus) that contains the FXB –>FXA parameter.

```
┌─────────────────────────────────────────┐
│  FXA    DECAY     HFDAMP    FxB>FxA       │
│          127        127       127         │
└─────────────────────────────────────────┘
```

2. Set this amount to 127. Press the cursor button to return the cursor to the top line in the display.

3. Use the Data Entry Control to select the FXA submix routing parameter screen.

```
┌─────────────────────────────────────────┐
│  FXA                       Main:  0%      │
│  Sub1: 20%                 Sub2: 30%      │
└─────────────────────────────────────────┘
```

4. Press the cursor buttons to advance the cursor to the Main field.

5. Set the Main send amount to any amount other than zero.

6. Press the cursor button again to return the cursor to the FXA title. Use the Data Entry Control to advance to the FXB Algorithm page.

7. Select an effect.

8. Advance to the FXB submix routing page and set the Main FXB send percentage to zero.

9. Play the keyboard and you should hear the B Effect running through Effect A. This patch is shown below.
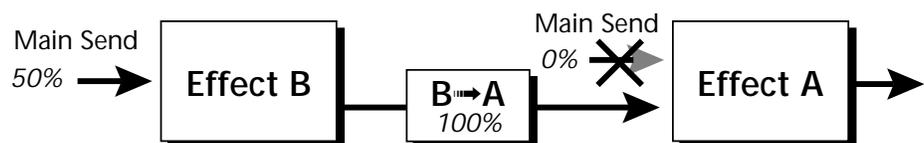
General Effect Descriptions

Reverb

Reverberation is a simulation of a natural space such as a room or hall. The reverb effects simulate various halls, rooms and reverberation plates. In addition, there are several other reverb effects such as Gated Reverbs, Multi Tap (early reflections), Delay and Panning effects. There are two adjustable parameters on the reverb effects - Decay Time and High Frequency Damping.

Decay time defines the time it takes for the reflected sound from the room to decay or die away. The diagram below shows a generalized reverberation envelope.
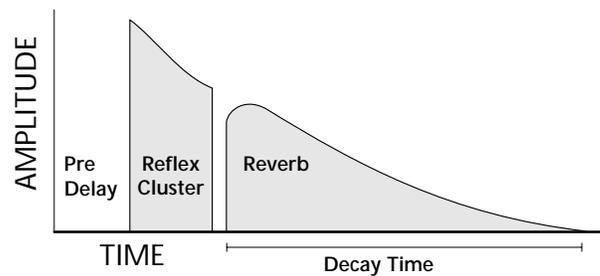
After an initial pre-delay period, the echoes from the closest walls or ceiling are heard. These first echoes, or the early reflection cluster, vary greatly depending on the type of room. Roughly 20 milliseconds after the early reflection cluster, the actual reverberation begins and decays according to the time set by the Decay Time parameter.

High frequency energy tends to fade away first as a sound is dissipated in a room. The High Frequency Damping parameter allows you adjust the amount of high frequency damping and thus change the characteristics of the room. Rooms with smooth, hard surfaces are more reflective and have less high frequency damping. Rooms filled with sound absorbing materials such as curtains or people have more high frequency damping.

General Descriptions of the Reverb Types

Room: Programs simulate small rooms with high frequency absorption caused by drapes and furniture.

Plates: Simulates plate type reverbs with their tight, dense, early reflections and sharp reverb buildup.

Hall: Presets recreate the open, spacious ambience of large concert halls.

Gated Reverbs: Add ambience only while the original signal is still sounding. As soon as the signal falls below a threshold, reverb is cut off.

Delay: Programs can be used to create echo and doubling effects.

Multi Tap: Programs consist of the reflection cluster only without the reverb decay.

Chorus

The function of a chorus device is to thicken the sound or to make one voice sound like many. This effect is usually created by mixing one or more delayed versions of the signal with the original. The delay times used are too short to be perceived as an echo, but long enough so that comb filtering does not occur. In addition, the delay time is varied via a low frequency oscillator to simulate the random differences which occur when multiple instruments are playing together. A slight amount of feedback improves the effect by creating multiple images of the sound as it recirculates again and again.

All the choruses are true stereo using two separate delay lines controlled by a single set of controls. The delay times are slightly different for each channel and the LFO phase is inverted on one channel to help contribute to the overall chorus effect. The LFO Rate and Depth settings are critical to achieving a realistic effect, with faster LFO rates generally requiring less LFO amount and vice-versa.

Doubling

When a copy of a sound delayed by about 26 milliseconds is added back to the original, two audio images are perceived by your brain. When the delayed image is slightly varied or modulated, the illusion of two voices is created.

Slapback

Slapback is a single short echo in the range of 50-60 milliseconds. A sound delayed by this length of time is perceived as a discrete and separate image which is useful for a thickening effect or as a pre-delay for reverb simulating a hard, reflective surface such a gymnasium wall.

Stereo Flanger

A flanger consists of a short audio delay line whose output is mixed together with the original signal. Mixing the delayed and original signals results in multiple frequency cancellations called a comb filter. Since the flanger is a type of filter, it works best with harmonically rich sounds.

Flanging was originally created using two tape recorders playing identical recordings. By exactly synchronizing the two decks and then slowing the speed of one by grasping the tape reel flanges, the flanging effect was born.

The flanger is a stereo device consisting of two separate delay lines controlled by a single set of controls. A Low Frequency Oscillator (LFO) varies this initial delay setting, changing the frequency of the notches and adding animation to the sound. LFO Rate controls the rate of change and LFO Depth controls how much the LFO changes the delay.

The Feedback control sends some of the delayed signal through the delay line again. When feedback is used the comb filter notches are deepened.

Delay

Delay is an effect which can be used for doubling, reverb pre-delay, or echoes.

Delay Time is variable from 0-635 mS and controls the time between echoes. Feedback and determines how long the echoes continue sounding. "Infinite" delay effects are also possible without the risk of runaway.

Stereo Delay

Similar to delay except that the delay line outputs a stereo signal from the mono input. The two output signals are a few milliseconds apart to create a stereo image. The delay times are variable from 0-635 mS.

Panning Delay

A panning delay is similar to the normal delay lines except that the echoes bounce back and forth between the two stereo speakers.

Dual Tap

These are delay lines where the signal is "tapped off" at two unevenly spaced locations. When feedback is used, multiple complex echoes are produced. The fraction in the name (i.e. 1/3, 1/4) refers to the distance between the taps.

Vibrato

Basically, this a delay line modulated by an LFO, but with none of the original signal added in. The LFO modulation creates a Doppler shift and a resultant cyclical pitch shift. The vibrato created in this manner sounds very different than vibrato created by frequency modulating the sample.

Distortion

Distortion uses a technique called "soft-clipping" to create additional harmonics in the signal. As the level increases, the top of the waveform becomes somewhat squared. As the level increases further, it transforms into a true square wave.

Save/Copy Menu

The Save/Copy menu is used to save changes to a preset and to copy data between presets. When in "Quick Edit" mode, this menu always defaults to the "Save to Preset" page of this menu with the cursor on the second line. You can use the Data Entry Control to navigate to other pages that support copying information.

Saving a Preset

Any time you make a change to a preset, either using the Edit menu or by changing the Controller Knobs in Quick Edit mode, you must save the preset in order for the change to become permanent. When you save a preset it erases any existing preset information in that location. Make sure that the destination location does not contain preset information you want to keep.

✎ *Each time you change a preset parameter, the Save/Copy button LED illuminates reminding you to save your work.*

```
SAVE PRESET  to
020¹  Destination Preset
```

☞ To Save a Preset

1. Press the Save/Copy menu button.
2. Move the cursor to the bottom line on the display.
3. Select the new preset location using the Data Entry Control.
4. Press the Enter/Home button.

Copying Information

The Copy operations let you copy information from any preset or layer to any other preset or layer. To use the copy command, first select the preset or layer to which you want to copy (the destination location). Then, from the copy screen, select the preset or layer you want to copy to the currently selected location (the source location). Using the copy commands you can copy preset, layer, PatchCord and arpeggiator information.

Copy Preset

The Copy Preset command lets you copy all of the preset information from one location into the preset of the current location. The preset information in the source location (the preset location from which you want to copy) is not deleted from the original location, just copied to the destination location.

```
COPY PRESET from
020¹ Source Preset
```

☞ **To Copy a Preset**

1. Select the Preset you want to copy information into.
2. Press the Save/Copy menu button.
3. Move the cursor to the bottom line on the display.
4. Select the preset location using the Data Entry Control, of the preset containing the information you want to copy into the current preset.
5. Press the Enter/Home button.

