

# ALESIS QuadraSynth Plus

## Reference Manual

## Important Safety Instructions

**WARNING** - When using this electric product, basic precautions should always be followed, including the following:

- 1) Read all the instructions before using the product.
- 2) Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
- 3) This product, either alone or in combination with an amplifier and headphones or 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, you should consult an audiologist.
- 4) This product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
- 5) The power-supply cord on this product should be unplugged from the outlet when left unused for a long period of time.
- 6) Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
- 7) The product 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 onto the product; or
  - c) The product has been exposed to rain; or
  - d) The product does not appear to be operating normally or exhibits a marked change in performance; or
  - e) The product has been dropped, or the enclosure damaged.
- 8) Do not attempt to service this product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

## Grounding Instructions

This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce 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 that is properly installed and grounded in accordance with all local rules and ordinances.

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

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## CHAPTER 1

# SETTING UP

## Unpacking and Inspection

Your QuadraSynth Plus was packed carefully at the factory. The shipping carton was designed to protect the unit during shipping. Please retain this container in the highly unlikely event that you need to return the QuadraSynth Plus for servicing.

Upon receiving the QuadraSynth Plus, carefully examine the shipping carton and its contents for any sign of physical damage that may have occurred in transit. If you detect any damage, do not destroy any of the packing material or the carton, and immediately notify the carrier of a possible claim for damage. Damage claims must be made by you. Contact your Alesis dealer.

The shipping carton should contain the following items:

- QuadraSynth Plus with the same serial number as shown on shipping carton
- Sustain pedal
- AC Power Cable
- Computer floppy disk containing Sound Bridge software and electronic manual
- This instruction manual, plus lists of Mixes and Programs, and Quick Start guide
- Alesis warranty card



*It is important to register your purchase; if you have not already filled out your warranty card and mailed it back to Alesis, please take the time to do so now.*

## AC Power Hookup

The QuadraSynth Plus works with the voltage of the country it is shipped to (either 110 or 220V, 50 or 60 Hz), and comes with a line cord or power supply suitable for the destination to which the keyboard is shipped.

With the QuadraSynth Plus off, plug the AC cord's female (jack) end into Quadra-Synth Plus's AC socket and the male (plug) end into a source of AC power. It's good practice to not turn the QuadraSynth Plus on until all other cables are hooked up.

The IEC-spec AC cord included with the QuadraSynth Plus (do not substitute any other AC cord) is designed to connect to an outlet that includes three pins, with the third, round pin connected to ground. The ground connection is an important safety feature designed to keep the chassis of electronic devices such as the QuadraSynth Plus at ground potential. Unfortunately, the presence of a third pin does not always indicate that it is properly grounded. Use an AC line

tester to determine this. If the outlet is not grounded, consult with a licensed electrician.



*Do not operate any electrical equipment with ungrounded outlets. Plugging the QuadraSynth Plus into an ungrounded outlet, or “lifting” the unit off ground with a three-to-two wire adapter, can create a hazardous condition.*

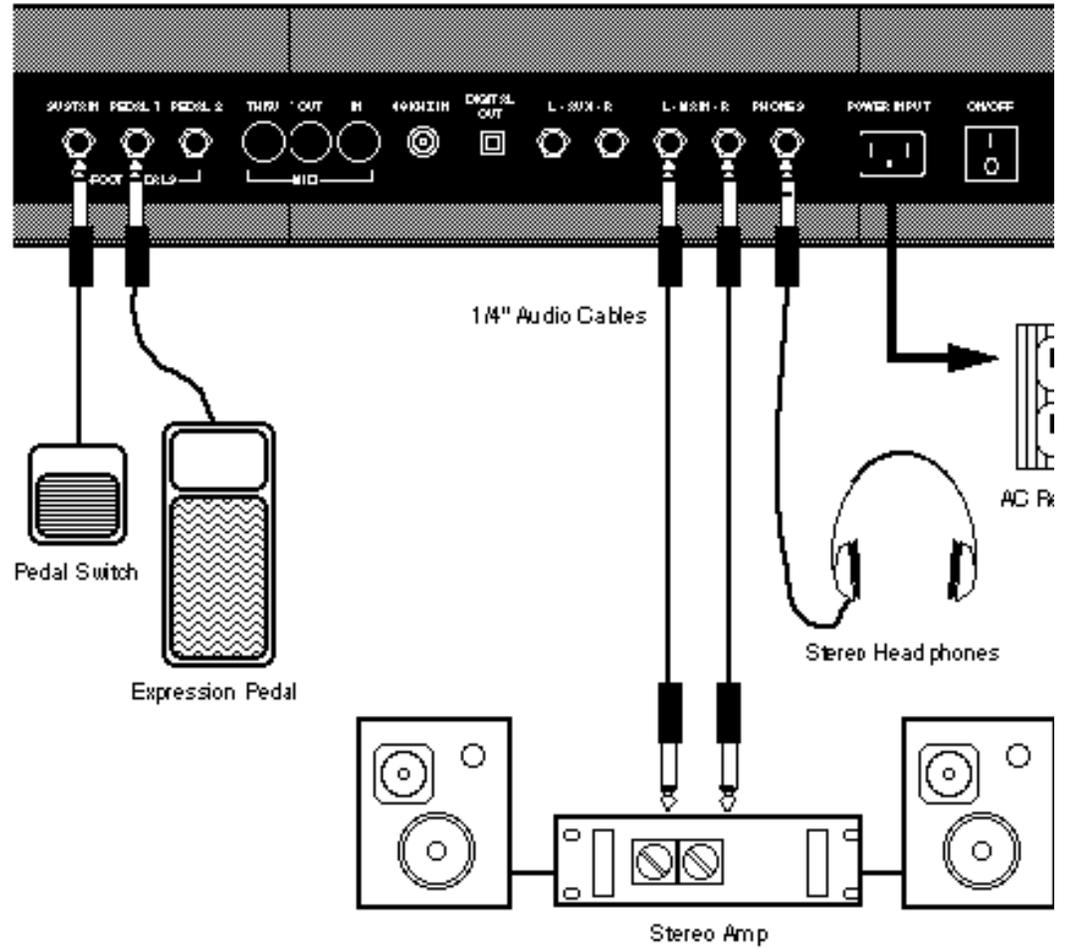


*Alesis cannot be responsible for problems caused by using the QuadraSynth Plus or any associated equipment with improper AC wiring.*

### Line Conditioners and Protectors

Although the QuadraSynth Plus is designed to tolerate typical voltage variations, in today’s world the voltage coming from the AC line may contain spikes or transients that can possibly stress your gear and, over time, cause a failure. There are three main ways to protect against this, listed in ascending order of cost and complexity:

- **Line spike/surge protectors.** Relatively inexpensive, these are designed to protect against strong surges and spikes, acting somewhat like fuses in that they need to be replaced if they’ve been hit by an extremely strong spike.
- **Line filters.** These generally combine spike/surge protection with filters that remove some line noise (dimmer hash, transients from other appliances, etc.).
- **Uninterruptible power supply (UPS).** This is the most sophisticated option. A UPS provides power even if the AC power line fails completely. Intended for computer applications, a UPS allows you to complete an orderly shutdown of a computer system in the event of a power outage, and the isolation it provides from the power line minimizes all forms of interference—spikes, noise, etc.



## About Audio Cables

The connections between the QuadraSynth Plus and your studio are your music's lifeline, so use only high quality cables. These should be low-capacitance shielded cables with a stranded (not solid) internal conductor and a low-resistance shield. Although quality cables cost more, they do make a difference. Route cables to the QuadraSynth Plus correctly by observing the following precautions:

- Do not bundle audio cables with AC power cords.
- Avoid running audio cables near sources of electromagnetic interference such as transformers, monitors, computers, etc.
- Do not place cables where they can be stepped on. Stepping on a cable may not cause immediate damage, but it can compress the insulation between the center conductor and shield (degrading performance) or reduce the cable's reliability.
- Avoid twisting the cable or having it make sharp, right angle turns.
- Never unplug a cable by pulling on the wire itself. Always unplug by firmly grasping the body of the plug and pulling directly outward.
- Although Alesis does not endorse any specific product, chemicals such as Tweek and Cramolin, when applied to electrical connectors, are claimed to improve the electrical contact between connectors.

## Basic Audio Hookup



*When connecting audio cables and/or turning power on and off, make sure that all devices in your system are turned off and the volume controls are turned down.*

Because the QuadraSynth Plus includes extensive signal processing as well as a full complement of sounds, you can make great sounds with nothing more than an amplifier or a set of headphones.

The QuadraSynth Plus has two Main and two Aux audio outputs. These can provide an amplification system or mixer with several different audio hookup options:

- **Mono.** Connect a mono cord from the [MAIN-R] Audio Output to a mono amplification system or individual mixer input.
- **Stereo.** Connect two mono cords from the [MAIN-L] and [MAIN-R] Audio Outputs to a stereo amplification system or two mixer inputs.
- **Dual Stereo/Four Individual Outs.** Connect two mono cords from the [MAIN-L] and [MAIN-R] Audio Outputs and two mono cords from the [AUX-

L] and [AUX-R] Outputs to a dual stereo amplification system, or four mixer inputs.

- **Stereo Headphones.** Plug a set of high-quality stereo headphones into the rear panel [PHONES] jack.

## A Word About Sound Bridge

Included with the QuadraSynth Plus is a 3-1/2" floppy disk containing a software program called Sound Bridge. This software has been provided free of charge in an effort to promote sound design for the QuadraSynth Plus.

Sound Bridge is a Macintosh™ sound development utility which compiles custom samples from a variety of sources into the QuadraSynth Voice format, and downloads the compiled data to an Alesis PCMCIA Sound Card via MIDI Sysex to a QuadraSynth Plus or S4 Plus. Originally developed for in-house use only, Alesis soon realized the need for individuals and sound developers to be able to burn their own Sound Cards as well, using whatever samples they wanted. Sound Bridge makes this possible without having a PCMCIA card burner attached to your computer. All you need is a QuadraSynth Plus or S4 Plus.

Sound Bridge creates a QuadraSynth Voice (multi-sample) by loading Sample Cell I or Sample Cell II format Instrument files. Using this format, Sound Bridge is able to determine key group and velocity group split points, root notes, sample playback rates, tunings, start points, loop points, and loop tunings. Sound Bridge can also create QuadraSynth Voices without Sample Cell Instruments by loading single AIFF, Sound Designer, or Sound Designer II files.

Sound Bridge does NOT require Sample Cell hardware. The Sample Cell Instrument file, or sample file, may be loaded directly into Sound Bridge from any disk (i.e. CD-ROM, floppy disk, hard disk, etc.). For example, a user may load data from a Sample Cell CD-ROM, and send this data to the QuadraSynth PCMCIA Card, without ever using Sample Cell!

Sound Bridge can write to PCMCIA cards (or PC Cards) of up to 8MB in size. These cards must be either Type I SRAM (150ns or faster) or Type I Flash RAM cards (AMD C-series or D-series 5V Flash Memory Cards). If you are unsure whether a card is compatible with the S4 Plus, contact Alesis Product Support for more information.

The Sound Bridge disk contains the Sound Bridge application, and an electronic manual which will give you all the information you need to know to run Sound Bridge.

## CHAPTER 2

# YOUR FIRST SESSION WITH THE QUADRASYNTH PLUS

## Powering Up

After making your connections, turn on the system's power using this procedure:

⑩ Before turning on the QuadraSynth Plus's power, check the following items:

- Have all connections been made correctly?
- Are the volume controls of the amplifier or mixer turned down?
- Is the volume of the QuadraSynth Plus turned down?

¶ Turn on the [ON/OFF] (power) switch on the QuadraSynth Plus rear panel.

*Upon power-up, the QuadraSynth Plus will display the last selected Program or Mix. If this Program/Mix has been edited, the display will indicate this by showing the word "EDITED" below either the word "MIX" or "PROGRAM."*

① Turn the QuadraSynth Plus's master [VOLUME] control to maximum. *The best signal-to-noise ratio is achieved when [VOLUME] is set to maximum. This is a digital volume control, and lower settings have lower resolution.*

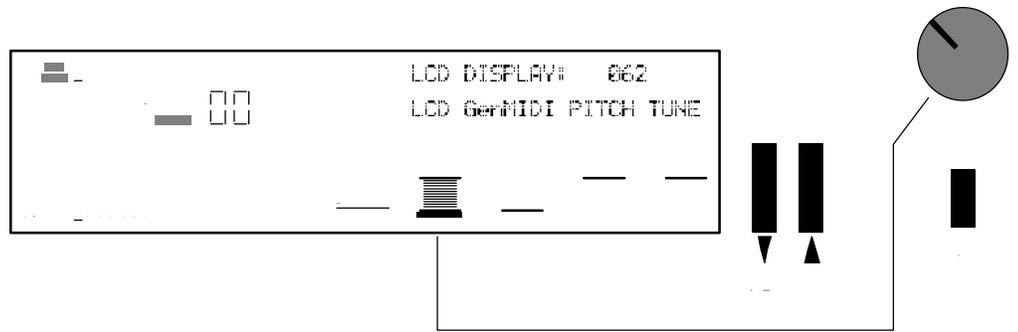
Turn on the power of the amplifier/mixer, and adjust the volume.

## Adjusting the Display Contrast

Occasionally, the characters in the LCD display may be difficult to read, depending on the viewing angle and existing lighting conditions. In such a situation, adjust the contrast of the LCD display using the following procedure.

⑩ Press [GLOBAL].  
*The display will change to the Global Page.*

¶ Use Quad Knob [1] to adjust the contrast, or use the VALUE [-] and [ ] buttons.  
*The contrast and its value in the display will change.*



## Playing the Demo Sequence

The QuadraSynth Plus has a built-in demo sequence which demonstrates the wide variety of sounds this amazing instrument is capable of generating. In order to get the full effect of the demo, we recommend that you connect both the LEFT and RIGHT outputs to your sound system, or listen on headphones.

To play the demo sequence:

⑩ Hold the [GLOBAL] button, and press [MIX].  
*The upper-right display will read "Playing Demo. Press MIX to stop."*

¶ Press [MIX] to stop the demo.

There will be no MIDI OUT messages during the demo, and the keyboard will be disabled.

### Playing Specific Sections of the Demo

The demo sequence is currently comprised of four sections. Any of these sections can be played directly, without listening to the sections preceding it. This can be done by holding [GLOBAL] and pressing one of the Quad Buttons [1] – [4] buttons which corresponds to the section you would like to hear.

## Enabling General MIDI Mode

If you are using a General MIDI sequencer, and/or playing a sequence that is programmed to take advantage of General MIDI, turn the "General MIDI" function in the QuadraSynth on.

To turn the General MIDI function on:

⑩ Press [GLOBAL].  
*The display will now be in Global Edit Mode.*

¶ Press Quad Button [2].  
*This selects the General MIDI parameter in the display.*

① Press the VALUE [ ] button.  
*This turns on General MIDI mode, and automatically puts you into Mix Play Mode with Mix 00 of Preset Bank 4 selected.*

For more information about General MIDI, refer to the the MIDI Supplement in Appendix B.

## Playing the QuadraSynth Plus

The QuadraSynth Plus is shipped from the factory with 5 Banks of 128 Preset Programs (sounds) each. Additionally, there are 100 Mixes in each of the 5 Banks.

### Program Mode and Mix Mode

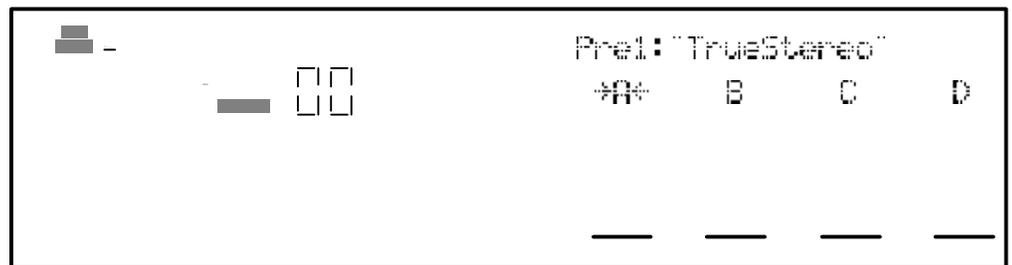
The QuadraSynth Plus is always in one of two modes: *Program Mode* or *Mix Mode*. When selecting Programs, you will be in Program Play Mode. When editing a Program, you will use Program Edit Mode. When auditioning Mixes, you will be in Mix Play Mode. When editing a Mix, you will use Mix Edit Mode.



*If you ever get lost while programming the QuadraSynth Plus, press either the [PROGRAM] button or the [MIX] button to get back to their respective play modes.*

- Press the [PROGRAM] button to select Program Play Mode.

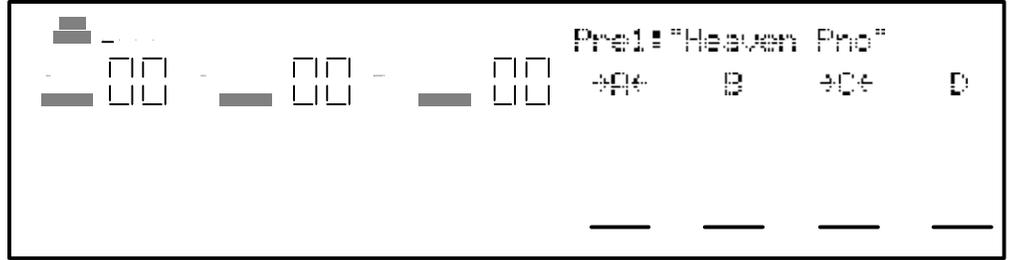
In Program Play Mode, the QuadraSynth Plus plays a single Program. The display will look like this:



The current PROGRAM number is displayed, and the Program's name appears in the top-right. The current Bank is shown to the left of the Program name. The current MIDI channel is shown in the top left corner left.

- Press the [MIX] button to select Mix Play Mode.

In Mix Play Mode, the QuadraSynth Plus can combine up to 16 Programs for stacking sounds together, splitting the keyboard into different regions, or working with a MIDI sequencer. The display will look like this:



All MIDI channels that are active in the current Mix are shown at the top left, to indicate multitimbral operation. The current MIX and EFFECT numbers are displayed, along with the current Bank and Mix's name. The PROGRAM number display shows the program assigned to the underlined MIDI channel.

## Auditioning Internal Programs

⑩ Press the [PROGRAM] button to select Program Play Mode. *You can now play the QuadraSynth Plus keyboard; the Program will be whatever was selected when last in Program mode (Program number 00 — 127).*

¶ Select a Program using any of these methods:

- Use the [-1] and [+1] buttons to step through the Programs one at a time.
- Use the [-10] and [+10] buttons to step through the Programs ten at a time.
- Hold the [PROGRAM] button and rotate Quad Knob [1].
- Use the DIRECT SELECT [1]—[0] buttons for direct entry. *Leading zeroes must be entered for Programs 0 — 19. Example: Press [0] then [0] then [5] for Program 5; press [0] then [1] then [3] for Program 13. Only begin with [1] if you are selecting a Program from 100 — 127. If you start entering a number and change your mind, wait a few seconds and the QuadraSynth Plus will revert to the previous Program number.*



*To hear the Stereo Grand Piano, select Program 00 in Preset Bank 1.*

## Selecting Banks

The QuadraSynth Plus provides five internal Banks containing 128 Programs in each (and 100 Mixes each, but we'll get to Mixes in a moment). The currently selected Bank will be shown in the display just to the left of the currently selected Program's name.

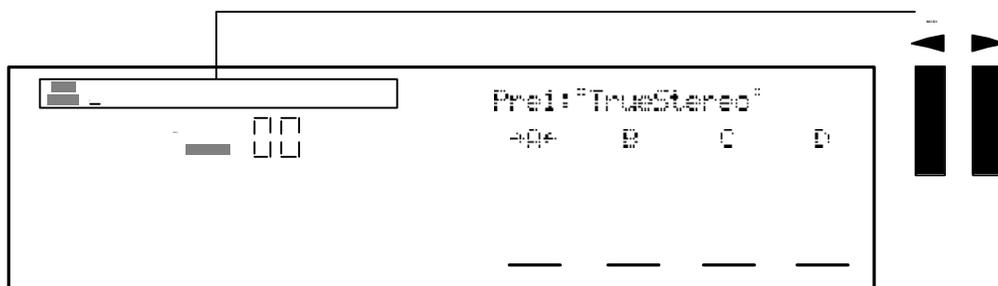
- Use the BANK [♦] and [∅] buttons to select a Bank (User, Preset 1 – 4).



*User and Preset Banks are described in detail in Chapter 4.*

## Selecting the MIDI Channel

While in Program Play Mode, the QuadraSynth Plus can transmit and receive information on any single MIDI channel of the 16 available channels. The currently selected channel appears at the top left of the display.



- ⑩ Use the MIDI [♦] and [∅] buttons to select a MIDI channel from 1 — 16.  
*The display will change to indicate the currently selected MIDI channel.*

## Realtime Performance Functions

The QuadraSynth Plus provides various ways to control the sound as you are playing. Try out some of these functions while playing the keyboard. The sound of the effects can also change by using these controllers. The effect of these realtime controllers varies from Program to Program; in some they may not be active, and in others they may have a dramatic effect.

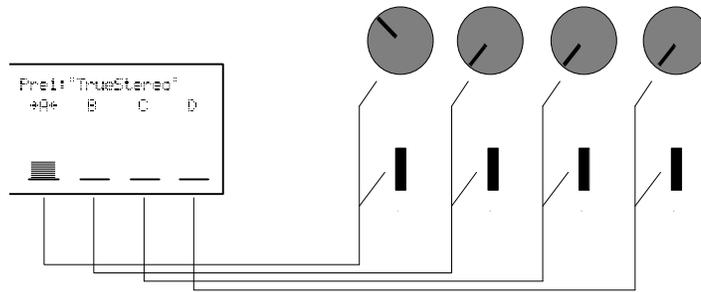
- **Velocity.** The volume and tonal quality of the sound will change according to how hard you play the keyboard.
- **Aftertouch.** The action of pressing a key down after playing it is called “aftertouch” (it is also sometimes referred to as “Pressure” since it corresponds to the amount of pressure being applied to the keyboard). Pitch, tone and volume (among other things) can be changed using aftertouch.
- **Pitch Bend Wheel.** While playing a note, you can move the PITCH BEND WHEEL up to raise the pitch, or down to lower the pitch. The amount of pitch bend available can be different for each Program.
- **Modulation Wheel.** By raising the MODULATION WHEEL, you can add expressive modulation effects (such as vibrato or tremolo) while you play. The type of modulation effect can be different for each Program.
- **The Quad Knobs.** These are described below.

Further expressive control is available with a pedal switch (included) or expression pedal (optional, see page 25). By connecting a pedal switch to the SUSTAIN jack on the rear panel, you can have the sound sustain even after you release the keys. By connecting an expression pedal to one of the pedal jacks (PEDAL 1 or PEDAL 2), you can use the pedal to change the volume or tone (or some other quality such as reverb depth or vibrato speed) of the sound, if the Program is edited to use the pedal(s).

## The Quad Knobs

To the right of the display are four knobs referred to as Quad Knobs, [1]—[4], each with its own button. The Quad Knobs provide control over various parameters depending on the mode you are in. The parameters in the display will change depending on which function and page are selected. Not all four Quad Knobs are active in all windows; there are many pages that have only one active Quad Knob.

In Program Play Mode and Mix Play Mode, the Quad Knobs act as Controllers A–D. These Controllers are defined in Global Edit Mode (Page 3) to transmit various MIDI controller messages. If a Program or Mix uses these Controllers A–D, a pair of arrows will point towards the active controller’s letter in the display. This indicates that moving the related Quad Knob will have some kind of effect on the selected Program or Mix. In the illustration below, Controller A (Quad Knob [1]) is used by the selected Program.



When in Program Edit Mode or Mix Edit, the Quad Knobs are linked to the parameters that appear in the right side of the display. The lower line of the alphanumeric display will show the abbreviated name of each parameter, with a bar graph below it representing the current setting of the parameter. By turning Quad Knob [1], you adjust the setting of the first parameter on the left. Turning Quad Knob [2] adjusts the next parameter, and so on. Once a Quad Knob has been turned, or its button has been pressed, the top line of the display will immediately show the parameter's name and current setting. At this point, the parameter will have a thick underline beneath its bargraph, indicating that you can now use the VALUE [-] and [ ] buttons to adjust the parameter's setting.

### Auditioning Mix Play Mode

Mix Play Mode allows you to assign a Program to each of the 16 MIDI channels. This makes it easy to create multitimbral setups for use with an external MIDI sequencer. Additionally, a MIX can be used to “layer” sounds together, or “split” the keyboard in a number of ways, or any combination of these. There are many different ways to program a Mix. For more about Mix Play Mode, refer to Chapter 5. For more about connecting the QuadraSynth Plus to a MIDI sequencer, see Chapter 3.

⑩ Press the [MIX] button.  
*The display will change to Mix Play Mode.*

¶ Select a Mix from 00—99 using one of these methods:

- Use the [-1] and [+1] buttons to step through the Mixes one at a time.
- Use the [-10] and [+10] buttons to step through the Mixes ten at a time.
- Hold the [MIX] button and rotate Quad Knob [1].
- Use the DIRECT SELECT [1]—[0] buttons for direct entry.

*Leading zeroes must be entered for Mixes 0 — 9. Example: Press [0] then [5] for Mix 5. If you start entering a number and change your mind, wait a few seconds and the QuadraSynth Plus will revert to the previous Mix number.*

### Selecting Banks

The QuadraSynth Plus provides five internal Banks containing 100 Mixes in each. The currently selected Bank will be shown in the display just to the left of the currently selected Mix's name.

- Use the BANK [♦] and [∅] buttons to select a Bank (User, Preset 1 – 4).



*After switching between the Preset and User banks, press Quad Button [1] to see the name of the Mix in the display again.*

User memory and Preset memory are described in detail in Chapter 4.

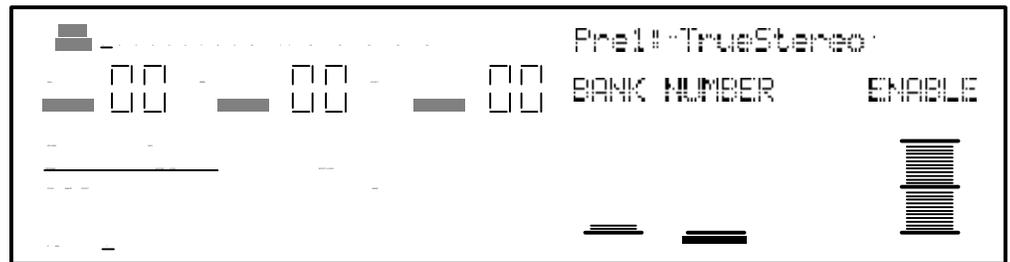
## Editing a Mix

In this section, we will assign Programs to and set volume levels for the 16 MIDI channels in a Mix, for playing back tracks from a MIDI sequencer. However, there is much more about a Mix that may be edited. Refer to Chapter 5 for more about Mix editing.

⑩ Press [MIX] and select a Mix using one of the three methods described above.

¶ Press [SELECT].  
The top line of the LCD's function list will read "EDITING: MIX".

① Simultaneously press both the FUNCTION [◆] and [∅] buttons.



Use the MIDI [◆] and [∅] buttons to select a MIDI channel for editing.

The MIDI monitor and selection strip will indicate the selected MIDI channel with an underline. These buttons "wrap around" (e.g., if you're on channel 16 and press MIDI [∅], you'll select channel 1. If channel 1 is selected and you press MIDI [◆], you'll select channel 16).

) Use Quad Knob [1] to choose a Bank (User, Preset 1 – 4).

★ Use Quad Knob [2] to select a Program for the selected Channel.



Don't use the MIX/PROGRAM SELECT [1]—[0] buttons while in any edit mode. If you do, you will be kicked out of Mix Edit mode and will select another Mix, losing your changes.

Use Quad Knob [4] to enable or disable the Program on the selected Channel.

When enabled, the Channel number will appear in the top left of the display. When disabled, the Channel number will not appear (unless selected for editing using the MIDI [◆] and [∅] buttons, in which case it is underlined).

♠ To set the Program's level, press the FUNCTION [∅] button once so that "LEVEL" is underlined in the display. Use Quad Knob [1] to adjust the level.

⑥ Repeat steps ① — ♠ until all desired Programs are assigned to all desired MIDI channels, and have the appropriate levels.



*Changes to Mix parameters are temporary and will be lost if another Mix is selected. To make changes permanent, you must store the Mix into the User bank. Refer to Chapter 4 for information about storing changes.*

## Setting the Effects Level

Each Program can use up to four Sounds, for either layering or splitting the keyboard. Each of these Sounds has its own effects send level and effects bus assignment. Many of the Programs in the QuadraSynth Plus use only one or two Sound layers, while others may use all four Sounds. You can adjust the effect send amount for each Sound independently, or you can view/edit all four sounds simultaneously.

⑩ Press [PROGRAM] to access Program Play Mode, and select a Program you wish to edit, using the methods described on page 14.

¶ Press [SELECT] to access Program Edit Mode.

① Press the [EFFECT] button (located among the DIRECT SELECT buttons on the far left); the words “EFFECT - LEVEL” are underlined in the display.

*This is where you determine how much level will be sent from the current Program sound layer to the effects processor, and on which of the four busses.*



Turn Quad Knob [1] to adjust the effect send level of the selected Sound (1—4).

*For the most dramatic effect, set this to 99.*

) Press the [EDIT 1] button to select another Sound to adjust.

*The display will indicate “SOUND 1” or “SOUND 2,” etc., to indicate which of the four Sounds is being edited.*

★ Press the [EDIT 4] button to display the effect send levels of all four Sounds simultaneously; use Quad Knobs [1] — [4] to adjust each Sound’s effect level.

*The display will indicate “SOUND 1 2 3 4.”*



*Note: If a Sound is not enabled in a Program, its title will be shown in lowercase (“snd4”), and adjust its controls will have no effect on the Sound until the Sound is enabled. To enable a Sound, hold down its respective Quad Button (i.e., [3] for Sound #3) and press VALUE [ ].*

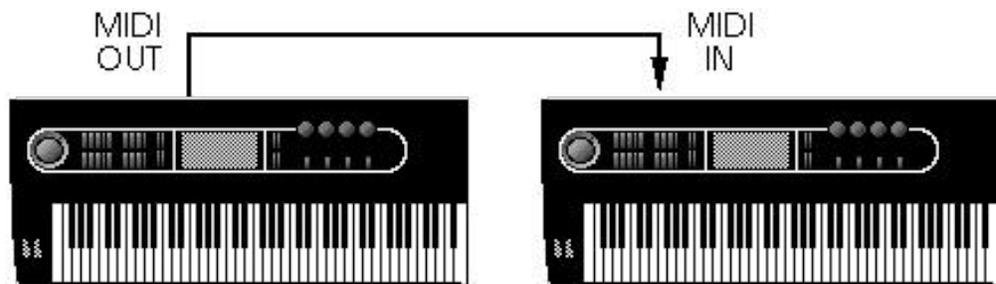
## CHAPTER 3

# CONNECTIONS

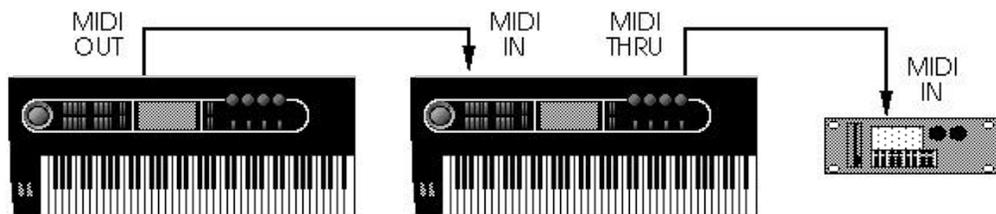
## Basic MIDI Hookup

MIDI is an internationally-accepted protocol that allows musical-related data to be conveyed from one device to another. See the MIDI Supplement in Appendix B if you are not familiar with how MIDI works.

The MIDI connections provide three different functions. To trigger the QuadraSynth Plus from a MIDI control device (keyboard, drum pad, guitar or bass controller, sequencer, etc.), connect the control device's MIDI OUT to the QuadraSynth Plus's MIDI IN.



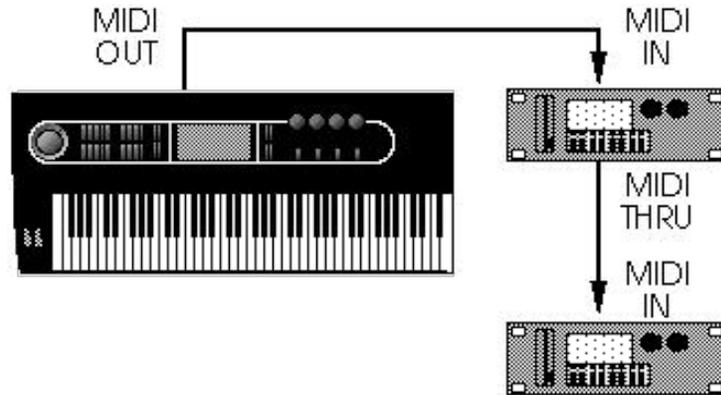
The MIDI THRU jack carries a replica (or echo) of the signal appearing at the QuadraSynth Plus's MIDI IN, allowing you to trigger other devices from the same controller which is feeding the QuadraSynth Plus. Simply connect the QuadraSynth Plus MIDI THRU to the other device's MIDI IN. Note that the MIDI THRU jack will not send messages from the QuadraSynth Plus's keyboard itself.



The MIDI OUT sends MIDI data from the QuadraSynth Plus's keyboard to other MIDI devices, but can also send *System Exclusive* data (see the MIDI supplement) to a storage device such as the Alesis DataDisk for later recall.

## Example 1: Master Controller for Live Use

Most live applications use the QuadraSynth Plus to generate sounds, with (possibly) the MIDI output driving other MIDI devices, such as an S4 Plus rack unit, QuadraVerb 2, other keyboards and sound modules, etc.



To drive MIDI controlled devices from the QuadraSynth Plus, patch the QuadraSynth Plus's MIDI OUT to the MIDI device's MIDI IN. If there is more than one MIDI device, patch the first device's MIDI THRU to the second device's MIDI IN, the second device's MIDI THRU to the third device's MIDI IN, etc.

*Caution:* Do not attempt to connect more than three or four units together using thru connections as this may impede the MIDI data flow to the connected devices. Instead, insert a MIDI patch-bay to the QuadraSynth Plus's MIDI OUT so that all devices receive its MIDI information simultaneously.

In Program mode, the keyboard sends and receives MIDI information on only one MIDI channel at a time. In Mix mode, however, the keyboard can transmit on as many as 16 MIDI channels, each with its own keyboard range (for more information on Program mode and Mix mode, see Chapter 4).

When using the QuadraSynth Plus as a master keyboard to play other MIDI devices, be sure the Keyboard Mode is set to "NORMAL." The Keyboard Mode parameter is found on Page 2 of Global mode (for more information, see Chapter 8).