Copy Layer

The Copy Layer command lets you copy any layer information from one preset into any layer of the current preset location. The layer information in the source location (the layer location from which you want to copy) is not deleted from the original location, just copied to the destination location.

```
COPY  LAYER   from      L1  ->  L4
020¹  Source Preset
```

☞ **To Copy a Layer**

1. Select the Preset and Layer you want to copy information into.
2. Press the Save/Copy menu button.
3. Move the cursor to the bottom line on the display.
4. Select the preset location using the Data Entry Control, of the preset containing the information you want to copy into the current preset.
5. Move the cursor to the top line in the display.
6. Select the layer of the source preset in the first field on the right.
7. Select the destination layer in the second field.
8. Press the Enter/Home button.

Copy PatchCords

The Copy PatchCord command lets you copy the patchcord settings from one layer of the preset location into the current layer of the current preset location. The preset information in the source location (the preset location from which you want to copy) is not deleted from the original location, just copied to the destination location.

```
┌──────────────────────────────────────────────┐
│                                    L1 -> L4    │
│  COPY  PATCHCORDS                              │
│  020¹  Source Preset                           │
│                                                │
└──────────────────────────────────────────────┘
```

☞ **To Copy a PatchCord**

1. Select the Preset and Layer you want to copy information into.
2. Press the Save/Copy menu button.
3. Move the cursor to the bottom line on the display.
4. Select the preset location using the Data Entry Control, of the preset containing the information you want to copy into the current preset.
5. Move the cursor to the top line in the display.
6. Select the layer of the source preset in the first field on the right.
7. Select the destination layer in the second field.
8. Press the Enter/Home button.

*Copy
Arpeggiator Settings*

The Copy Arp Settings command lets you copy all of the arpeggiator settings from one preset to the Arpeggiator settings of the current preset. The arpeggiator information in the source location (the preset location from which you want to copy) is not deleted from the original location, just copied to the destination location.

```
COPY  ARP  SETTINGS  from
020¹ Source Preset
```

☞ **To Copy Arpeggiator Settings**

1. Select the Preset and Layer you want to copy information into.
2. Press the Save/Copy menu button.
3. Move the cursor to the bottom line on the display.
4. Select the preset location using the Data Entry Control, of the preset containing the information you want to copy into the current preset.
5. Move the cursor to the top line in the display.
6. Select the layer of the source preset in the first field on the right.
7. Select the destination layer in the second field.
8. Press the Enter/Home button.

*Copy
Arpeggiator Pattern*

The Copy Arp Pattern screen lets you copy Arpeggiator Patterns from any location to any User Pattern location.

```
┌─────────────────────────────────────┐
│  COPY ARP PATTERN  from               │
│  10²   SEEKRET                        │
└─────────────────────────────────────┘
```

✎ *There are now 200 factory preset arpeggiator patterns and 100 user definable arpeggiator patterns.*

☞ **To Copy an Arpeggiator Pattern:**

1. Press the Save/Copy button.
2. Turn the Data Entry Control clockwise to "Copy Arp Pattern from".
3. Press a cursor key and select the pattern you want to copy.
4. Press Enter to confirm your choice. The screen shown below appears.

```
┌─────────────────────────────────────┐
│  Overwrite pattern:                   │
│  15⁰    SPUN                          │
└─────────────────────────────────────┘
```

5. Select a user pattern to overwrite and press Enter. The pattern has been copied.

Appendix

This section provides some of the more technical information about the Audity 2000. In this appendix, you will find information about velocity curves, MIDI commands, percussion maps, PatchCord charts and lists of all the instruments, presets, and arpeggiator patterns.

Velocity Curves

This section provides diagrams and descriptions of the Audity 2000 velocity curves.
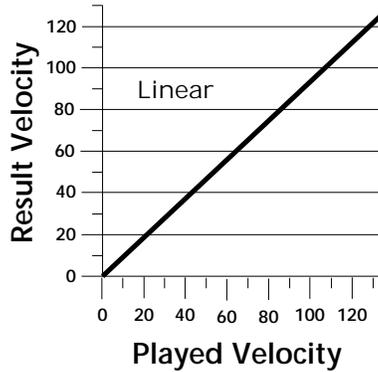
Linear

Linear, no change to velocity.

Curve 1
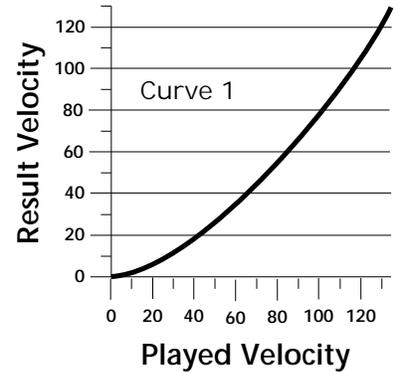
Compresses velocity range.
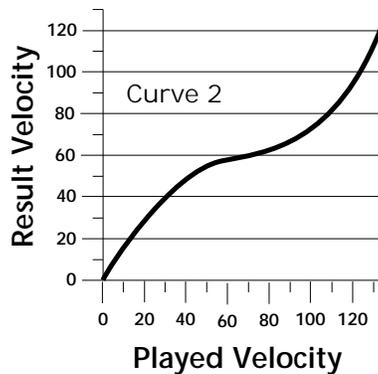
Curve 2

Expands dynamics in low range, emphasizing medium velocity values and compressing high velocity values.
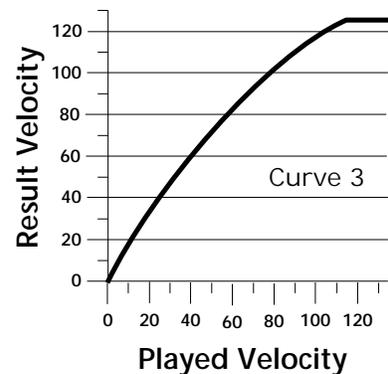
Curve 3

Expands velocity range.
Soft -> Loud
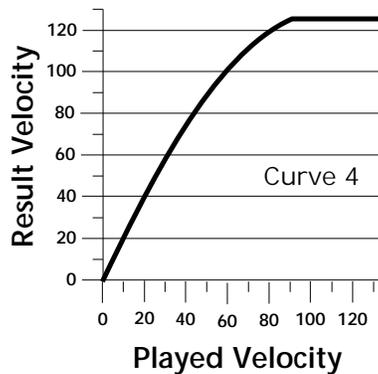
Curve 4

Expands velocity range.
Outputs high values.
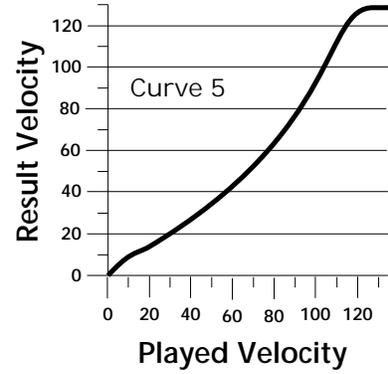
Curve 5

Shifts velocity values upward.
Good dynamic range.

120
100
Curve 6
80
60
40
20
0

0   20   40   60   80   100   120

Played Velocity
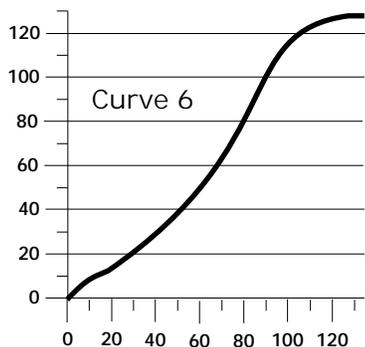
Shifts velocity values up while
compressing the middle range.

Result Velocity

120
100
Curve 7
80
60
40
20
0

0   20   40   60   80   100   120

Played Velocity

Similar to Curve 6.

120
100
Curve 8
80
60
40
20
0

0   20   40   60   80   100   120

Played Velocity
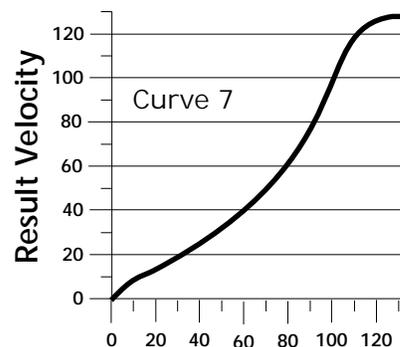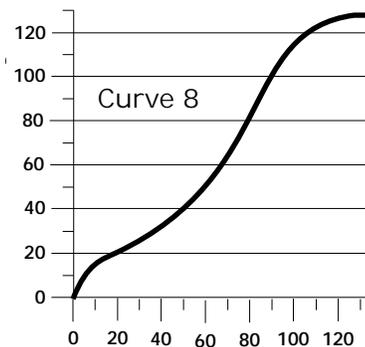
Similar to Curve 6 with more
emphasis on the middle range.