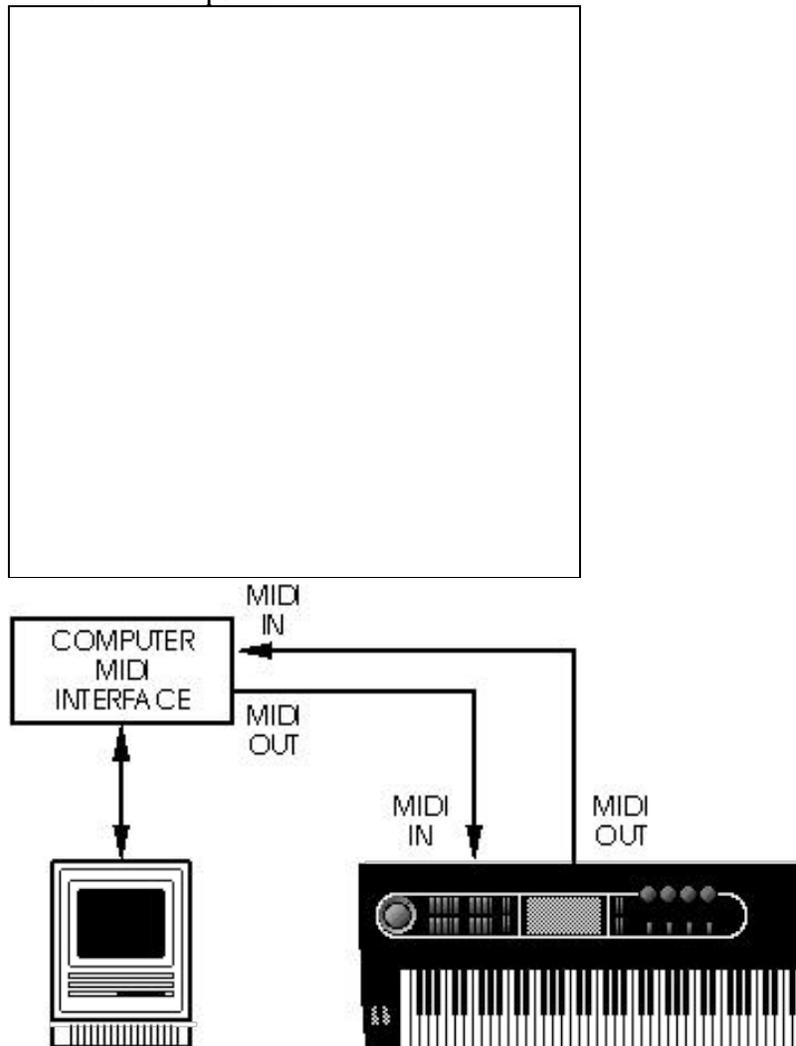
It is possible for the QuadraSynth Plus to transmit volume and pan settings via MIDI (as controllers 7 and 10, respectively). This occurs whenever a new Program is selected, or when a new Mix is selected. In the case of a Mix, the volume and pan settings may be transmitted for each Channel (up to 16) used in the selected Mix.

## Example 2: Using an External Sequencer

The QuadraSynth Plus can generate MIDI signals that are recorded by a sequencer. On playback, the sequencer sends this data back into the QuadraSynth Plus, which then serves as a multitimbral sound module (in Mix mode). The sequencer can generate data over several channels; in Mix mode, the QuadraSynth Plus can be programmed so that individual Programs play sequenced data on specific channels.

*Example:* If the sequencer transmits a piano part over channel 1, a bass part over channel 2, and a drum part over channel 10, you could set up a QuadraSynth Plus Mix so that a piano sound plays only the MIDI data assigned to channel 1, a bass sound plays only the MIDI data assigned to channel 2, and drums play only the MIDI data assigned to channel 10. The QuadraSynth Plus can store up to 100 User Mixes.

Connect the sequencer's MIDI Out to the QuadraSynth Plus's MIDI IN, and the QuadraSynth Plus's MIDI OUT to the sequencer's MIDI In. This allows the QuadraSynth Plus to send data to the sequencer for recording, and play back data from the sequencer.



If you are driving other MIDI gear (such as an expander module or MIDI-responsive signal processor), you'll usually drive these from the sequencer if it has additional MIDI outputs. However, you can also use the QuadraSynth Plus's MIDI THRU connector to drive other modules since the Thru carries a replica of what appears at the QuadraSynth Plus's MIDI IN, which is the same as the sequencer's MIDI OUT.

## About the Keyboard Mode

In a Mix, the QuadraSynth Plus's keyboard may be set up in several ways using the Keyboard Mode parameter found on Page 2 of Global mode. You need to determine which way is best for your application. The Keyboard Mode parameter determines how the keyboard will function with regard to MIDI in Mix mode:

- The keyboard sends on only one MIDI channel and the sequencer is used to set the MIDI channel of each track (Keyboard Mode = OUT 1 – OUT 16).
- Or, the keyboard is split or layered, sending on many MIDI channels at once, and the sequencer records each channel onto a different track (NORMAL).
- Or, the keyboard only sends on one MIDI channel, but you change the channel on the QuadraSynth Plus for each separate track on the sequencer (CH SOLO).

In OUT 1 – OUT 16 mode, you will not hear the QuadraSynth Plus unless your sequencer echoes the MIDI data back to the QuadraSynth Plus's MIDI IN. This is a way of verifying that the sequencer is set to receive properly. Depending on the capabilities of your sequencer, it may “auto-channelize” the echoed MIDI back to the QuadraSynth Plus on a different MIDI channel (usually, the MIDI channel that the selected record track is assigned to). In NORMAL or CH SOLO mode, the QuadraSynth Plus sounds are internally played from the QuadraSynth Plus keyboard, so any echo features of the sequencer should be turned off.

When using the QuadraSynth Plus with a MIDI sequencer, the usual choice for the Keyboard Mode is “OUT 1.” This is equivalent to turning the QuadraSynth Plus's local control off and transmitting on channel 1. For more information, see page 46.

## Pedal and Footswitch Hookup

The QuadraSynth Plus keyboard has two PEDAL jacks that accept a Roland model EV-5 (or equivalent) volume control pedal, or a standard switch pedal. Each pedal can be assigned to independent modulation functions within a program. *Example:* One pedal could control volume, and the other vibrato depth.

The SUSTAIN footswitch jack accepts a momentary footswitch unit, included with the unit (it is packed in the center of the end caps). This provides the same function as the sustain (or damper) pedal on a standard keyboard. You can use either a normally closed or normally open momentary contact footswitch. Plug it into the rear panel SUSTAIN footswitch jack before powering up the QuadraSynth Plus; on power up, it will automatically sense the footswitch polarity and calibrate itself accordingly.



*If your footswitch seems to respond backwards (notes sustain unless the footswitch is pressed), turn off the QuadraSynth Plus, make sure the footswitch plug is fully inserted into the footswitch jack, then turn the power back on.*



*Don't hold down the footswitch when powering up the QuadraSynth Plus.*

## Digital Audio/Optical Hookup

The QuadraSynth Plus can send digital audio directly into ADAT, which provides better fidelity than using the analog inputs and outputs.

The digital I/O connector follows a proprietary Alesis format that carries all four audio outputs on a single fiber optic cable. Either pair of outputs can be converted into standard AES/EBU or S/PDIF stereo digital audio format by using the Alesis AI-1 interface. Fiber optic cables of various lengths are available from your Alesis dealer. The shorter the cable, the better. The model OC cable is 5 meters long and is the maximum length recommended.

To hook up the optical cable:

- ⑩ Remove the two pieces of clear plastic, tubular sleeving (if present) that protect the tips of the optical cable plugs.
- ¶ Insert one cable end into the QuadraSynth Plus DIGITAL OUT and the other end into the ADAT or AI-1 DIGITAL IN.

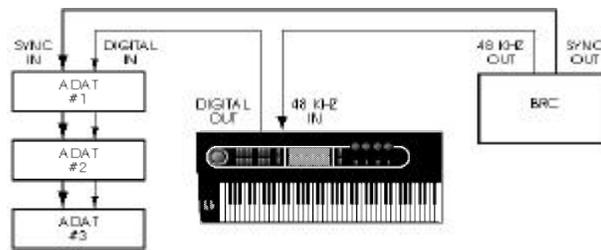
To test the cable and QuadraSynth Plus digital output, plug one cable end into the QuadraSynth Plus. The other end should emit a soft red light (it is not dangerous to look directly at this light).

### Recording Digital Audio

Once the fiber optic connection is made between the QuadraSynth Plus and ADAT or an AI-1, the QuadraSynth Plus will output audio on the first four channels of the digital bus (the bus is capable of handling eight channels of digital audio). The Main Left and Right outputs are routed to channels 1 and 2, while the Aux Left and Right outputs are routed to channels 3 and 4. Note that the volume knob controls the level of all analog and digital output channels simultaneously. Set the volume to maximum for most applications.

### 48 kHz Clock In

If your ADAT system has an Alesis BRC Remote Controller, the QuadraSynth Plus's digital clock must be synchronized to the clock coming from the BRC. Connect a BNC-to-BNC cable (such as the Alesis BN cable) between the BRC's 48 kHz CLOCK OUT and the QuadraSynth Plus's 48 kHz CLOCK IN. For more information about using the 48 kHz clock, see page 118 in Chapter 8. When using only one ADAT without the BRC, it is not necessary to connect the 48 kHz Clock.



*Tip:* With this type of connection, the ADAT tracks will remain in tune with the QuadraSynth Plus even when the BRC's pitch value is adjusted.

## CHAPTER 4

## OVERVIEW

## Basic Architecture

The QuadraSynth Plus contains digitized acoustic and electronic **voices**, organized into 18 **groups** of sound types. The groups are:

Piano	Bass	Ensemble	Drums
Organ	Guitar	Ethnic	Percussion
Keyboard	Brass	Voice	Rhythm
Synth	Woodwind	Sound FX	QSPPlus
Waves	String		

Several functions (filter, amplitude envelope, pitch envelope, LFO, multiple modulation sources, signal processors, etc.) can be used to process a sample. A **Sound** is the combination of a sample with its associated processing.

A **Program** consists of up to four sounds. These sounds can be layered, split over specific keyboard ranges, or selectively overlapped. The QuadraSynth Plus has a User Bank of 128 Programs that you can modify, plus 4 Preset Banks with 512 Preset Programs that are permanently installed in the QuadraSynth Plus at the factory (although the Preset Programs can be edited, they must be stored into the User bank to permanently retain your changes). Each Program is linked to its own Effects Patch.

A **Mix** consists of up to 16 Programs, each assigned to a specific MIDI channel and one Effect Patch. The QuadraSynth Plus has 100 Mixes in the User Bank, plus 4 Preset Banks with 400 Preset Mixes. This is extremely useful for multitimbral setups where the QuadraSynth Plus plays back different sounds on different MIDI channels. Because of the 64 voices and built-in effects, the QuadraSynth Plus is often the only sound generator needed.

## QuadraSynth Plus Polyphony

The QuadraSynth Plus provides 64-voice **polyphony** (i.e., how many notes can play at once). If a program uses one sound, up to 64 notes can play at once. Layering two sounds allows for 32-note polyphony and layering four sounds, 16-note polyphony.

Layering is a powerful technique that allows you to build up complex timbres. This is crucial because acoustic instruments have extremely complex, evolving sounds and by comparison, many synths sound static. Being able to layer up to four sounds allows for creating large ensembles (e.g., brass section consisting of alto & tenor sax, trumpet, and trombone) or extremely realistic versions of single instruments. When creating layered Programs, keep polyphony in mind. If all Programs in a Mix use all four available sounds, the QuadraSynth Plus will quickly run out of voices.

## Modes

The QuadraSynth Plus is always in one of two main modes: Program Mode or Mix Mode. Pressing [PROGRAM] selects Program Play Mode, while pressing [MIX] selects Mix Play Mode. While in Program Play Mode, you can press [SELECT] to access Program Edit Mode and Effects Edit Mode. While in Mix Play Mode, pressing [SELECT] alternates between Mix Edit Mode, Program Edit Mode and Effects Edit Mode. Pressing [GLOBAL] accesses Global Edit Mode, pressing [COMPARE] accesses Compare Mode, and pressing [STORE] accesses Store Mode. Here are descriptions of these modes:

### Program Play Mode

Program Play Mode lets you play the QuadraSynth Plus's various Programs one at a time. The QuadraSynth Plus contains 512 Preset and 128 User *Programs* (i.e., the sounds of various instruments, effects, ensembles, etc.) that show off just how cool this instrument really is. Initially, the 4 Preset Banks and the User Bank contain data loaded in at the factory. The User Programs can be edited or replaced with your own Programs. However, you cannot replace the Preset Programs, because these are stored in ROM (permanent memory). In Program Play Mode, the QuadraSynth Plus responds to or generates messages on a single MIDI channel.

### Mix Play Mode

Mix Play Mode lets you audition the QuadraSynth Plus's various Mixes, and use it as a MIDI master controller. The QuadraSynth Plus contains 400 Preset Mixes and 100 User Mixes. A Mix can combine up to 16 different Programs, and the keyboard can generate up to 16 channels of MIDI data at once. Therefore, much thicker and richly textured sounds can be created. In Mix Play Mode, the QuadraSynth Plus can be used in a wide range of applications. It can be used for live performance, in which sounds are layered or assigned to sections of the keyboard. It can also be used as a multitimbral sound source for desktop music and home studio applications. A Mix can use the Effects Patch associated with one of its Programs. Although there may be 16 Programs in a Mix, there can only be one Effects Patch per Mix. In Mix Mode, the QuadraSynth Plus can respond to messages on up to 16 MIDI channels simultaneously; different channels are available depending on which Mix is selected.

### Program Edit Mode

In Program Edit Mode, you can change the various settings which determine the sound of an individual Program, or create an entirely new Program from scratch. Each Program is made up of four Sound layers, which you can edit individually, or simultaneously. In Program Edit mode you can:

- select which sample waveform from the 24 megabytes of onboard sample ROM will be used, in each of the 4 sounds;
- change the tone, level, attack and decay characteristics, modulation inputs, and pitch of each layer;

- set modulation routings so any parameter can be controlled via MIDI;
- set the effect level for each Sound layer, and set which of the four effect sends each Sound layer will use for signal processing (such as reverb, delay, and chorus—or any combination of these).

### Mix Edit Mode

Mix Edit Mode lets you change the parameters of an existing Mix. Up to 16 Programs can be active in each Mix, and Mix Edit mode sets up how each will be played. Mix Edit Mode allows you to:

- select which Programs will be played by the different MIDI channels and by the keyboard in multiple layers or splits;
- set the output level, effects level, and pan of each Program in the Mix;
- select which Program's Effects Patch will be used by the Mix.

### Effects Edit Mode

Effects Edit Mode is used for setting up the Digital Signal Processing effects. Each Effect Patch has 4 effect bus inputs, and an internal configuration of multiple effects such as reverb, delay, and pitch-related effects (chorus, flange, etc.). You can determine what kinds of effects are used on each bus (this is called a "Configuration"), change each effect's parameters (such as reverb decay time or chorus speed), set modulation routings (such as having the modulation wheel change the decay time), and set the effects mix (how much reverb, delay and chorus on the output of each effect bus).

### Global Edit Mode

Use Global Edit Mode to set various parameters which effect the entire instrument, such as overall master tuning, display contrast, MIDI controller settings, keyboard sensitivity, and how the unit will respond to or generate messages in Mix Mode.

### Store Mode

Store Mode is used for storing changes of Programs, Mixes and/or Effects into the User Bank or onto a QuadraCard PCMCIA memory card accessory. It is also used for transmitting the QuadraSynth Plus's parameters over MIDI for data storage purposes, copying sounds or effects from one Program to another, and for transferring entire Banks to or from a Sound Card.

### Compare Mode

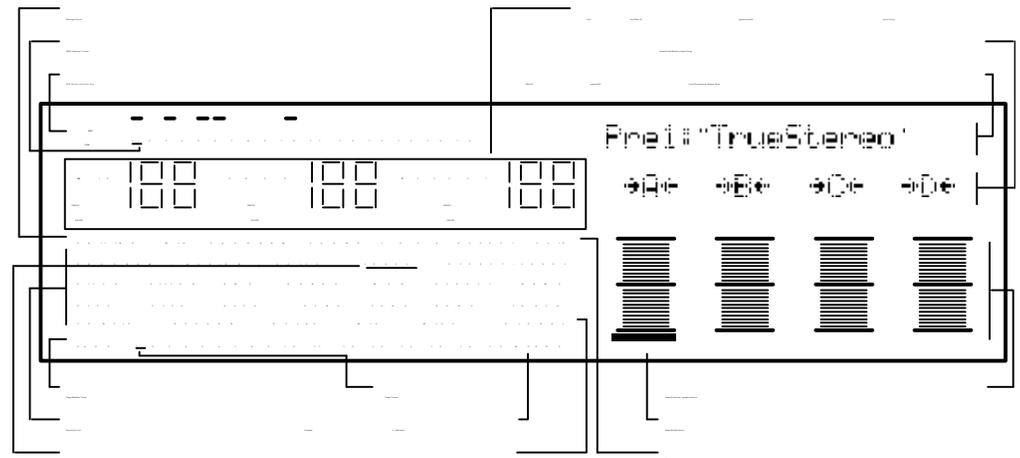
Once a Program has been edited in Program Edit Mode, or a Mix has been edited in Mix Edit Mode, the word "EDITED" will appear in the display next to the Mix/Program number. If [COMPARE] is pressed, the word "COMPARE" will appear in the display, and you will temporarily

be hearing (and seeing) the original version of the Mix/Program. If you are editing a Mix and press [COMPARE], the original unedited MIX is temporarily recalled. Likewise, if you are editing a Program or its Effects Patch and press [COMPARE], the original Program will be temporarily recalled. Pressing [COMPARE] again switches back to the edited version, and the word "COMPARE" disappears from the display.

## The User Interface: Display, Functions, Pages, and Parameters

The key to the QuadraSynth Plus user interface is the combination of the Display and four Quad Knobs/Buttons [1] — [4] located toward the right of the front panel. The Display constantly informs you of the QuadraSynth Plus's status.

### About the Display



*Note: This illustration shows all display flags turned on at once. Actual displays show only some of these at any time.*

The display has eight main sections:

- **MIDI monitor and selection strip.** Selects different MIDI channels for the programs in Mix Play Mode (a thick underline indicates the selected channel), monitors keyboard and incoming MIDI activity (thick lines above active channel numbers indicates activity either from the keyboard or MIDI In), and chooses the basic MIDI channel in Program Play Mode.
- **Current Mix, Program and Effect strip.** Shows the currently selected Mix and/or Program and its associated Effect.
- **Editing Status.** Indicates what you are editing (either Mix Edit, Program Edit, or Effects Edit), after pressing [SELECT]. "1 2 3 4" indicates which Sound (1-4) is selected for editing when in Program Edit mode; or, which effect send (1-4) is selected for editing when in Effects Edit mode. Press [EDIT 1] to cycle through the four Sounds/sends. When Edit 4 mode is selected (press [EDIT 4]), all four numbers appear, to indicate that all four Sounds are available for simultaneous editing (Edit 4 mode is available in Program Edit mode only).
- **Functions list.** Displays the various editing functions available in a particular editing mode. Use the FUNCTION [♦] and [∅] buttons to select a function, as indicated by the small line (cursor) underneath one of the words in the list. When a function is chosen, the page number strip

and right-hand side of the display will show values related to that function. Only the functions used by the current edit mode will be displayed and selectable. Functions can also be selected from the DIRECT SELECT buttons (see page 31).

- **Page number strip.** Some functions have too many options to fit on a single screen. These functions use multiple screens, with each screen considered a *page*. This strip shows which page is selected by underlining the page number. The PAGE [♦] and [∅] buttons allow you to select a page.
- **Name strip.** When in Mix Play Mode, the name of the currently selected Mix will appear here. Likewise, when in Program Play Mode, the name of the currently selected Program will appear here. In any Edit mode or Store mode, the name of the currently selected parameter will appear here indicating it is selected for editing using the VALUE [ ] and [-] buttons.
- **Quad Knob/Button Label strip.** This line is used to show the labels of the bar graph meters, which determine the functions of the four Quad Knobs and Buttons. These labels change depending on which function and page is currently selected. The labels are abbreviations of the parameters; the complete name (and value) of a selected parameter will appear in the Name strip.
- **Quad Knob bar graph meters.** When a Quad Knob controls a function's parameter, an associated bar graph appears which reflects the Knob's setting. *Note:* Not all four Quad Knobs are active in all pages. If a single line appears somewhere in the bargraph area, it indicates its corresponding Quad Knob is active.

## MIDI Buttons

The MIDI [♦] and [∅] buttons serve two purposes. In Program Play Mode, they select the basic MIDI channel the QuadraSynth Plus will receive and transmit MIDI messages on. In Mix Play Mode, they are used to select one of the 16 Programs for viewing and editing.

For more information on MIDI and its uses, see Chapters 8 and 9, and Appendix B.

## Quad Knob Editing

The Quad Knobs have two editing modes: Immediate and Pass-thru. When using the Quad Knobs to adjust parameter values, you may prefer using one mode over the other. When set to Immediate, parameter values jump immediately to the Quad Knob's exact position the moment it is moved. When set to Pass-thru, the Quad Knob must be turned beyond the parameter's current setting before it becomes "live" and begins adjusting the parameter's value.

The editing mode is set in Global Edit mode, Page 2, using Quad Knob [3]. For more information about selecting the Quad Knobs' editing mode, see Chapter 8.

## Parameter Editing

All parameter editing involves the same general procedure, with minor variations:

⑩ Select the type of parameters you want to edit with the corresponding button: [MIX], [PROGRAM], or [GLOBAL].  
*Mix parameters edit a Mix. Program parameters edit a Program. Effects parameters can be edited from within a Mix or a Program (see below). Global parameters edit general characteristics that affect the entire instrument.*

¶ Select an Edit Mode with the [SELECT] button.  
*Example: If you pressed [PROGRAM], the [SELECT] button switches between two groups of functions—one for editing the Program’s Sound layers (Program Edit Mode), and the other for editing the associated Effect (Effects Edit Mode). If you’re editing a Mix, the [SELECT] button switches between three groups of functions—one for editing the Mix’s parameters (Mix Edit Mode), one for editing the Programs in the Mix (Program Edit Mode), and the last for editing the associated Effect (Effects Edit Mode).*

① Use the FUNCTION [◆] and [∅] buttons to select a **function** (level, pitch, etc.). Alternatively, you can use the DIRECT SELECT buttons (located on the far left of the front panel) to directly select a Function to edit.  
*Press FUNCTION [∅] to move toward the end of the list, and FUNCTION [◆] to move back toward the beginning. The selected function will be underlined in the display. Press both FUNCTION [◆] and [∅] simultaneously to get back to the first function in the list.*

If a function has multiple pages, select the appropriate **page** by using the PAGE [◆] and [∅] buttons.  
*The LCD’s page number strip shows the number of pages in a function; an underline shows the currently selected page (e.g., if the display shows “1 2 3” then page two is selected).*

*Press the PAGE [∅] button to select the next higher-numbered page, and PAGE [◆] to select the next lower-numbered page. Press both PAGE [◆] and [∅] simultaneously to get back to the first page of the selected function.*

) Select a **parameter** on the page for editing.  
*There can be up to four editable parameters on a page. The right side of the display shows these parameters with both text and bar graph meters to give instant visual feedback concerning a parameter’s value. Each of the four columns has an associated Quad Knob and Button: the leftmost column monitors Quad Knob/Button[1], the second from left column monitors Quad Knob/Button [2], etc. Turning a Quad Knob or pressing its Button selects the associated parameter for editing. The currently selected parameter is indicated by a thick line at the bottom of one of the four bar graph meters.*

★ Change the parameter **value**.  
*You can edit the value either by turning the associated Quad Knob (for large value changes) or pressing the VALUE [–] and [ ] buttons (for smaller changes).*

Each bar graph indicates a parameter's approximate value—increasing a value increases the column height. With *bipolar* values that can go positive or negative, turning a knob clockwise increases the column height upward from the midpoint, and turning a knob counterclockwise increases the column height downward (more negative value) from the midpoint.

Always refer to the parameter name strip in the display above the bargraphs for the current parameter label and value.

## Direct Function Selection

When editing a Mix, Program or a Program's Effects, the DIRECT SELECT buttons (located next to the large VOLUME knob) provide direct selection of edit Functions. This means you can get to the Function you want to edit fast. The Functions available for direct selection are printed on the front panel adjacent to each button. By pressing some of the buttons repeatedly, you can select other Functions related to the main Function for that button. *Example:* By pressing DIRECT SELECT [7] when in Program Edit Mode, the Filter Function is selected. Press it a second time, and the FLFO is selected; press it a third time and the FENV is selected.

The Direct Select Functions are shown in the table below.

Button	Mix Edit Function	Program Edit Function	Effects Edit Function
1	Program-Assign	Assign-Voice	Config
2	Level	Level	Pitch
3	Effect-Level / Effect	Effect-Level	Delay
4	Range	Range	Reverb
5	Name	Name	Mix
6	Pitch	Pitch / PLFO / PENV	-----
7	-----	Filter / FLFO / FENV	-----
8	-----	Amp / ALFO / AENV	-----
9	-----	Mod / Track	Mod
0	-----	Misc.	Misc.

## Editing Program Parameters

Here is an example of how to use the QuadraSynth Plus's editing features to change Program parameters. Feel free to make changes and twist dials; these will not be made permanent unless you store the Program (described later).

⑩ Press the [PROGRAM] button.  
*This selects Program Play Mode.*

¶ Select a Program using the methods described on page 14.  
*The currently selected Program will appear in the upper right of the display.*

① Press the [SELECT] button.  
*Pressing this button toggles between Program Edit mode and Effects Edit mode. The display's editing status line will indicate either "Editing: Program" or "Editing: Effect." To change edit status, press the [SELECT] button again. For now, select "Editing: Program."*

Select the desired function by using the FUNCTION [◆] and [∅] buttons to step through the various Function in the display (Assign Voice, Level, Effect Level, Pitch, Filter, Amp, etc.). Alternatively, you can use the DIRECT SELECT buttons (located on the far left of the front panel) to directly select a Function.

*Pressing FUNCTION [∅] advances to the next function, and FUNCTION [◆] returns to the previous function. As you select the different edit Functions, the page number strip shows how many pages exist for that function, and the right part of the display will show the parameters on the current page.*

) Some functions have more parameters than will fit on a single display page, and therefore will have multiple pages, as indicated in the lower left corner of the display. To select a page within a particular edit function, use the PAGE [◆] and [∅] buttons.

*Press the PAGE [∅] button to advance to the next higher-numbered page or PAGE [◆] to return to the next lower-numbered page.*

★ To adjust a parameter on a page, either:

- Turn the associated Quad Knob [1] – [4].
- Press the associated Quad Button [1] – [4] to select a parameter in the display, then adjust its setting with the VALUE [–] and [ ] buttons.

## Edit 4 and Edit 1 Modes

A Program is made up of four sounds. Sometimes, you need to edit four variables of a single Program sound (for example, the attack/decay/sustain/release parameters of an envelope). Other times, you may want to edit one variable in all four layers (for example, the attack parameter of each layer). These two different methods of editing a Program are available under the [EDIT 1] and [EDIT 4] buttons. The only difference between the two modes is what variables will appear in the display at the same time. You can switch between Edit 1 Mode and Edit 4 Mode at any time.

*Note: There is no Edit 4 mode for Mixes or Effects.*

⑩ Press [EDIT 1] repeatedly to select a sound for editing. *The status line in the display will indicate "SOUND 1," or "SOUND 2," etc., as you continue to press [EDIT 1].*

¶ To view and edit parameters for all four sounds at once, press [EDIT 4]. *The status line in the display will indicate "SOUND 1 2 3 4."*

In Edit 4 mode, the four Quad Knobs represents the four sound layers of a Program. The currently selected parameter's name will appear at the top right of the display, while above each bargraph are the words "SND1 SND2 SND3 SND4." If a sound is disabled, the display will show the sound's name in lower case ("snd1" means that sound 1 is disabled). If a sound is in Drum mode, the sound's name will read "drmX," where X is the sound number (1–4).

Notice that the assignments of the Quad Knobs and the number of pages in a function change between Edit 1 Mode and Edit 4 Mode. For example, in Edit 1 mode the LEVEL function has only one page which

shows the Volume, Pan and Output of a single sound. In Edit 4 Mode, the Level function has three pages: all four sound volumes are page 1, all pans are on page 2, and all outputs are on page 3.

## Resetting a Parameter Value

It's often convenient while editing to return a parameter to its default setting (usually, but not always, 0). This normally involves turning a Quad Knob or repeatedly pressing the VALUE [←] and [ ] buttons, but here's a quicker way:

To reset a parameter to its default setting:

- ⑩ Select the parameter you wish to reset using the methods described earlier.
- ¶ Simultaneously press both the VALUE [←] and [ ] buttons.

## Comparing Edited and Stored Versions

When you edit a Program or Mix, you are actually editing a copy which is in a temporary edit buffer. Therefore, to retain the results of your edit, you must save it to a particular memory location (see the next section on Storing). If you change memory locations before saving, the buffer will be replaced and your edits lost.

Because the original Program/Mix remains undisturbed, you can compare the edited version to the original by using the Compare function. You can only select Compare mode when either Mix Edit, Program Edit or Effects Edit is selected, and the word “EDITED” appears in the display below either “MIX,” “PROG” or “EFFECT.”

- ⑩ Press [COMPARE].  
*The word “COMPARE” will appear in the display, while the word “EDITED” will disappear.*
- ¶ Press [COMPARE] again to exit Compare mode and return to the edited version.  
*The word “COMPARE” will disappear from the display, and the word “EDITED” will reappear. Pressing [MIX], [PROGRAM], [GLOBAL], [STORE] or the MIX/PROGRAM SELECT [1]—[0] buttons will also exit Compare mode.*



*While Compare mode is selected, you can move around to view the various parameters, but you will not be able to edit anything. This is because you are seeing what is in memory, not what is in the edit buffer.*

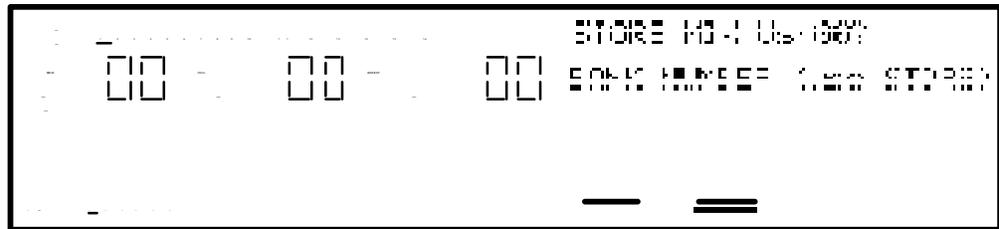
## Preset Memory and User Memory

The QuadraSynth Plus has two types of memory banks for Mixes and Programs: Preset and User. The Preset banks, of which there are four, are stored in ROM (Read Only Memory), and therefore cannot be altered. However, the User bank, of which there is 1, is stored in RAM (Random Access Memory). Anytime you want to keep an edited version of a Mix or Program, you will store it into the User bank or onto a RAM Card. If you want to permanently change a Mix or Program that is in the Preset bank, you can store the edited version into the User bank (in either the same number location or a different number location).

However, this requires that you “store over,” losing whatever was previously in that location. If you don’t want to lose any of the sounds in the User bank, you should back-up the entire bank to either an external SRAM or FlashRAM PCMCIA card, or (via MIDI System Exclusive) into a data storage device like the Alesis DataDisk or a MIDI sequencer. See Chapter 9 for more information on external storage operations.

## Storing

The [STORE] button selects Store mode. Store mode has 6 pages which you can scroll through by using the PAGE [♦] and [∅] buttons. Each page in Store mode provides a different type of storage, copy or data transfer function. When storing edited Mixes, or Programs into the User Bank or a RAM Card Bank, you will use the first page of Store mode (for more information about the other pages of Store mode, see Chapter 9). If you press [STORE] while in Mix Play Mode, the display will look like this:



Once you have edited a Mix, a Program, or an Effect, the word “EDITED” will appear in the display. If this word appears next to the Mix Number, the Mix has been edited; if it appears next to the Program Number, the Program has been edited; if it appears next to the Effect Number, the Effect has been edited.

Each edit mode type requires its own store operation. For example, if while making a new Mix you also make changes within one of the Programs (such as lowering the filter level), you must use the Store command separately (from Mix Edit, and Program Edit or Effect Edit) in order to save your work. *Note:* When using the Store command from Effect Edit Mode, the associated Program is stored. This is because Effects are stored within their respective Programs.

If you select a different Mix while in Mix Edit mode, or a different Program in Program Edit mode, you will lose all changes you have made, unless you perform a store first.



*You can only store Mixes, Programs, and Effects into their respective User banks. The Preset banks are permanently stored in ROM and cannot be saved over.*

### Store a Program

⑩ While in either Program Play Mode or Program Edit mode, after making your edits press the [STORE] button.

¶ Select the memory Bank and location to which you want to store the Program using Quad Knobs [1] and [2], respectively.  
*If no RAM Card is inserted, you will only be able to select the User Bank.*



*Don't use the DIRECT SELECT [1]—[0] buttons. Doing so will result in recalling a different Program and you will lose your changes.*

- ① Press [STORE] again to complete the operation.  
*Or, Press any other button to cancel out of the Store operation without storing.*

## Copying Effects Between Programs

Follow the steps below to copy the Effects from one Program to another Program in the User Bank.

⑩ Press [PROGRAM] to select Program Play Mode.

¶ Use the VALUE [–] and [ ] buttons to select the Program Number that uses the Effects you want to copy. If necessary, use the FUNCTION [♦] and [∅] buttons to select a different Bank.

① Press [STORE].

Press PAGE [∅] once to advance to Page 2.

*The top right section of the display will read “COPY TO SOUND 1”.*

) Turn Quad Knob [1] clockwise until the display reads “COPY FROM EFFECT”.

*This selects the Effects of the currently selected Program as the source of what is to be copied.*

★ Turn Quad Knob [2] to select the Program Number in the User Bank you wish to copy the Effects to (000–127).

Press [STORE] to complete the copy function.

## Store an Effect

If you have edited a Program’s Effect and would like to store it without storing the changes you’ve made to the Program’s parameters, you can use the Copy Effect function to store only the Effects edits to the currently selected Program. When you recall this Program, it will have the new Effects settings you saved it with, but will retain its previously stored Program parameter settings.

## Store a Mix

⑩ While in either Mix Play Mode or Mix Edit mode, after making your edits press the [STORE] button.

¶ Select the memory Bank and location to which you want to store the Mix using Quad Knob [1] and [2], respectively.

*If no RAM Card is inserted, you will only be able to select the User Bank.*



*Do not use the DIRECT SELECT [1]—[0] buttons. Doing so will result in recalling a different Mix and you will lose your changes.*

① Press [STORE] again to complete the operation.



*Storing a Mix only stores the Mix parameters, not the individual Programs or Effect Patch used in the Mix. If you have edited any of the Programs in the Mix or the Effects Patch, you must store them separately.*

## To Audition Programs Before Storing

To look for available memory locations to permanently store your Program to, you can move between Program Mode and Mix Mode without losing your changes. This is because Program Mode has a Program edit buffer, and Mix Mode has its own Mix edit buffer along with 16 Program edit buffers. These buffers are retained when moving between Program Mode and Mix Mode, thus making it easy to search for a suitable location to store your newly created Program. *Example:* While in Program Edit mode, go to Mix Mode and scroll through the Program list on one of the Channels; while editing a Program from Mix Mode, go to Program Mode to scroll through the Program list.