Result Velocity

120
100
Curve 9
80
60
40
20
0

0   20   40   60   80   100   120

Played Velocity

Extreme dynamic range
compression.

120
100
Curve 10
80
60
40
20
0

0   20   40   60   80   100   120

Played Velocity
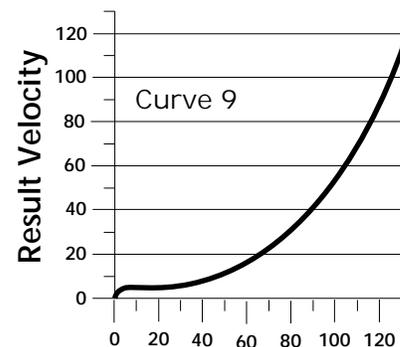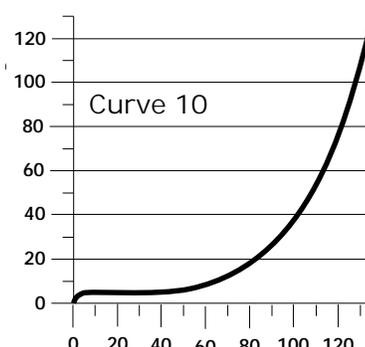
Extreme dynamic range
compression. Outputs low values.

Result Velocity

120
100
Curve 11
80
60
40
20
0

0   20   40   60   80   100   120

Played Velocity
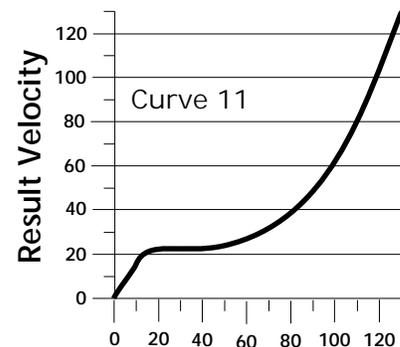
Extreme dynamic range compres
but doesn't output low values
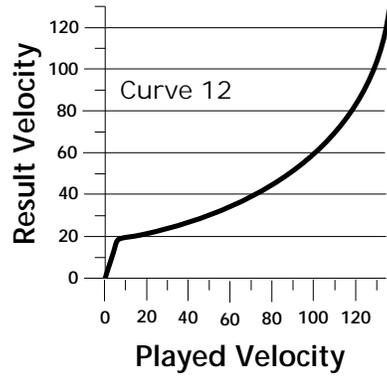
Played Velocity
Less severe version of Curve 11.
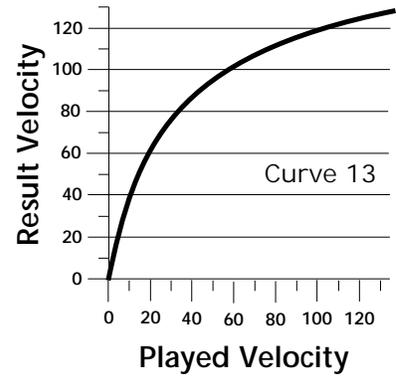
Played Velocity
Extreme expansion of
velocity range.

PatchCord Setup

The following chart shows the PatchCord "Amount" settings in order to get semitone intervals when modulation sources are connected to pitch.

Semitone	PatchCord Amount	Semitone	PatchCord Amount
1	3	21	66
2	6	22	69
3	approx. 9	23	approx. 72.5
4	approx. 12	24	approx. 76
5	16	25	79
6	19	26	82
7	22	27	88
8	25	28	91
9	28	29	approx. 95
10	approx. 31	30	98
11	35	31	
12	38	32	
13	41	33	
14	44	34	
15	47	35	
16	50	36	
17	approx. 53	37	
18	57	38	
19	60	39	
20	63	40	

MIDI

MIDI Implementation Chart

Function	Transmitted	Recognized	Remarks
Basic Default Channel Changed	No No	1 1-16	Memorized
Mode Default Messages	No	Mode 1, 3, 4 Mono, Poly, Omni, On/Off	Memorized
Note Number True Voice	No No	0-127 0-127	
Velocity Note ON Note OFF	No No	Yes v=1-127 Yes	
After Keys Touch Channels	No No	Yes Yes	
Pitch Bender	No	Yes	
Control Change	Yes	Yes	0-31 64-79
Bank Select	No	Yes	
Program Change True No.	No No	Yes 0-127 Yes 0-127	
All Sound Off	No	Yes	
All Notes Off	No	Yes	
Reset all Controllers	No	Yes	
System Exclusive	Yes	Yes	
System :Song Pos Common :Song Sel :Tune	No No No	No No No	
System :Clock Real Time :Cmnds	No No	Yes Yes	
Aux :Local On/off Msgs :Active Sense :Reset	No No No	No No No	

NOTES: Pan: -64 = hard left, +63 = hard right
Mode 1: Omni ON, Poly   Mode 2: Omni ON, Mono
Mode 3: Omni OFF, Poly   Mode 4: Omni OFF, Mono

Product ID for Audity 2000 = OF.
Device ID = [00-7F] (0-126 decimal) 127 is broadcast to all.
Parameter Number and Parameter Value are 2 bytes each.

There is only one edit buffer which is used by the current preset (the preset shown in the display). You can edit only one preset at a time via SysEx commands, although these presets can be edited independently of the current preset edited using the Front Panel. Remote Preset selection is independent of the edit buffer. Changing the current preset erases the edit buffer.

Received Channel Commands

Channels number (n) = 0-15. Message bytes are represented in hex. All other numbers are decimal. Running Status is supported.

Command	Message	Comments
Note Off	8n kk vv	
Note On †	9n kk vv	velocity 0 = note off
Key Aftertouch	An kk vv	kk = 0-127 vv = 0-127
Program Change	Cn vv	0-127
Channel Aftertouch	Dn vv	0-127
Pitch Bend	En ll mm	l = lsb, m = msb
Real-time Controller	Bn cc vv	cc = 00-31
Footswitch	Bn cc vv	cc = 64-79, vv ≥ 64 = on
Volume	Bn 07 vv	0-127
Pan	Bn 0A vv	0=left, 127=right, 64=center
All Sound Off	Bn 78 00	turns all sound off
Reset All Controllers	Bn 79 00	ignored in omni mode
All Notes Off	Bn 7B 00	ignored in omni mode
Omni Mode Off*	Bn 7C 00	forces all notes & controls off
Omni Mode On*	Bn 7D 00	forces all notes & controls off
Mono Mode On (Poly Off)*	Bn 7E 00	forces all notes & controls off
Poly Mode On (Mono Off)*	Bn 7F 00	forces all notes & controls off
Bank Select	Bn 00 00 20 bb	bb = bank #

* Special Notes:
- **From Omni Mode** .... Omni Off turns Poly On.
- **From Poly Mode**............. Omni On turns Omni On; Mono On turns Mono On.
- **From Mono Mode** .... Mono Off turns Poly On; Omni On turns Omni On.
- **From Multi Mode**........... Omni On turns Omni On; Omni Off or Mono Off turns Poly On; Mono On turns Mono On.
- All other changes have no effect.

SysEx Specification

Audity 2000 contains an extensive set of MIDI SysEx commands. Because of the size and technical nature of the System Exclusive specification, it is beyond the scope of this manual. The complete SysEx specification for Audity 2000 is available on the official E-mu Systems, Inc. web site: www.emu.com

Percussion Maps

El Perc Kit 1
Instrument 274

MIDI Key # →

24

36

Kick 2 —
Snare 1 —
Snare 1 —
Lo Tom —
Mid Tom —
High Tom —
Low Conga —
Mid Conga —
High Conga —
Kick 1 —
1 Shot Perc G3 —
1 Shot Dis 3 G3 —
1 Shot Dis 2 G3 —
Kick 2 —
Snare 2 —
Snare 3 —
Snare 4 —
Snare 5 —
Snare 6 —
Snare 7 —
Snare 8 —
Snare 9 —
Snare 10 —
Snare 11 —

48

60

72

84

— Rim Shot
— Clap 1
— Closed Hat
— Open Hat
— Cymbal L1
— Cowbell
— Maracca
— Clave
— Cymbal L2
— Cymbal L3

El Perc Kit 2
Instrument 277

MIDI Key # →

24

36

Kick 4 —
Snare 14 —
Snare 14 —
Dry Tom 1 —
Dry Tom 2 —
Dry Tom 3 —
Dry Clap —
Kick 5 —
Snare 9 —
Snare 9 —
Kick 3 —
Snare 12 —
Snare 12 —
Snare 13 —