The way to tell the difference between a program edited in Program Mode and one edited from Mix Mode is simple: in Program Mode, the MIX number does not appear in the display.



*You will lose your changes if you remain in the same mode and recall a different Mix/Program by pressing the MIX/PROGRAM SELECT [1]—[0] buttons.*

### To audition Programs before overwriting them with STORE

...when editing a Program in Program Mode:

- ⑩ While in Program Edit mode, press [MIX].  
*This selects Mix Play Mode, retaining your edits to the Program in an edit buffer.*
- ¶ Using the BANK and DIRECT SELECT buttons, select Mix 99 in Preset Bank 1.
- ① Press [SELECT] to enter Mix Edit Mode, and press both MIDI [♦] and [∅] buttons simultaneously to select Channel 1.  
  
Press the DIRECT SELECT [1] button (or both FUNCTION [♦] and [∅] buttons simultaneously) so the words “PROGRAM - ASSIGN” are underlined.
- ) Turn Quad Knob [1] to the left so that the word “USER” appears in the top part of the display, just before the Program name. If a RAM card is inserted, use Quad Knob [1] to select a Card Bank.
- ★ Turn Quad Knob [2] to scroll through the Programs until you find one you wish to overwrite with the new edited Program. Take a note of the number.  
  
Press [PROGRAM] to enter Program Play Mode.  
*This recalls the edit buffer in Program Mode, which is your edited Program.*
- ♠ Press [STORE].

*The top right of the display will read “STORE PRG UsrXXX?” where XXX is a User Program number from 000—127.*

⑥ Use Quad Knob [2] to enter the Program number you noted in step 6. If necessary, use Quad Knob [1] to select a Card Bank.

) Press [STORE] again.  
*The Program is now stored.*

To audition Programs before overwriting them with STORE

...when editing a Program in Mix Edit Mode:

⑩ While in Mix Program Edit mode, press [PROGRAM].  
*This selects Program Play Mode, retaining your edits to the Program in Mix Edit.*

¶ Press the BANK [♦] button until the word “USER” appears in the top part of the display, just before the Program name. If a RAM card is inserted, use the BANK buttons to select a Card Bank.

① Use the VALUE [ ] and [-] buttons to scroll through the Programs until you find one you wish to overwrite with the new edited Program. Take note of the number.

Press [MIX].

*This recalls the edit buffer in Mix Mode, which contains your edited Program.*

) Press [SELECT] twice, until “EDITING: PROGRAM” appears under the MIX number in the display.

★ Press [STORE].  
*The top line of the display will read “STORE PRG UsrXXX?” where XXX is a User Program number from 000—127.*

Use Quad Knob [2] to select the Program number you noted in step 3. If necessary, use Quad Knob [1] to select a Card Bank.

♠ Press [STORE] again.  
*The Program is now stored.*

At this point your edited Program is stored, however the Mix you were auditioning before storing the Program still has the old Program number assigned (if the edited Program was saved to a different Program number location). Therefore, you need to re-select the new Program number from within Mix Edit mode.

⑥ Press [MIX], then [SELECT] to access Mix Edit mode.

) Use the MIDI [♦] and [∅] buttons to select the MIDI channel you want, and use the VALUE [ ] and [-] buttons or Quad Knob [2] to select the Program number. If necessary, use Quad Knob [1] to select the Bank.



## CHAPTER 5

## EDITING MIXES

## What is a Mix?

Mix Mode is one of the most powerful features of the QuadraSynth Plus. While in Program Mode you can play only one Program at a time, in Mix Mode you can play up to 16 Programs at once, either from the keyboard (as layers or splits) or from an external sequencer (via 16 MIDI channels) or a combination of both.

With Mix Mode, you can do the following:

- Combine ("stack" or "layer") different Programs so they can be played simultaneously from the keyboard. For example, stack a piano on top of a brass patch and a string patch, adjusting the volume of each for a desirable mix. (Note that the stacking of Programs in Mix Play Mode is in addition to any sounds that may be stacked in the four sound layers of each Program.)
- Split the keyboard into different zones--for example, the classic bass guitar on the left-hand side of the keyboard and synth or piano on the right. You can split the keyboard into as many as 16 zones.
- Transmit on several different MIDI channels simultaneously.
- Receive up to 16 MIDI channels from an external sequencer, with each channel representing a different instrument--piano on Ch. 1, bass on Ch. 2, drums on Ch. 10, trumpet on Ch. 16. Mix Play Mode is the multitimbral mode of the QuadraSynth Plus.
- Set the relative level, panning, and effect send of each MIDI channel.

## Mix Edit Mode

To edit a Mix you must select Mix Edit mode. Press [SELECT] from Mix Play Mode. "Editing: Mix" should appear in the edit status section of the display:

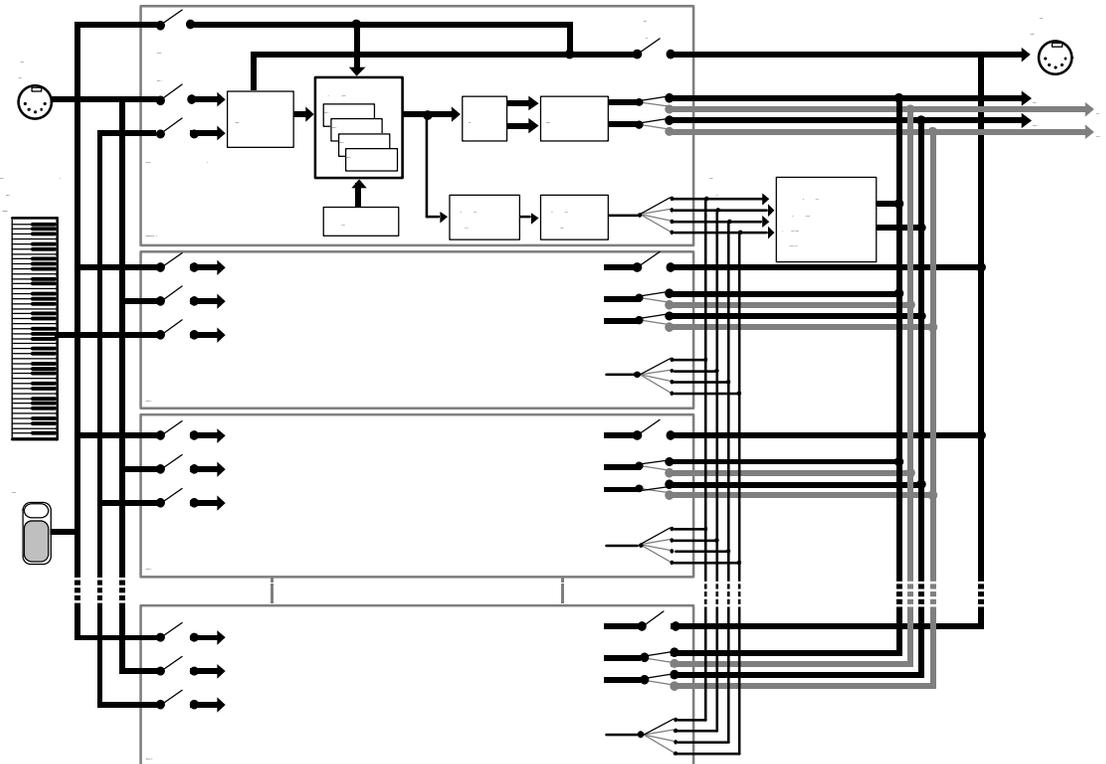


*Note: This illustration shows a Mix with all 16 MIDI channels enabled. If a channel is not enabled, its number will not show in the display unless the MIDI cursor is under the number.*

Editing a Mix begins with using the MIDI [♦] and [Ø] buttons to select the MIDI channel you want, and assigning a Program number for the channels you want

to use. Each channel may be enabled or disabled, without changing any of its parameter settings. When a channel is disabled, its number will not appear in the upper left display, except when it is selected for editing. You can set levels, effect levels and bus assignments, pitch transposition, keyboard ranges (if making a split or layer), and MIDI parameters for each individual channel. Each function is selected using the FUNCTION [♦] and [∅] buttons and (if necessary) the PAGE [♦] and [∅] buttons. A Mix also uses the Effect Patch associated with one of its 16 Programs.

Here is a simplified diagram of the signal path in Mix mode.



## Understanding the Edit Buffers

In Mix mode, there are 16 Program edit buffers (one for each channel), plus another buffer for the Mix parameters (Level, Pitch, Range, etc.), and yet another buffer for the Effects Processor. When you select a Mix from memory, it is copied into the Mix Edit buffer, the 16 Programs of that Mix are copied into the 16 edit buffers, and the Effect from one of the 16 Programs is copied into the Effects buffer. If you make changes to the Mix, they are only temporarily kept in the edit buffer until a new Mix is selected from memory. Therefore, you **MUST** store your edited Mix if you want to keep it.

If in the course of making a Mix, you enter Program Edit mode (by pressing [SELECT]) and edit one or more Programs in the Mix, the edits you make are entered into a separate buffer for each Program in the Mix. Note, however, that you **DO** have to **STORE** each edited Program in the User bank (in the same or different Program number location) before selecting a different Mix, or your

changes will be lost. The same goes for editing the Effects, which will be stored with its associated Program. If you select another Mix before storing, your changes will be lost.

## Program Assign for each MIDI Channel

The first function of Mix Edit is Program Assign.

### **Program Bank (User, Preset 1–4, Card)**

This determines which Bank the selected Program is located in for the selected MIDI channel. There are five Banks available in the QuadraSynth Plus. If you insert a QuadraCard Sound Card, you can have even more Banks.

### **Program Number (000 to 127)**

This determines the Program Number (000—127) for the selected MIDI channel.

### **Enable (On or Off)**

This determines whether the Program on the selected channel is enabled or disabled. When disabled, no sound will be generated by the QuadraSynth Plus. The Channel number in the display for a disabled channel will not appear except when selected for editing.



*Even if a channel is enabled here, it will not play unless the proper settings in the RANGE function (MIDI IN and/or KEYBOARD On/Off and LOW/HIGH) are made.*

## Level Setting for Each Program

The second function of Mix Edit is Level.

### **Level (00 to 99)**

This sets the overall volume for a sound. Higher numbers give higher levels.

### **Pan (<3 to 3>, or PG )**

This determines the pan position of the selected channel. When set to PG, the panning setting will be that of the Program assigned to the selected channel. However, you can override this setting by selecting a different value, thereby assigning the channel's panning between the left and right outputs of either the MAIN or AUX outputs (depending on the Output assignment--see below).

### **Output (MAIN, AUX, OFF, or PROG)**

This determines the audio output assignment for the selected channel. When set to PROG, the channel will use the Output assignment of the Program. However, you can override this assignment by setting this parameter to something different. Selecting MAIN or AUX will assign the channel to the MAIN or

AUX audio outputs. When set to OFF, the channel will not be sent to either set of outputs (but can still feed an effect bus).

## Pitch

The Pitch function lets you transpose a channel's Program in either semitone or octave increments. By using both parameters together, you have a total transposition range of  $\pm 3$  octaves.

### **Octave (-2 to +2 octaves)**

This transposes the Program's pitch in octave (12 semitone) steps from -2 (transposed down 2 octaves) to +2 (transposed up two octaves).

### **Semitone (-12 to +12 semitones)**

This transposes the Program's pitch in semitone steps, from -12 (transposed down one octave) to +12 (transposed up one octave).

## Setting the Range and MIDI Switches

Each sound can be restricted to a specific range of the keyboard. This is ideal for creating splits (e.g., bass in the lower octave and a half, piano in the middle three octaves, and strings in the upper octave). When you start to setup a MIX, it may be confusing if many of the channels have their Keyboard parameter turned off. In order to hear anything on a particular channel, enable Keyboard control and set the Range so that the low note and high note values are set beyond where you want to play. Look at the MIDI MONITOR section of the display. A thick line will appear above any active MIDI channels as you play notes or send notes to the QuadraSynth Plus from a sequencer on those channels.

### Range (Page 1)

#### **Lower Limit (MIDI note 000 to 127/ C-2 to G8)**

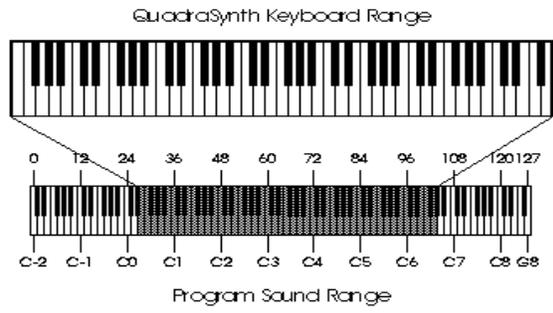
Specifies the lowest note of the sound's keyboard range. You can set the lower limit by holding Quad Switch [1] and tapping the key on the keyboard you want to set as the lowest note in the range.

#### **High Limit (MIDI note 000 to 127/ C-2 to G8)**

Specifies the highest note of the sound's keyboard range. You can set the high limit by holding Quad Switch [2] and tapping the key on the keyboard you want to set as the highest note in the range.



*If the lower limit is set above the high limit, there will be no sound from this program layer.*



## Range (Page 2)

### **MIDI In (On or Off)**

This determines whether or not the selected channel will respond to incoming MIDI messages.

### **MIDI Out (On or Off)**

This determines whether or not the selected channel will transmit MIDI messages.

### **Keyboard (On or Off)**

This determines whether or not the selected channel will respond to the keyboard, pitch-bend and mod wheels, foot pedals and sustain pedal of the QuadraSynth Plus itself.

## Range (Page 3)

The following four parameters determine whether or not specific types of MIDI information will be received or transmitted, and are set separately for each Channel in the Mix. These, however, are dependent on how the individual Channels have their Range Page 2 parameters set (described above).

### **Pitch-bend and Modulation Wheels (On or Off)**

This determines whether or not the selected channel will transmit and receive pitch-bend and modulation (controller 1) MIDI information.

### **Aftertouch (On or Off)**

This determines whether or not the selected channel will transmit and receive aftertouch MIDI information.

### **Sustain Pedals (On or Off)**

This determines whether or not the selected channel will transmit and receive sustain pedal (controller 64) MIDI information.

### **Controllers (On or Off)**

This determines whether or not the selected channel will transmit and receive MIDI controller information which the Controllers A–D and Pedals 1 & 2 are assigned to (these are assigned to MIDI controllers in Global Mode, Page 3 and 5).

## Transmitting MIDI Volume and Panning

Each Channel in a Mix can transmit its volume and panning settings via MIDI, if the “MIDI Prog Select” parameter is set to “On” (Global Edit Mode, Page 6, Quad Knob [1]). Volume level is sent as MIDI controller #7, and panning is sent as controller #10. If the “MIDI Prog Select” parameter is set to “On.”

- whenever a Mix is recalled (via the front panel or via MIDI), volume and panning information will be transmitted;

- whenever a Channel's "Level" parameter is edited, volume information will be transmitted as controller #7 on that Channel;
- whenever a Channel's "Pan" parameter is edited, panning information will be transmitted as controller #10 on that Channel (except when set to "PRG").

*Note:* Panning information will not be transmitted if the Channel's "Pan" parameter is set to PRG (using the selected Program's stored Pan setting).

## Effects in Mix Play Mode

In Mix Play Mode, you can have only one Effect Patch active per Mix, which will be the Effects Patch associated with one of the Programs used in the Mix. However, the Mix's Effect Patch still has 4 independent effect buses, and you can set the effect send level and routing from each Program layer to the effects processor.

The QuadraSynth Plus offers you a choice of what parameters to use for effects:

- The **Effect Channel** determines which one of the Programs in the Mix you want to use the Effects Patch from. For example, if the Effect Channel is set to 10, you will use whatever effect is used by the program on MIDI channel 10.
- The **effect levels and bus assignments** of the Program on each Channel can be set directly by the Mix, or you can use the same levels and buses that were stored in each Program.

### Effect Level

The Effect function is where each channel may be given its own Effect Level and Effect Bus assignment.

#### **Effect Level (00 to 99, or PROG)**

This determines the amount of signal from the selected channel that will be sent to the effects, using one of the four effects buses as determined by Quad Knob [2].

#### **Effect Bus (1, 2, 3, 4, or PROG)**

Quad Knob [2] determines which effect bus the selected channel will be routed to. When set to PROG, the effect bus assignment will be that stored by the channel's Program. 1, 2, 3 or 4 overrides the Program's bus assignment, sending all sound layers of the Program to the chosen bus.

### Effect

The Effect function is where you select what Effect Patch will be used by the Mix, by linking the Effect to one of the Programs in the Mix.

#### **FX Channel (1 to 16)**

The Effect Channel determines which channel's Program's Effect Patch will be used for the entire Mix. In other words, when the Effect Channel is set to 3, the Mix will use the Effect Patch used by the Program assigned to channel 3.

**FX MIDI (On or Off)**

This determines whether the Effects settings will change along with its Program, if a MIDI program change is received on the Effect Channel. If on, and a MIDI program change is received, a new Program will be recalled along with its associated Effect Patch. This, however, can change the way the other Programs in the Mix sound, since they all share the same Effects Patch. If you want to recall Programs via MIDI program changes, but want to continue using the same Effects Patch, leave this parameter turned off.

If a program change is received on the Effects Channel and the FX-MIDI parameter is off, the Program will change to the new number (as determined by the program change number that was received) and the Effects Patch will also change to a new number. However, the previous Effects Program will be copied into the Mix's Effects buffer and the word "EDITED" will appear next to the Effects Patch number. This indicates that, although the Effects Patch number coincides with the Program number on the Effects Channel, the Mix is still using the Effects Program connected to the original Program on the Effects Channel that is stored in the Mix. If you store the Mix, the newly selected Program on the Effects Channel will be stored with it. The next time this Mix is recalled the new Program on the Effects Channel will be recalled along with its Effects (which will be different, in most cases, from the Effects originally used with this Mix). If this occurs, and you wish to keep the new Program in the Mix, you could copy the Effects from the old Program into the new Program (see the Store Mode section, later in this chapter). Or, you could adjust the Effects Send level and Effects Bus parameter for the remaining Channels so that their associated Programs sound good with the new Effects. Or, you could modify the new Program's Effects.

**Naming a Mix**

The Name function allows you to change the name of the Mix. The Mix name can be up to 10 characters long. Use the PAGE [♦] and [∅] buttons to position the cursor. Quad Knob [1] selects the character. Here is a chart of available characters:

	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	0	1	2	3
4	5	6	7	8	9	:	;	<	=	>	?	@	A	B	C	D	E	F	G
H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	[
¥	]	^	_	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
p	q	r	s	t	u	v	w	x	y	z	{		}	∅	♦				

## Polyphony in Mix Play Mode

The QuadraSynth Plus has 64-note polyphony. In Mix Play Mode, if you have all 16 MIDI channels assigned to the same keyboard range, and each channel's Program has only one active Program Sound, you'll have 4-note polyphony as you play the keyboard (but a really thick layer...). This is extreme, of course, but should tell you what you can expect when you really pile on the layers from the keyboard.

## Using the QuadraSynth Plus as a Master Keyboard

Mix Play Mode gives the QuadraSynth Plus the capabilities of a MIDI master keyboard. You can layer the QuadraSynth Plus's internal sounds with an external synthesizer's sounds without using up internal polyphony by adjusting the proper parameters in the Mix Edit mode.

*Example:* You can have 2 layers (or a split) played directly from the QuadraSynth Plus, simultaneously playing on external synthesizers using a MIDI channel which has its internal QuadraSynth Plus's sound turned OFF.

## Setting MIDI Out Channels for Mix in Global Mode

The QuadraSynth Plus offers a wide variety of ways to set the MIDI output. It is very easy in Program Play Mode; you just use the MIDI [♦] and [∅] buttons to set the MIDI OUT channel for the whole instrument. But when using the QuadraSynth Plus in Mix Play Mode, you need to be able to transmit on several MIDI channels at once, and to temporarily isolate certain channels within a Mix. This is done with the Keyboard Mode function.

⑩ From Mix mode, press [GLOBAL].

¶ Press PAGE [∅] to get to Page 2.

① Press Quad Button [4].

You will see "KBD MODE: " in the top right of the display.

Use the VALUE [←] and [→] buttons or Quad Knob [4] to set the Keyboard Mode.

The options are: *NORMAL*, *CH SOLO* and *OUT 1 — OUT 16*.

**NORMAL.** In this mode, the MIDI channels sent out will correspond to whatever layers or splits the Mix is set up for. For example, in the Preset Mix bank, there are several Mixes in which the keyboard is split in two or more ways from left to right; each of these "zones" is linked to a different set of channels. As you play through each zone, it will send MIDI messages corresponding to that key range and trigger the corresponding channels. Note that certain controllers such as pitch bend and aftertouch will send on all channels at once. The MIDI Monitor indicators in the display will show which channels are active.

**CH SOLO.** In this mode, the only sounds coming from the QuadraSynth Plus, and the only MIDI Out messages, will come from the layer or range of the underlined MIDI channel in the display. This allows you to isolate individual channels in a Mix. So, if you play in a range of the keyboard that is active on

MIDI CH 1, and 1 is underlined, you'll hear it. All other ranges or layers will not respond to the keyboard (they will continue to respond to incoming MIDI messages on their respective channels, however).

Use the MIDI [♦] and [∅] buttons to hear each channel in turn.

**OUT 1 — OUT 16.** The QuadraSynth Plus will generate MIDI messages from the keyboard, regardless of the Range settings for that channel in the Mix, but it will not play the internal sound. Use this mode if you're using a MIDI sequencer with an ECHO feature--the sound will be activated by messages appearing at the MIDI IN connector after it's made the "round trip" through the sequencer. This is the QuadraSynth Plus's equivalent to LOCAL OFF.

## CHAPTER 6

# EDITING PROGRAMS

## Overview

Synthesizer programming is the art and science of shaping sounds in a particular way by altering the parameters of various modules. Like music itself, learning synth programming is an ongoing process. Although this manual presents information about synthesizer programming, no manual can offer a complete course in programming (at least for a price that customers would be willing to pay!).

If you're new to synthesizer programming, the best way to learn is to adjust different parameters as you play to discover how different parameter values affect the sound. Also, become familiar with the signal and modulation flow within the QuadraSynth Plus (as shown in the various block diagrams included in this manual) so that you can understand the many ways in which you can process a signal as it works its way from oscillator to output.

## The “Normalized” Synth Voice

The first synthesizers were comprised of various hardware modules, some of which generated signals, and some of which processed those signals. These were designed to be general-purpose devices since nobody was quite sure how they would be applied; some engineers used them as signal processors, while keyboard players treated them as musical instruments. Therefore, *patch cords* connected the inputs and outputs of the various signal generating and processing modules (which is why particular synth sounds were called *patches*). Changing a patch involved manually repositioning patch cords and adjusting knobs and switches; recreating a patch required writing down all the patch settings on paper so they could be duplicated later. Even then, due to the imprecision of analog electronics, the patch might not sound exactly the same.

Over the years, certain combinations of modules seemed to work better than others, and since patch cords were troublesome to deal with, eventually these modules were wired together in a "normalized" configuration. Synthesizers such as the MiniMoog, Prophet-5, and others eliminated the need for patch cords by containing a normalized collection of sound modules (including oscillators, filter, envelopes, LFOs, etc.).

The QuadraSynth Plus offers the best of both worlds. The most commonly-used, normalized configurations are built-in to every program for ease of programming. In addition, the QS Modulation Matrix gives back much of the flexibility of a modular synthesizer, allowing you to map various modulation sources to multiple destinations for special needs. If you're a beginner, all of the normalized pathways are easy to find; as you gain experience you can explore more advanced features.

## How the QuadraSynth Generates Sound

The QuadraSynth Plus uses custom integrated circuits, developed by the Alesis engineering team specifically for the QuadraSynth Plus. These resemble the types of chips used in computers and other digital devices. In fact, you can think of the QuadraSynth Plus as a special-purpose computer designed to generate and process audio. Although the user interface maintains the metaphor of "modules," in fact all sounds are simply a set of numbers reflecting how you've programmed the various sound parameters. For example, when you change the filter cutoff frequency, you're not actually messing with a filter; you're telling the computer to simulate the effect of messing with a filter.

Each "module" is represented by parameters that appear on one or more display pages. The Quad Knobs and Buttons change these parameters. All "patching" is done via software, so the only patch cords you need are those that go to your mixer or amplifier.

You can take a "snapshot" of the QuadraSynth Plus's parameters and save this in memory as a *program*. The QuadraSynth Plus comes with 512 factory preset programs, and 128 user-editable programs.

## Program Sound Layers

The simplest method of programming is to take one voice, process it through the filter and amp sections, and (if desired) add some effect to it. However, more elaborate Programs usually consist of 2 to 4 layers, with each layer making its own distinct contribution to the sound, for example:

- An organ program with Program Sound 1 set to a sustained organ waveform, and Program Sound 2 set to a percussion waveform with a fast decay.
- A piano program with one layer tuned normally, and a second layer tuned an octave higher.
- A synthesizer program with one layer set to a sharp attack waveform, a second layer set to an acoustic waveform, and a third layer with a slow-attack string waveform.

This may remind you of Mix Play Mode, where playing the keyboard can sound up to 16 different Programs at once. There are many similarities. In Mix Play Mode, you can make the same kind of layered Mix as you can with the four sounds of a Program. But there are differences:

### Use Program Layers:

- If you want multiple sounds to respond to a single MIDI channel. For example, if you need to play a layered synthesizer sound that was assembled in Mix Play Mode instead of Program Play Mode, you must send 3 Note On

messages from your sequencer (one for each channel) for every note; a layered program would need only one Note On message.

- When layers of a Program are designed to be used together, and the individual layers by themselves wouldn't be used alone (for example, the percussion layer of the organ sound).

#### Use Mix Play Mode:

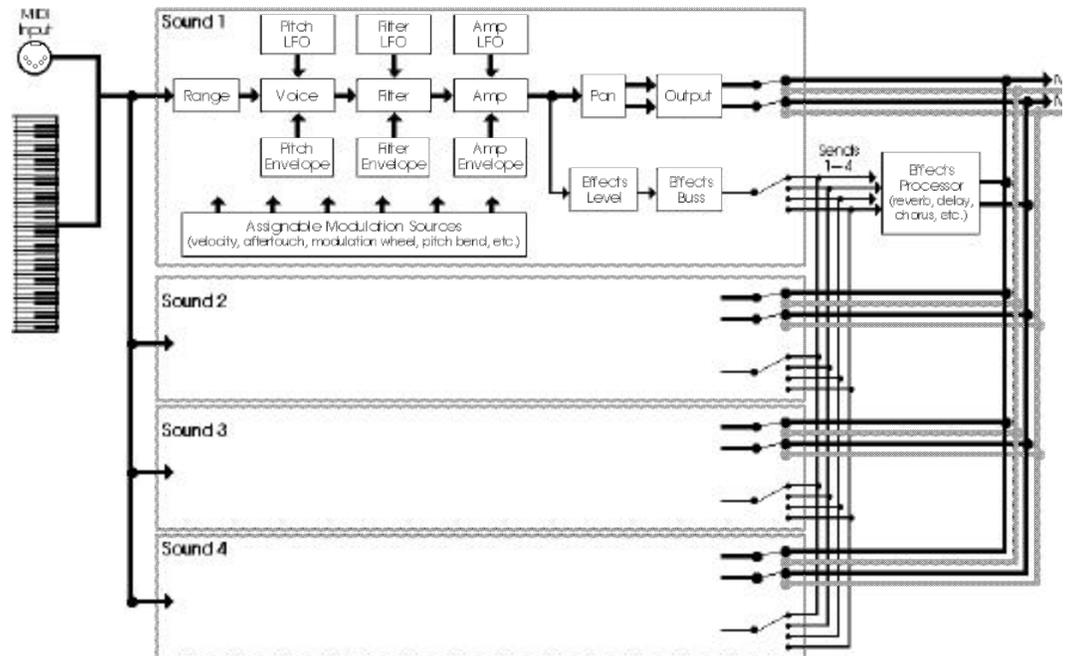
- When you want to layer more than four voices. In Mix Play Mode, it is possible (though not advisable) to stack all 64 voices onto a single key.
- When each sound is likely to be used by itself by other setups. For example, if you are programming three different keyboard splits, each of which uses the same left-hand bass patch, it makes sense to use Mix Play Mode.
- When you want different sounds to respond to different MIDI channels.

## QuadraSynth Plus Signal Flow

### The Four Sounds of a Program

Each Program is made up of at least one to four sounds. A sound is made up of several components including a voice (the original sound material) which passes through a low-pass filter and an amplifier. The voice, filter and amp modules each have direct modifiers (Pitch LFO, Filter LFO, Amp Envelope) which affect how each will function in the Program. You can layer these sounds together, or divide them into regions of the keyboard, or a combination of these things.

The following diagram illustrates the signal flow within each QuadraSynth Plus Program.



Let's look at each module's function in detail.

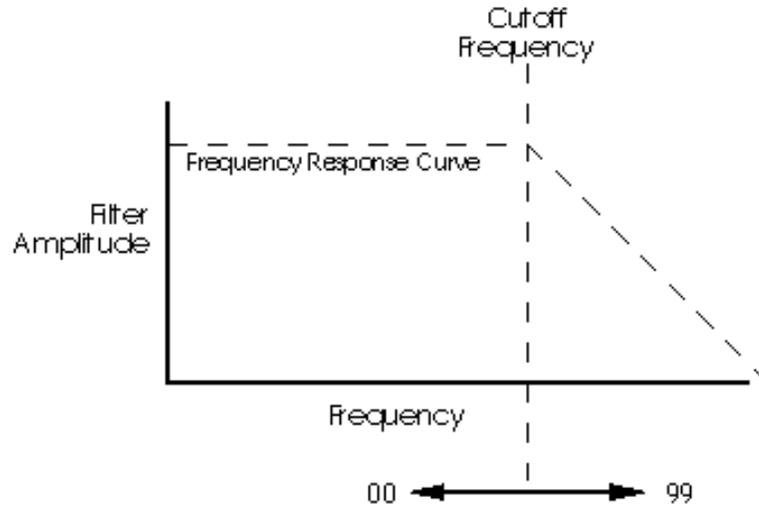
### Voice

This digitally-based oscillator provides the actual raw sounds from the 24 megabyte library of on-board samples. The oscillator's pitch can be tuned to a fixed frequency or *modulated*. Modulation is the process of varying a parameter dynamically over time; the oscillator pitch can be modulated by envelope, keyboard, pressure, pedal, LFO, and other control sources (described later).

Note that the waveforms in the QuadraSynth Plus are different from those found in samplers or many sample-playback units. Because the QuadraSynth Plus has its own filter module and amplitude module for each voice, the pure waveforms are relatively bright--as bright as the original instrument can be--and have a constant sustaining amplitude, like an organ. So if you listen to a piano voice without setting the filter or amp to the correct settings, it won't decay after it is hit, as you might expect. This gives you the freedom to create the timbre and dynamics you want, instead of being chained to the parameters of the original sample.

### Lowpass Filter

A lowpass filter varies a signal's harmonic content by progressively increasing attenuation above a specified *cutoff frequency*. The higher frequencies are filtered, while the lower frequencies are allowed to "pass-thru." When the cutoff frequency is set high, the sound becomes brighter; when set low, the sound becomes bassier since fewer harmonics are present.



The cutoff parameter changes the frequency at which the high-frequency response starts to roll off. Lower values give a lower cutoff frequency. A value of 00 will cut all sound off.

Static (non-changing) filter settings can be useful, but varying the filter cutoff dynamically over time often produces more interesting effects. Modulating with velocity produces brighter sounds with louder dynamics, which produces a more accurate acoustic instrument simulation. Modulating with an envelope can create a pre-defined change in harmonic structure, such as having a brighter attack and bassier decay.

### Amp

Each voice/filter combination is followed by an amplifier whose level can be controlled by a variety of modulation sources. This allows for creating sounds with percussive or slow attacks, particular types of decays, tremolo, etc.

Filter and amp settings can interact. If the filter cutoff is extremely low, then no signal will get through, no matter how the amp is set. Similarly, setting the amp for a short decay won't let you hear any filtering set for a longer decay. This is because the volume will reach zero before the filter decay finishes.

## About Modulation

Modulation modifies some aspect of a sound over time. Since oscillators make static sounds (unlike acoustic instruments, whose timbre and dynamics change—often radically—over the duration of a note), modulation is the key to making rich and expressive sounds. The vibrato of a flute, the expression pedal of an organ, a wah-wah pedal on a guitar—all of these are examples of modulation. You're probably familiar with the mod wheel of a synthesizer, that typically adds vibrato to a Program as it is raised. But in synthesizer programming, modulation is used to control even the basic characteristics of a voice: its attack, decay, and release times, for example. Every box in the signal diagram on page 51 pointing

towards the Voice, Filter, or Amp boxes is a *modulation source*. The amount of modulation, the time it takes place, and what controls (such as key velocity, footpedals, aftertouch, mod wheel etc.) affect it are important parameters in every Program. The QuadraSynth Plus provides the modulation flexibility of patch cord-based instruments, but with the convenience and ease of use of digital technology.

With some parameters, the modulation amount can be positive or negative. A positive control signal increases the value of the parameter being controlled. A negative control signal *decreases* the value of the parameter being controlled. Setting modulation to 00 turns off the modulation source. *Example:* Keyboard velocity can either make a sound brighter the harder you play, or make it less bright, or have no effect on the filter at all. You have the freedom to set modulation any way you want, even in ways that are the opposite of what they would be on an acoustic instrument.

If a "baseline" setting exists for a parameter, modulation amounts add or subtract values from the existing setting. However, modulation cannot force a value beyond its maximum range. For example, if the amp is already at its minimum value (lowest level), you could apply positive modulation to raise the level. But applying negative modulation will not affect the amp level, since it's already at its lowest value and cannot go any lower.

The QuadraSynth Plus lets you assign several modulation sources to one modulation "target" parameter, which allows for interaction between two modulation signals. *Example:* If the amp parameter responds to both the envelope generator and a pedal, the parameter will follow the general envelope shape but will also be influenced by the pedal.

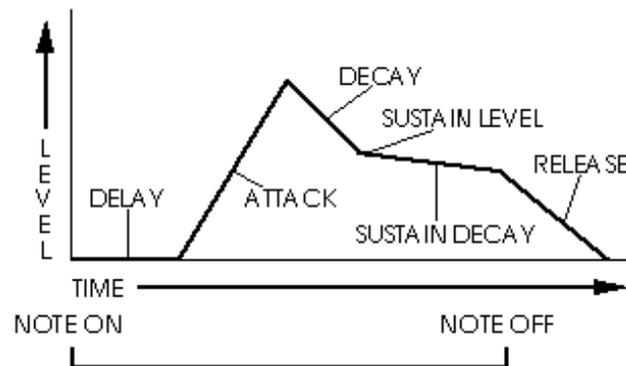
## LFO (Low Frequency Oscillator)

The pitch, filter, and amp modules each have a dedicated LFO module for modulation. The term LFO stands for low frequency oscillator, and comes from how modulation was created in the early synth days (an oscillator set to a low frequency could modulate some aspect of the sound; routing the LFO to the pitch, for example, would create vibrato). The LFO creates a cyclic (periodic) modulation; this amount can be constant and/or varied with a variety of modulation sources (mod wheel is one of the most popular). Each LFO has a waveform shape and speed, along with other controls.

## Envelopes

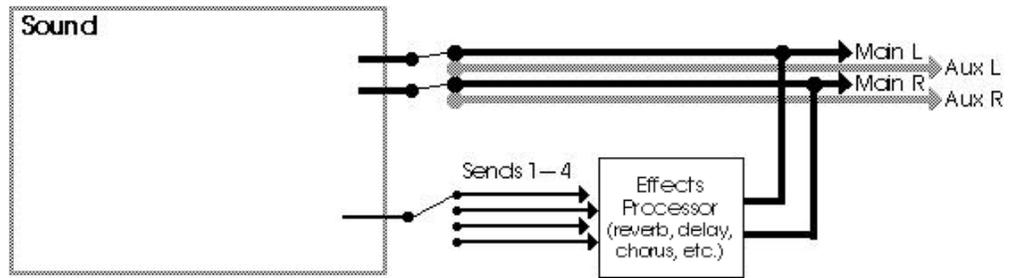
Envelope generators provide a modulation signal that varies over time, from the time you strike the key until after you let go. There are three independent envelope generators (for pitch, filter, and amp) in each Program Sound. An envelope generator has different effects on different modules. *Example:* The Amp Envelope creates level changes. Amplitude that decays over time creates percussive effects (plucked strings, drums, etc.). Amplitude that increases over time gives the effect of brass, woodwind, and some bowed instruments.

Each envelope generator has the standard attack, decay, sustain, and release parameters found on most synthesizers, along with delay, sustain decay, and different triggering options.



## About Signal Processing

The QuadraSynth Plus features a signal processing section based on the Alesis QuadraVerb 2. It is a complete digital signal processing unit with four input buses, simultaneous multiple effects, and flexible signal routing.



Effects parameters are edited separately from either the Program or the Mix, using Effects Edit Mode (more in Chapter 7). In Program Edit Mode, each of the four sounds in the Program has its own Effect Level control and can be assigned to any one of the four effect buses. Effects settings, Effect Level and Bus information is saved with the Program when you store it back into memory.

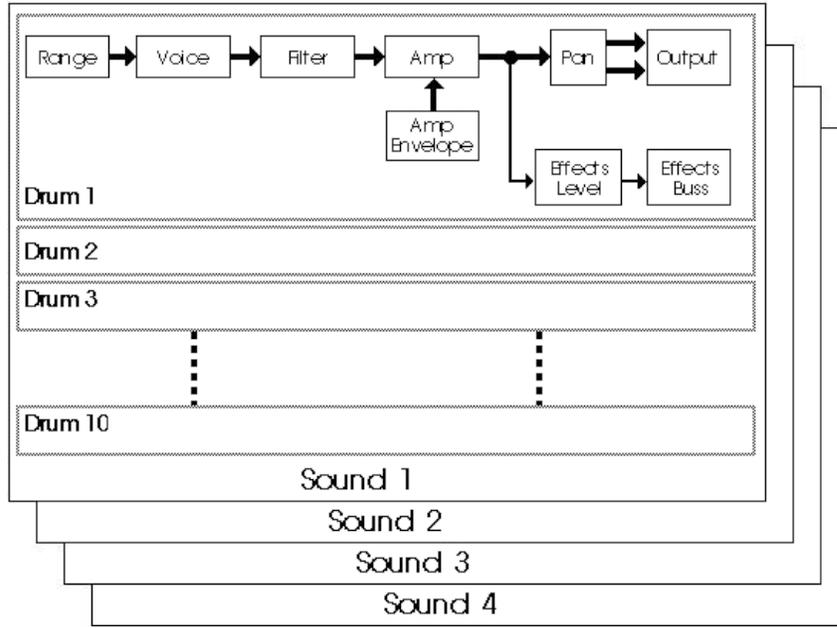
## Drum Mode

Any one or all of the four sounds in a Program can be put in Drum Mode. The Drum Mode parameter is found in the Misc. Function (see last section of this chapter). Note that Drum Mode isn't the only way to hear drums or percussion from a Program. In Standard mode, if you select a kit (such as "Rock Kit 1") as the voice of a Program sound, an entire arrangement of preset, pre-mapped drum sounds will be assigned across the keyboard. If you select a single drum (such as "Tympani") as the voice, that single drum sound will sound across the keyboard range, with a different pitch on each note (the original sample pitch will appear on C3).

However, Drum Mode changes the nature of the ASSIGN VOICE function, allowing you to make up your own drum kit from a selection of over 80 different samples: 7 kicks, 8 snares, 4 hi-hats, 14 toms, 5 cymbals, 31 percussion, 17 percussion effects and 3 synth waves. Plus, there are 44 rhythm beats to choose from (pre-sequenced drum grooves). You can map any of these samples to any note on the keyboard that does not already have a drum assigned to it in that layer. When a sound is in Drum Mode, you can assign 10 different drum sounds to 10 different keys in that layer. If all four sounds in a Program are placed in Drum Mode, you could assemble 40 drum sounds. In Drum mode, individual drums cannot be "stretched" across a wide range of the keyboard -- each occupies up to 4 keys.

Each of the 10 drum sounds has its own set of parameters in each of the functions in the display (Pitch, Filter, Range, Effects Level, etc.). You can use Quad Knob [4] in each Function page to select which one of the 10 drum sounds to edit.

Here is a block diagram of a sound in Drum Mode.



When Drum Mode is enabled, the sound will have fewer parameters for editing. Consequently, not all Function labels will appear in the LCD display as when Drum Mode is turned off. Specifically, the LFOs and all Envelopes (with the exception of the Amp Envelope) are unavailable. In addition, the parameters in most other functions will differ.



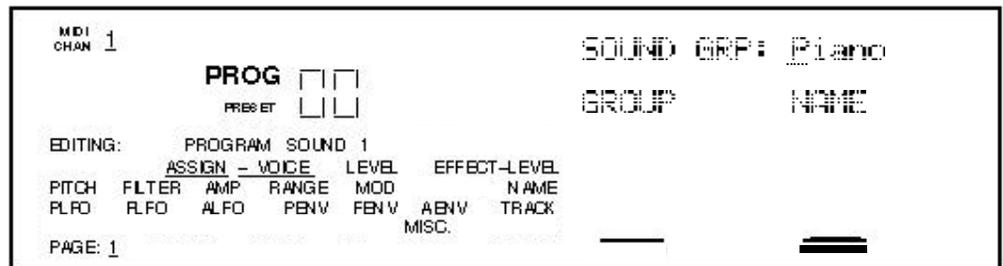
*When using Edit 4 mode, sounds using Drum Mode will be unavailable for editing; only sounds not in Drum Mode will be editable in the bargraph display. If a sound is in Drum mode, the display will show "drmX," whereby X is the sound number (1-4).*

If you enable Drum Mode for a sound while in Edit 4 mode, the QuadraSynth Plus will automatically switch to Edit 1 mode for that layer.

## Program Edit Functions

### Assign Voice

To edit a Program you must select Program Edit mode. Press [SELECT] from Program Play Mode. "Editing: Program " will appear in the display's edit status section:



The Assign Voice function is the most fundamental part of Program editing. It is where you choose the particular sample that forms the basis of a sound. To avoid scrolling through long lists of samples (remember, there are 24 megabytes of sounds in here!), sounds are divided into groups. After selecting the group, you then select the sample within the group.

### Group (16 options)

Choose from among 16 different onboard sample groups (see chart in next section).

### Name

Selects one of the available samples by name from the selected group, or OFF (no sample selected). Each group has a variety of samples from which you can choose, although some groups (such as waves) have more samples than others.

On the following page, you'll find a chart listing the various samples in their respective groups.

Group	Voice
Piano	GrandPiano, Dark Piano, No Hammer, Piano wave, BrtRhdsHrd, BrtRhdsSft, BrtRhdsVel, MidRhdsHrd, MidRhdsSft, MidRhdsVel, Rhdes Hard, Rhdes Soft, Rhdes Velo, DynaRhds 1, DynaRhds 2, FM Piano, Wurlser, AcousPiano, BritePiano, PianoModul
Organ	FullDrwbar, 3 Drawbars, Jazz Tone, Percus 2nd, Percus 3rd, Mellow, DrtyChurch, 60's Combo
Keybrd	Clavinet, FMClav Hrd, FMClav Sft, FMClav Vel, Harpsicord, FM Harpsi, Marimba Hd, Marimba Sf, Marimba V, FMMrmba Hd, FMMrmba Sf, FMMrmba V, MrmbaWave, Vibraphone, VibesWave, Glock, FM Pluck H, FM Pluck S, FM Pluck V, FMPlukWave
Synth	SyncSweep1, SyncSweep2, SyncSweep3, SyncSweep4, SyncSweep5, SncSweepV1, SncSweepV2, MicroWave1, MicroWave2, MicroWave3, MicroWave4, MicroWaveV, FiltSweep1, FiltSweep2, FiltSweep3, FiltSweep4, FiltSweep5, FiltSweep6, FiltSweep7, FltSweepV1, FltSweepV2, DigtlStik1, DigtlStik2, DigtlStik3, DigtlStikV, AnalogSqr1, AnalogSqr2, AnalogSqr3, AnalogSqr4, AnalogSqrV, SyncLead 1, SyncLead 2, SyncLead 3, SyncLead 4, SyncLead 5, SyncLead V, MicroPerc1, MicroPerc2, MicroPerc3, MicroPercV, Perc Filt1, Perc Filt2, Perc FiltV, Analog Buzz1, AnalogBuzz2, AnalogBuzz3, AnalogBuzz4, Analog Res, FM Bell, Whistle
Wave	Pure Sine, 10% Pulse, 15% Pulse, 20% Pulse, 25% Pulse, 33% Pulse, 50% Pulse, Velo Pulse, Mini Saw, Saw Fltr 1, Saw Fltr 2, Saw Fltr 3, Saw Fltr 4, Saw Fltr 5, Saw Fltr 6, Saw Fltr 7, Velo Saw, MiniSquare, Sqr Fltr 1, Sqr Fltr 2, Sqr Fltr 3, Sqr Fltr 4, Sqr Fltr 5, Sqr Fltr 6, Velo Sqr, Mini Peak, Mini Tri, Tri Fltr 1, Tri Fltr 2, Tri Fltr 3, Tri 4, Velo Tri, Rectanglar, Rct Fltr 1, Rct Fltr 2, Rct Fltr 3, Rct Fltr 4, Rct Fltr 5, Rct Fltr 6, Rct Fltr 7, Velo Rect, Mini Thin, Thn Fltr 1, Thn Fltr 2, Thn Fltr 3, Velo Thin, HardSync 1, HardSync 2, HardSync 3, HardSync 4, HardSync 5, HardSync 6, HardSync 7, Velo HSync, Additive 1, Additive 2, Additive 3, Additive 4, Additive 5, Digital 1, Digital 2, Digital 3, Digital 4, Digital 5, Digital 6, Digital 7, Digital 8, Digital 9, Science 1, Science 2, Science 3, Science 4, Science 5, Science 6, Noise
Bass	Brite Bass, StudioBass, Slap Bass, Velo Bass, Slap w/pop, Bass Pops, Fretless, Stik, Acoustic, Fat Synth, SynAcoustic, FM Bass, FilterBass, Bass Wave1, Bass Wave2, Bass Wave3
Guitar	Nylon, Nylon Vel, Nylon Harm, Acoustic, AcousticVel, AcoustHarm, 12Str Elec, 6 Str Elec, 6 Str Velo, 6 Str Harm, Power Gtr, AcoustHrm2, NylonHrm2, 6 Str Hrm2
Brass	Ensemble, "Pows", Trumpet, Mute Trmpt, TrmpySplit, Trombone, Mute FHorn, Soft FHorn, Velo FHorn, Tuba Hard, Tuba Soft, Tuba Velo, Tuba Blats
Wdwind	Bassoon, Oboe, Clarinet, Flute Vibr, Flute, Bari Sax, Tenor Hard, Tenor Brth, Tenor Velo, Alto Sax, Soprano, Bari Combo, Sax Combo, FlutAtkVib
String	SoloViolin, Solo Viola, Solo Cello, Violin Ptz, Cello Ptz, Bass Ptz, Harp, Elect Harp
Ensmbl	Strings, AttkString, SynthStrng, TapeString
Ethnic	Harmonia, FM Harmnca, EuroAccrdrn, Elec Banjo, Asian Drum, Waterphone
Voice	Choir Aahs, Choir Oohs, Voice EFX1, Voice EFX2, Voice EFX3, Aahs Wave, Oohs Wave
SndFX	Zap Attk 1, Zap Attk 2, Zap Attk 3, Mini Attk, Pop, Pop Attk, Bottle Hit, Metal Attk1, Metal Attk2, SambaWhstl, Alert, Android, Cyborg, Meteor, Supernova

Drums	Stndrd Kit, Rock Kit 1, Rock Kit 2, Dance Kit, Stab Kick, Deep Kick, Spike Kick, Flap Kick, GarageKick, PillowKick, Elect Kick, Studio Snr, TurboSnare, PiccoloSnr, Crisp Snr, Power Snr, Dance Snr, Rimshot, Side Stick, Power Tom, Mid Tom, Floor Tom, Slam Tom, Cannon Tom, Closed Hat, Edge Hat, Open Hat, FootClosed, Cym Ride, Cym Bell, Cym Crash, Cym China, Cym Splash, Analog Kit, Brush Kit, Tribal Kit
Percus	Tympani, TbularBell, Orch Combo, Agogo, Bongo, Cabasa, Castanet, Clave, Conga Hit, Conga Slap, Cowbell, FingerSnap, Guiro Long, GuiroShort, Hand Clap, Log Drum, Maracas, Shaker, ShortWhstl, Tambourine, Timbale, Triangle, TriangleMt, Vibrasmack, Wood Block
Rhythm	PsiBeat 1, PsiBeat 2, PsiBeat 3, PsiBeat 4, PsiBeat 5, Kick Loop1, Kick Loop2, Kick Loop3, Kick Loop4, Kick Loop5, SnareLoop1, SnareLoop2, SnareLoop3, Backbeat, ClsdHHLoop, OpenHHLoop1, OpenHHLoop2, FootHHLoop, Ride Loop1, Ride Loop2, Ride Loop3, Tick Talk, Swingset, Bongo Loop, BlockLoop1, BlockLoop2, BlockLoop3, HiTriLpHd, HiTriLpSf, LoTriLpHd, LoTriLpSf, Tamb Loop1, Tamb Loop2, ShakerLoop, ShufflShakr, PopperLoop, BottleLoop, Motor, MiniNoizLp, HvyMetalLp, Machine Lp, Kah Loop, Bass Loop, SynBass Lp
QSPPlus	Piano L, Piano R, BritePno1L, BritePno1R, DarkPno1 L, DarkPno1 R, PnoKnock L, PnoKnock R, Piano Trem, El.Piano1, El.Piano2, Drawbars, Perc.Organ, Pipe Organ, Clavinet, Varimba, Fretless, BritePno2L, BritePno2R, DarkPno2 L, DarkPno2 R, BritePno3L, BritePno3R, DarkPno3 L, DarkPno3 R, TapPiano L, TapPiano R, El.Spinet1, El.Spinet2, Toy Pno L, Toy Pno R, KeyTrack1, KeyTrack2, Stretch L, Stretch R, Analog Pad

### Level

Each sound in a program can have its own level, pan position, and output assignment. With up to four sounds per program, this allows for a wide variety of stereo effects and level balances between the sounds.

#### **Volume (00 to 99)**

This sets the overall volume for a sound. Higher numbers give higher levels.

#### **Pan (<3 to 3>)**

There are 7 available pan locations in the stereo (two-channel) field: Far left (-3), mid left, near left, center (0), near right, mid right, and far right (+3). The pan value is maintained, even if the Output value is changed (see below).

#### **Output (Main, Aux, or Off)**

The Output parameter has three settings: Main, Aux, or Off. To send the sound's output to the Main outputs, select Main. To send the sound's output to the Aux outputs, select Aux. To turn off the sound's output, set this parameter to Off.

(Note, however, that the sound may still feed an Effect Send).

To send a sound to an individual output, use Output in conjunction with Pan. *Example:* Panning a sound full left and selecting the Aux outputs means that the sound will appear at only the left Aux output.

### Effect Level

The QuadraSynth Plus isn't just a synthesizer; it also has a built-in effects system and mixer, with four effect buses and sends. This section lets you

feed the sound to one of the effect buses for processing. See Chapter 7 for more information on editing Effects.

**Level (00 to 99)**

Determines how much of the sound feeds the chosen effect bus (see below). Higher values mean that the sound will be more effected.

**Bus (1 to 4)**

Selects which of the four buses the sound will feed, thereby determining which effect(s) will process the sound. Each Program has its own unique arrangement of effects. *Example:* In Program #12, bus 1 may be a Chorus/Delay/Reverb, while in Program #27, bus 1 may just be a Flanger.

## Pitch

**Pitch (Page 1)****Semitone (-24 to +24 semitones)**

Sets the oscillator pitch in semitone steps, from -24 (transposed down two octaves) to +24 (transposed up two octaves).

**Detune (-99 to +99 cents)**

Sets the oscillator pitch in cents, from -99 (transposed down 99/100 of a semitone) to +99 (transposed up 99/100 of a semitone).

**Detune Type (Normal or Equal)**

With Normal selected, the *percentage* of detuning remains the same over the entire range of the keyboard, so the effects of detuning sound the same no matter which key you play. With Equal selected, the *absolute amount* of detuning remains the same over the entire keyboard, so any detuning seems less pronounced as you play higher up on the keyboard.

**Pitch (Page 2)****Pitch Wheel Range (0 to 12 semitones)**

Determines the maximum amount of pitch bend when the pitch bend wheel is either full forward or back. *Example:* When set to 12, the pitch wheel will bend  $\pm 1$  octave (12 semitones).

**Aftertouch Depth (-99 to +99)**

At +00, aftertouch has no effect on pitch. Applying aftertouch (by pressing harder on the keyboard, or via MIDI messages) with this parameter set to a positive value raises the pitch; conversely, applying aftertouch through a negative value lowers the pitch. The higher the number (either positive or negative), the greater the amount of pitch change for a given amount of aftertouch.

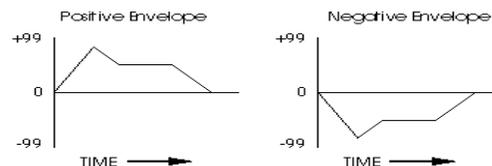
*Tip:* Aftertouch is useful for creating keyboard-controlled string bend effects. Low settings are good for “humanizing” synthesized sounds, since aftertouch changes can give very slight pitch changes, as associated with acoustic instruments.

### **Pitch LFO Depth (-99 to +99)**

At +00, the pitch LFO has no effect. Higher positive values increase the amount of Pitch LFO modulation. Negative values give the same apparent effect, but with reversed LFO phase (i.e., if the pitch would normally be increasing with depth set to a positive number, the pitch would instead be decreasing at that same moment had the depth been set to a negative number). Pitch LFO parameters (such as speed and wave shape) are programmed within the PLFO Function (see page 67).

### **Pitch Envelope Depth (-99 to +99)**

At +00, the pitch envelope has no effect. Positive values raise the pitch from the baseline according to the envelope shape, while negative values similarly lower the pitch. The higher the number (negative or positive), the greater the effect. Pitch Envelope parameters (such as attack and decay time) are programmed within the PENV Function (see page 71).



### **Pitch (Page 3)**

**About portamento:** When you play a key and then a second key, normally the sound jumps instantly from one pitch to another. Portamento provides a sweeping glide from one note to another over a variable amount of time. A good example of this type of sound is a steel guitar, where a note slides from one pitch to another.

### **Portamento (Exponential, Linear, 1 Speed)**

This provides the sweep’s “curve.”

- With an exponential curve, the pitch change seems to happen more rapidly at first, then slows down as it approaches the ending pitch.
- A linear curve produces a constant pitch change throughout the glide.
- Normally, the greater the interval (the pitch difference between the two notes), the longer the glide. For example, a glide between two notes a whole step apart would take much less time than a glide between two notes an octave apart. The 1

Speed curve maintains a constant glide rate regardless of the pitch difference between notes.

**Rate (0 to 99)**

Sets the glide duration. Higher numbers give longer glide times. The Rate value is affected by the Portamento value (see above).

**Keyboard Mode (Mono, Poly, 1-Pitch or 1-PMono)**

In Mono mode, you can play only one note at a time—just like vintage monophonic synthesizers or wind instruments. Poly mode allows you to play polyphonically. Note that portamento behavior is more predictable in mono mode.

*Tip:* With a feedback guitar patch that uses one sound for the guitar and one sound for the feedback, setting the feedback sound to Mono Keyboard Mode insures that your feedback “whistle” will be monophonic, which more accurately mimics what happens when you play lead guitar.

Use 1-PITCH mode when you want a program sound layer to play a single pitch polyphonically throughout the entire keyboard range. In 1-PITCH mode, the QuadraSynth Plus will play the sample used for note C3 for all notes in the range. 1-PITCH mode is often used for layering a noise or drum sound behind another sound that is pitched, for example, to fatten up a bass guitar sound with a hint of kick drum, or to have the same cymbal hit every time any note is played. Alternatively, 1-PMONO mode is a monophonic version of 1-PITCH.

Sometimes when playing a monophonic instrument, you will not want the envelopes to retrigger when playing legato, as this would sound realistic. Imagine a flute-player beginning each note in a phrase with a sharp, breathy attack. In reality, the player would only attack the first note in the phrase this way. Therefore, if the Keyboard Mode is set to “Mono”, the three envelopes (PENV, FENV and FENV) will only retrigger when playing legato if the envelope's Trigger Mode is set to either “Reset” or “Reset-Freerun”.

## Filter

### **Filter (Page 1)**

#### **Frequency (00 to 99)**

This sets the filter's initial cutoff frequency. Lower values give a duller sound since this removes more harmonics; higher values let through more harmonics, which gives a brighter sound.

*Tip:* Signals with complex harmonic structures are most affected by the filter. *Examples:* A sine wave has virtually no harmonics so you will not hear any significant changes as long as the filter cutoff is higher than the note pitch. If the filter cutoff is lower than the note pitch, you will either not hear the note, or it will be very soft. A harmonically-rich sample (such as brass or white noise) will be greatly affected by the filter.

If the Filter Frequency is set to maximum, in most cases all other variables in the Filter function will have no effect. Most other filter functions raise the filter frequency, and it can't be greater than 99. So if you want to use filter effects, proper setting of this initial cutoff frequency is crucial. This is the "baseline" from which all other filter parameters will raise or lower (open or close) the filter.

If the Filter Frequency is set to 00, and no other parameters are set to raise it dynamically, no sound will pass through the filter at all--there will be silence. If the Amp settings are wide open and you can't hear anything, check the Filter Frequency setting.

Since the waveforms in ROM are recorded at the brightest possible setting, in many cases dynamic filtering is crucial to making a program sound natural.

#### **Keyboard Track (On or Off)**

When off, the filter cutoff remains constant across the keyboard. Higher notes will be more affected than lower notes, since the filter cutoff is comparatively lower for higher notes than lower ones.

When on, the filter frequency tracks the keyboard pitch. Therefore, if using the filter creates a particular harmonic structure when you play one key, playing a different key will shift the filter frequency to maintain the same harmonic structure.

#### **Velocity (-99 to +99)**

At +00, velocity has no effect on the filter cutoff. With positive values, playing harder increases the filter cutoff. More positive values drive the cutoff frequency higher for a given amount of velocity. More negative values drive the cutoff frequency lower for a given amount of velocity.

*Tip:* Many acoustic instruments, such as acoustic guitars, sound brighter when you play them more forcefully. Adding a little

positive velocity control over the filter can simulate more realistic acoustic sounds.

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**Filter (Page 2)****Modulation Wheel Depth (-99 to +99)**

Determines how moving the modulation wheel affects the filter cutoff frequency. *Example:* With positive settings, moving the modulation wheel up raises the filter cutoff frequency and moving it down lowers the filter cutoff frequency. With negative settings, moving the modulation wheel up lowers the filter cutoff frequency and moving it down raises the filter cutoff frequency .

**Aftertouch Depth (-99 to +99)**

At +00, aftertouch has no effect on the filter cutoff frequency. Applying aftertouch with this parameter set to a positive value raises the filter cutoff frequency; conversely, applying aftertouch with a negative value lowers the filter cutoff frequency. The higher the number (either positive or negative), the greater the effect for a given amount of aftertouch.

*Tip:* Many acoustic instruments sound brighter as you play them more forcefully; in particular, brass gets brighter as you blow harder. Using aftertouch to increase a sound's brightness can give more control and realism with acoustic instruments.

**Filter LFO Depth (-99 to +99)**

At +00, the filter LFO has no effect. Higher positive values increase the amount of filter LFO modulation. Negative values give the same apparent effect, but with reversed LFO phase (i.e., if the filter cutoff frequency would normally be increasing with depth set to a positive number, the cutoff would instead be decreasing at that same moment had the depth been set to a negative number). Filter LFO parameters (such as speed and wave shape) are programmed from within the FLFO Function (see page 69).

*Tip:* Filter LFO is good for giving wah-wah effects at slower LFO speeds, and for adding "shimmering" with higher LFO speeds.

**Filter Envelope Depth (-99 to +99)**

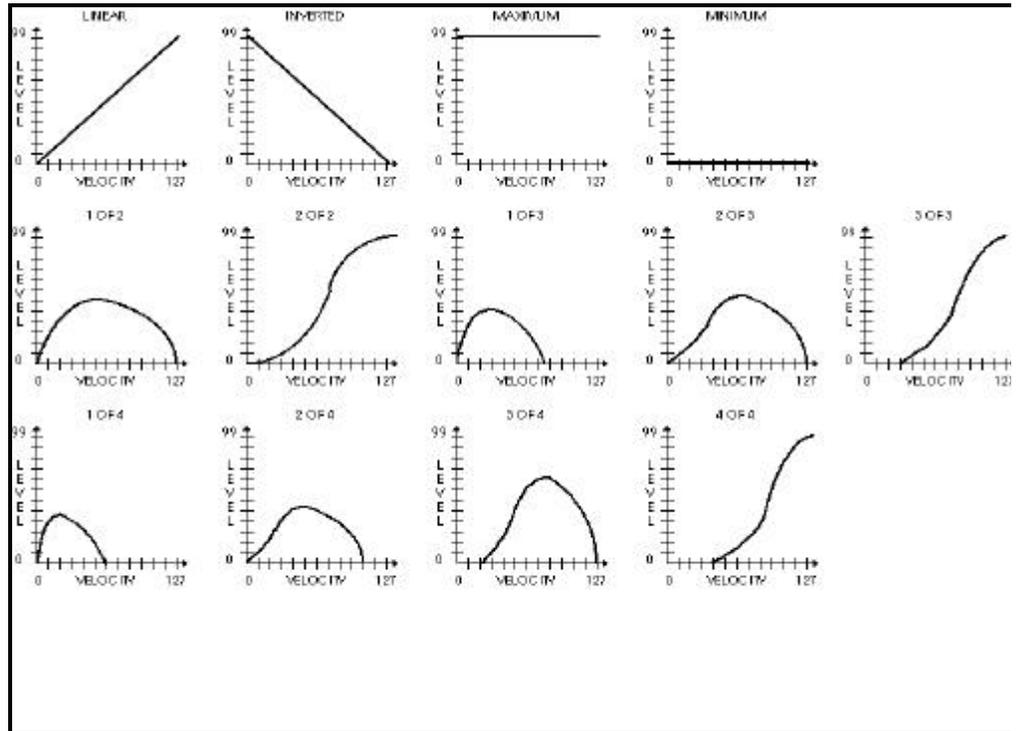
The Filter Envelope is one of the most important settings in making a program. Many programs will use the Filter Envelope to determine the tonal character of the sound over time (attack, decay, sustain, and release). At +00, the filter envelope has no effect. Positive values raise the filter from the baseline cutoff frequency according to the envelope shape, and negative values similarly lower the cutoff frequency. The higher the number (negative or positive), the greater the effect. Filter Envelope parameters (such as attack and decay time) are programmed within the FENV Function (see page 74).

Amp

**Velocity Curve (13 choices)**

This selects how the sound will respond to the dynamics of your playing the keyboard. A LINEAR curve is the norm, whereby the increase in level is equal to the increase in velocity; the velocity values increase as you play harder. Many of the Velocity Curves make up sets to be used by 2, 3 or 4 sounds in order to facilitate velocity crossfading, whereby a different sound is played depending on how hard or soft the keyboard is played.

As explained earlier, many of the samples to choose from when assigning voices are already velocity switching. These samples usually have the word “Velo” or the letter “V” in their names, indicating that there is actually more than one sample per note which can be selected by how hard or soft each note is played. However, the velocity point at which these sounds change is fixed and cannot be altered. If you want to create your own velocity crossfading Program, assign the single-sample versions of the same samples (“BrtrhdsVel” is made up of “BrtrhdsHrd” and “BrtrhdsSft”) to two or more sounds, then use the appropriate velocity curves for each sound (in a three-way velocity split, sound 1 would use curve “1 of 3,” sound 2 would use curve “2 of 3” while sound 3 would use “3 of 3”).



**Aftertouch Depth (-99 to +99)**

At +00, aftertouch has no effect on the amplitude. Applying aftertouch with this parameter set to a positive value raises the amplitude; conversely, applying aftertouch with a negative value will make the sound softer the harder you press. The

higher the number (either positive or negative), the greater the effect for a given amount of aftertouch.

*Tip:* Use aftertouch to “swell” the amplitude of brass and horn parts.

**Amplitude LFO Depth (-99 to +99)**

At +00, the Amp LFO has no effect. Higher positive values increase the amount of LFO modulation. Negative values give the same apparent effect, but with reversed LFO phase (i.e., if the amplitude would normally be increasing with depth set to a positive number, the amplitude would instead be decreasing at that same moment had the depth been set to a negative number). Amplitude LFO parameters (such as speed and wave shape) are programmed within the ALFO Function (see page 70).

*Tip:* Amplitude LFO set to a triangle wave gives tremolo effects.

**Range**

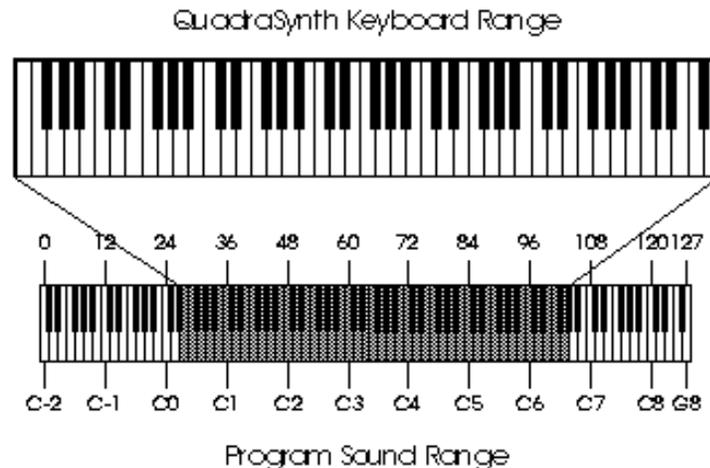
Each sound can be restricted to a specific range of the keyboard. This is ideal for creating splits (e.g., bass in the lower octave and a half, piano in the middle three octaves, and strings in the upper octave).

**Lower Limit (MIDI note 000 to 127/ C-2 to G8)**

Specifies the lowest note of the sound’s keyboard range. You can set the lower limit by holding Quad Switch [1] and tapping the key on the keyboard you want to set as the lowest note in the range.

**High Limit (MIDI note 000 to 127/ C-2 to G8)**

Specifies the highest note of the sound’s keyboard range. You can set the high limit by holding Quad Switch [2] and tapping the key on the keyboard you want to set as the highest note in the range.



*Tip:* By setting the lower limit above the high limit, you can create a “hole in the middle” effect. This makes the sound

appear to have two zones. All notes from the bottom of the keyboard to the high limit note will play, and all notes from the lower limit to the top of the keyboard will play, but the notes between the high limit and the lower limit will not play. This can be further enhanced in Mix Mode by using the Range function in Mix Edit Mode to cap-off the lower and high limits.

## Sound Overlap (00 to 99)

This determines how many voices can overlap on the same pitch.

*Example:* If you hold the sustain pedal down and play the same note over and over, Sound Overlap determines how many voices are available for that note, and thus how many voices will overlap (play simultaneously).

In the old days, different brands of synthesizers offered different voice allocation schemes. One brand used a method called “rotate mode” in which each time a note was struck, a new voice was used. Another brand used a different method called “reassign mode” whereby if a note is played and then played again, the same voice is used both times. In other words, a new voice is used each time a new note of a different pitch is played.

The Sound Overlap value lets you choose a comfortable setting between rotate mode and reassign mode. When the value equals 99, you are always in rotate mode, using up polyphony; if the value is 00, you are always in reassign mode, conserving voices. Set the value anywhere between 00 and 99 and you will get a combination of both, with partiality toward whichever mode the value is closest to.

A piano sound requires some Sound Overlap, but not a lot; it isn’t natural to hear too many voices on the same note. On the other hand, having only one voice per pitch isn’t natural either; let’s say you played a loud note with the sustain pedal held, followed by a soft note--the second note would abruptly cut-off the first. On a real piano, the string would still be resonating from the first (loud) note when the second (soft) note was played; thus the two notes would overlap.

Sound Overlap is especially useful in Drum Mode. In Drum Mode, each drum sound is designated to one note (or sometimes a group of notes). When playing one note for a drum sound, such as a snare, and you attempt to play a roll, the Sound Overlap controls how much of an overlap will exist between each pair of notes. If the Sound Overlap value is set low, you are more likely to hear old notes getting cut-off.

This function has added value when the Program’s Keyboard Mode parameter is set to Mono, instead of Poly. When playing monophonically, Sound Overlap controls the amount of overlap between notes. Normally, even if the sound has a long release time, playing a new note in Mono Mode will cut-off the previous note. By adjusting the Sound Overlap value, you can still hear the previous note fading away after the new note has been played.



*It is important to note that Sound Overlap can have a negative effect on polyphony.*

If you have Sound Overlap set to 99, hold the sustain pedal and play a series of notes, you will run through all 64 voices in no time. By adjusting the Sound Overlap to a lower value, you decrease the number of voices used by each new note, and thereby ensure there are voices available to play other sounds, if necessary.

## Mod

### About General Purpose Modulation

Although there are several dedicated modulators in the QuadraSynth Plus (e.g., the pitch can always be modulated by the pitch LFO and pitch envelope), sophisticated synthesizer programming demands the ability to use as many modulation sources as possible to modulate as many modulation destinations as desired.

The QuadraSynth Plus arranges its modulation source outputs and modulation destination inputs into a “matrix” so that any selected source can connect to any of several destinations.

There are six general purpose matrix modulators, which allows you to control up to six parameters with any of several control sources.

Use the MOD functions to setup your own customized control of a program, such as:

- Using one or both of the PEDAL inputs to control volume, brightness (filter cutoff), effect level, LFO speed, etc.
- Using velocity to increase or decrease the attack speed of an envelope, so playing softly makes the sound fade in, while playing hard causes an immediate attack.
- Using release velocity to increase/decrease the release time of an envelope, so quick releases of the keys cut off the end of the sound, while slow key releases allow the sound to fade away gradually.