48

60

72

84

— Dry Tick
— Closed Hat 4
— Closed Hat
— Dry Open Hat 2
— Dry Open Hat 2
— Closed Hat 2
— Closed Hat 3
— Dry Cym 1
— Dry Cym 2
— Dry Cym 3

MIDI Key #

Acoustic Perc A
Instrument 282

Acoustic Kick 2 —
Acoustic Snare —
Acoustic Snare —
Acoustic Tom 1 —
Acoustic Tom 1 —
Acoustic Tom 2 —
Acoustic Tom 3 —
Acoustic Tom 3 —
Acoustic Ride —

— Acoustic Rim
— Acoustic Roll

— Acoustic Hat 1
— Acoustic Hat 2
— Acoustic Hat 3

— Acoustic Crash
— Acoustic Ride

24
36
48
60
72
84

MIDI Key #

Warehouse Perc
Instrument 281

Dwank —
buzz Thing —
1 Shot Siren A#4 —
1 Shot Siren A#4 —
Gwap —
Ruff Scratch —
Hit F#2 —
1 Shot Grind #3 —
Turbo C6 —
1 Shot Vox C4 —
Turbo C4 —
1 Shot Turbine C4 —
1 Shot Laser C4 —
1 Shot Dis 1 C2 —
1 Shot Bass C2 —

— 1 Shot Alien C5
— Kathunk

— Hat Closed
— Nother Hat Closd
— Nother Hat Closd

— Looped Thing
— Rez Honk D#4

— Hat Open
— Nother Hat Open
— Nother Hat Open

24
36
48
60
72
84

Hybrid Perc
Instrument 280

MIDI
Key # →

24

36

Synth Kick — — Rim arama
Another Snare — — Reverse Rim
Another Snare —
Another Tom —
Nice Deep Drum — — Noise Burst
Nice Deep Drum — — Little Hat
Muted Deep Drum — — Closed HiHat Rev
Kick It — 48 — El Hit
Tuff Snare — — Tip Hat
Nother Rev Snare —
Boxy Snare — — Tip Hat Brt Rev
Boxy Snare Rev — — Foot Hat
Power Kick — — Foot Hat Rev
Power Kick Rev —
Lutefisk EKick — 60 — Another Rim
Perco Snare — — Wack
Lutefisk ESnare —
Kit Tom 4 — — Noisy Thing
Kit Tom 1 — — Noisy Thing
Kit Tom 2 — Noisy Thing
Kit Tom 3 —
Cracked Kick — 72 — Dink
Snare Beware — — Electro Clave
Reverse Snare —
Whackee — — Another Open Hat
Another Snare — — Ruff Scratch
Boxy Snare — — Rev Scratch
1 Shot Alien C5 —
Whooooop — 84

Presets

Audity 2000 contains 640 unalterable ROM Presets and 256 editable RAM Presets. The presets are organized into banks of 128 presets each. The RAM banks 0 & 1 are duplicates of banks 5 & 6.

Audity 2000 Preset Categories

The Audity 2000 presets are organized in categories according to the types of sound. The banks are organized starting with some examples from each category (Bank 0/5 Presets 0-39), then 40 presets with arpeggiators turned on, then blocks of presets in each category throughout the rest of the five banks.

Below are the categories and their three letter prefixes:

arp: Arpeggiated	**edg**: Edgy, cutting
led: Leads	**wal**: Dense, harmonically complex
wav: Simple waveforms	**bas**: Basses
raw: Playable, vanilla	**nse**: Noises
syn: Complex, harmonically rich	**pad**: Sustained, pad-like
lfo: Tempo-based LFOs featured	**vox**: Vocals
cmp: Playable keyboards, etc	**bel**: Bells
seq: Short	**sfx**: Sound Effects
hit: Shorter	**prc**: Percussion
org: Organs	**scr**: Scratches

*Audity 2000
Preset List*

Banks 0 and 5

0. edg:BARRACUDA	43. arp:OrbisTabula1	86. raw:RMI Lark EP
1. arp:Hollographik	44. arp:OrbisTabula2	87. raw:Mellow PWpad
2. edg:Love All	45. arp:Key Hole	88. raw:Drama
3. lfo:Scuzzy	46. arp:NewsAtTen	89. raw:Rave Organ
4. wal:LARD	47. arp:Palomar	90. raw:Big Synthy
5. pad:Astrology	48. arp:Tension	91. raw:Syn Brass
6. syn:Mercy	49. arp:theGrind	92. raw:MortalSynth
7. bas:2000	50. arp:Fundamentals	93. raw:Farzy Sync
8. sfx:Air Motion	51. arp:Tronix	94. raw:SLICER
9. prc:Bottom Perc	52. arp:Uplift	95. raw:FizzeeString
10. arp:Lust up	53. arp:Vice	96. raw:Synthex 80's
11. edg:REZARECT	54. arp:Aud Feel	97. raw:PlexiGlass
12. edg:Zonk	55. arp:Bassoloid	98. raw:Rez Zipper
13. edg:Spawn	56. arp:Classic Base	99. raw:3 O 3
14. syn:SynkerSteppr	57. arp:Glissynth	100. raw:Acid Blomp
15. syn:Boogy Synth	58. arp:Glider	101. raw:Mango Bass
16. pad:Sawpipe	59. arp:LooseSynq	102. raw:Booty Qooty
17. led:Buckzawz	60. arp:Anthill	103. raw:SIRRUS
18. led:CReeP	61. arp:Axis Saw	104. raw:Big Wall
19. led:Jester	62. arp:Bouchete	105. raw:Euro Noise
20. led:Alley Kat	63. arp:Risen	106. raw:Sonar,What?
21. lfo:"Carpe Diem"	64. arp:Saw Standard	107. raw:SweeTDreaM
22. lfo:Tempo LFOs	65. arp:Tekno Cheep	108. raw:Edge
23. lfo:Oscillo Box	66. arp:Squeaky	109. raw:Space Storm
24. lfo:FLutter	67. arp:Eden	110. raw:Goth
25. bas:FAT ALBERT	68. arp:Phrophetics	111. raw:Future
26. bas:Limbo	69. arp:Micro Sync	112. raw:Vertigo
27. bas:POLY	70. arp:Wire	113. raw:SpidersOMars
28. bas:Trashy	71. arp:Plastik	114. raw:Heli Pad
29. nse:PARANOIA	72. arp:SineDrum	115. raw:Don'Doo It
30. wal:ThroughVapor	73. arp:Exel	116. raw:Cooleo
31. vox:AfterShock	74. arp:CricketGruve	117. raw:Electric Kit
32. vox:We Are Evil	75. arp:Seed Saw	118. raw:Env Kit
33. sfx:Ripped Lazer	76. arp:Beat Queen	119. raw:Found Kit
34. sfx:Audacity	77. arp:LowRideGruve	120. led:Multiswept
35. sfx:FoldingSpace	78. arp:Trance	121. led:Monogatori
36. scr:Pressure Scr	79. arp:Whisper	122. led:El Effo
37. prc:CONSTRUCT	80. raw:Basic Saw	123. led:Leadin' Soul
38. prc:DRUMATIX	81. raw:Classic Tri	124. led:Mini 2000
39. prc:MANTIS	82. raw:Synk Slave	125. led:Punch Out
40. arp:You Know It	83. raw:Audity Arp	126. led:Quant Pitch
41. arp:Toxic Vox	84. raw:Play Sawcomp	127. led:ShortCircuit
42. arp:Deeper Love	85. raw:Ring-A-Ling	