The MOD functions give you the freedom to go beyond the standard modulation sources built-in to other functions.

### Selecting the Modulator (1 to 6)

Use the PAGE [♦] and PAGE [Ø] buttons to select one of the six modulators (modulator 1 is page 1, modulator 2 is page 2, modulator 3 is page 3, etc.). All modulators work in the same way, so only one will be described here.

### Modulation Source

Quad Knob [1] selects one of several modulation sources:

- **Note #** provides a modulation signal that corresponds to the note played on the keyboard (higher keys give higher values). Example: Use this modulation source to obtain a different sound in the upper and lower keyboard ranges.

- **Velocity** relates to how fast a key goes from the key up (note off) to the key down (note on) position, and therefore represents the dynamics of your playing.
- **Release velocity** relates to how fast a key goes from the key down (note on) to the key up (note off) position. Example: Use this to affect the level of a sound's release based on how fast you remove your fingers from the keys.

- **Aftertouch** Pressing on the keys after they're down generates this control signal. Aftertouch is also called channel pressure, and represents an average of all keys being pressed. This affects any keys that are held down. The harder you press on the keys, the greater the degree of modulation.
- **Polyphonic Pressure** This is similar to aftertouch, but each key can respond to individual pressure messages. Although the QuadraSynth Plus keyboard does not generate poly pressure, the sound generators can respond to poly pressure signals entering via the MIDI In. *Example:* Assign poly pressure to the sound's amplitude in a string ensemble patch. You can then increase the level of selected notes of a held chord to "pull" some notes out of the chord.
- **Pitch Wheel** The two wheels to the left of the keyboard are modulation sources (see below). The leftmost wheel, Pitch, always controls the oscillator pitch but can be tied to other parameters as well.
- **Modulation Wheel** The rightmost wheel, Modulation, is traditionally assigned to LFO amount (level) so that rotating the wheel away from you introduces vibrato. However it is also well-suited to controlling timbre, vibrato speed, and many other parameters.
- **MIDI Volume** MIDI can produce a variety of controller messages (see the MIDI supplement in the back of this manual). Of these, controller #7, which controls channel volume, is one of the most frequently used. *Example:* Assign the filter cutoff as the destination, and you can have the signal become less bright as it becomes lower in volume.
- **Sustain Pedal** The sustain switch plugged into the sustain pedal jack provides this modulation signal.
- **Pedal 1** The pedal plugged into the Pedal 1 jack provides this modulation signal. Typically, this may be mapped to AENV Amp to act as a volume pedal.
- **Pedal 2** The pedal plugged into the Pedal 2 jack provides this modulation signal.
- **Pitch LFO** This is the same modulation signal provided by the Pitch LFO. The **Frequency LFO** and **Amplitude LFO** can also be selected as modulation sources.
- **Pitch Envelope** This is the same modulation signal provided by the Pitch Envelope. The **Frequency Envelope** and **Amplitude Envelope** can also be selected as modulation sources.

- **Random** This provides a different modulation value every time you hit a key. Example: With vintage analog synth patches, use pitch as the destination and apply a very slight amount of random modulation. Each note will have a slightly different pitch, which simulates the natural tuning instability of analog circuits.
- **Trigrate** This is a Trigger Rate Follower, which monitors how fast notes are being played on the keyboard. For example, if routed to the Effect send of a Program, you could automatically have more effect when playing slowly, and less effect when playing quickly.
- **Controllers (A, B, C, D)** Four incoming MIDI controllers can be recognized by the QuadraSynth Plus and used as modulation sources. These controllers are assigned as A–D in Global Mode (see Chapter 8). In Program Play Mode and Mix Play Mode, the four Quad Knobs can be used to control these directly.
- **Tracking Generator** This accepts the output of a signal processed by the Tracking Generator module (see page 81).
- **Stepped Tracking Generator** This accepts the output of a signal processed by the Tracking Generator module in stepped mode (see page 81).

### Modulation Destination

Quad Knob [2] selects one of several modulation destinations. You can find out more about these parameters and how they affect the sound in their respective sections (for example, to learn how Pitch Envelope Attack affects the sound, see page 72 on Pitch Envelopes).

- |                     |                           |             |
|---------------------|---------------------------|-------------|
| • Pitch             | • Filter Cutoff           | • Amplitude |
| • Effect Send       | • PLFO Speed              | • PLFO      |
| Amp                 |                           |             |
| • PLFO Delay        | • PENV Delay              | • PENV      |
| Attack              |                           |             |
| • PENV Decay        | • PENV Sustain Decay      | •           |
| • PENV Release      |                           |             |
| • PENV Amp          | • FLFO Speed              | • FLFO      |
| Amp                 |                           |             |
| • FLFO Delay        | • FENV Delay              | • FENV      |
| Attack              |                           |             |
| • FENV Decay        | • FENV Sustain Decay      | •           |
| • FENV Release      |                           |             |
| • FENV Amp          | • ALFO Speed              | • ALFO      |
| Amp                 |                           |             |
| • ALFO Delay        | • AEnvelope Delay         | •           |
| • AEnvelope Attack  |                           |             |
| • AEnvelope Decay   | • AEnvelope Sustain Decay | •           |
| • AEnvelope Release |                           |             |
| • AEnvelope Amp     | • Portamento Rate         |             |

**Modulation Level (-99 to +99)**

At +00, the modulation source has no effect on the destination. Higher positive values increase the amount of modulation. Negative values also increase the amount of modulation, but with negative phase (i.e., if the modulation would normally be increasing with depth set to a positive number, the modulation would instead be decreasing at that same moment had the depth been set to a negative number).

**Gate Mode (Off or On)**

The Gate Mode function is available only on modulation routings 1 through 4. When Gate Mode is on, the Modulator will only be routed while notes are being played. In other words, you can gate the effect of the Modulator so that it stops when you are not playing any notes. This can be used on sounds with medium to long release times, where an interesting effect (like tremolo) is intended to be active while holding notes down, but deactivated as the sound is fading away after being released.

**Quantize Mode (Off or On)**

The Quantize Mode function is only available in modulation routings 5 and 6. When Quantize Mode is on, the modulation effect will be stepped. When off, the effect will be smooth, or linear. *Example:* If you were to route the Modulation Wheel to Pitch with an amplitude of +99, moving the Mod Wheel while the Quantize parameter was off would cause the pitch of a held note to slide up, much the same way it does when the Pitch Bend Wheel is used. However, moving the Mod Wheel while the Quantize parameter was on would cause the pitch of a held note to rise in half-step increments.

Pitch LFO

**Pitch LFO (Page 1)**

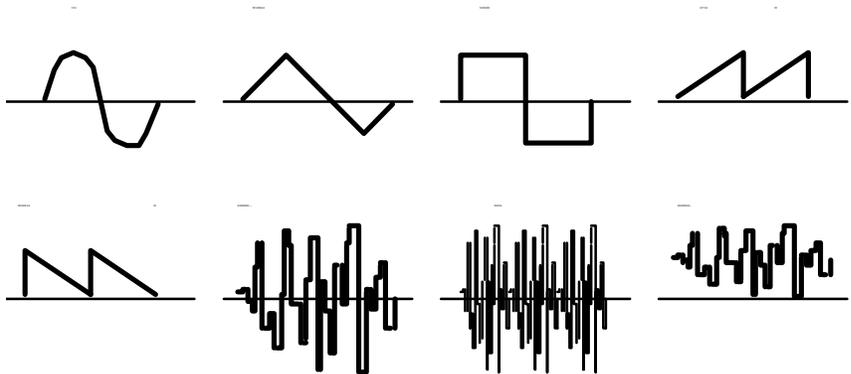
The Pitch LFO is most often used to apply vibrato to a sound.



*The following Pitch LFO variables will make a difference in the sound only if the PITCH LFO DEPTH (on Page 2 of the PITCH function) is set to a value other than 0, or, if the Pitch LFO is a source in the MOD function.*

**Wave (8 choices)**

The waveform determines the shape of the LFO. Use Quad Knob [1] to select either Sine, Triangle, Square, Up Saw, Down Saw, Random+-, Noise or Random+.

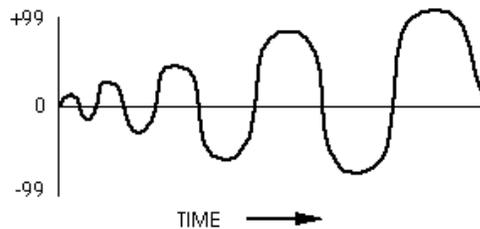


**Speed (00 to 99)**

Quad Knob [2] controls the speed or rate of the LFO. For fast modulation, increase this value. For slower modulation, decrease this value.

**Delay (00 to 99)**

This is the amount of time that is to occur before the LFO fades in. Sometimes, it is desirable to have modulation come in a moment or two after a note has been played, rather than starting instantly. The higher the value, the slower the LFO fades in.



**Trigger (Mono, Poly, Key Mono, or Key Poly)**

The Trigger parameter determines how the LFO should be triggered, or started. There are four possible settings: Mono, Poly, Key Mono and Key Poly. When playing multiple voices in a single sound, each voice has its own LFO. However, the LFO Trigger parameter determines whether or not they should be in sync, and whether or not they can be retriggered independent from one another.

**Mono.** All voices' LFOs are in sync with each other. If you hold a chord and then play new notes on top of the chord, all voices' LFOs will be moving in the same direction and at the same speed. Because of this, modulating the LFO Speed using a voice-specific source (such as velocity or one of the envelopes, for example) will have no effect (you will be allowed to do this, but you won't hear any difference). This is because these modulation sources are meant for polyphonic purposes. These include: Note Number, Velocity, Release Velocity, PLFO, FLFO, ALFO, PENV, FENV, AENV, Random, Trig Rate and Tracking Generator. However, modulation sources which are not voice-specific will still have an effect while the LFO Trigger is set to MONO. These include: Aftertouch, Mod Wheel, Pitch Wheel, MIDI Volume, Sustain Pedal, Pedal 1, Pedal 2, and Controllers A—D.

**Poly.** Each voice's LFO is independent. If you hold a chord, some voices' LFOs will be moving in one direction while others move in the other direction. If the LFO Speed is being modulated (by one of the envelopes, for example), the LFO's of each voice may be running at different speeds.

**Key Mono.** This is identical to MONO, but whenever a new note is played, the LFO is retriggered, instead of continuing from wherever it may be in its cycle.

**Key Poly.** This is almost identical to POLY, but whenever a new note is played, the LFO is retriggered, instead of continuing from wherever it may be in its cycle.

### **Pitch LFO (Page 2)**

#### **Level (00 to 99)**

This is the base output level of the Pitch LFO. If you want to have a constant value of vibrato, even without using the Mod Wheel or Aftertouch, set LEVEL above 00. The Mod Wheel and Aftertouch will add or subtract from this base level. *Example:* If Level is set to 10 and the Mod Wheel parameter is set to 10, there will always be some vibrato, and raising the Mod Wheel will add more vibrato. On the other hand, if the Mod Wheel parameter is set to -10, raising the Mod Wheel to the top will cancel out all vibrato.

#### **Mod Wheel (-99 to 99)**

This is the modulation amount of the Mod Wheel over the Pitch LFO's Level. A positive value raises the level when the Mod

Wheel is moved up, and lowers the level when moved down. Negative settings of this parameter will decrease the output level of the PLFO as the Mod Wheel is raised. Since the output level of the PLFO cannot be less than zero, a negative setting of the Mod Wheel parameter will have no effect unless either the Aftertouch or the Level is set to raise the PLFO output. If both the Level and Aftertouch are set to 00, and the Mod Wheel parameter is set to -99, the Mod Wheel will have no effect on the vibrato from the PLFO.

**Aftertouch (-99 to 99)**

This is the modulation amount of Aftertouch over the Pitch LFO's Level. A positive value raises the level as more Aftertouch is applied. A negative value will lower the amount of PLFO level as more Aftertouch is applied.

## Filter LFO

### **Filter LFO (Page 1)**

The Filter LFO is most often used to apply tremolo-like or "wah-wah" effects to a sound.



*The following Filter LFO variables will affect the sound only if the FILTER LFO DEPTH (on Page 2 of the FILTER function) is set to a value other than 0, or, if Filter LFO is a source in the MOD function.*

*Also note that the Filter LFO may have no effect if some other modulation source or setting has already pushed the filter cutoff frequency to its maximum.*

### **Wave (8 choices)**

The waveform determines the shape of the LFO. Use Quad Knob [1] to select either Sine, Triangle, Square, Up Sawtooth, Down Sawtooth, Random+-, Noise or Random+. For a graphic representation of these waveforms, see the diagram in the Wave section of the PLFO description on page 67.

### **Speed (00 to 99)**

Quad Knob [2] controls the speed or rate of the LFO. For fast modulation, increase this value. For slower modulation, decrease this value.

### **Delay (00 to 99)**

This is the amount of time that is to occur before the LFO fades in. Sometimes, it is desirable to have modulation come in a moment or two after a note has been played, rather than starting instantly. The higher the value, the slower the LFO fades in.

### **Trigger (Mono, Poly, Key Mono, or Key Poly)**

The Trigger parameter determines how the LFO should be triggered, or started. There are four possible settings: Mono, Poly, Key Mono and Key Poly. A description of these settings is found in the Trigger section of the PLFO description on page 67.

### **Filter LFO (Page 2)**

#### **Level (00 to 99)**

This is the base output level of the Filter LFO. If you want to have a constant value of tremolo to the filter, even without using the Mod Wheel or Aftertouch, set LEVEL above 00. The Mod Wheel and Aftertouch will add or subtract from this base level.  
*Example:* If Level is set to 10 and the Mod Wheel parameter is set to 10, there will always be some filter tremolo, and raising the Mod Wheel will add more tremolo. On the other hand, if the Mod Wheel parameter is set to -10, raising the Mod Wheel to the top will cancel out all tremolo.

**Mod Wheel (-99 to 99)**

This parameter sets how much the Mod Wheel will increase or decrease the Filter LFO's Level. A positive value raises the level when the Mod Wheel is moved up, and lowers the level when moved down. Negative settings of this parameter will decrease the output level of the FLFO as the Mod Wheel is raised. Since the output level of the FLFO cannot be less than zero, a negative setting of the Mod Wheel parameter will have no effect unless either the Aftertouch or the Level is set to raise the FLFO output. If both the Level and Aftertouch are set to 00, and the Mod Wheel parameter is set to -99, the Mod Wheel will have no effect on the tremolo from the FLFO.

**Aftertouch (-99 to 99)**

This is the modulation amount of Aftertouch over the Filter LFO's Level. A positive value raises the level as more Aftertouch is applied. A negative value will lower the amount of FLFO level as more Aftertouch is applied.

**Amp LFO****Amp LFO (Page 1)**

The Amp LFO is usually used to add tremolo to a sound.



*The Amp LFO variables will have an effect only if the AMP LFO DEPTH (in the AMP function) is set to a value other than 0, or, if Amp LFO is a source in the MOD function.*

**Wave (8 choices)**

The waveform determines the shape of the LFO. Use Quad Knob [1] to select either Sine, Triangle, Square, Up Sawtooth, Down Sawtooth, Random+-, Noise or Random+. See the diagram in the Wave section of the PLFO description on page 67.

**Speed (00 to 99)**

Quad Knob [2] controls the speed or rate of the LFO. For fast modulation, increase this value. For slower modulation, decrease this value.

**Delay (00 to 99)**

This is the amount of time that is to occur before the LFO fades in. Sometimes, it is desirable to have modulation come in a moment or two after a note has been played, rather than starting instantly. The higher the value, the slower the LFO fades in.

**Trigger (Mono, Poly, Key Mono, Key Poly)**

The Trigger parameter determines how the LFO should be triggered, or started. There are four possible settings: Mono,

Poly, Key Mono and Key Poly. A description of these settings is found in the Trigger section of the PLFO description on page 67.

**Amp LFO (Page 2)****Level (00 to 99)**

This is the base output level of the Amp LFO. If you want to have a constant value of tremolo, even without using the Mod Wheel or Aftertouch, set LEVEL above 00. The Mod Wheel and Aftertouch will add or subtract from this base level. *Example:* If Level is set to 10 and the Mod Wheel parameter is set to 10, there will always be some tremolo, and raising the Mod Wheel will add more tremolo. On the other hand, if the Mod Wheel parameter is set to -10, raising the Mod Wheel to the top will cancel out all tremolo.

**Mod Wheel (-99 to 99)**

This is the modulation amount of the Mod Wheel over the Amp LFO's Level. A positive value raises the level when the Mod Wheel is moved up, and lowers the level when moved down. Negative settings of this parameter will decrease the output level of the ALFO as the Mod Wheel is raised. Since the output level of the ALFO cannot be less than zero. A negative setting of the Mod Wheel parameter will have no effect unless either the Aftertouch or the Level is set to raise the ALFO output. If both the Level and Aftertouch are set to 00, and the Mod Wheel parameter is set to -99, the Mod Wheel will have no effect on the tremolo from the ALFO.

**Aftertouch (-99 to 99)**

This is the modulation amount of Aftertouch over the Amp LFO's Level. A positive value raises the level as more Aftertouch is applied. A negative value will lower the amount of ALFO level as more Aftertouch is applied.

## Pitch Envelope

**Pitch Envelope (Page 1)**

Pitch Envelope can lead to dramatic effects, since it can cause the pitch of a single key to change drastically over time. It's typically used in special-effect synthesizer programs, but it may also be used more subtly in an acoustic program to simulate the characteristic of some instruments to go sharp on the initial attack, especially when played hard.



*The following Pitch Envelope variables will have an effect only if the PITCH ENVELOPE DEPTH (on Page 2 of the PITCH function) is set to a value other than 0, or, if Pitch Envelope is a source in the MOD function.*

**Attack (00 to 99)**

This is the amount of time the envelope will take until it reaches its maximum output level. Setting the Attack to 0 will make the

pitch go to maximum immediately on hitting the key (if the Delay is also set to 0 in PENV Page 2--see below); a setting of 99 will result in a much slower attack, taking many seconds before the envelope gets to maximum.

**Decay & Sustain (00 to 99)**

As soon as the attack portion of the envelope finishes (when the level reaches maximum), the envelope will decay (decrease in level). The level it reaches is set by the Sustain control; how long it takes to get there is set by the Decay control. In the special case where the Sustain level is all the way up (99), then there is no decrease and the Decay time segment is bypassed. Whatever level the sustain is set to is the level that the decay section of the envelope will head for. Depending on the setting of the Sustain Decay control (see below), the envelope will either hold at the sustain level until you release the note on the keyboard, or decay to 0 at the Sustain Decay rate (which is on page 2 of the envelope). You can create a long "plateau" at the start of a note by setting the Sustain to 98 and the Decay to 99. This will cause the envelope to take the maximum amount of time to get from peak level to a level of 98, before the Sustain Release portion of the envelope begins.

**Release (00 to 99, Hold)**

Eventually, you will let go of the note that you've been holding (either by releasing the note on the keyboard, or releasing the sustain pedal if it was pressed). It is at this point that the Release portion of the envelope takes effect. The Release is the time that the envelope takes to get from its current level back down to nothing. Setting the Release time to 99 will take the envelope a very long time to reach zero level.

The Pitch Envelope is unique from the other two envelopes in that its Release time can be set above 99. When this is done, the value in the display will read "Hold". This indicates that the pitch envelope will remain where it is even after the note is released. This is important when you want the pitch effect to continue even after releasing the key. *Example:* If the PENV is bending a note up, and you don't want the pitch to fall when you release the key, set the Release parameter to "Hold".

**Pitch Envelope (Page 2)****Delay (00 to 99, Hold)**

This is the amount of time that the envelope will wait before doing anything; very useful if you want to affect one element of a sound sometime after the sound starts. When the Delay is set to 0, the envelope attacks right away, without any delay. Play some notes while turning up the delay and see that the time between playing the note and hearing the effect of the Pitch Envelope gets progressively longer as the Delay control is turned up.

If the Delay is set above 99, the display will read "Hold". This indicates that the Delay stage of the envelope will wait indefinitely until the key is released before continuing on to the remaining envelope stages (Attack, Decay, etc.). This requires

that the Pitch Envelope's Trigger parameter (see next page) is set to "Freerun". However, when the Delay is set to "Hold", "Freerun" mode is forced on regardless of the Trigger parameter's setting.

### **Sustain Decay (00 to 99)**

This is the amount of time that the envelope will take during the sustain stage to bring the level down to 0. If this is set to 99, the envelope will remain at the Sustain level until the note is released. When set to 0, the envelope's level will immediately jump down to 0 upon reaching the sustain stage.

### **Trigger (Normal, Freerun, Reset, Reset-Freerun)**

The Trigger mode determines how the envelope will function. You may select either Freerun or Reset, or both (Reset-Freerun) or neither (Normal). When set to Normal, the envelope will always start at its current level (i.e., if another note had been played which triggered the envelope's cycle, playing another note in the middle would not interrupt the cycle). Also in Normal mode, the envelope will immediately advance to its release stage upon releasing the note. When set to Freerun, the envelope will complete its entire cycle, even if the note is released in the middle. When set to Reset, the envelope starts at the beginning whenever a new note is played. When set to Reset-Freerun, the envelope will start at the beginning whenever a new note is played and will complete its entire cycle, even if the note is released in the middle.

If a sound layer's Keyboard Mode parameter (found in the Pitch Function, Page 3, Quad Knob [4]) is set to "Mono", the Pitch Envelope will only retrigger when playing legato if the Trigger Mode is set to either "Reset" or "Reset-Freerun".

### **Pitch Envelope (Page 3)**

#### **Time Tracking (On or Off)**

This determines whether or not keyboard position will affect the cycle speed of the envelope. When turned on, playing toward the higher end of the keyboard will result in a faster envelope cycle; playing toward the lower end of the keyboard will result in a slower envelope cycle. However, this does not effect the attack time, but only the decay, sustain decay and release segments. This feature will result in only a subtle change. The envelope's timing doubles or halves over a range of two octaves.

#### **Sustain Pedal (On or Off)**

This determines whether or not the Sustain Pedal will have an effect on the envelope. When turned on, holding down the Sustain Pedal while playing short notes is virtually the equivalent to holding down those notes on the keyboard with some subtle but important differences. If the Delay and Attack are set to 0 and either the Decay is 0 or the Sustain is 99, the envelope will immediately jump to the sustain decay stage (if

not already there) when the note is released and the sustain pedal is held down. If a long attack is set, and the envelope does not reach the end of the attack segment when the note is released, it will be skipped and the envelope will jump immediately to the release segment. If a long delay is set, and the envelope has not reached the attack segment before the note is released, the envelope will remain at 0. However, if Freerun is turned on, the envelope will continue through the delay, attack, decay and sustain segments and remain at the sustain decay segment. This is exactly the same as holding down the note on the keyboard. When the Sustain Pedal parameter is turned off, the Sustain Pedal will have no effect on the envelope.

**Level (00 to 99)**

This is the overall output level of the envelope. If this is set to 00, the PENV will have no output and will have no effect, while at 99 it will have a maximum effect on whatever it is being routed to. *Tip:* When selecting PENV Level as a modulation destination, set the PENV level to 00 if the Modulation Level is above 0 (or, set the PENV level to 99 if the Modulation Amount is below 0).

**Velocity Modulation (00 to 99)**

This determines how keyboard dynamics will affect the envelope level. When set to 99, note velocity controls the envelope's output; notes played hard will deliver a higher envelope output than notes played soft. When set to 0, note velocity will have no effect on the envelope's output level.

**Filter Envelope****Filter Envelope (Page 1)**

Filter Envelope is crucial whenever you want the tonal quality of a note to change over time, differently from its overall level.

*Example:* When you want the initial attack of a note to be bright, but want the sustaining part to be filtered.



*The following Filter Envelope variables will only have any effect if the FILTER ENVELOPE DEPTH (on Page 2 of the FILTER function) is set to a value other than 0, or, Filter Envelope is a source in the MOD function.*

*Also note that the Filter Envelope may have no effect if some other modulation source, or the basic setting of the filter, has already pushed the filter cutoff frequency to its maximum.*

**Attack (00 to 99)**

This is the amount of time the envelope will take until it reaches its maximum output level. Setting the Attack to 0 will give a sharp edge to the sound (if the Delay is also set to 0 in FENV Page 2--see below); a setting of 99 will result in a much slower attack, taking many seconds before the envelope gets to maximum.

**Decay & Sustain (00 to 99)**

As soon as the attack portion of the envelope finishes (when the level reaches maximum), the envelope will decay (decrease in level). The level it reaches is set by the Sustain control; how long it takes to get there is set by the Decay control. In the special case where the Sustain level is all the way up (99), then there is no decrease and the Decay time segment is bypassed. Whatever level the sustain is set to is the level that the decay section of the envelope will head for. Depending on the setting of the Sustain Decay control (see below), the envelope will either hold at the sustain level until you release the note on the keyboard, or decay to 0 at the Sustain Decay rate (which is on page 2 of the envelope). You can create a long "plateau" at the start of a note by setting the Sustain to 98 and the Decay to 99. This will cause the envelope to take the maximum amount of time to get from peak level to a level of 98, before the Sustain Release portion of the envelope begins.

**Release (00 to 99)**

Eventually, you will let go of the note that you've been holding (either by releasing the note on the keyboard, or releasing the sustain pedal if it was pressed). It is at this point that the Release portion of the envelope takes effect. The Release is the time that the envelope takes to get from the sustain level back down to nothing. Setting the Release time to 0 is good for playing those short funky riffs that you hear on a clavinet. Setting the Release time to 99 will take the envelope a very long time to reach zero level.

**Filter Envelope (Page 2)****Delay (00 to 99)**

This is the amount of time that the envelope will wait before doing anything; very useful if you want to affect one element of a sound sometime after the sound starts. When the Delay is set to 0, the envelope attacks right away, without any delay. Play some notes while turning up the delay and see that the time between playing the note and hearing the effect of the Filter Envelope gets progressively longer as the Delay control is turned up.

If the Delay is set above 99, the display will read “Hold”. This indicates that the Delay stage of the envelope will wait indefinitely until the key is released before continuing on to the remaining envelope stages (Attack, Decay, etc.). This requires that the Filter Envelope’s Trigger parameter (see next page) is set to “Freerun”. However, when the Delay is set to “Hold”, “Freerun” mode is forced on regardless of the Trigger parameter’s setting.

**Sustain Decay (00 to 99)**

This is the amount of time that the envelope will take during the sustain stage to bring the level down to 0. If this is set to 99, the envelope will remain at the Sustain level until the note is released. This is the normal setting for organ-type sounds. When set to 0, the envelope’s level will immediately jump down to 0 upon reaching the sustain stage.

**Trigger (Normal, Freerun, Reset, Reset-Freerun)**

The Trigger mode determines how the envelope will function. You may select either Freerun or Reset, or both (Reset-Freerun) or neither (Normal). When set to Normal, the envelope will always start at its current level (i.e., if another note had been played which triggered the envelope’s cycle, playing another note in the middle would not interrupt the cycle). Also in Normal mode, the envelope will immediately advance to its release stage upon releasing the note. When set to Freerun, the envelope will complete its entire cycle, even if the note is released in the middle. When set to Reset, the envelope starts at the beginning whenever a new note is played. When set to Reset-Freerun, the envelope will start at the beginning whenever a new note is played and will complete its entire cycle, even if the note is released in the middle.

If a sound layer’s Keyboard Mode parameter (found in the Pitch Function, Page 3, Quad Knob [4]) is set to “Mono”, the Filter Envelope will only retrigger when playing legato if the Trigger Mode is set to either “Reset” or “Reset-Freerun”.

**Filter Envelope (Page 3)****Time Tracking (On or Off)**

This determines whether or not keyboard position will affect the cycle speed of the envelope. When turned on, playing toward the higher end of the keyboard will result in a faster envelope cycle; playing toward the lower end of the keyboard will result in a slower envelope cycle. However, this does not effect the attack time, but only the decay, sustain, sustain decay and release segments. This feature will result in only a subtle change. The envelope's timing doubles or halves over a range of two octaves.

**Sustain Pedal (On or Off)**

This determines whether or not the Sustain Pedal will have an effect on the envelope. When turned on, holding down the Sustain Pedal while playing short notes is virtually the equivalent to holding down those notes on the keyboard with some subtle but important differences. If the Delay and Attack are set to 0 and either the Decay is 0 or the Sustain is 99, the envelope will immediately jump to the release stage (if not already there) when the note is released and the sustain pedal is held down. If a long attack is set, and the envelope does not reach the end of the attack segment when the note is released, it will be skipped and the envelope will jump immediately to the sustain decay segment. If a long delay is set, and the envelope has not reached the attack segment before the note is released, the envelope will remain at 0. However, if Freerun is turned on, the envelope will continue through the delay, attack, decay and sustain segments and remain at the sustain decay segment. This is exactly the same as holding down the note on the keyboard. When the Sustain Pedal parameter is turned off, the Sustain Pedal will have no effect on the envelope.

**Level (00 to 99)**

This is the overall output level of the envelope. If this is set to 00, the FENV will have no output and will have no effect, while at 99 it will have a maximum effect on whatever it is being routed to. *Tip:* When selecting FENV Level as a modulation destination, set the FENV level to 00 if the Modulation Level is above 0 (or, set the FENV level to 99 if the Modulation Amount is below 0).

**Velocity Modulation (00 to 99)**

This determines how keyboard dynamics will affect the envelope level. When set to 99, note velocity controls the envelope's output; notes played hard will deliver a higher envelope output than notes played soft. When set to 0, note velocity will have no effect on the envelope's output level.

## Amp Envelope

**Amp Envelope (Page 1)**

The Amp Envelope is crucial for all sounds because it sets the basic characteristics of the note--whether it attacks quickly or slowly, sustains or decays. Some Programs may leave the Amp Envelope in a sustaining mode, and provide attack and decay using the Filter Envelope; the effect is slightly different. Unlike Pitch and Filter Envelope, the Amp Envelope is always fully active (there is no second-page to the AMP function adjusting how much envelope is applied to the amp).

**Attack (00 to 99)**

This is the amount of time the envelope will take until it reaches its maximum output level. Setting the Attack to 0 will give a sharp edge to the sound (if the Delay is also set to 0 in AENV

Page 2--see below); a setting of 99 will result in a much slower attack, taking many seconds before the envelope gets to maximum.

### **Decay & Sustain (00 to 99)**

As soon as the attack portion of the envelope finishes (when the level reaches maximum), the envelope will decay (decrease in level). The level it reaches is set by the Sustain control; how long it takes to get there is set by the Decay control. In the special case where the Sustain level is all the way up (99), then there is no decrease and the Decay time segment is bypassed. Whatever level the sustain is set to is the level that the decay section of the envelope will head for. Depending on the setting of the Sustain Decay control (see below), the envelope will either hold at the sustain level until you release the note on the keyboard, or decay to 0 at the Sustain Decay rate (which is on page 2 of the envelope). You can create a long "plateau" at the start of a note by setting the Sustain to 98 and the Decay to 99. This will cause the envelope to take the maximum amount of time to get from peak level to a level of 98, before the Sustain Release portion of the envelope begins.

### **Release (00 to 99)**

Eventually, you will let go of the note that you've been holding (either by releasing the note on the keyboard, or releasing the sustain pedal if it was pressed). It is at this point that the Release portion of the envelope takes effect. The Release is the time that the envelope takes to get from the sustain level back down to nothing. Setting the Release time to 0 is good for playing those short funky riffs that you hear on a clavinet. Setting the Release time to 99 will take the envelope a very long time to reach zero level.

### **Amp Envelope (Page 2)**

#### **Delay (00 to 99)**

This is the amount of time that the envelope will wait before doing anything; very useful if you want to affect one element of a sound sometime after the sound starts. When the Delay is set to 0, the envelope attacks right away, without any delay. Play some notes while turning up the delay and see that the time between playing the note and hearing the effect of the Amp Envelope gets progressively longer as the Delay control is turned up.

If the Delay is set above 99, the display will read "Hold". This indicates that the Delay stage of the envelope will wait indefinitely until the key is released before continuing on to the remaining envelope stages (Attack, Decay, etc.). This requires that the Amp Envelope's Trigger parameter (see next page) is set to "Freerun". However, when the Delay is set to "Hold",

“Freerun” mode is forced on regardless of the Trigger parameter’s setting.

### **Sustain Decay (00 to 99)**

This is the amount of time that the envelope will take during the sustain stage to bring the level down to 0. If this is set to 99, the envelope will remain at the Sustain level until the note is released. When set to 0, the envelope’s level will immediately jump down to 0 upon reaching the sustain stage.

### **Trigger (Normal, Freerun, Reset, Reset-Freerun)**

The Trigger mode determines how the envelope will function. You may select either Freerun or Reset, or both (Reset-Freerun) or neither (Normal). When set to Normal, the envelope will always start at its current level (i.e., if another note had been played which triggered the envelope’s cycle, playing another note in the middle would not interrupt the cycle). Also in Normal mode, the envelope will immediately advance to its release stage upon releasing the note. When set to Freerun, the envelope will complete its entire cycle, even if the note is released in the middle. When set to Reset, the envelope starts at the beginning whenever a new note is played. When set to Reset-Freerun, the envelope will start at the beginning whenever a new note is played and will complete its entire cycle, even if the note is released in the middle.

If a sound layer’s Keyboard Mode parameter (found in the Pitch Function, Page 3, Quad Knob [4]) is set to “Mono”, the Amp Envelope will only retrigger when playing legato if the Trigger Mode is set to either “Reset” or “Reset-Freerun”.

### **Amp Envelope (Page 3)**

#### **Time Tracking (On or Off)**

This determines whether or not keyboard position will affect the cycle speed of the envelope. When turned on, playing toward the higher end of the keyboard will result in a faster envelope cycle; playing toward the lower end of the keyboard will result in a slower envelope cycle. However, this does not effect the attack time, but only the decay, sustain, sustain decay and release segments. This feature will result in only a subtle change. The envelope’s timing doubles or halves over a range of two octaves.

#### **Sustain Pedal (On or Off)**

This determines whether or not the Sustain Pedal will have an effect on the envelope. When turned on, holding down the Sustain Pedal while playing short notes is virtually the equivalent to holding down those notes on the keyboard with some subtle but important differences. If the Delay and Attack are set to 0 and either the Decay is 0 or the Sustain is 99, the envelope will immediately jump to the release stage (if not

already there) when the note is released and the sustain pedal is held down. If a long attack is set, and the envelope does not reach the end of the attack segment when the note is released, it will be skipped and the envelope will jump immediately to the sustain decay segment. If a long delay is set, and the envelope has not reached the attack segment before the note is released, the envelope will remain at 0. However, if Freerun is turned on, the envelope will continue through the delay, attack, decay and sustain segments and remain at the sustain decay segment. This is exactly the same as holding down the note on the keyboard. When the Sustain Pedal parameter is turned off, the Sustain Pedal will have no effect on the envelope.

**Level (00 to 99)**

This is the overall output level of the envelope. If this is set to 00, the AENV will have no output and will have no effect, while at 99 it will have a maximum effect on whatever it is being routed to. *Tip:* When selecting AENV Level as a modulation destination, set the AENV level to 00 if the Modulation Level is above 0 (or, set the AENV level to 99 if the Modulation Amount is below 0).

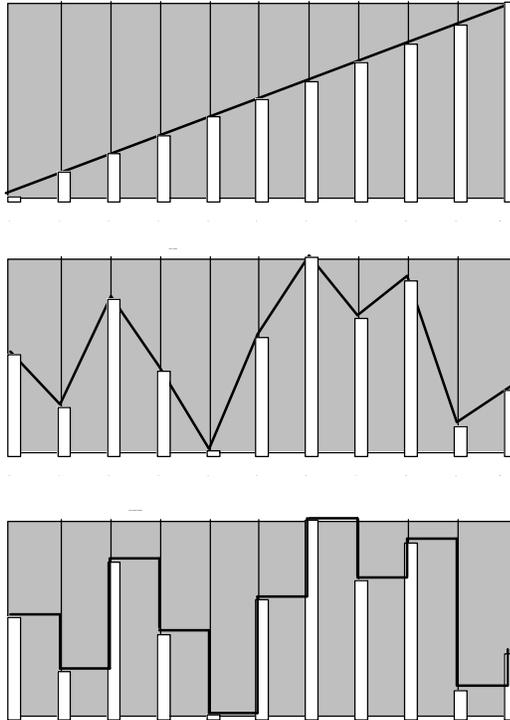
## Tracking Generator

The Tracking Generator is used to scale a modulation source. For example, normally you could modulate the Amp (volume) of a sound using velocity; the harder you play, the louder the sound gets. The amount of change in volume is equal to the change in velocity; this is called linear control. If instead, however, you set the Tracking Generator's input to "velocity", and then routed the Tracking Generator to the Amp (using the Mod function), you can make your own customized "map" of the control velocity has over the sound's level.

The Tracking Generator divides the range of the input into 11 points (0—10), each of which can be set between 0 and 100. If you boost the value of one of the lower points, you make the input more sensitive in its lower register. By creating a non-linear curve using the velocity example above, you can scale the velocity's control over the sound's volume just the way you want.

When selecting the Tracking Generator as a modulation source in the Mod Function, these two choices will be available. When "TRACKGEN" is selected as the modulation source, the Tracking Generator functions normally, scaling its input as determined by its parameter settings.

When "STEPTRACK" is selected as a modulation source, the Tracking Generator's output will be stepped, or interpolated. This means that instead of scaling the input linearly from point to point, the input is kept at each point's value setting until it goes beyond the following point's value setting, at which point it jumps to that setting. This feature is very useful in creating "mini-sequences" if the modulation destination is set to "Pitch" and the Tracking Generator's input is an LFO using an "Up Sawtooth" as its waveform.



*Tip:* The Tracking Generator can be used to turn a variable control, such as the Mod Wheel or velocity, into a switch by setting all of the points to 0 except for point 10. Only near the maximum input will anything other than 0 come out of the Tracking generator. You can patch the Mod Wheel somewhere else in addition to the Tracking Generator, giving you gradual control of one function with the full range of the Mod Wheel, while switching on a second function only at the top of the wheel.

However, the Tracking Generator interpolates between steps; this is sort of like playing “connect the dots.” In other words, the Tracking Generator does not step directly from one point to the next, but ramps from point to point.

**Input**

In Page 1 of the TRACK function, Quad Knob [1] selects the input of the Tracking Generator:

- Note Number
- Velocity
- Release
- Aftertouch
- Poly Pressure
- Mod
- Pitch Wheel
- MIDI Volume
- Sustain
- Pedal 1
- Pedal 2
- PLFO
- FLFO
- ALFO
- PENV
- FENV
- AENV
- Random
- Trig Rate
- Cont. A—D

For detailed descriptions of each of these sources, see the section “Modulation Source” in the Mod section on pages 67—69.

**Points 0 — 10 (00—100)**

Quad Knobs [2], [3] and [4] in page 1 of the TRACK function control the levels of points 0 —2. Points 3—6 are found on page 2, while points 7—10 are on page 3.

**Name**

The Name Function allows you to change the Program’s name. The Program name can be up to 10 characters long. Use the PAGE [◆] and [∅] buttons to position the cursor. Quad Knob [1] selects the character. Here is a chart of available characters:

	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	0	1	2	3
4	5	6	7	8	9	:	;	<	=	>	?	@	A	B	C	D	E	F	G
H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	[
¥	]	^	_	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
p	q	r	s	t	u	v	w	x	y	z	{		}	∅	◆				

Misc.

### **Drum Mode**

This enables and disables Drum Mode which allows you to assign individual drum sounds to individual keys. To Program a sound in Drum Mode, refer to the next section “Programming Drum Sounds.”

### **Sound Enable**

This is the master on/off switch for the selected sound (1—4) of the current Program.

To avoid using up polyphony unnecessarily, set Sound Enable to OFF for any sounds that will not be used in a Program. When using Edit 4 mode, disabled sounds will have the word “sndx” (where x is a sound from 1 to 4) appear in lowercase letters above each bar graph meter in the display. Active sounds will have the word “SNDX” appear in uppercase letters. Turning sounds off is a convenient way to isolate a particular sound you are editing. A quick way to turn a sound on and off from anywhere within Program Edit mode is to hold the corresponding Quad Button [1]—[4] and press VALUE [–] to disable or VALUE [ ] to enable. *Example:* Holding Quad Button [1] and pressing VALUE [–] will disable sound 1.

## Programming Drum Sounds

To program a sound in Drum Mode, you must first enable Drum Mode for that particular sound in the Misc. Function (see previous section). Quad Knob [4] is always used to select a Drum (1—10), regardless of which Function or Page is selected (except Effect, Name and Misc.). For an explanation of the basics of Drum Mode, see page 56.



*When using Edit 4 mode, sounds using Drum Mode will be unavailable for editing; only sounds not in Drum Mode will be editable in the bargraph display. If a sound is in Drum mode, the display will show “drmX,” whereby X is the sound number (1—4).*

If you enable Drum Mode for a sound while in Edit 4 mode, the QuadraSynth Plus will automatically switch to Edit 1 mode for that layer.

### Assign Voice

The Assign Voice function is where you choose the particular sample for the selected drum (1—10). Similar to the normal Assign Voice function, sounds are divided into groups. After selecting the group (using Quad Knob [1]), you then select the sample within the group (using Quad Knob [2]). Here is a chart listing the various drum samples in their respective groups.

Group	Voice
Kick	Stab Kick, Deep Kick, Spike Kick, Flap Kick, GarageKick, PillowKic, Elect Kick
Snare	Studio Snr, TurboSnare, PiccoloSnr, Crisp Snr, Power Snr, Dance Snr, Rimshot, Side Stick
Hi Hat	Closed Hat, Edge Hat, Open Hat, FootClosed
Toms	Hi Pwr Tom, Lo Pwr Tom, Hi Mid Tom, Mid Tom, Lo Mid Tom, Hi Flr Tom, Floor Tom, Lo Flr Tom, Hi Slam Tom, Md Slam Tom, Lo Slam Tom, Hi Cannon, Mid Cannon, Lo Cannon
Cymbal	Cym Ride, Cym Bell, Cym Crash, Cym China, Cym Splash
Percus	Tympani, TbularBell, Asian Drum, Cabasa, Castanet, Clave, High Agogo, Low Agogo, High Bongo, Lo Bong, Conga High, Conga Lo, Conga Slap, Cowbell, Triangle, TriangleMt, Guiro Long, GuiroShort, Hand Clap, Shaker, Maracas, Tambourine, Timbale Hi, Timbale Lo, Log Drum, Vibrasmack, WoodBlk Hi, WoodBlk Lo, Waterphone, SambaWhstl, ShortWhstl, Alert, Android, Cyborg, Meteor, Supernova
Percus FX	Zap Attk 1, Zap Attk 2, Zap Attk 3, Mini Attk, Pop, Pop Attk, Bottle Hit, Metal Attk1, Metal Attk2, Fingersnap, Voice EFX1, Voice EFX2, Voice EFX3
Wave	High Sine, Low Sine, Noise
Rhythm	PsiBeat 1, PsiBeat 2, PsiBeat 3, PsiBeat 4, PsiBeat 5, Kick Loop1, Kick Loop2, Kick Loop3, Kick Loop4, Kick Loop5, SnareLoop1, SnareLoop2, SnareLoop3, Backbeat, ClsdHHLoop, OpenHHLoop1, OpenHHLoop2, FootHHLoop, Ride Loop1, Ride Loop2, Ride Loop3, Tick Talk, Swingset, Bongo Loop, BlockLoop1, BlockLoop2, BlockLoop3, HiTriLpHd, HiTriLpSf, LoTriLpHd, LoTriLpSf, Tamb Loop1, Tamb Loop2, ShakerLoop, ShufflShakr, PopperLoop, BottleLoop, Motor, MiniNoizLp, HvyMetalLp, Machine Lp, Kah Loop, Bass Loop, SynBass Lp,

### Level

Each of the 10 drums in a sound can have its own level, pan position, and output assignment. The Level function provides these controls. Use Quad Knob [1] to adjust the selected drum's level (00 to 99), Quad Knob [2] to adjust pan position (<3 to >3), and Quad Knob [3] to select the Output assignment (Main, Aux or Off). Use Quad Knob [4] to select the drum (1—10) you wish to edit.

To send a drum to an individual output, use Output in conjunction with Pan. *Example:* Panning a drum full left and selecting the Aux outputs means that the drum will appear at only the left Aux output.

## Effects Level

The Effects Level function determines how much of the selected drum is being routed to the effects processor, and on which bus. Quad Knob [1] adjusts the Effect Send level (00 to 99), and Quad Knob [2] selects the Effects Bus (1, 2, 3 or 4). Use Quad Knob [4] to select the drum (1—10) you wish to edit.

## Pitch

### **Pitch (-12.00 to +12.00)**

The Pitch function lets you transpose the selected drum up or down one octave in micro-step (1/4th of a half step) increments, and lets you modulate the drum's pitch with velocity. Quad Knob [1] determines the tuning of the selected drum ( $\pm 12.00$ ). Use Quad Knob [2] to select how much you wish velocity to affect the selected drum's tuning (0—7). When this value is set to 7, the drum will be played sharp when the associated note is played hard; when played soft, the drum's tuning will be unaltered. Use Quad Knob [4] to select the drum (1—10) you wish to edit.

## Filter

### **Velocity>Filter (0 to 3)**

The Filter function lets you control the “brightness” of the selected drum by modulating the filter frequency with velocity. Use Quad Knob [1] to set the Velocity>Filter parameter (0—3). When set to 3, playing the associated note will result in a brighter sound (more high frequencies), while playing softer will result in a duller sound (less high frequencies). When this parameter is set to 0, velocity will have no affect on the filter. Use Quad Knob [4] to select a drum (1—10) to edit.

## Amp

### **Velocity Curve (13 choices)**

Quad Knob [1] in the Amp function lets you select one of 13 velocity curves. This determines how the drum will respond to the dynamics of your playing the keyboard. Use Quad Knob [4] to select the drum (1—10) you wish to edit.

A LINEAR curve is the norm, whereby the increase in level is equal to the increase in velocity; the velocity values increase as you play harder. Many of the Velocity Curves make up sets to be used by 2, 3 or 4 drums in order to facilitate velocity crossfading, whereby a different drum is played depending on how hard or soft the keyboard is played. However, each drum must be in a different sound layer of the Program in order to be stacked on the same note.

If you want to create your own velocity crossfading Program, assign the related versions of the same drum samples (“Conga High” and “Conga Lo”) the same key in different Program Sound layers, then use the appropriate velocity curves for each drum (in a three-way velocity split, drum 1 would use curve “1 of 3,” drum 2 would use curve “2 of 3” while drum 3 would use “3 of 3”).

For more details about the 13 velocity curves, see the illustration on page 64.

## Range

### **Note (000 to 127/C-2 to G8)**

Each drum can be assigned to a single note which will trigger the drum sound when played. Quad Knob [1] specifies the note assignment of the selected drum (000 to 127/C-2 to G8). You can also set the note assignment by holding Quad Switch [1] and tapping the key on the keyboard you want to set as the note for the drum.



*Only one drum can be assigned to a single note within a single Program sound layer. If more than one drum in a single sound is assigned to the same note number, only the higher number drum will sound.*

### **Range (0 to +3)**

Each drum can be assigned a range of notes (up to 3) above the root note which will trigger the drum sound when played. Quad Knob [2] specifies the note range of the selected drum (0 to +3). The pitch of the drum will remain the same no matter which key is played.

## Amp Envelope

### **Decay (0 to 99, Gate00 to Gate99)**

Quad Knob [1] in the Amp Envelope (AENV) Function lets you adjust the Decay time of the selected drum (00 to 99, Gate00 to Gate99). If this is set to 0, only the very beginning of the drum sample is played; setting this to 99 will cause the entire drum sample to play. When set above 99, the Decay uses a gated mode. The Decay can still be set between 0 and 99, but in 5-step

increments (e.g., Gate00 = Decay setting of 0 with gating, Gate05 = Decay setting of 5 with gating, etc.). Gating means that the drum sound will continue to be played as long as the key is held. This is useful for longer sounds, like cymbals, when you wish to hear a short crash by playing a short note but can still hear a longer crash by keeping the note held down.

### **Mute Group (Off, 1, 2, or 3)**

This is an important feature when using multiple sounds of the same instrument. Mute Groups allow multiple drums to share a single voice. For example, if you have assigned a Closed Hat and an Open Hat to two different notes, playing either note should cut-off the other (if it had recently been played). This creates a more realistic sound, since an actual Hi Hat is only capable of making one sound at a time.

In the Amp Envelope function, Quad Knob [2] is used to assign the selected drum to one of the three Mute Groups. In our example above, both Hi Hat drums would be assigned to the same Mute Group. The additional Mute Groups can be used by other sounds that you wish to cut-off each other, but do not want to interfere with the Hi Hat sounds. Use Quad Knob [4] to select the drum (1—10) you wish to edit.

## Copying Sounds

While editing a Program, it is helpful to be able to copy a sound to another sound in either the same Program or a different Program, especially if you are building a split or layered Program. This can be done very easily from within the Store function.

To copy a sound to another sound in the same Program, or to the same sound in a different Program:

- ⑩ From Program Edit mode, press [STORE].
- ¶ Press PAGE [∅] to select Page 2 of the Store function.
- ① Use Quad Knob [1] to select which sound (1–4) in the currently selected Program to copy from.

Use Quad Knob [2] to select which sound (1–4) in the currently selected Program to copy to; or to select which Program (0–127) to copy to.  
*The selected sound will be copied into the same sound location in the selected Program. If you select to copy sound 2 to Program 45, the sound will be copied into sound 2 of Program 45.*

- ) Press [STORE] to copy the sound.

## Copying Effects

While editing a Program, it is helpful to be able to copy the Effects Patch from a different Program. This can be done very easily from within the Store function.



*Be sure to save your changes to the edited Program before going to a new Program. Otherwise, all your changes will be lost.*

To copy the Effects Patch from a Program to another Program:

- ⑩ Recall the Program which contains the Effects Patch you wish to copy, using the methods described on page 14.
- ¶ Press [STORE].
- ① Press PAGE [∅] to select Page 2 of the Store function.

Use Quad Knob [1] to select “EFFECT”, which is the Effects Patch in the currently selected Program to copy from.

- ) Use Quad Knob [2] to select which Program (0–127) in the User Bank to copy to.  
*The selected sound will be copied into the same sound location in the selected Program. If you select to copy sound 2 to Program 45, the sound will be copied into sound 2 of Program 45.*

- ) Press [STORE] to copy the sound.

## Initializing Programs

If you want to start programming from “scratch”, you can easily reset all parameters to their default settings by re-initializing the software. Make sure your mod wheel is all the way down before re-initializing, otherwise the "zero" position of the mod wheel will be incorrect.

To re-initialize the QuadraSynth Plus:

- ⓐ Press [PROGRAM] to enter Program mode.
- ⓑ Turn the unit off.
- ① While holding down both Quad Buttons [1] and [4], turn on the power.

The QuadraSynth Plus will come on showing Program 00, with the EDITED flag showing in the display. This is the Program Mode edit buffer, set to the default settings. Re-initializing will also reset all Global parameters to their default settings, and will initialize all edit buffers so that all Mix and Program parameters are reset to their default settings. However, none of the Programs or Mixes are changed when re-initializing the unit. You can proceed to edit, then [STORE] at any Program location you like.

## CHAPTER 7

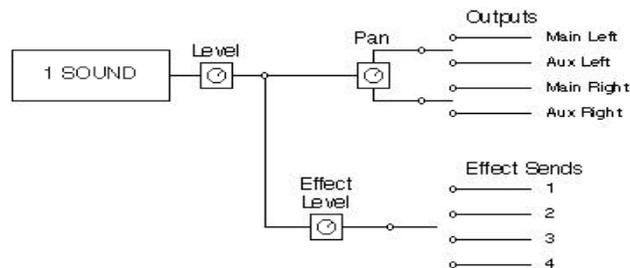
## EDITING EFFECTS

## About Signal Processing

The built-in effects processor of the QuadraSynth Plus is similar to that of the Alesis QuadraVerb 2, capable of generating multiple, fully digital effects simultaneously. The QuadraSynth Plus effects processor has four inputs, called effect sends. You might think of these as the typical post-fader sends found on a mixing console. In a Program, each of the four Sounds can be assigned to one of the four effect sends. In a Mix, each Program can use its own effects level and bus routing or you may override these by assigning the entire Program (all 4 sounds) to one of the four effect sends and all at the same level. Once you assign a Sound (in Program Edit Mode) or a Program (in Mix Edit Mode) to an effect send, you can adjust the Sound's/Program's Effect Send Level.



To route a Sound/Program only to an effect send, and not the Main or Aux outputs, assign the Output parameter of the Sound/Program to "OFF," assign its Effect Bus to one of the four effect sends, and adjust the Effects Level.



The Effect Patch's *Configuration* determines the arrangement of effect functions of each effect send. Imagine a Configuration as an arrangement of multiple effects processors patched together at the end of each effect send.

*Example:* In one configuration, effect send 3 has its own separate reverb, while in another configuration it has its own delay and a level control feeding a reverb shared with send 1. When you're programming effects, you will need to refer to the charts on pages 92—97 for the effect configuration you're using, so you know how the paths from different effect functions interact.

The Effect functions consist of: Pitch, Delay, Reverb and in some cases Misc. (which provides access to special effects such as EQ and Overdrive). Each function has several types to choose from. For example, the Pitch effect can be either a chorus, a flange, a resonator, etc. The Reverb can be a large hall, plate, gated, etc. The effect types available for each effect function depends on the Configuration you are using. The parameters available for an effect function depend on the selected effect type. Some effect types have very few parameters, while others have many. For example, the stereo delay effect has about twice as many parameters as the mono delay effect (since the stereo delay has two

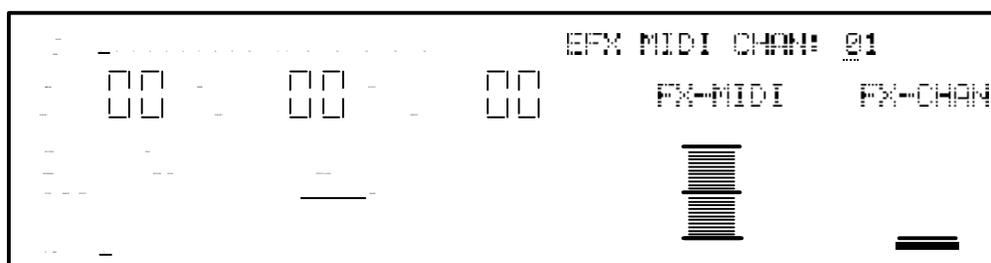
adjustments— left and right – for several parameters). Consequently, the more parameters an effect has, additional pages become available for that function. The number of pages the currently selected function has and the current page are always shown in the bottom left of the display.

Each effect has stereo outputs, which may be routed to the Main Left and Right outputs using the Mix function (the Aux Left and Right outputs do not use the internal effects processing).

## Selecting Effects in Mix Mode

Each Program has its own effects that are recalled when you select a Program. However, since a Mix can have up to 16 Programs (one on each Channel), you must select which Channel's Program you wish to use the effects from. To select an Effects Patch, you must be in Mix Edit Mode, by pressing the [SELECT] button until the correct display appears.

Use the FUNCTION [♦] and [∅] buttons to scroll through the functions in the display until the word EFFECT is underlined, then press Quad Button [4]. The display should look like this:



Quad Knob [4] (FX-CHAN) lets you select which Channel (1—16) of the Mix whose Effects Patch you wish to use. If you set the Effect Channel to 1, the Mix will use the Effects Patch used by the Program on Channel 1. The Effect Channel is also used to determine what MIDI channel the Effects Patch will be set to for receiving MIDI controller information for the Modulators (see the Mod section later in this chapter for more on real-time MIDI control).

Quad Knob [2] turns on and off the FX-MIDI function. The FX-MIDI parameter determines whether or not a program change received on the Effects Channel should only recall a new Program (“Off”) or if the Effects of the newly selected Program should be recalled as well (“On”). This can be set on or off. Usually you would want this off, so that the Effects in a Mix do not change even though you may select different Programs for the Effects Channel.

## Setting Effects Send Levels

The effect send levels and effect bus assignments are saved as part of a Program (from Program Edit Mode), or set for each Channel in a Mix (from Mix Edit Mode). Keep in mind that these are separate from any changes that will be made to the effects settings. If you are in Mix Mode and are changing settings in both Mix Edit and Effects Edit modes, you will have to STORE both the Program that is on the Effect Channel (thus storing its Effects Patch), and the selected Mix, in

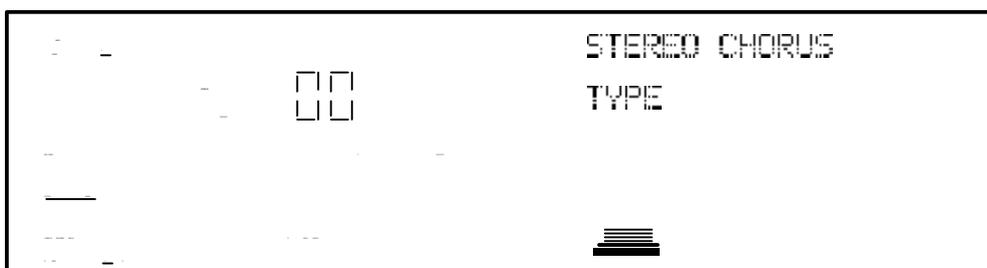
order to have your changes remembered and heard the same way in the future. The actual arrangement of depth of reverb, delay time, etc., is saved as part of the Effects Edit parameters when a Program is stored. It is possible for different Mixes to share the same Effects Patch. So keep in mind that when you edit an Effects Patch, it may affect the sound of any other Mixes that also use it.

## Clip

While routing sounds into the effects processor, the word “CLIP” will temporarily appear in the display if an input is overloading the effects. If this should occur, try reducing the Input Levels for each of the effects devices in the current configuration, and (if necessary) reduce the Effects Levels in the Mix/Program.

## Editing Effects

The Effects Patches themselves are not edited in Program Edit Mode or Mix Edit Mode, but (could you guess it?) Effects Edit Mode. You can enter Effects Edit mode by pressing the [SELECT] button until the display looks something like this:



The basic method of navigating through the displays in Effects Edit mode is similar to that in Program Edit Mode and Mix Edit Mode.

- The FUNCTION [♦] and [∅] buttons and the DIRECT SELECT buttons are used to select a function (Pitch, Mod, Name, Configuration, Reverb, Delay and Mix).
- If a function has more than one page, the display will indicate the number of pages available in the bottom left corner. Use the PAGE [♦] and [∅] buttons to scroll through a function’s pages.
- Use the [EDIT 1] button to select which of the four effect sends you want to edit (the [EDIT 4] button will not let you edit multiple sends, but rather will switch the display back to Program Edit mode and enable Edit 4 mode).

The important thing to understand is the hierarchy of the displays. Think of it as a three dimensional game of Chess, where you can move among three different axes. Each function has 1 or more pages. But, the number of pages a function has available will differ when another effect send is selected (using the [EDIT 1] button). For example, if you are using Configuration #1 and trying to edit the Reverb parameters, you would need to have effect send 1 selected, because that’s where the Reverb is located. So, you not only have to be aware of how to select a function and a page, but how to select the effect send as well.

Not all effects are available in each Configuration. For example, if you were to select the Pitch function on effect send 4 in Configuration #1, the display would read, “(NOT IN THIS CONFIG).” This is because a Pitch module is available on

sends 1, 2 and 3 in Configuration #1, but not on send 4—as you can see in the chart on page 92.

Although only used in Configuration #s 4 and 5, the word “MISC.” will appear in the display. This can be selected in the same manner as any other function using the FUNCTION [♦] and [Ø] buttons. The MISC function is where you access the EQ parameters used in Configuration #4, and the Overdrive effect’s parameters in Configuration #5. If you are using Configuration #s 1–3, and you select the MISC function, the display will read “(NOT IN CONFIG)”, since there are no EQ or Overdrive parameters in these configurations.

## Storing Effect Patches In Program Mode

Effects are an extension of a Program. So, when you store a Program, you store its Effects Patch along with it. Once a Program’s Effect Patch has been altered, the display will show the word “EDITED” next to the Program number (if in Program Mode; when editing the Effect Patch in Mix mode, the word “EDITED” will appear next to the Program number only when the Effect Channel is selected). This indicates that the current Effect Patch in the edit buffer is different from what is stored in memory for the selected Program.

While in Effects Edit mode, press [STORE] at any time to go to Store mode. Store mode has several pages, but the main storing function is found in the first page.



To store the edited Program along with its Effect Patch into the same location it was recalled from, simply press [STORE] again, and it will be stored. To store the edited Program into a different location, use Quad Knob [2] to select a different Program number (000—127) in the User Bank to store it to. If a RAM Sound Card is inserted, you can use Quad Knob [1] to select a Card Bank to store the Program to.

## Storing Effect Patches in Mix Mode

When in Mix Play Mode or Mix Edit Mode, the Effect Program number shown in the display is the Program number selected as the Effect Channel. Storing the Mix will save this number, but will not store any changes you may have made to the Effect Patch itself.

- If [STORE] is pressed twice while editing a Program that is on the Effect Channel, both the Program and its Effects will be stored.

- If [STORE] is pressed twice while editing a Program that is on a Channel other than the Effect Channel, the edited Program will be stored without altering its previous Effects settings.
- If [STORE] is pressed twice while editing a Mix (Mix Edit Mode), only the Mix parameters will be stored, not the individual Programs or the Effects Patch.

## Copying Effect Patches

When you want a Program to use the Effects from a different Program, you must copy that other Program's Effects into the Program you are working on. This is done within Store Mode using the "Copy Effect" function. First, select the Program which contains the Effects you wish to copy. And, of course, you can only copy Effects to Programs that are in the User Bank or on a RAM Sound Card Bank.

For more about copying effects, see page 35.

## Configurations

A Configuration is essentially the starting point of any Effects Patch. You must select the Configuration you are going to use before making any other edits, since all routings and parameters change to their default settings each time you change the configuration. Each Configuration is a unique arrangement of multiple effect blocks, distributed across the four effect sends. Some effect sends may have three different effects (pitch, delay and reverb) on them. Configurations also determine where the signal to a block comes from, and where the output of each block goes to -- the main outputs, the next effect in line, or even to an effect block belonging to another effect send. The Configuration diagrams on the next six pages provide a crucial "road map" you'll need to guide you through the many paths that are possible in each configuration. Refer to them as you program the effect.

The five Effect Configurations are:

- Configuration #1: 4-Sends, 1 Reverb
- Configuration #2: 4-Sends, 2 Reverb
- Configuration #3: 4-Sends, 1 Leslie
- Configuration #4: 2-Sends, With EQ
- Configuration #5: OD>CHS>DDL>REV>LZ

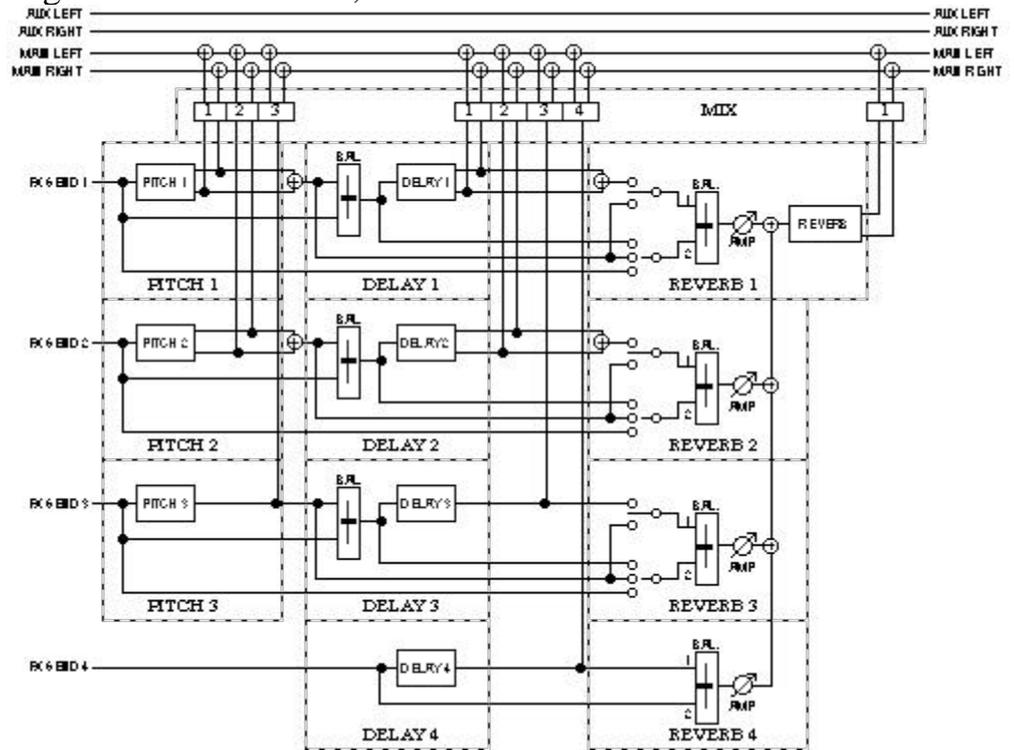
The Configuration function is used to select the Configuration for the Effects Patch you are editing. Use the FUNCTION [♦] and [Ø] buttons to scroll through the functions in the display until the word CONFIG is underlined. The display should look like this (from Mix Edit Mode):



Quad Knob [1] selects the Configuration. As you scroll through the various Configurations, each one's name will appear in the upper right section of the display.

Here is a run-down of the various Configurations:

### Configuration #1: 4-Sends, 1 Reverb



**Pitch 1 Delay 1Reverb 1**

Mono chorus    Mono delay    Plate 1  
 Stereo chorus    Stereo delay    Plate 2  
 Mono flange    Ping-pong delay    Room  
 Stereo flange    Hall  
 Pitch detune    Large  
 Resonator    Gate  
                     Reverse

**Pitch 2 Delay 2Reverb 2**

Mono chorus    Mono delay    Balance and level to Reverb 1  
 Stereo chorus    Stereo delay  
 Mono flange    Ping-pong delay  
 Stereo flange  
 Pitch detune  
 Resonator

**Pitch 3 Delay 3Reverb 3**

Resonator    Mono delay    Balance and level to Reverb 1

**Delay 4    Reverb 4**

                    Mono delay    Send/delay mix and level to    Reverb

1

Think of the diagram as a "road map" showing all possible paths from the starting points (FX SEND 1 through 4) to the ultimate destinations (MAIN LEFT and MAIN RIGHT at the top of the page). The dotted lines indicate the divisions between different functional blocks, and the solid lines indicate signal paths between the blocks and controls. The diagram

is similar to a block diagram for a mixer, with signal moving generally from the left to the right. The number next to each function name represents one of the four effect sends. For example, Delay 2 refers to the Delay effect on effect send 2.

This Configuration #1 provides three Pitch effects, four Delay effects and one Reverb effect. The Pitch effects are found on effect sends 1, 2 and 3, but while the Pitch effects on sends 1 and 2 are stereo and their types are selectable (Mono Chorus, Mono Flange or Resonator), the Pitch effect on send 3 is mono and can only be used as a Resonator. Effect send 4 has no Pitch effect.

Each of the four sends has its own Delay effect, but while the Delay effects on sends 1 and 2 are stereo, the Delay effects on sends 3 and 4 are mono.

Each effect send can be routed through the Reverb. Since there is only one Reverb effect, it is found in the first effect send (see next section on Reverb). Reverb parameters that set the sound of the reverb itself (such as high and low decay, reverb type, predelay, etc.) are found only when "EDITING: 1" is displayed. However, each of the 4 effect sends has controls for how much dry signal and how much effected signal are sent to the Reverb effect.

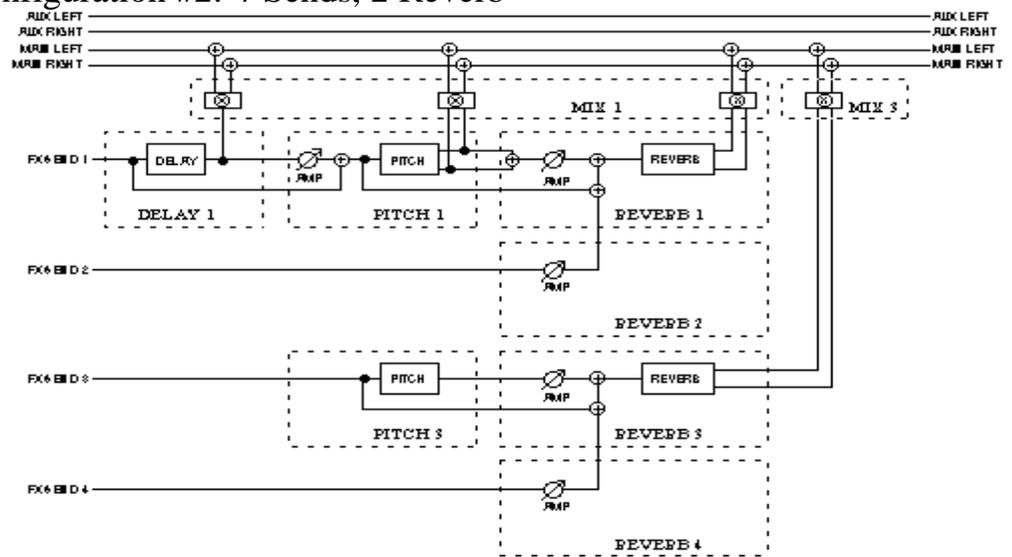
*Example:* The Reverb 2 block allows you to send signal to the reverb from four different points in the second effects chain: a) directly from effects send 2, b) the output of Pitch 2, c) the input of Delay 2, or d) the output of Delay 2. You can even send a combination of these to the reverb. But to change any other reverb parameters, you must return to editing Reverb 1.

Each Pitch, Delay and Reverb module has its own independent Mix output level (i.e., how much of their output is routed directly to the Main Left and Right outputs). The Mix function is where you determine how the effects will actually be heard.

Mix 1, for example, is where you can control the outputs of Pitch 1, Delay 1, and Reverb 1 to the main outputs. The Mix parameter controls how much an effect block feeds directly to the main outputs, but doesn't control how much it feeds to any other blocks that may follow it. For example, when Pitch 1's Mix control is set to 0, it is still available as an input to Delay 1 and Reverb 1.