Banks 1 and 6

0. led:SkreeBrass	43. syn:Hypass Ditty	86. syn:MadeMess
1. led:Hisynk Lead	44. syn:AsultoMate	87. syn:Digital Noiz
2. led:Rezcape	45. syn:Multisteps	88. syn:LastManStand
3. led:Slider	46. syn:Squeapels	89. syn:Feverish
4. led:Retro Onde	47. syn:Basic Buzz	90. syn:BACKDRAFT
5. led:Slap Back	48. syn:Mars Attacks	91. syn:That'sCreepy
6. led:Poly Source	49. syn:Brass Juice	92. syn:Kaleidoscope
7. led:Robot Love	50. syn:LittleWeasel	93. syn:Phasetoidy
8. led:Ring	51. syn:Basic 2600	94. syn:CazioTone
9. led:FutziWhatsi	52. syn:Kloksynk	95. syn:I made it
10. led:Quantized Bl	53. syn:Raved Pass	96. syn:ORiON
11. led:Calculator	54. syn:Future Harmi	97. syn:FilterFlange
12. led:Orleans	55. syn:Dappy	98. syn:NeBuLA
13. led:Masses	56. syn:GHOSTndaSheL	99. syn:Saw On High
14. led:Sawdust	57. syn:Swirl Jenkin	100. syn:Tink Or Toys
15. led:PolyClavWOrm	58. syn:Low SawSweep	101. syn:Scary Noise
16. led:Irish Moog	59. syn:Euroflash	102. syn:Listoller
17. led:Saturn	60. syn:Low CL2Sweep	103. syn:CavernCreeps
18. led:HardNormlMom	61. syn:TeKKen	104. syn:IoN SHoWER
19. led:P5 Zentropa	62. syn:FutureSteps	105. syn:Uncertainty
20. led:FM Phaselead	63. syn:Digitell	106. syn:Groove Wow
21. led:FM Leadweed	64. syn:Tahdaaa...	107. lfo:Exploration
22. led:Ringmodular	65. syn:Wet	108. lfo:Clocking Out
23. led:Basic Dodo	66. syn:Silkness	109. lfo:Modify
24. led:Serkel Lead	67. syn:Enigma....	110. lfo:OliveOil
25. led:Rendalaw	68. syn:Extremity	111. lfo:Rotary
26. led:Funky Buzz	69. syn:Mono PolyFX	112. lfo:DailyBread
27. led:Solo Environ	70. syn:EQed Swamp	113. lfo:AireTyme
28. led:Trance Lead	71. syn:Z-GATE	114. seq:Synk2Speenar
29. led:TANGERINE	72. syn:Marvs Modulo	115. seq:Audi Zippie
30. led:SQUEAKEE	73. syn:Grinded	116. seq:Arpege me
31. led:JungleWall	74. syn:Tha GOOCH	117. seq:Queezey
32. wav:ALERT!	75. syn:Damage Maker	118. seq:On The Run
33. wav:Trumpet2000	76. syn:BLAHSOM	119. seq:Retro Beep
34. wav:ReleaseMe	77. syn:Scarlotta	120. seq:Pissto Hi
35. wav:Super Saw	78. syn:Bat Pann	121. seq:Tin PulseMon
36. wav:JETSONS	79. syn:TRON	122. hit:Screeke
37. wav:E=MU2	80. syn:South Euro 1	123. hit:Clavi Maniac
38. wav:Syncked	81. syn:South Euro 2	124. hit:House Chord
39. wav:DRIP	82. syn:Muffle Sync	125. hit:Technoval
40. wav:XtoZ	83. syn:SteppedDream	126. hit:Organist
41. wav:Phazy Square	84. syn:Bottom Floor	127. -default preset-
42. wav:Coyote	85. syn:Luscious	

Bank 2

0. cmp:Nordica Comp	43. edg:BarbWire	86. edg:ClocK WorK
1. cmp:Squishey	44. edg:COFFINRIDE	87. edg:Futura
2. cmp:BigDandyBoy	45. edg:Turbonic	88. bas:4Mula
3. cmp:Riverdancing	46. edg:DirtyHertz	89. bas:Submarine
4. cmp:Sympani	47. edg:PUNISHER	90. bas:Deliver
5. cmp:AudKlav	48. edg:Heavy Mental	91. bas:Germany
6. cmp:Syn Chaos	49. edg:DISTRUCTOR	92. bas:UKshoota
7. cmp:Synclava	50. edg:ACiDOPHiLUS	93. bas:Steeper Bass
8. cmp:Wind Up Toi	51. edg:Duckfuzz	94. bas:PUNKCHURE
9. cmp:Malleable EP	52. edg:Growly Glide	95. bas:Moby3SoloDbl
10. cmp:Turbine	53. edg:Pele	96. bas:OminousBass
11. cmp:ShimmerStrng	54. edg:Small Town	97. bas:Bassasid
12. cmp:R&B Syncomp	55. wal:ABYSS	98. bas:FuzzGrinder
13. cmp:Gate Girl	56. edg:SCRAPMETAL	99. bas:HybridPhased
14. cmp:Prephad	57. edg:Zorkon	100. bas:Distorto
15. cmp:Sync4Seqence	58. edg:BASSFLANG	101. bas:Mo'
16. cmp:Wind Up	59. edg:Zoned	102. bas:Junglist Bs
17. cmp:Analogue Pno	60. edg:Battery	103. bas:PoKe
18. cmp:Synek Komper	61. edg:Skreecher	104. bas:Bullit
19. cmp:Octivate	62. edg:Monster	105. bas:PLEX
20. cmp:Raverotic	63. edg:GhostStories	106. bas:DistTBSquare
21. cmp:Syn O-da Sob	64. edg:Inductor	107. bas:BuzzerFlange
22. cmp:Syn O-da Son	65. edg:BuZZ KiLL	108. bas:SlideOnDown
23. cmp:Shao Lin	66. edg:MaMMoTH	109. bas:Lo Subb
24. cmp:DarkShadows	67. edg:Breath Stack	110. bas:Taurus Tuba
25. cmp:Max's Pad	68. edg:OverTheEdge	111. bas:Slam Master
26. cmp:Mellow Vibe	69. edg:Low Edge	112. bas:MICRO DR0P
27. cmp:Kyoto Bullet	70. edg:Love 1	113. bas:Klang
28. cmp:Smooth Saw	71. edg:Love 2	114. bas:FM Bass
29. cmp:Blend-O-Comp	72. edg:Bare Edge	115. bas:Interference
30. cmp:Pop Piano	73. edg:Granules	116. bas:Dull Dance
31. cmp:Thickets	74. edg:Uncle Fester	117. bas:Bounce
32. cmp:Jethro	75. edg:Bouncerette	118. bas:KEVLAR
33. org:70's Jazzup	76. edg:THE MACHEEN	119. bas:Grinder
34. org:Saint Audity	77. edg:HlywdINative	120. bas:Reepeter
35. edg:SCRAPE	78. edg:Tibet	121. 1bas:Mongo Bass 1
36. edg:REZANATOR	79. edg:UnderClaSS	122. bas:Mongo Bass 2
37. edg:Odd Quasar	80. edg:Honker	123. bas:Mongo Bass 3
38. edg:REZAWRECKT	81. edg:Mr.Edge	124. bas:Hollowave
39. edg:UNDERTAKER	82. edg:19inch Nails	125. bas:FuzzBizz
40. edg:WdcuttrsBall	83. edg:Strangled	126. bas:Acidic
41. edg:BoXT	84. edg:Grindin Me!	127. bas:BAD ACID
42. edg:SakuraTime	85. edg:Ringer Lead	

Bank 3

0. bas:Prodigal	43. nse:BirdbraiN	86. pad:BP Strings
1. bas:TrafficJam	44. nse:AarnoLdt	87. pad:DARK CITY
2. bas:Square Velo	45. nse:Spaced	88. pad:Chiffity
3. bas:JUMPUP	46. nse:Ionize	89. pad:Enoze Tri
4. bas:CReePeR	47. nse:Tweety Boid	90. pad:Hi&LowLights
5. bas:Tugboat	48. nse:SideBands	91. pad:Raz
6. bas:Phatt N' Low	49. nse:PLAZMATIC	92. pad:Synterval
7. bas:R&B Bzzybass	50. nse:LuciferDom	93. pad:HOUSE
8. bas:Ventolator	51. nse:Modular Ring	94. pad:Zephyr
9. bas:Metamorph	52. nse:SpottedWhite	95. pad:Danube
10. bas:Audity 3033	53. nse:Uncowardinar	96. pad:Grumble
11. bas:Reso TB V-Sw	54. nse:Lizard Skin	97. pad:Vespers
12. bas:ReedBass	55. wal:Group Chants	98. pad:MetalFriend
13. bas:RingCycle	56. wal:DOOM 2020	99. pad:Air Surf :-)
14. bas:FLEX	57. wal:Hadrian's	100. pad:GRITS
15. bas:Squelch	58. wal:Underworld	101. pad:Ault
16. bas:Roundy Bass	59. wal:Banshee	102. pad:Jumpy Brass
17. bas:Dirty Bass	60. wal:Quiet Wall	103. pad:W6 3sEvEn
18. bas:3003 Weirder	61. wal:Hittite	104. pad:TRIPPER
19. bas:Sweat	62. wal:Darknaohe	105. pad:AQUANAUT
20. bas:FunkyBootsy	63. wal:Dinkness	106. pad:Wat'na Hell
21. bas:One Shot	64. wal:KillingField	107. pad:PI Solutions
22. bas:ThickyDance	65. wal:Ripped	108. pad:Air Voices
23. bas:Over TheEdge	66. wal:Spunk Dinks	109. pad:SweepDancer
24. bas:Bongo Bass 1	67. wal:Warrans	110. pad:2ManyDlphins
25. bas:Bongo Bass 2	68. wal:VOID	111. pad:Nervousity
26. bas:Bongo Bass 3	69. wal:Akiro Rising	112. pad:Field
27. bas:Razorette	70. syn:EQed Swamp	113. pad:GLISST
28. bas:Calmer	71. wal:CrashKlydcup	114. pad:Silk Cut
29. bas:Acid line	72. wal:Chemical ;-)	115. pad:CREST
30. bas:Ring Bassox	73. wal:Inferno	116. pad:Rio Dulce
31. bas:KX Bass	74. wal:Midevilonu!	117. pad:RazorSlider
32. bas:Roof Top Tri	75. wal:March2TheWal	118. pad:OLD-D
33. bas:Suschi Bass	76. wal:Gattica	119. pad:NagaChampa
34. bas:Hard X	77. wal:Walball Bass	120. pad:Ice Ring
35. nse:Tunnel Lead	78. wal:Oily Deity	121. pad:Eastern Mist
36. nse:Auto Motive	79. wal:CYBER DEATH	122. pad:Glassers
37. nse:GrainyPixel	80. wal:Transit	123. pad:Scooped Mids
38. nse:Faucet Drip	81. wal:TunnelVizion	124. pad:Prophety
39. nse:Machined	82. wal:Station	125. pad:ObieLand
40. nse:DarkForest	83. wal:Balls2The…	126. pad:More Senses
41. nse:Noise Train	84. wal:ICEAGE	127. Blank Preset
42. nse:PsychicSea	85. pad:Moby's Trip	