Think of the Mix function in the QuadraSynth Plus's effects section as being similar to the effect return control on a mixing console. For example, if Effect Send 1's Mix Reverb Output parameter is set to 0, you won't be able to hear reverb regardless of how much input you feed it from any of the effect buses.

### Configuration #2: 4-Sends, 2 Reverb



**Delay 1 Pitch 1 Reverb 1**

- Mono delay
- Mono chorus
- Plate 1
- Stereo chorus
- Plate 2
- Room
- Hall
- Large
- Gate
- Reverse

**Reverb 2**

- Level to Reverb 1

**Pitch 3 Reverb 3**

- Mono chorus
- Plate 1
- Plate 2
- Room
- Hall
- Large
- Gate
- Reverse

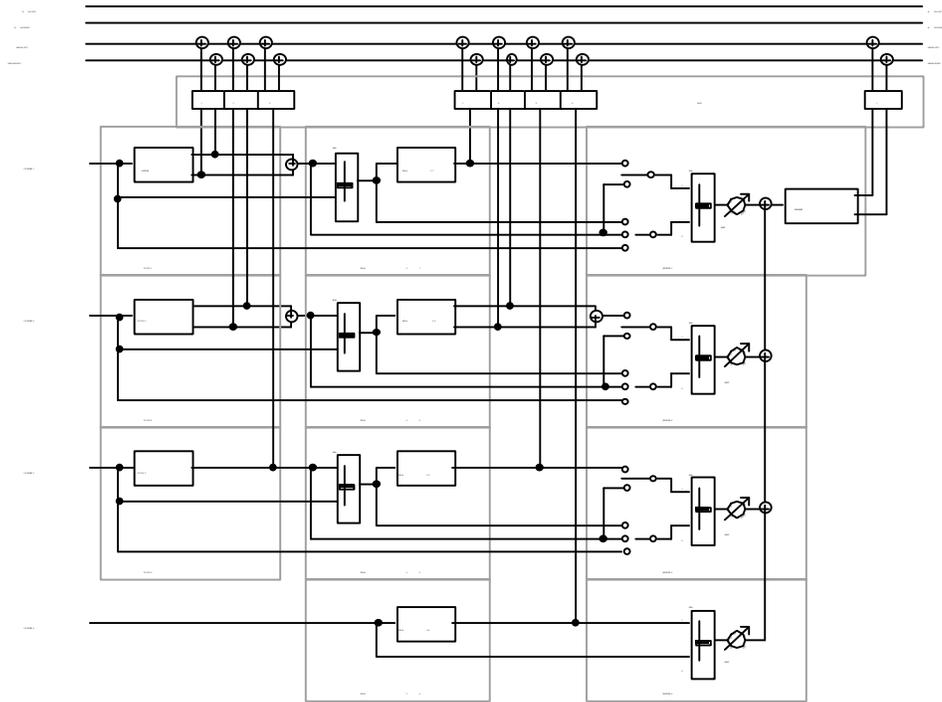
**Reverb 4**

- Reverb 4
- Level to Reverb 3

This Configuration differs from Configuration #1 in many ways. In this Configuration, there is only one Delay effect, two Pitch effects and two Reverb effects. Effect send 1 is routed through the mono Delay, then a stereo Pitch effect, and finally a stereo Reverb effect. Send 2 has no effects of its own, but can be routed to the same Reverb effect as send 1. Send 3 is routed through a mono Pitch effect, and then a stereo Reverb effect. Send 4 has no effects of its own, but can be routed to the same Reverb effect as send 3.

Effect send 1's Delay, Pitch, and Reverb can feed the Mix output directly. Unlike the first configuration, however, Pitch 3 can be routed to the Mix only after passing through Reverb 3.

Configuration #3: 4-Sends, 1 Lezlie



**Pitch 1 Delay 1Reverb 1**

Lezlie Mono delay Plate 1  
 Plate 2  
 Hall  
 Room  
 Hall  
 Large  
 Gate  
 Reverse

**Pitch 2 Delay 2Reverb 2**

Mono chorus Mono delay Balance and level to Reverb 1  
 Stereo chorus Stereo delay  
 Mono flange Ping-pong delay  
 Stereo flange  
 Pitch detune  
 Resonator

**Pitch 3 Delay 3Reverb 3**

Resonator Mono delay Balance and level to Reverb 1

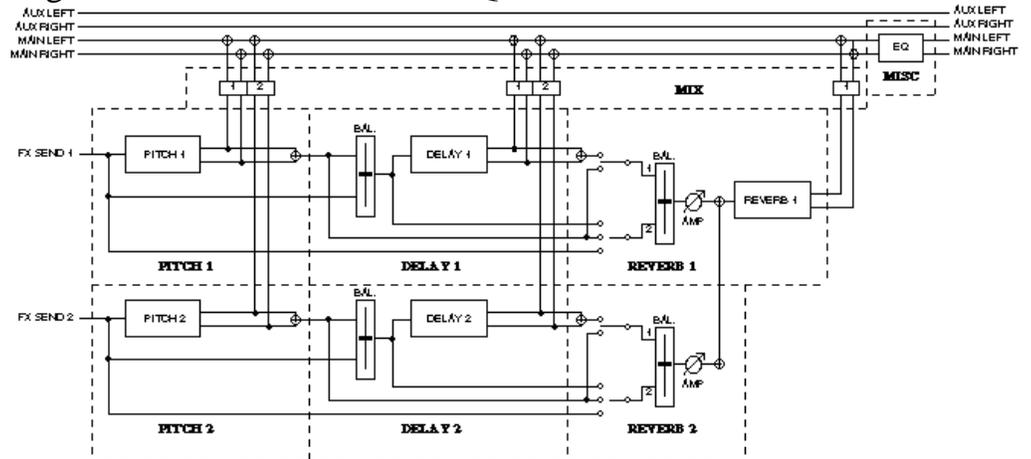
**Delay 4 Reverb 4**

Mono delay Mix and level to Reverb 1

This Configuration is similar to Configuration 1, except it provides a stereo “Lezlie” effect on send 1, which emulates a rotating speaker effect commonly heard with organ sounds. This is followed by a Delay effect before going to the single stereo Reverb effect. Sends 2 and 3 have Pitch modules preceding Delay modules, which are then routed to Reverb 1.

Send 4 has only a Mono Delay effect, which may also be routed to Reverb 1.

### Configuration #4: 2-Sends, with EQ



<b>Pitch 1</b>	<b>Delay 1</b>	<b>Reverb 1</b>	<b>Misc. 1</b>
Mono chorus	Mono delay	Plate 1	EQ
Stereo chorus	Stereo delay	Plate 2	
Mono flange	Ping-Pong delay	Room	
Stereo flange	Hall		
Pitch detune	Large		
Resonator	Gate		
	Reverse		

<b>Pitch 2</b>	<b>Delay 2</b>	<b>Reverb 2</b>
Mono chorus	Mono delay	Balance and level
Stereo chorus	Stereo delay	to Reverb 1
Mono flange	Ping-Pong delay	
Stereo flange		
Pitch detune		
Resonator		

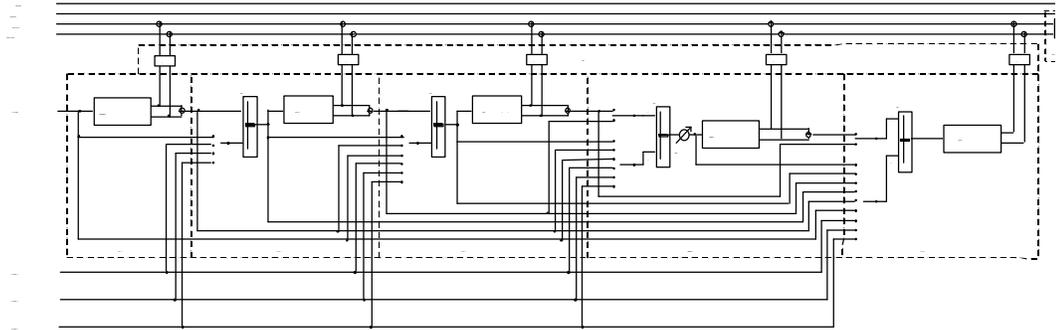
In this Configuration, note that Sends 1 and 2 are identical to that of Configuration #1. However, Sends 3 and 4 have been removed. In their place, we have added a shelving EQ module to the main outputs. This means you have bass and treble boost controls for all sounds coming out of the main outputs (not just the sounds routed to the Effects Sends).



*If you are using Configuration #4, routing any of the Program's Sounds to Send #s 3 or 4 will have no effect. In other words, it's as if you routed channels of your mixing console to effects sends that aren't connected to anything.*

The MISC function is where you access the EQ parameters used in this configuration. This can be selected in the same manner as any other function using the FUNCTION [♦] and [∅] buttons. The shelving EQ provides bass and treble boost, and affects the entire main output.

Configuration #5: OD>CHS>DDL>REV>LZ



<b>Pitch 1</b>	<b>Delay 1</b>	<b>Reverb 1</b>	<b>Misc. 1</b>
Mono chorus	Mono delay	Plate 1	Overdrive
Mono flange	Stereo delay	Plate 2	-----
Resonator	Ping-Pong delay	Room	EQ
-----	Hall		
Lezlie	Large		
	Gate		
	Reverse		

This is an “all-for-one” Configuration. You get six effects all at once, and they are all found in the Send 1 section, but other sends may be used to access particular parts of the chain. Send 1 feeds the Overdrive effect which provides classic distortion. The Overdrive output then feeds the Pitch effect. The Pitch effect has a second input which can come from either Sends 1, 2, 3 or 4 . These two inputs can be mixed together.

The Delay effect has two inputs which can be mixed together. The first input comes from the Pitch effect’s output. The second input can come from either Sends 1, 2, 3 or 4 , or the Overdrive effect’s output, or Pitch effects input.

The Reverb effect has two inputs which can be mixed together. The first input can come from the Pitch effect’s output or the Delay effect’s output. The second input can come from either Sends 1, 2, 3 or 4 , or the Overdrive effect’s output, or the Delay effect’s input.

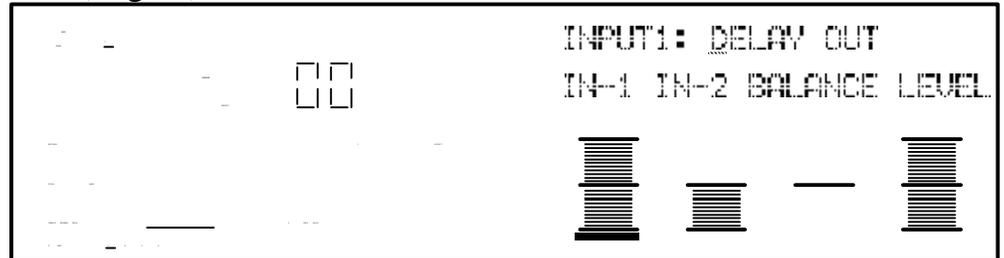
The Lezlie effect (found in the Pitch Function, Page 4) has two inputs which can be mixed together. The first input can come from the Delay effect’s output or the Reverb effect’s output. The second input can come from either Sends 1, 2, 3 or 4 , or the Overdrive effect’s output, or the Pitch effect’s input or output, or the Delay effect’s input, or the Reverb effect’s input.

The outputs of all these effects are routed back to the Main Outputs, and sent through the shelving EQ effect (found in the Misc. Function, Page 4).

## Reverb

Reverb can be thought of as a great number of distinct echoes, called reflections, that occur so fast that our ear hears them blurred together as one. In nature, different sized spaces give distinctly different sounding reverbs, depending on the size and shape of the space, and the texture of surfaces that the reflections bounce off of. The various parameters in the effects processor make it possible to simulate nearly any natural reverberant space that can be imagined, and a few artificial ones as well.

### Reverb (Page 1)



The Reverb function is used to edit Reverb parameters. In all configurations, page 1 of the Reverb function selects what the reverb is “hearing” (i.e., where the input of the reverb is coming from). The source can come directly from the Effect bus, the output of other effects in the chain before it, or a mix of several of them. *Example:* In Configuration #1, page 1 of the Reverb function (shown above) allows you to select either one or two sources to be routed to the reverb’s input. You can choose from the Delay output, the Delay input, the Pitch output and the unaffected send input (dry signal). You can then adjust a balance between these and set an overall input level.

#### Input 1

In configurations 1, 3, 4, and 5, there are two inputs to the Reverb. Both Inputs 1 and 2 can select a signal from several locations in the signal chain. Quad Knob [1] can select either the Pitch output or the Delay output as Input 1. If the signal is taken from the Pitch output, the Reverb will be chorused, flanged, detuned or resonating, depending upon which Pitch type is selected. (Note that the delay signal may already have passed through the Pitch module, depending on the Input settings of the Delay module.)

#### Input 2

By using Quad Knob [2], Input 2 can have as its source either the Pitch output, the Delay output, or the dry effect send signal. If the signal is taken from the Delay output, the Reverb will be delayed by the amount of delay time set for the Delay. If the signal is taken from the Pitch output, the Reverb will be chorused, flanged, detuned or resonating, depending upon

which Pitch type is selected. If the signal is taken from the effect send, the Reverb will receive direct, unaffected signal.

### **Input Balance**

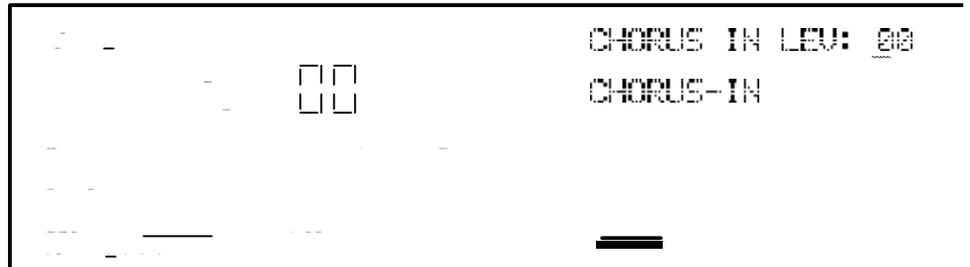
Quad Knob [3] allows you to control the balance between Reverb Inputs 1 and 2 and therefore control the blend between the various input sources. This makes it possible to have the signal from the Pitch or Delay sections, or the direct effect send in any combination or amount.

## Input level

Quad Knob [4] controls the overall Input Level going into the Reverb.

## Chorus Input Level

If Configuration #2 is selected (refer to block diagram of Configuration #2, earlier in this chapter), the first page of the Reverb function will look like this:



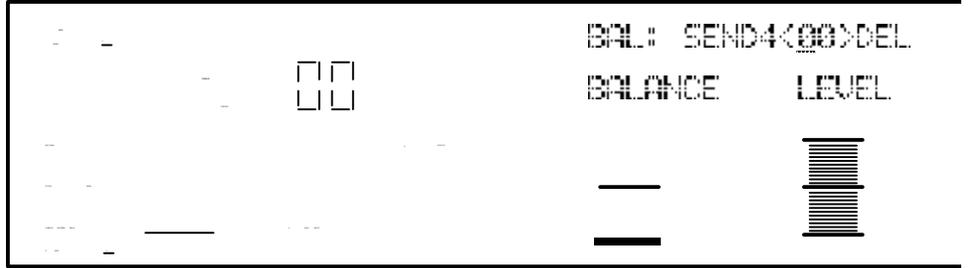
The Configuration has two Reverbs, one on send 1 (which send 2 can share), the other on send 3 (which send 4 can share). There is only one parameter in this page: Chorus Input Level. Quad Knob [1] lets you adjust the level of the signal coming from the Pitch output going into the Reverb, otherwise the signal comes purely from the Pitch input.

The other parameters and pages in the Reverb function are identical, regardless of which Configuration is being used. Only page 1 is different, because of the fewer input choices the Reverb has in this Configuration.

## Send Input Levels

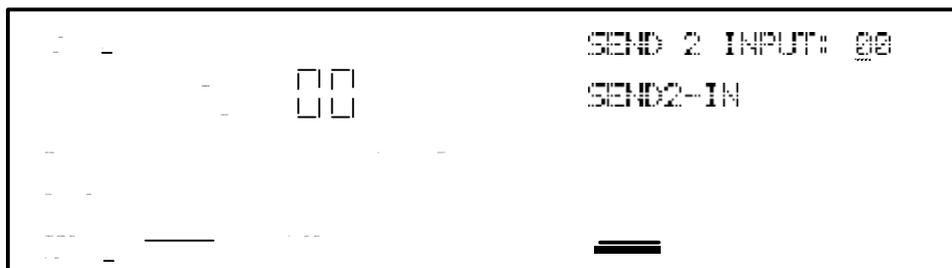
If Configuration #1 is selected and you press [EDIT 1] to advance to effect send 2, the display will now show you the parameters that represent the signal levels on send 2 going into the Reverb. Note that there is now only 1 page available, since the other reverb parameters are found back on effect send 1.

Press [EDIT 1] again to advance to send 3, and the display will still look the same, but now the parameters adjust the signal levels on send 3 going into the Reverb. If you press [EDIT 1] again and advance to send 4, the display will look like this:



There are only two parameters: Balance and Input Level. This is because in Configuration #1, effect send 4 only has a Delay effect, and not a Pitch effect like the other effect sends do. Quad Knob [1] controls the Balance between the Delay output and the dry effect send signal, while Quad Knob [3] controls the overall input level to the Reverb.

If Configuration #2 is selected and you press [EDIT 1] to advance to effect send 2 while the Reverb function is selected, the display will look like this:



Quad Knob [1] lets you adjust the level of the signal coming from effect send 2 going into the Reverb. Send 2 in this Configuration has no effects of its own. Therefore, there are no input or input mix controls in this page, since there is only one possible signal choice. Send 2 is intended to be used for signals that you want to send to Reverb 1, but bypass Delay and Pitch 1. In Configuration #2, send 4 is similar to send 2, in that it has no effects of its own but serves as a bypass going directly to Reverb 3.

## Reverb (Page 2)

Pressing the PAGE [Ø] button will advance the display to Page 2 of the Reverb function. However, you must have the correct effect send selected (1—4) in order to get at the Reverb parameters (in Config. #1, 3, 4, and 5, the Reverb parameters are found only on effect send 1; in Config. #2, they are found on sends 1 and 3 since there are two separate Reverbs). Here you will find parameters for selecting the Reverb type, adjusting Pre-Delay Time and Pre-Delay Mix.

### Reverb Type

The QuadraSynth Plus has seven different reverb types, all stereo, each of which simulates a different space or produce a different ambient effect. Use Quad Knob [1] to select one. The different Reverb types are:

**Plate 1 & 2.** The two Plate reverb types simulate an artificial device known as a Plate. In the early days of recording, Plates were extremely popular because they were almost the only way to provide any sort of artificial ambiance to a recording. The sound of a well-tuned Plate has become quite popular over the years especially when used on vocal or drum sounds. The two Plate reverbs differ in subtle tonal characteristic changes such as those found in different manufacturers' plate reverbs.

**Room.** The Room reverb type simulates not only rooms of different sizes, but rooms with different surface materials. A room with soft surfaces such as carpet will produce a

reverberant sound with much less high end (treble) than a room with hard surfaces. This reverb type can easily simulate both examples and many, many more.

**Hall.** Much larger than a room, Halls are characterized by their high ceilings, irregular shapes, and generally uniform density of reflections.

**Large.** Much larger than a hall, this reverb type emulates large ambient spaces such as amphitheaters, gymnasiums, etc.

**Gated.** Gated Reverb is a very popular effect on drums first found on English records in the early 1980s. This reverb type can simulate applying a noise gate (a device that automatically decreases the volume once the signal falls below a certain level) across the output of the reverb thereby causing the initial attack of the reverb to sound very big, but the tail of the reverb to be cut off very quickly. Although this effect is not found in nature, it works great for modern drums, percussion, and any quickly repeated, transient source.

**Reverse.** The Reverse Reverb type is an inverted reverb in which the volume envelope is reversed. This means that the signal begins softly but grows louder until it is cut off, rather than loud to soft as normal.

### **Pre-Delay Time**

Pre-Delay is the slight delaying of the Reverb itself so that the dry signal more easily stands out from the Reverb. A bit of Pre-Delay can sometimes make certain instruments (such as snare drums) sound bigger. Use Quad Knob [2] to adjust the Pre-Delay Time in 10ms intervals, and/or use Quad Knob [3] to adjust the Pre-Delay Time in 1ms intervals. This Pre-Delay is part of the Reverb itself; don't confuse it with the separate Delay modules available under the Delay function.

### **Pre-Delay Mix**

Quad Knob [4] allows you to mix the amount of Pre-Delay into the Reverb signal path. This gives you the ability to hear a bit of the Reverb before the loudest part of the Reverb (the Pre-Delayed Reverb) sounds. This makes for bigger and smoother sounding Reverb settings.

## Reverb (Page 3)

### **Input Filter**

This is a low-pass filter which comes before the Reverb input. Use Quad Knob [1] to adjust the filter frequency. Lower the Input Filter to remove high frequencies from the input signal before they go into the Reverb.

### **Decay**

The Reverb Decay determines how long the Reverb will sound before it dies away. When using the Reverse Reverb type, Reverb Decay controls the Reverse Time.

### **Low Decay and High Decay**

These two parameters allow the Decay Time to be set separately for both the low and high frequencies of the Reverb. This means that you have control over the tonal shape of the Reverb itself, being able to make the high frequencies die faster if the effect is too bright, and being able to make the lows die faster if the effect is too boomy. This allows you to simulate different surfaces of a

room or hall, with softer surfaces absorbing more high frequencies and smaller rooms having faster low frequency decay.

If the selected Reverb type is Gate, the Low Decay parameter is unavailable.

## Reverb (Page 4)

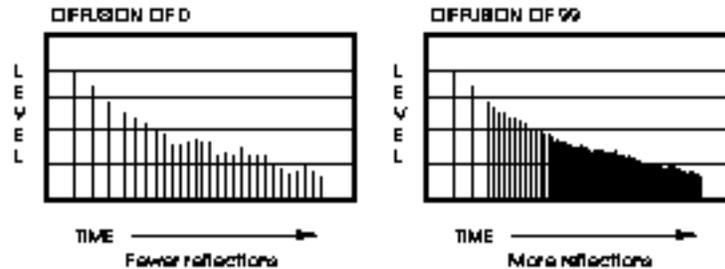
### Density

Density controls how the first reflection of the reverb effect will appear. When set to 0, the first reflection is heard alone without any other reflections. When set to 99, the first reflection appears to “fade-in” and then “fade-out”. This is because a number of reflections will occur just before and just after the first reflection, in addition to the remaining reflections heard after the first reflection. Thus, the reverb sounds more “dense”.

If the select Reverb type is Large, the Density parameter is unavailable.

### Diffusion

Diffusion determines the “thickness” of the reverb sound by adding more reflections to the reverb’s decay. With lower diffusion settings, you may be able to actually hear the individual echoes that make up the overall reverb sound. With higher diffusion settings, the echoes increase in number and blend together, washing out the reverb’s decay. Greater diffusion works better with percussive sounds, whereas less amounts of diffusion work well with vocals and other sustained sounds.



*Note:* The illustration above reflects a Density setting of 0.

## Delay

The Delay function is used to edit Delay parameters.

### Delay (Page 1)

The QuadraSynth Plus's effects processor has three different Delay types available.

**Note:** Some delay modules only feature a mono Delay, and therefore the Delay Type parameter will be unavailable. Instead the parameters normally found on page 2 of the Delay function are shown in page 1, and there are no other pages (please refer to next section for a description of those parameters).

#### Delay Type

**Ping-Pong.** This is called a “Ping Pong Delay” because the output bounces from side to side (left to right) in stereo with the speed determined by the delay time. The maximum delay time is 399 milliseconds.

**Stereo Delay.** The Stereo Delay is actually two separate delays, which can be individually varied. The maximum delay time for each delay is 399 ms.

**Mono.** The Mono Delay has the advantage of twice the available delay time, or 799 ms in Configuration #1, 1199 ms in Configuration #2.

### Delay (Pages 2 and 3)

In Page 2 of the Delay Function you will find the remaining parameters for the Delay function. If the Stereo Delay type is selected, you can press PAGE [Ø] again to advance to Page 3. This is because the Stereo Delay type has parameters for both the Left and Right channels.

#### Input

Quad Knob [1] is used to balance the Delay Input between the signal coming from the Pitch effect output (if applicable) and the dry effect send.

#### Time/Left Time/Right Time

This is the actual Delay time, which determines the amount of time the input signal will be delayed. Use Quad Knob [2] to adjust the delay time in 10 ms intervals; use Quad Knob [3] to adjust the delay time in 1 ms intervals.

#### Feedback/Left Feedback/Right Feedback

Quad Knob [4] is used to adjust the Delay Feedback, which is a portion of the delay signal output being “fed back” into the input. This results in the delay repeating itself. The more feedback, the more repeats.



## Pitch

The Pitch function is used to edit Pitch parameters.

### Pitch (Page 1)

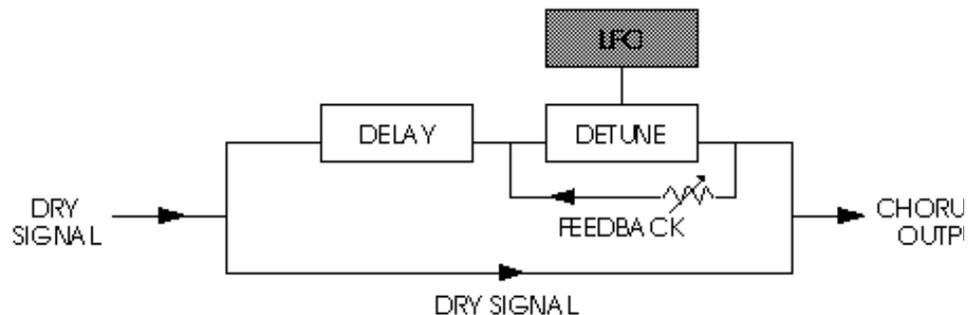
The first page of the Pitch function will look different depending on the selected Configuration and which effect send you are editing. Normally, there will only be one parameter: Pitch Type. However, in the case of Configuration #2, a second parameter (Delay Input) is also available.

### Pitch Type

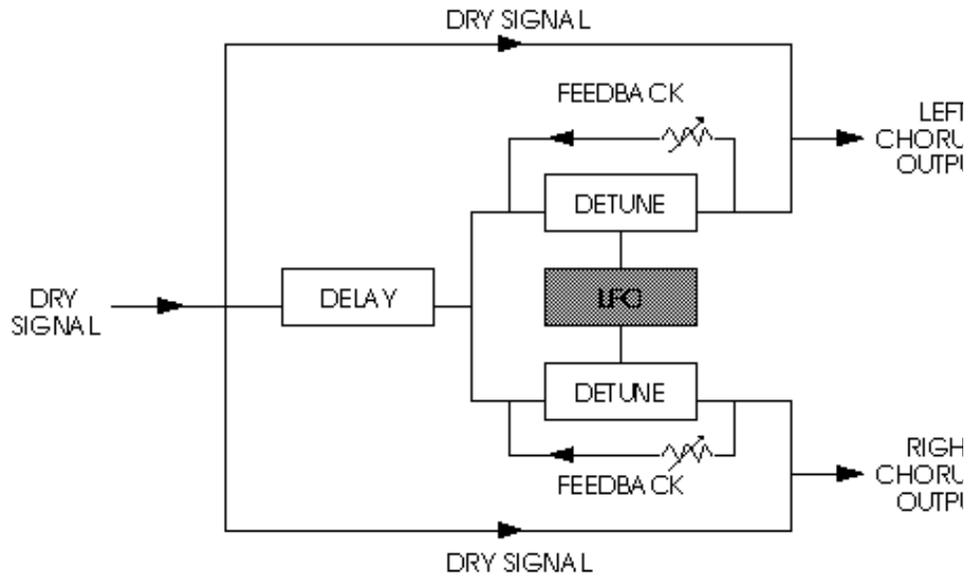
The Pitch Type function allows access to 6 pitch altering modes. The Pitch types available are: Mono Chorus, Stereo Chorus, Mono Flange, Stereo Flange, Pitch Detune and Resonator. Although some of these effects can sound similar to one another depending on the parameter settings, each is achieved differently and can be quite dramatic under the right circumstances. Pitch effects are achieved by splitting the signal into two parts, effecting the pitch of one of the parts, then mixing them back together. This eventual mixing is essential since the overall sound of the effect is achieved by the actual difference between the normal, unaffected signal and the effected signal.

So that you can better understand the differences between the Pitch type effects, and therefore better apply them to your music, here is a brief explanation of each.

**Mono Chorus.** The Chorus effect is achieved by taking part of the signal, slightly delaying it, and then slightly detuning it as well. The detuning is further effected by being modulated by an LFO which causes the detuning to vary. Many variables are available in this scheme. The LFO depth can be varied, the LFO speed can be varied, and a portion of the detuned signal can be fed back to the input to increase the effect. Finally, the waveform shape of the LFO can be changed from a smooth triangle to a more abrupt squarewave to make the pitch detuning more pronounced.

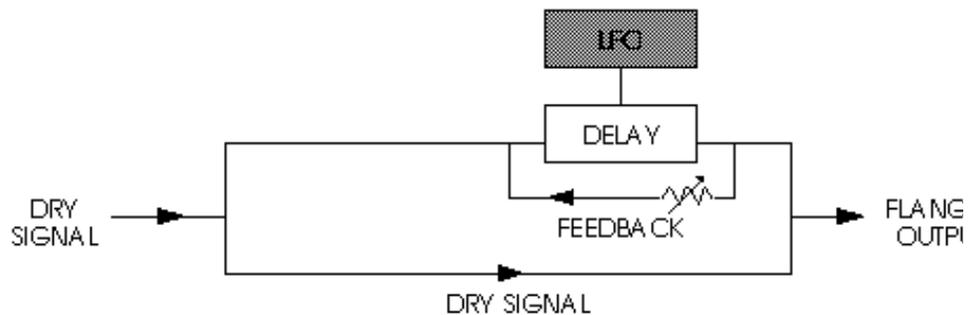


**Stereo Chorus.** In the case of a Stereo Chorus, the signal is split into three parts with a dry signal and a separate Detuning section for both left and right channels. When the left channel is detuned sharp, the right is detuned flat, and vice versa. Once again, this causes the effect to become more pronounced and dramatic.



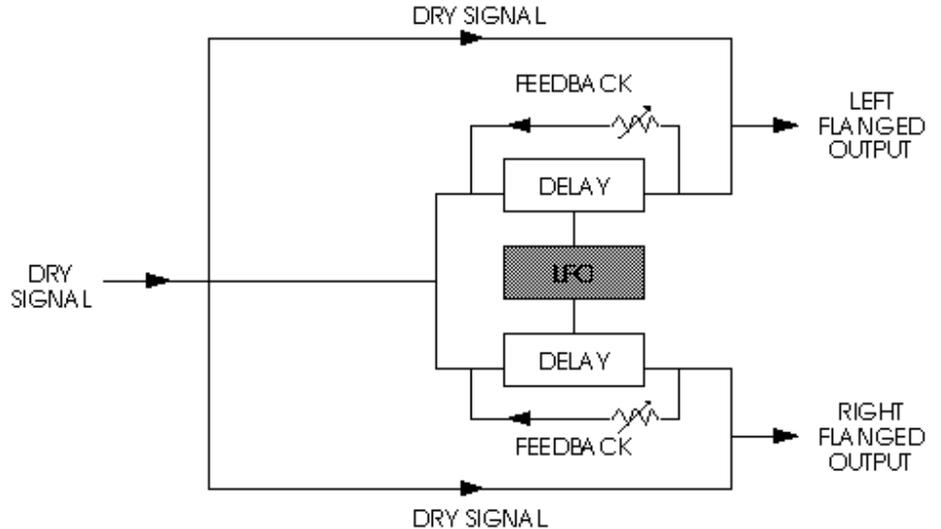
**Mono Flange.** First used in the 1960s, “Flanging” was achieved by the use of two tape recorders that would record and play back the same program in synchronization. By alternately slowing down one tape machine, and then the other, different phase cancellations would occur. Since the slowing down of the tape machines was done by hand pressure against the flanges of the tape supply reels, the term “Flanging” came into being.

The effect of Flanging is achieved by splitting and slightly delaying one part of the signal, then varying the time delay, again with an LFO. The delayed signal is then mixed back with the original sound to produce the “swishing” or “tunneling” sound.

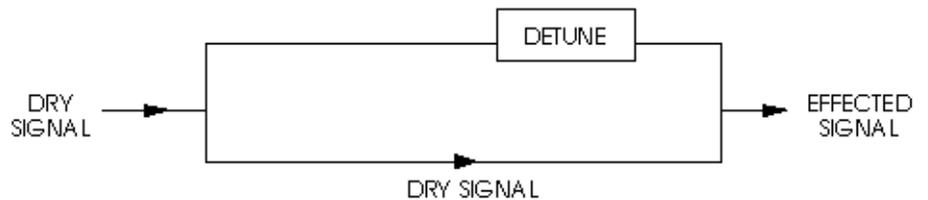


Many variables are available, from varying the speed and depth of the LFO to feeding back part of the signal to make the effect stronger. The Flanger's waveform shape can be either "Normal" or "Inverted". Use the "Inverted" setting for a more dramatic flange effect.

**Stereo Flange.** In the case of the Stereo Flange, the signal is split into three parts with a dry signal and a separate Delay section for both left and right channels with one channel flanging up while the other channel flanges down. Once again, this causes the effect to become more pronounced and dramatic.



**Pitch Detune.** As the name implies, Pitch Detune takes a part of the signal and detunes it either sharp or flat. When mixed back with the original dry signal, the popular “12 string guitar” effect is produced.



**Resonator.** This can be thought of as a highly resonant filter, or a filter that is tuned to a specific frequency with a lot of emphasis, which will cause the frequency that the resonator is set at to be highly accentuated.

### Delay Input

Quad Knob [2] can adjust the level of the signal coming from the Delay output going into the Pitch Input. The Delay Input parameter is only available when editing a effects bus which has the Delay effect ahead of the Pitch effect in the selected Configuration (*Example: Configuration #2, effect send 1*).

## Pitch (Page 2)

If the Pitch type is Mono Chorus, Stereo Chorus, Mono Flange or Stereo Flange, page 2 of the Pitch function contain the following four parameters:

### **Waveform Shape**

Quad Knob [1] determines the LFO's waveform shape. This parameter only appears when the Mono or Stereo Chorus or Flange are selected. The Waveform Shape of the LFO can be changed from a sine waveform, which provides a smoother, more even sound, to a square or triangle waveform, which makes the Chorus or flange effect more pronounced.

### **Speed**

Quad Knob [2] is used to adjust the LFO Speed of all Pitch types, with the exception of Pitch Detune and Resonator.

### **Depth**

Quad Knob [3] is used to adjust the LFO Depth of all Pitch types, with the exception of Pitch Detune and Resonator. The LFO Depth, which is the amount of pitch alteration, can be adjusted to produce the desired effect.

### **Feedback**

Quad Knob [4] is used to adjust the LFO Feedback of all Pitch types, with the exception of Pitch Detune and Resonator. A portion of the output of the Pitch section can be "fed back" into the input in order to make the effect more tonal or pronounced.