Bank 4

0. pad:SWELL	43. vox:HeavyBreathr	86. sfx:Hard Stop
1. pad:Solace	44. vox:Chronic Komp	87. sfx:PumpkinHead
2. pad:theMessage	45. vox:Swishy	88. sfx:AK-47
3. pad:Vampirella	46. vox:Middle Ages	89. sfx:WARPSHIELD
4. pad:Big Aud'Pad	47. vox:Chant	90. sfx:Landing
5. pad:Sonar Ghost	48. vox:Ether	91. sfx:MaRTIaNS
6. pad:SIRRUS	49. vox:ARMAGEDDON	92. sfx:Soline 9x
7. pad:Gorgontastic	50. vox:Humanacomp	93. sfx:Ion Split
8. pad:Druidz Song	51. vox:Noo Sweep	94. sfx:Audatious 1
9. pad:Air Age	52. vox:ANGELIKA	95. sfx:Audatious 2
10. pad:Future Vox	53. vox:Galaxal	96. sfx:TwelveBells
11. pad:Swervy	54. vox:Loah	97. sfx:Alienator
12. pad:Strings Box	55. vox:Bandvoxxe	98. sfx:REZANATION
13. pad:Daddy's Girl	56. vox:Flangelo	99. scr:DJ UFO
14. pad:Ice Dreams	57. bel:Ballerina	100. scr:GoSpeedRacer
15. pad:SaturnRings	58. bel:NiteLite	101. src:HighLow
16. pad:Lunar Pad	59. bel:SAHARA	102. scr:Scratch Sw
17. pad:Smoovie	60. bel:Audity Bell	103. scr:MartianVinyl
18. pad:SMAK	61. bel:ComputerArp	104. scr:Skratch Diss
19. pad:Synthex 80's	62. bel:TWISTY RING	105. scr:ChokeScratch
20. pad:Aki's World	63. bel:Efemm Bellsa	106. scr:Reckerd
21. pad:Tink	64. bel:Bubblies	107. scr:Icha-Owcha
22. pad:WAVE	65. bel:PIPER BELL	108. prc:Cooleo
23. pad:G.L.OTekTwin	66. bel:MONK	109. prc:C1 Dmachine
24. pad:Cast	67. bel:SweeTDreaM	110. prc:BottomDrums
25. pad:Low Back	68. bel:WaveBell	111. prc:Krappy Kit
26. pad:Warm&Lush	69. bel:Tinkle Bell	112. prc:INYOURFACE
27. pad:Lonely Space	70. bel:Mult-A-Metal	113. prc:ALTURNET
28. pad:Prose Andre	71. bel:Mystery Bell	114. prc:TR 2O2O
29. pad:Pure Synth	72. bel:NordicCalm	115. prc:Hip Hop kit
30. vox:We All Leave	73. bel:Quasimoto	116. prc:DRUMULATER
31. vox:DonkeyBreath	74. bel:Rainbellz	117. prc:B-N-DMonkey
32. vox:Speech Boys	75. bel:Islander	118. prc:SmakMymanup!
33. vox:DreamVoxx	76. bel:Agualla Bell	119. prc:80's Tones
34. vox:Bliss	77. sfx:Sambatronica	120. prc:Sycoma
35. vox:Audity	78. sfx:TurPeeDogh	121. prc:Klonk Perks
36. vox:Gothem	79. sfx:Ratchit	122. prc:Crash Head
37. vox:Rouge Temple	80. sfx:DroiD	123. prc:ANGST PicKls
38. vox:Ka Wire	81. sfx:EerieCreep	124. prc:KalinallCars
39. vox:Wally Vox	82. sfx:NukeMeltDwN	125. prc:Drum Shadow
40. vox:Hey!!!!	83. sfx:Diesel	126. prc:Roge ?!@#&
41. vox:Out of Here	84. sfx:Thatwasntme!	127. prc:K'werk It
42. vox:AppleSeeede	85. sfx:Arp Trillz	

Instrument List

This section lists all of Audio 2000's raw instruments in the order in which they appear in the User Interface.

0.	None	36.	Classic Lead 2	72.	Mikro Bass
1.	Sine Wave	37.	Classic Lead 3	73.	Shush Bass
2.	Saw Wave	38.	Classic Lead 4	74.	Fuzz Bass
3.	Square Wave	39.	Digi Lead	75.	Flange Bass
4.	Triangle Wave	40.	Audity Synth 1	76.	Buzz Bass
5.	Audity Saw	41.	Audity Synth 2	77.	Booty Q Bass 1
6.	Audity Square	42.	Audity Synth 3	78.	Booty Q Bass 2
7.	Audity Blend	43.	Audity Synth 4	79.	Zodiac Bass 1
8.	Audity Sync	44.	Audity Synth 5	80.	Zodiac Bass 2
9.	Audity Sync	45.	Audity Synth 6	81.	Prodigal Bass
10.	Audity Sync 1	46.	Audity Synth 7	82.	Zeek Bass
11.	Audity Sync 2	47.	Audity Synth 8	83.	Audity Bell 1
12.	Audity Sync 3	48.	Audity Synth 9	84.	Audity Bell 2
13.	Audity PWM 1	49.	Audity Synth 10	85.	Audity Bell 3
14.	Audity PWM 2	50.	Audity Synth 11	86.	Audity Bell 4
15.	Audity PWM 3	51.	Audity Synth 12	87.	Audity Bell 5
16.	Ring Mod 1	52.	Audity Synth 13	88.	Vox Humana
17.	Ring Mod 2	53.	Audity Synth 14	89.	Vapor Vox
18.	Ring Mod 3	54.	Audity Bass 1	90.	Chronic Vox
19.	Metal Wave	55.	Audity Bass 2	91.	Vox Wave 1
20.	Jungle Lead	56.	Audity Bass 3	92.	Vox Wave 2
21.	Metalik	57.	Acid Bass 1	93.	Vox Wave 3
22.	Brass Lead 1	58.	Acid Bass 2	94.	Vox Wave 4
23.	Brass Lead 2	59.	Acid Bass 3	95.	Vox Wave 5
24.	Audity Lead 1	60.	Acid Bass 4	96.	Vox Wave 6
25.	Audity Lead 2	61.	Acid Bass 5	97.	White Noise
26.	Audity Lead 3	62.	Acid Bass 6	98.	Pink Noise
27.	Audity Lead 4	63.	Acid Bass 7	99.	Audity Wall 1
28.	Audity Lead 5	64.	Acid Bass 8	100.	Audity Wall 2
29.	Audity Lead 6	65.	Acid Bass 9	101.	Audity Wall 3
30.	Audity Lead 7	66.	Acid Bass 10	102.	Audity Wall 4
31.	Audity Lead 8	67.	Hybrid Bass 1	103.	Audity Wall 5
32.	Audity Lead 9	68.	Hybrid Bass 2	104.	Audity Wall 6
33.	Audity Lead 10	69.	Hybrid Bass 2b	105.	Audity Wall 7
34.	Audity Lead 11	70.	Dance Bass 1	106.	Noise Tunnel
35.	Classic Lead 1	71.	Dance Bass 2	107.	Air Pipe

108. Crystal Cavern	**147.** Looped Perc 8	**186.** Looped Perc 47
109. Sonar	**148.** Looped Perc 9	**187.** Looped Perc 48
110. Audity Edge 1	**149.** Looped Perc 10	**188.** Looped Perc 49
111. Audity Edge 1b	**150.** Looped Perc 11	**189.** Looped Perc 50
112. Audity Edge 1c	**151.** Looped Perc 12	**190.** Looped Perc 51
113. Audity Edge 2	**152.** Looped Perc 13	**191.** Looped Perc 52
114. Audity Edge 3	**153.** Looped Perc 14	**192.** 1 Shot Perc 1
115. Future World	**154.** Looped Perc 15	**193.** 1 Shot Perc 2
116. Grinder	**155.** Looped Perc 16	**194.** 1 Shot Perc 3
117. Growly	**156.** Looped Perc 17	**195.** 1 Shot Perc 4
118. Cricket	**157.** Looped Perc 18	**196.** 1 Shot Perc 5
119. Fuzz Ball	**158.** Looped Perc 19	**197.** 1 Shot Perc 6
120. Droid Scrape	**159.** Looped Perc 20	**198.** 1 Shot Perc 7
121. Rez Honk	**160.** Looped Perc 21	**199.** 1 Shot Perc 8
122. Krunchy Hit	**161.** Looped Perc 22	**200.** 1 Shot Perc 9
123. Turbo	**162.** Looped Perc 23	**201.** 1 Shot Perc 10
124. Interference	**163.** Looped Perc 24	**202.** 1 Shot Perc 11
125. 1 Shot Bass	**164.** Looped Perc 25	**203.** 1 Shot Perc 12
126. 1 Shot Dis Bass 1	**165.** Looped Perc 26	**204.** 1 Shot Perc 13
127. 1 Shot Dis Bass 2	**166.** Looped Perc 27	**205.** 1 Shot Perc14
128. 1 Shot Dis Bass 3	**167.** Looped Perc 28	**206.** 1 Shot Perc 15
129. 1 Shot Perc Bass	**168.** Looped Perc 29	**207.** 1 Shot Perc 16
130. 1 Shot Grind	**169.** Looped Perc 30	**208.** 1 Shot Perc 17
131. 1 Shot Siren	**170.** Looped Perc 31	**209.** 1 Shot Perc 18
132. 1 Shot Turbine	**171.** Looped Perc 32	**210.** 1 Shot Perc 19
133. 1 Shot Alien	**172.** Looped Perc 33	**211.** 1 Shot Perc 20
134. 1 Shot Laser Rip	**173.** Looped Perc 34	**212.** 1 Shot Perc 21
135. 1 Shot Aud Vox	**174.** Looped Perc 35	**213.** 1 Shot Perc 22
136. 1 Shot Scratch 1	**175.** Looped Perc 36	**214.** 1 Shot Perc 23
137. 1 Shot Scratch 2	**176.** Looped Perc 37	**215.** 1 Shot Perc 24
138. 1 Shot Scratch 3	**177.** Looped Perc 38	**216.** 1 Shot Perc 25
139. 1 Shot Scratch 4	**178.** Looped Perc 39	**217.** 1 Shot Perc 26
140. Looped Perc 1	**179.** Looped Perc 40	**218.** 1 Shot Perc 27
141. Looped Perc 2	**180.** Looped Perc 41	**219.** 1 Shot Perc 28
142. Looped Perc 3	**181.** Looped Perc 42	**220.** 1 Shot Perc 29
143. Looped Perc 4	**182.** Looped Perc 43	**221.** 1 Shot Perc 30
144. Looped Perc 5	**183.** Looped Perc 44	**222.** 1 Shot Perc 31
145. Looped Perc 6	**184.** Looped Perc 45	**223.** 1 Shot Perc 32
146. Looped Perc 7	**185.** Looped Perc 46	**224.** 1 Shot Perc 33

225. 1 Shot Perc 34	**246.** 1 Shot Perc 55	**267.** 1 Shot Perc 76
226. 1 Shot Perc 35	**247.** 1 Shot Perc 56	**268.** 1 Shot Perc 77
227. 1 Shot Perc 36	**248.** 1 Shot Perc 57	**269.** 1 Shot Perc 78
228. 1 Shot Perc 37	**249.** 1 Shot Perc 58	**270.** 1 Shot Perc 79
229. 1 Shot Perc 38	**250.** 1 Shot Perc 59	**271.** 1 Shot Perc 80
230. 1 Shot Perc 39	**251.** 1 Shot Perc 60	**272.** 1 Shot Perc 81
231. 1 Shot Perc 40	**252.** 1 Shot Perc 61	**273.** Audity Scratches
232. 1 Shot Perc 41	**253.** 1 Shot Perc 62	**274.** El Perc Kit 1
233. 1 Shot Perc 42	**254.** 1 Shot Perc 63	**275.** El Kit 1 Looped
234. 1 Shot Perc 43	**255.** 1 Shot Perc 64	**276.** Kit 1 Env Loops
235. 1 Shot Perc 44	**256.** 1 Shot Perc 65	**277.** El Perc Kit 2
236. 1 Shot Perc 45	**257.** 1 Shot Perc 66	**278.** El Kit 2 Looped
237. 1 Shot Perc 46	**258.** 1 Shot Perc 67	**279.** Kit 2 Env Loops
238. 1 Shot Perc 47	**259.** 1 Shot Perc 68	**280.** Hybrid Perc
239. 1 Shot Perc 48	**260.** 1 Shot Perc 69	**281.** Warehouse Perc
240. 1 Shot Perc 49	**261.** 1 Shot Perc 70	**282.** Acoustic Perc A
241. 1 Shot Perc 50	**262.** 1 Shot Perc 71	**283.** Ac Kick+Snare b
242. 1 Shot Perc 51	**263.** 1 Shot Perc 72	**284.** Acoustic Kit A+B
243. 1 Shot Perc 52	**264.** 1 Shot Perc 73	**285.** Hardcore Kit 1
244. 1 Shot Perc 53	**265.** 1 Shot Perc 74	**286.** Hardcore Kit 2
245. 1 Shot Perc 54	**266.** 1 Shot Perc 75	**287.** Hardcore Kit 3

Factory Arpeggiator Pattern List

Bank 1

0. LILY	34. Circular	68. SouthrnBells
1. Green Bride	35. 5ths	69. Industry1bar
2. CHAOS	36. Diddy 1	70. Bucholic
3. AmbiTech	37. Polytone 1	71. MusikBox2ba
4. Free State	38. Basic News	72. Trance 1 Bar
5. Mouf Teek	39. Polytone 2	73. Trn/Gliss2Ba
6. Cyber X	40. Aud Endo	74. Celtic 1 Bar
7. Booty Rush	41. Aud Funk	75. Numan 2 Bar
8. Turn Over	42. Rose Groove	76. Octal
9. Hi Tension	43. OdeToStewart	77. Odd Side
10. PG	44. Extrusion	78. Speed Jumper
11. Downstairs	45. TensionMount	79. Bad Fad
12. Hold Me	46. Classic 60s	80. Alert
13. Head Slammer	47. Classic 70s	81. Hyper Alert
14. TekVac	48. Diddy 2	82. Stutter Hopp
15. Amfetamean	49. Syncho Play	83. Jazz Line
16. Low Life	50. Diddy 3	84. Down To It
17. Brain Sifter	51. 4rthOf5th	85. Climber
18. Gen X	52. Burma	86. Classical 1
19. Scale Back	53. Syncho Penta	87. Classical 2
20. PeniTrator	54. Syncho 7-11	88. Classical 3
21. Grinder	55. OpposedWhole	89. SHURE THING
22. Hesitator	56. Missing Phil	90. Audo Pilot
23. Tone Walker	57. SNAKECHARMr	91. Psychosalsa
24. Flam Back	58. MAJOR	92. Orbis
25. PulseFlammer	59. MINOR	93. Celt
26. Skip This	60. JungleRoll?	94. PumpkinEater
27. Can't Get Up	61. MENACE BASS	95. GORECKI
28. Bad Love	62. MENACEBEAT1	96. Classic 1
29. Lost 4 Ever	63. MENACEBEAT2	97. Classic 2
30. Beyond 16	64. MENACEBEAT2b	98. LiveUp
31. Kreamer	65. WonderCliche	99. ShakeUp
32. Xtreme	66. Twilight1/2	
33. Wreave	67. Robot Love	

Bank 2
(These patterns are duplicated in the User Arpeggiator RAM Bank 0).

0.	BOUND-T	34.	Phrophety	68.	Lash Dance
1.	DRUMnBASS 1	35.	Hittite	69.	Ampsterdance
2.	DRUMnBASS 2	36.	Chiffity	70.	Disko Roll
3.	DRUMnBASS 3	37.	Octivate	71.	Heads Up
4.	DRUMnBASS 4	38.	Monogatori	72.	Go Hoser
5.	DRUMnBASS 5	39.	Lowlights	73.	Diminiom
6.	DRUMnBASS 6	40.	Singin	74.	Devlin
7.	DRUMnBASS 7	41.	Spike	75.	Strutter
8.	MANTIS	42.	SlideOn	76.	Oopsical
9.	LED FOOT	43.	Deliver	77.	Arpsidy
10.	SEEKRET	44.	Gorgontastic	78.	Arpsidy 2
11.	CHASE MAN	45.	LiteLite	79.	Base House
12.	CHASE BOY	46.	Hat Skipper	80.	RollDrumRoll
13.	SHORTY	47.	Lil Grooval	81.	Surf's Up!
14.	RAPPID	48.	Strait Rock	82.	ROUNDABOUT
15.	SPUN	49.	Beat Drive	83.	BLACK HOLE
16.	STOP&GO	50.	Groovin	84.	SNAKED
17.	SMOOTH-D	51.	No Control	85.	SLIDER
18.	ACID	52.	Up Side	86.	X LOOP
19.	BASS LOOP	53.	Pocket	87.	Y LOOP
20.	RHYTHMIX	54.	Roll Over	88.	QUANTIZER
21.	GABER	55.	Zoner	89.	Dmachine
22.	ORBIT	56.	Penta Flyer	90.	TOOL KIT 1
23.	BOUNCE-O	57.	Hopper	91.	TOOL KIT 2
24.	Old Skool 1	58.	Zoned	92.	TOOL KIT 3
25.	Old Skool 2	59.	Follow Me	93.	TOOL KIT 4
26.	Raveted	60.	Lucky Spot	94.	SH>>>>>>>
27.	Hollowave	61.	Zephyr	95.	OVAL
28.	Reed	62.	SHOGUM	96.	TRANCED
29.	UKshoota	63.	Skipper	97.	IN & OUT
30.	Synclava	64.	Good Gruv	98.	CHEMY SIS
31.	Extremity	65.	Cowabunga!	99.	--empty--
32.	Raverotic	66.	Shazammm		
33.	DailyBread	67.	Stammer		

Technical Specifications

Audio Channels:	32
MIDI:	MIDI In, MIDI Out, MIDI Thru
MIDI Channels:	16
Presets:	896 (256 user, 640 ROM)
Filters:	12th Order (50 different types)
Arpeggiators:	16
Arpeggiator Patterns:	100 user patterns (32 steps each) 200 factory patterns, up, down, up/down, fwd assign, bkwd assign, fwd/bkwd assign, random.
Audio Outputs:	6 polyphonic analog outputs
Submix Inputs:	4 analog inputs (sum to main outs)
Digital Output:	S/PDIF stereo (AES-pro compatible)
Max. Output Level:	+4 dB
Output Impedance:	1000 Ohms
Sound Memory:	16 MB (expandable to 32 MB)
Data Encoding:	16-bit linear data, 18-bit linear outputs
Effects Engine:	24-bit internal processing
Sample Playback Rate:	44.1 kHz
Signal to Noise:	>92 dB
Dynamic Range:	>90 dB
Frequency Response:	20 Hz - 20 kHz (+2/-1 dB)
THD + Noise:	< 0.02% (1kHz sine wave, A-weighting)
IMD	< 0.05%
Stereo Phase	Phase Coherent +/- 1º at 1 kHz
Power Consumption:	15 Watts
Voltage Input:	90VAC-260VAC at 50Hz-60Hz
Dimensions	H: 1.75 inches W: 19 inches L: 8.5 inches
Weight	6 lb., 14 oz. (3.1 Kg)

Warranty

Please read this warranty, as it gives you specific legal rights.

Length of Warranty

This warranty covers all defects in materials and workmanship for a period of one year from the date of purchase by the original owner, provided that the Warranty Registration Card is filled out and returned to E-mu Systems within 14 days from the date of purchase. Cases may arise where E-mu's Service Department or one of E-mu's authorized service centers will ask for a copy of your sales receipt to facilitate warranty service. Please keep your purchase receipt in a safe place.

How To Obtain Warranty Service

If your instrument requires warranty service, it may be done by any authorized E-mu service center in the country in which you purchased the product ("Country of Purchase"). If you are unable to locate a service center in your Country of Purchase, please contact E-mu Systems Service Department at (408) 438-1921. They will either refer you to an authorized service center in your Country of Purchase or ask that you return your instrument to the factory. When returning an instrument to the factory, you will be issued a Return Authorization number (RA). Please label all cartons, shipping documents and correspondence with this number. E-mu suggests you carefully and securely pack your instrument for return to the factory or authorized service center. Mark the outside of the shipping carton clearly with your RA number. Send to E-mu Systems, Inc. 1600 Green Hills Road, Scotts Valley, California, 95066. You must prepay shipping charges to the service location. E-mu Systems will pay return shipping fees. You will be responsible for any damage or loss sustained during shipment in any direction.

E-mu Systems does not cover:

- Damages due to improper or inadequate maintenance, accident, abuse, misuse, alteration, unauthorized repairs, tampering, or failure to follow normal operating procedures as outlined in the owner's manual.
- Deterioration or damage of the cabinet.
- Damages occurring during any shipment of the product for any reason.
- An E-mu product that has in any way been modified by anyone other than E-mu Systems, Inc.

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This limited warranty is the sole and exclusive warranty provided by E-mu. No other warranties are expressed or implied. E-mu Systems specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

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E-mu Systems' liability for a product found defective is limited to repair or replacement of the unit, at E-mu's option. In no event shall E-mu Systems be liable for damages based on inconvenience, whether incidental or consequential, loss of use of the unit, loss of time, interrupted operation or commercial loss, or any other consequential damages.

Some states do not allow limitation of the duration of implied warranties or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

3/98

Credits

☞ To See Names of the Audity 2000 Development Team:

• Press and hold both cursor buttons and the Edit menu button while powering up the Audity 2000.

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MODEL NUMBER: **SERIAL NUMBER:**

PRODUCT NAME:

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YOUR NAME: _____   TELEPHONE: _____

ADDRESS: _____

CITY: _____   STATE: _____   ZIP CODE: _____

We would appreciate your answers to the following questions:

For what activities will you use this E-mu product? *(Check all that apply)*

MUSIC	**FILM/VIDEO PROD.**	**PERSONAL/HOBBY**
☐ Composition	☐ Scoring	☐ Performance ☐ Solo?
☐ Performance	☐ FX/Sound Design	☐ Home Recording
☐ Recording	☐ Multimedia Authoring	☐ Just Messing Around

What percentage of your income is derived from music? ☐ 100% ☐ 50-99% ☐ 25-49% ☐ 1-24% ☐ 0%

Where did you first learn about this E-mu product? _____

Why did you choose this E-mu product? _____

How would you rate your MIDI knowledge? ☐ Expert   ☐ Moderate   ☐ Struggling to Learn

Will you use this product with a computer? ☐ Yes   ☐ No

If so, what type? ☐ PC *(or compatible)* ☐ Mac   ☐ Atari   ☐ Amiga   ☐ Other _____

Which of the following magazines do you read?

☐ Keyboard *(1)*	☐ Modern Drummer *(12)*	☐ Sound-On-Sound *(19)*	☐ Keys *(25)*
☐ Musician *(2)*	☐ Studio Sound *(14)*	☐ EQ *(21)*	☐ Audio Media *(26)*
☐ Mix *(5)*	☐ Music Technology *(16)*	☐ Future Music *(22)*	☐ Canadian Musician *(27)*
☐ Downbeat *(9)*	☐ Post *(17)*	☐ Keyboards *(Germany) (23)*	☐ Film & Video *(28)*
☐ Elec. Musician *(10)*	☐ Millimeter *(18)*	☐ Home/Studio Recording *(24)*	

What other products would you like to see from E-mu? _____

_____

How would you describe your buying experience?

☐ Splendid   ☐ Very Good   ☐ Fair   ☐ Poor   ☐ Abysmal

Additional Comments: _____

_____

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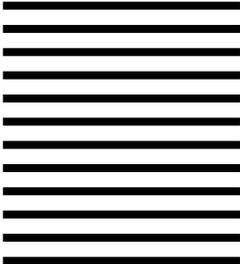
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