### **Detune**

If the Pitch type is Pitch Detune, page 2 will have only this parameter. Use Quad Knob [1] to adjust the tuning of the Pitch Detune effect.

### **Resonator Tuning and Decay**

If the Pitch type is Resonator, page 2 of the Pitch function will have two parameters. Use Quad Knob [1] to adjust the Resonator tuning, and Quad Knob [3] to adjust the Resonator Decay.

## Mod

The Mod Function lets you control various effects parameters from the various controls on the QuadraSynth Plus (keyboard, after-touch, pitch-bender, etc.) or from the MIDI input. This is extremely useful when dynamic or real-time control is required in a live playing situation. It is possible to control up to 2 parameters simultaneously. The Modulation assignments are saved with the Effects Patch.

Don't confuse this Mod Function with the Mod Function used by the Programs; they are independent destinations, though they can come from the same source.

Note: Modulating any effect parameter (with the exception of chorus speed) while audio is passing through it can result in audio artifacts or noises due to discontinuities in the modulation source.

### Selecting the Modulator

There are two Modulators. You can select between these by using the PAGE [♦] and [∅] buttons. Page 1 displays the parameters of Modulator #1, while page 2 displays the parameters for Modulator #2.

### Mod Source

The Mod Source parameter selects the MIDI controller which will remotely cause a change (modulate) in one or two of the parameters in the effects processor. Nearly every MIDI controller can become a Mod Source (using controllers A-D, set in Global mode, page 3), with the most common controllers appearing as a direct option in the display. Quad Knob [1] selects the Mod Source. The options for the Mod Source are:

- Aftertouch
- MIDI Volume
- Sustain Pedal
- Controller A—D
- Mod Wheel
- Pedal 1
- Pedal 2
- Pitch Wheel

### Mod Destination

The Mod Destination is the parameter that will be controlled by the selected Mod Source. Quad Knob [2] selects the Mod Destination. The possible Destination parameters are:

- Pitch Speed
- Pitch Balance
- Delay Level
- Reverb Decay
- High Decay
- Reverb Diffusion
- Pitch Depth
- Delay Time
- Reverb Balance
- Reverb Low Decay
- Reverb Level
- Pitch Level
- Delay Feedback
- Reverb Input
- Reverb

If the selected Configuration has a particular effect on more than one effect send (for example, Config. #1 has a delay on each send), then some Mod Destination parameters will be listed more than once. For example, the Delay Time parameter will appear four times (“D1 Time,” “D2 Time,” “D3 Time,” and “D4 Time”). In the case of Pitch, where you can choose from various pitch effects, different parameters are available

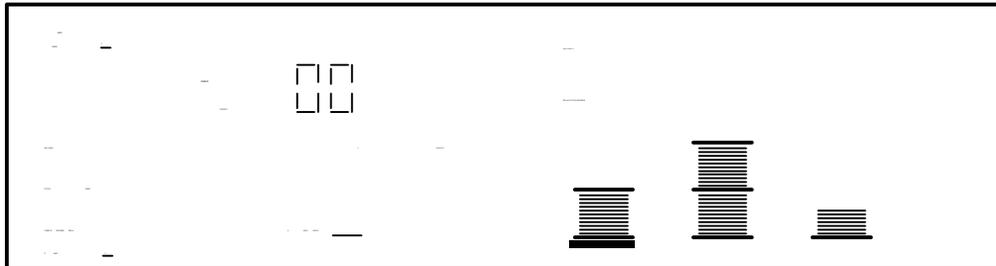
depending on the effect chosen. However, the Mod Destinations retain their names. *Example:* If the Resonator is the Pitch effect, the Pitch Speed Modulation Destination controls the first parameter in the Resonator (Tuning).

### Mod Level

The Mod level is the amount that the Destination parameter will be affected by the Mod Source. Use Quad Knob [3] to affect the Destination parameter by a positive or negative amount. *Example:* If the Reverb Decay was selected as the Destination with the mod wheel as the Source, the mod wheel could be programmed to cause the Reverb to increase the decay (positive) or decrease the decay (negative).

## Mix

Not to be confused with an actual Mix or Mix mode, the Effect's Mix function is where you can mix the various signal levels of all the effects to the Main Left and Right outputs of the QuadraSynth Plus. Only effect modules that have access to the Main outputs will appear on the Mix page. There is a separate Mix page for each of the four effect busses whose effect modules feed the main output. Note that the Mix page doesn't control how much the individual effect modules feed to each other; only how much they feed to the Main outputs.



Depending on the selected Configuration, the order of the effects will differ (for example: in Configuration #1, the order reads Pitch, Delay, Reverb; but in Configuration #2, the order is Delay, Pitch, Reverb).

### Pitch Level

Adjusting this value will cause the Pitch Output Level to increase or decrease. The Pitch Output level is the level for the Pitch Section of the QuadraSynth Plus's effects processor to the Main outputs, and should be set as desired. Even if this parameter is set to 00, the output of the Pitch section is still available (depending on the bus and configuration) to following Delay and Reverb sections.

### Delay Level

Adjusting this value will cause the Delay Output Level to increase or decrease. The Delay Output level is the level for the Delay Section of the QuadraSynth Plus's effects processor to the Main outputs, and should be set as desired. Even if this parameter is set to 00, the output of the Delay

section is still available (depending on the bus and configuration) to following Pitch and Reverb sections.

### Reverb Level

Adjusting this value will cause the Reverb Output Level to increase or decrease. The Reverb Output level is the level for the Reverb Section of the QuadraSynth Plus's effects processor to the main outputs, and should be set as desired.

## Misc.

This Misc. Function is only available when using Configuration #s 4 or 5. In Configuration 4, the Misc. Function is where the EQ parameters are found. In Configuration #5, the Misc. function houses both the Overdrive parameters and the EQ parameters (the EQ is found on Page 3). In all cases, the Misc. Function can be selected and its parameters edited regardless of which Effects Send (1–4) is selected.

### EQ

The shelving EQ is only available in Configuration #s 4 and 5. It provides bass and treble boost, and affects the entire Main Output (not just the Effects Sends). Four EQ parameters are included: low frequency (range: 30Hz to 180Hz), low frequency boost (0dB to 12dB), high frequency (3kHz to 10kHz), high frequency boost (0dB to 9dB).

#### **Lo EQ Frequency**

This allows you to adjust the cutoff frequency of the Lo EQ. It can be set between 30Hz and 180Hz. If the Lo EQ Gain parameter is set above 0dB, all frequencies below and including the one selected by the Lo EQ Frequency parameter will be affected.

#### **Lo EQ Gain**

This controls how much boost will be applied to frequencies below and including the one selected by the Lo EQ Frequency. It can be set between 0dB and +12dB.

#### **Hi EQ Frequency**

This allows you to adjust the cutoff frequency of the Hi EQ. It can be set between 3kHz and 10kHz. If the Hi EQ Gain parameter is set above 0dB, all frequencies above and including the one selected by the Hi EQ Frequency parameter will be affected.

#### **Hi EQ Gain**

This controls how much boost will be applied to frequencies above and including the one selected by the Hi EQ Frequency. It can be set between 0dB and +9dB.

### Overdrive

The Overdrive effect provides four parameters spread across two editing pages. It is only used in Configuration #5.

### **Overdrive Type**

This selects one of two Overdrive Types: Soft and Hard. The Soft Overdrive has less gain and provides slightly less distortion than the Hard Overdrive. Also, there will still be a slight bit of distortion when using the Soft setting, if the signal feeding the Overdrive effect is below the Overdrive Threshold setting (see below). The Hard setting will only provide distortion when the signal feeding the Overdrive effect is above the Overdrive Threshold setting.

**Overdrive Threshold**

This sets the level the signal feeding the Overdrive effect must be reach before the Overdrive effect will begin distorting. It can be set between 00 and 99. If this number is very low, the Overdrive effect will start to distort almost right away. When set to a high number, the distortion will not occur until the signal feeding the overdrive becomes louder than the Threshold setting.

**Overdrive Brightness**

This sets the tone of the Overdrive effect. It can be set between 00 and 99. Higher numbers result in a brighter sounding overdrive. Lower numbers result in a duller distortion sound.

**Overdrive Balance**

This controls the output mix of the Overdrive effect. It can be set anywhere from “CLEAN<99” to “CLEAN<00>OVRD” to “99>OVRD”. When set to “CLEAN<99”, the Overdrive effect cannot be heard at all. When set to “CLEAN<00>OVRD”, you have an even mix between the original, unaffected signal and the overdriven signal. When set to “99>OVRD”, only the overdriven effect is heard.

*Note:* The CLIP indicator is disabled when configuration 5 is selected.



## CHAPTER 8

# GLOBAL SETTINGS

Global Edit Mode is where you will find several parameters which affect the entire instrument, such as overall master tuning, display contrast, controller settings, keyboard mode, edit mode and the 48 kHz input.

## Editing Global Parameters

⑩ Press the [GLOBAL] button.

*The display will change to Global Edit Mode, page 1 . The total number of pages (seven) is indicated in the lower left corner of the display. The currently selected page number will be underlined.*

¶ There are four parameters available for editing in Global Edit Page 1:

- Quad Knob [1] controls the display contrast.
- Quad Knob [2] enables General MIDI Mode and recalls Mix 00 of Preset Bank 4.
- Quad Knob [3] controls the transposition, or pitch, of the keyboard.
- Quad Knob [4] controls the instrument's overall master tuning.

① Use the PAGE [♦] and [Ø] buttons to scroll through the 7 pages of Global Mode.

The following sections describe in detail each of the parameters found in the seven Global Edit Mode pages.

## LCD Contrast

In Page 1 of Global Edit Mode, Quad Knob [1] adjusts the LCD Display Contrast (00 to 121). Whenever the [GLOBAL] button is pressed, the display will always revert to Page 1 with the Display Contrast parameter selected. This is so that if the display contrast is set too high or too low and is unreadable, you can easily adjust it even if you can't see what you're doing.

## General MIDI Mode

In Page 1 of Global Edit Mode, selecting Quad Button [2] and pressing VALUE [ ] enables General MIDI Mode. This will immediately take you out of Global Edit Mode and into Mix Mode, automatically selecting Mix 00 of Preset Bank 4. For more information about General MIDI, refer to the MIDI Supplement in Appendix B.

### Enabling General MIDI Mode via MIDI

The QuadraSynth will respond to a universal MIDI Sysex message to turn General MIDI mode on or off. Some (but not all) General MIDI sequences will have a Sysex message at the beginning (bar 1) which tells the receiving device to go into its General MIDI mode. If this message is sent, no matter where you happen to be on the QuadraSynth, General

MIDI mode will be enabled, and Mix 00 of Preset Bank 4 will automatically be selected.

## Master Pitch and Master Tuning

In Page 1 of Global Edit Mode, Quad Knob [3] adjusts the QuadraSynth Plus's overall pitch (-12 to +12/up or down an octave). Adjust this parameter when you wish to globally transpose all sounds. Quad Knob [4] adjusts the QuadraSynth Plus's overall Master Tuning (-99 to +99/up or down 1/2 step). Adjust this parameter when tuning the QuadraSynth Plus to other instruments. These parameters have no effect on drum sounds, the Range settings, or MIDI Out.

## Keyboard Sensitivity

In Page 2 of Global Edit mode, Quad Knob [1] adjusts how sensitive the keyboard's velocity will be (00 to 99). When set to 0, the keyboard will not transmit any velocity, no matter how hard or soft the keys are played; all notes will be treated as having a velocity of 64 (right in the middle). When set to 99, the keyboard will have maximum sensitivity, allowing the greatest difference between soft and loud notes in terms of velocity control. Adjust this value to create the ideal sensitivity for your playing style. By lowering this value from 99, you limit how loud and soft notes may be played.

## Keyboard Curve

In Page 2 of Global Edit mode, Quad Knob [2] selects the Keyboard Velocity Curve. There are three options: Weighted, Plastic and Maximum. When set to weighted, the keyboard will have the velocity response of a weighted keyboard. This means you will really have to play hard to get the loudest notes. When set to plastic, the keyboard will have the velocity response of a typical plastic keyboard. Plastic is not as sensitive as Weighted, therefore playing soft will not result in the same soft notes as Weighted mode produces. When set to Maximum, no velocity response is available, and all notes are given a maximum velocity value of 127. This parameter only affects the keyboard's output to the sounds in the QuadraSynth Plus and MIDI Out. This is different from the Velocity Curve parameter in Program Edit, which determines how a sound will respond to incoming velocity information, either from the keyboard or from MIDI In.

## Keyboard Transpose

In Page 2 of Global Edit mode, Quad Knob [3] controls Keyboard Transposition (-12 to +12/up or down 1 octave). This determines the note number that the keyboard will transmit to the QuadraSynth Plus's sounds and to MIDI Out. If you are using a MIDI sequencer, use this function when you wish to record notes outside of the keyboard's normal note range (note numbers 28 – 103). When set to -12, the keyboard range is note numbers 16 – 91. Likewise, if set to +12, the range would be 40 – 115.

## Keyboard Mode

In Page 2 of Global Edit mode, Quad Knob [4] selects the Keyboard Mode (NORMAL, CH SOLO, OUT 1 – OUT 16). This determines how the keyboard will function. When in Mix Mode, you have the option to transmit on several MIDI channels at once, or to temporarily isolate certain channels within a Mix.

**NORMAL.** In Program Mode, the keyboard will transmit on the selected MIDI channel. In Mix Mode, the MIDI channels the keyboard transmits on will correspond to whatever layers or splits the Mix is set up for. Note that certain controllers such as pitch bend and aftertouch may transmit on a different set of channels, since they are enabled or disabled independently for each channel of the Mix. The MIDI Monitor indicators in the display will show which channels are active.

**CH SOLO.** In Program Mode, this is the same as the NORMAL setting. In Mix Mode, the only sounds coming from the QuadraSynth Plus, and the only MIDI messages, will come from the layer or range of the underlined MIDI channel in the display. This allows you to isolate individual channels in a Mix. So, if you play in a range of the keyboard that is active on MIDI CH 1, and 1 is underlined, you'll hear it. All other ranges or layers will not respond to the keyboard (they will respond to incoming MIDI messages on their respective channels). Use the MIDI [♦] and [∅] buttons to hear each channel in turn.

**OUT 1 – OUT 16.** In both Program Mode and Mix Mode, the keyboard will transmit on a specific MIDI channel (determined by the number setting of this parameter), but it will not play the internal sound(s). Use this mode if you're using a MIDI sequencer with an “Echo” feature (also known as “MIDI Thru”); the sound will be activated by messages appearing at the MIDI IN connector after it's made the “round trip” through the sequencer. This is the QuadraSynth Plus's equivalent to LOCAL OFF.

## Controllers A – D Assignment

The QuadraSynth Plus allows you to assign up to four general purpose MIDI controllers. These MIDI controllers are assigned a letter, A–D. In Page 3 of Global Edit mode, you can choose which MIDI controllers (0 to 120) to assign as Controllers A, B, C and D. For a listing of all MIDI controllers and their designations, see page 123 in the MIDI Supplement towards the end of this manual.

## Reset Controllers A – D

Found on Global Edit Page 4, the “A–D Reset” function (On/Off) determines whether the values for Controllers A–D will be reset to zero when a new Program or Mix is recalled. Use Quad Knob [2] to turn this on or off. This parameter works along with the A-D Mode parameter (described below) to choose how the keyboard is being used as a controller. If the A-D Controllers are being used to modulate the volume, etc., of external MIDI sound modules, you will probably want the A-D Reset parameter turned “OFF” so that the modules' volumes will not be reset to zero every time a new Mix or Program is selected. If you are using the A-D Controllers only for modulating parameters in the QuadraSynth Plus, you will probably want this parameter turned “ON” so that new Programs or Mixes are recalled with their stored settings.

*Example:* If you adjusted Controller A (using Quad Knob [1]) to, say, a value of 25 and then you recalled a different Program, the value of Controller A would remain at 25 if the “A-D Reset” function was turned off. Alternatively, the Controller A value would reset to 0 if this function was turned on.

## Controllers A – D Mode

The “A-D Mode” function (Local, MIDI, or Both) determines whether the Controllers A-D will have an affect on the currently selected Program or Mix, or will only send out controller data via the MIDI Out connector, or do both. Use Quad Knob [4] to turn this on or off.

Remember, whenever one of the Controllers A–D is used in the currently selected Program, a pair of arrows will appear on either side of that Controller's name in the display while in either Program Play Mode or Mix Play Mode. This indicates that turning that Controller's associated Quad Knob will have some effect on the Program or Mix. If the "A–D Mode" function is set to MIDI, turning the Quad Knobs will have no effect on the currently selected Program or Mix; however, this will cause controller data to be sent out the MIDI Out connector.

*Example:* If Controller A is defined as MIDI controller #11 (which is the default), and the "A–D Mode" is set to MIDI, turning Quad Knob [1] will send out controller 11 data but will have no effect on the currently selected Program or Mix (even if arrows appear on either side of the letter "A" in the display). Although the Program or Mix may use Controller A to modify it in some way, Controller A is temporarily "disconnected" from the Program or Mix until the "A–D Mode" function is set to Local or Both.

## Pedal 1 and 2 Assignment

Like the MIDI Controllers A–D, the two footpedal controls (Pedal 1 and Pedal 2) can be assigned to a MIDI controller. In Page 5 of Global Edit mode, you can assign which MIDI controllers (0 to 120) that Pedal 1 and Pedal 2 will be transmitted as over MIDI Out. Simultaneously, if the same MIDI controller is received it will control any modulations that use either Pedal 1 or Pedal 2. Quad Knob [1] selects the controller for Pedal 1, while Quad Knob [3] selects the controller for Pedal 2.



*When recording into a MIDI sequencer, be careful not to accidentally assign either Pedal 1 or Pedal 2 to a controller which may already be used by another control (like MIDI Volume/controller 7, or Mod Wheel/controller 1).*

### Using Pedals to Control Volume or Modulation

If either Pedal 1 or Pedal 2 is assigned to Controller 7 (Global Edit Mode, Page 4), then they will automatically control the volume of:

- any Sounds in a Program, and;
- in Mix Mode, any Sounds that are controlled by the Keyboard (Mix Edit Mode, Range, Page 2) and have Pedals turned on (Mix Edit Mode, Range, Page 3).

Likewise, if either Pedal is assigned to Controller 1, then they will automatically function like the Modulation Wheel for any Sound in Program Play Mode, and in Mix Play Mode, Sounds that are controlled by the Keyboard and have Pedals turned on. This is in addition to the fact that the pedals will be sending out MIDI information. The default settings are: Pedal 1 = 7; Pedal 2 = 4.

## MIDI Program Select

In Page 6 of Global Edit mode, Quad Knob [1] determines the MIDI Program Select mode (Off, On, Mix Select Channel 1 –16). When this is set to “Off”, the QuadraSynth Plus will not respond to incoming MIDI Program Change messages, nor will it transmit Program Changes.

When set to “On”, the QuadraSynth Plus will respond to incoming Program Change messages. Likewise, when a Program or Mix is recalled from the front panel, its respective program change message will be sent out. However, the QuadraSynth Plus will respond differently to incoming Program Change messages depending on whether Program Mode or Mix Mode is selected.

**In Program Mode**, the MIDI [♦] and [∅] buttons determine on which MIDI channel the QuadraSynth Plus will receive MIDI Program Change messages (as well as other messages, like notes, controllers, etc.). The Program recalled will be the same number as the MIDI Program Change message that is received, from whichever bank (Preset or User) is currently selected. When a Program is recalled from the front panel, the QuadraSynth Plus will transmit the equivalent Program Change message on this same MIDI channel.

**In Mix Mode**, when MIDI Program select is on, Program Changes received on any of the 16 MIDI channels will be received by the same numbered MIDI channels in the current Mix. The Mix itself will not respond to Program Changes.

When set to “Mix Select Channel 1 – 16”, the QuadraSynth Plus will change Mixes in response to Program Change messages received on the same MIDI channel as selected by this parameter, from whichever bank (Preset or User) is currently selected. Program Change messages received on any other channel (other than the one selected by this parameter) will change the individual Programs in the Mix on the same channels the messages are received on.

*Note:* When General MIDI Mode is enabled (see page 115), Channel 10 of the selected Mix will be used exclusively for drums. If a program change is received on Channel 10, a new drum kit will be recalled. These drum kits are used exclusively in General MIDI mode, and adhere to the General MIDI specification.

### Receiving and Transmitting Bank Change Message

The QuadraSynth Plus will respond to MIDI Bank Select messages. Bank Select messages are transmitted via MIDI Controller 0. The value of Controller 0 determines which bank (User, Preset 1–4, Card 1–8) is to be recalled. *Example:* If a Bank Select (controller 0) message of 0 is received, it will cause the User Bank to be recalled. If a Bank Select (message of 1 is received, Preset Bank 1 will be recalled. Additionally, if a Sound Card is inserted, the Card Banks can be selected using Controller 0 values between 5 and 13. Values higher than 13 are “wrapped around” and will recall the same Banks. *Example:* A Controller 0 message with a value of 39 will recall the User Bank.

*Note:* Bank change messages will be ignored if General MIDI Mode is enabled, so that only Programs within the General MIDI Bank (Preset 4) can be recalled via MIDI Program changes.

If the MIDI Program Select parameter is turned “On” and a new Bank is selected using the BANK [♦] and [Ø] buttons, a Bank Change message (followed by the appropriate Program Change message) will be transmitted out the MIDI Out connector.

If, additionally, a new Bank is selected in Mix Play Mode and any Channel’s MIDI Out parameter (Mix Edit Mode, Range Function, Page 2, Quad Knob [3]) is turned “On”, a Bank Select message (followed by the appropriate Program Change) will be transmitted out the MIDI Out connector for each of those MIDI Channels.

## Edit Mode

The Quad Knobs have two editing modes: Immediate and Pass-thru. When using the Quad Knobs to adjust parameter values, you may prefer one mode over the other.

In Page 6 of Global Edit mode, Quad Knob [3] determines the Edit Mode of the four Quad Knobs. When set to Immediate, parameter values jump immediately to the Quad Knob’s exact position the moment it is moved. When set to Pass-thru, the Quad Knob must be turned beyond the parameter’s current setting before it becomes “live” and begins adjusting the parameter’s value.

## 48 KHz Clock Input

In Page 7 of Global Edit mode, Quad Knob [1] turns the 48 kHz Clock Input on and off. When turned off, the QuadraSynth Plus uses its own internal sample clock as a reference for playing back the sampled sounds that make up a Program or Mix. However, if you are recording the QuadraSynth Plus to ADAT using the Digital Out fiber optic cable and also have a BRC Master Remote Controller, the QuadraSynth Plus must receive a 48 kHz clock signal from the BRC in order to maintain perfect sync with the ADAT system. This requires that you connect a BNC-to-BNC cable between the BRC’s 48 kHz Clock Out to the QuadraSynth Plus’s 48 kHz Clock In. When you are ready to record onto ADAT from the QuadraSynth Plus, be sure to turn on the 48 kHz Clock Input function. For more on connecting the BNC-to-BNC cable, see page 25.

## CHAPTER 9

# MIDI TRANSFER AND STORAGE OPERATIONS

## Saving the User Bank to an External Card

The entire contents of the QuadraSynth Plus's User memory (100 Mixes, 128 Programs, 128 Effects Patches) can be stored to an Alesis QuadraCard RAM card inserted into the Sound Card slot on the QuadraSynth Plus. Depending on the amount of RAM a particular card has, up to 8 complete banks can be stored onto it. The QuadraCard is a type of PCMCIA SRAM or FlashRAM card; it has 256K of memory and will store 4 complete banks. A 512K PCMCIA card can store 8 banks. When saving data to a card that contains a ROM (READ-ONLY) bank, it will be in bank 1; this means you cannot save anything into bank 1.

⑩ Insert a card into the Sound Card slot on the back of the QuadraSynth Plus.

¶ Press [STORE].

① Use either PAGE [♦] or [Ø] to select Page 6 of the Store function. *This selects the "SAVE TO CARD" option.*

Use Quad Knob [1] to select a bank location on the card to store to (1–8). *If the card contains a ROM bank, it will be bank 1. Therefore, you will only be able to save into bank locations 2–8.*

) Press [STORE] to transfer the data from the QuadraSynth Plus onto the card.

If the display reads "CARD IS WRITE PROTECTED", switch the write-protect switch on the card to off and repeat the procedure.

## Loading a Bank from an External Card

⑩ Insert the card into the card slot on the back panel.

¶ Press [STORE].

① Use either PAGE [♦] or [Ø] to select Page 7 of the Store function. *This selects the "LOAD FROM CARD" option.*

Use Quad Knob [1] to select the bank on the card you wish to load (1–8).

) Press [STORE] to transfer the data from the card into the QuadraSynth Plus.

## Storing an Individual Program or Mix to an External Card

You also have the option of storing a Mix or Program directly to a specific location in a RAM Sound Card Bank (instead of transferring the entire Bank) and vice versa. However, the Sound Card you are storing to must be of the current QuadraSynth Plus Bank format. A Sound Card is formatted whenever an entire QuadraSynth Plus Bank is stored onto it. If you are using an older Sound Card that does not use the current Bank format, you will not be able to store individual Mixes or Programs onto until you store an entire QuadraSynth Bank onto it first.

⑩ Insert a card into the Sound Card slot on the back of the QuadraSynth Plus.

¶ Select the Program or Mix you wish to transfer to the card.

① Press [STORE].

Use Quad Knob [1] to select a bank location on the card to store to (1–8). *If the card contains a ROM bank, it will be bank 1. Therefore, you will only be able to save into bank locations 2–8.*

) Use Quad Knob [2] to select a location in the selected card Bank to save to (00–127 if storing a Program; 00–99 if storing a Mix).

★ Press [STORE] to transfer the data from the QuadraSynth Plus onto the card.

If the card is write-protected, or not inserted, or not of the current Bank format, the display will indicate the situation with an error message. If the card is not of the current Bank format, use the “Save To Card” command first (Store Mode, Page 5) to save the entire User Bank to the card. This however will erase all Programs and Mixes in the selected card Bank. If these are important to you, first load them into the User Bank in the QuadraSynth, and then save them back onto the card in order to re-format the card using the new format.

## Loading an Individual Program or Mix from an External Card

You can load a single Mix or Program from a Sound Card into the User Bank, instead of having to load the entire Bank from the Sound Card. To do this, select the Mix or Program in the Sound Card Bank that you wish to copy, then use the Store Function (as described above) to designate a location you wish to store to in the User Bank.

*Note:* When storing a Mix from a Sound Card into the User Bank, the individual Programs used by the Mix will not be moved into the User Program Bank. Once you store a Mix from a Sound Card into the User Bank, it will still look for its Programs in the Sound Card Bank, if that is where it was programmed to look for them in the first place (which is almost always the case).

## Card Storage RAMifications

Whenever you transfer an internal Bank to a RAM card, the result is that all Mixes in the transferred Bank are changed so that they now access the Programs on the card bank to which the User bank was saved (since they reside there, now), instead of the Programs from the original internal Bank. And, when a Card Bank is transferred to an internal Bank location, the opposite happens – all Programs within a Mix which had previously accessed card bank 1 (the ROM card) now point to the User bank.

However, a problem can arise when you have one or more Mixes in the Bank you are transferring which use Programs already on the Card.  
*Example:* Let's say Mix 00 in the User Bank uses a Program that's located in Card Bank 1. If the User Bank is transferred to the Card Bank 1, the result will be that Mix 00 in Card Bank 1 now uses only Programs from Card Bank 1. If later you transfer the entire Bank back into the QuadraSynth Plus, you will find that Mix 00 no longer uses the Program on the Card as it was originally programmed to.

Here's a few ways to avoid this problem. First, always transfer to a Card Bank that does not include any Programs used by the Mixes in the Bank you are transferring from. In other words, if we transferred the Bank into Card Bank 2, we would not have a problem, since the Mix would still be using the Program in Card Bank 1. When this Bank is transferred back to the QuadraSynth, the Mix will still use the Program in Card Bank 1.

Another way to avoid this problem is to transfer the Bank to a Card Bank, and then immediately store the individual Mix onto the Card by itself. When a Mix is stored individually to a Card, it is not modified in any way ; i.e. if it used Programs in the internal Banks, it will still use them even though the Mix and its Programs are in two different locations (the Mix is on the Card but the Programs it uses are stored in the internal Banks).

Finally, you could avoid this situation by always making sure your Mixes use only Programs located in the same Bank it is stored in. This could mean individually storing some Programs from a RAM Card into one of the internal Banks. Although this is very limiting, it makes things much simpler in the long run.

## Saving Programs via MIDI Sys Ex

As an alternative to storing data to a card, the QuadraSynth Plus lets you transmit internal data via MIDI System Exclusive messages. This data can be sent to a storage device, or recorded into a MIDI sequencer, or sent to another QuadraSynth Plus or S4. You have a choice of sending any single Program in the User bank (00 to 127), or what is in the current Program Edit buffer, or what is in any of the 16 Mix Edit Program buffers, or the entire User bank (100 Mixes, 128 Programs, 128 Effects Patches) plus Global data. In the case of sending data to another QuadraSynth Plus, you can send any individual Program to the same location or any other location in the receiving QuadraSynth Plus, including any of its 17 Program Edit buffers.

**To send the entire User bank via MIDI:**

⑩ Connect a MIDI cable from the QuadraSynth Plus's MIDI Out to the MIDI In of a device capable of receiving the data (S4, another QuadraSynth Plus, etc.).

¶ Press [STORE].

① Use either PAGE [♦] or [Ø] to select Page 3 of the Store function.

Turn Quad Knob [1] to the right until the upper right display reads "SEND\_ALL TO MIDI."

) Press [STORE] to transmit the data out the MIDI Out connector.

**To send a single Program via MIDI:**

⑩ Follow steps ⑩ through ① in the instructions above.

¶ Use Quad Knob [1] to select a Program. You may select any Program in the User bank (0 to 127) or the Program Edit buffer (EDIT) or any of the 16 Mix Edit buffers (EDm01 to EDm16).

*As this value is changed, the second parameter (destination) will be linked. This is because most often you will want to transmit a Program to the same Program location. The only time to do otherwise is when sending to another QuadraSynth Plus (see below).*

① Press [STORE] to transmit the data out the MIDI Out connector.

**To send a single Program via MIDI to a *different* Program number:**

⑩ Follow steps ⑩ through ① in the instructions above.

¶ Use Quad Knob [1] to select a Program. You may select any Program in the User bank (0 to 127) or the Program Edit buffer (EDIT) or any of the 16 Mix Edit buffers (EDm01 to EDm16).

*As this value is changed, the second parameter (destination) will be linked.*

① Use Quad Knob [2] to select a Program number to send the selected Program to.

*If this value is turned all the way up, the "SEND ALL TO MIDI" option will be selected and the first value will jump all the way up. At this point you will not be able to adjust the destination value with Quad Knob [2] until you use Quad Knob [1] to re-select the Program to be transmitted.*

Press [STORE] to transmit the data out the MIDI Out connector.

The procedure is similar for sending Mixes. Page 4 of the Store function allows you to send any one of the Mixes.

Similarly, if a Mix is stored, you may want to store each of the Programs used in the Mix. The "SEND ALL TO MIDI" command in the Program Store function is an easy shortcut to this.

APPENDIX A

# TROUBLE-SHOOTING

## Trouble-Shooting Index

If you are experience problems while operating the QuadraSynth Plus, please use the following table to locate possible causes and solutions before contacting Alesis customer service for assistance.

Symptom	Cause	Solution
The display does not light when the ON/OFF switch is turned on.	No power.	Check that the power cable is plugged in properly.
Display is blank.	Display contrast is set either too high or low.	Adjust the display contrast (Global, p.1, Quad Knob 1).
No sound.	Bad connections.	Check your audio cables; if necessary, swap cables.
	Volume is turned down.	Turn [VOLUME] knob up.
	Keyboard Mode is set incorrectly.	Set the Keyboard Mode to "NORMAL" (Global, p. 2).
No MIDI input in Mix mode (cannot control through MIDI).	Bad connections.	Check MIDI cables.
	One or more channels' MIDI IN switch is off.	Make sure the MIDI IN parameter is turned on for the channel(s) you wish to control via MIDI.
	Keyboard Mode is set incorrectly.	Make sure the Keyboard Mode (Global p. 2) is set to "NORMAL".
Notes sustain continuously.	Sustain pedal was plugged in after power was turned on.	Turn off power and turn on again.

## Re-initializing

If your unit behaves erratically or "freezes", the first step is to power down the unit. and power it back up again. Disconnect any cables connected to the MIDI IN jack, and make sure that a sequencer or keyboard is not sending messages to the QuadraSynth Plus that would make it behave erratically (such as a long stream of pitch bend messages on 16 channels simultaneously). If these steps do not solve the problem, you must re-initialize the software. Make sure your mod wheel is all the way down before re-initializing, otherwise the "zero" position of the mod wheel will be incorrect. To re-initialize the QuadraSynth Plus, hold down both Quad Buttons [1] and [4] while turning on the power. This will reset all Global parameters to their default settings, and will initialize all edit buffers so that all Mix, Program and Effects parameters are reset to their default settings. However, none of the Programs, Mixes, or Effects are changed when re-initializing the unit.

## Checking Software Version

The current software version may be determined by holding [GLOBAL] and pressing [PROGRAM]. The QuadraSynth Plus will indicate the current software version installed in the upper right display.

## Maintenance/Service

### Cleaning

Disconnect the AC cord, then use a damp cloth to clean the keyboard's metal and plastic surfaces. For heavy dirt, use a non-abrasive household cleaner such as Formula 409 or Fantastik. **DO NOT SPRAY THE CLEANER DIRECTLY ONTO THE FRONT OF THE UNIT AS IT MAY DESTROY THE LUBRICANTS USED IN THE SWITCHES AND CONTROLS!** Spray onto a cloth, then use the cloth to clean the unit.

### Maintenance

Here are some tips for preventive maintenance.

- Periodically check the AC cord for signs of fraying or damage.
- Make sure the entire bottom part of the keyboard is supported so that the case is not subjected to unnecessary bending.
- Place a dust cover over the QuadraSynth Plus when it is not in use.

### Refer All Servicing to Alesis

We believe that the QuadraSynth Plus is one of the most reliable keyboards that can be made using current technology, and should provide years of trouble-free use. However, should problems occur, **DO NOT** attempt to service the unit yourself. The full AC line voltage, as well as high voltage/high current DC voltages, are present at several points within the chassis. Service on this product should be performed only by qualified technicians. **THERE ARE NO USER-SERVICEABLE PARTS INSIDE.**

### Obtaining Repair Service

Before contacting Alesis, check over all your connections, and make sure you've read the manual.

#### **Customers in the USA:**

If the problem persists, call Alesis USA at 1-800-5ALESIS (525-3747) and request the Product Support department. Talk the problem over with one of our technicians; if necessary, you will be given a repair order (RO) number and instructions on how to return the unit. All units must be shipped prepaid and COD shipments will not be accepted.

For prompt service, indicate the RO number on the shipping label. If you do not have the original packing, ship the XT in a sturdy carton, with

shock-absorbing materials such as styrofoam pellets (the kind without CFCs, please) or “bubble-pack” surrounding the unit. Shipping damage caused by inadequate packing is not covered by the Alesis warranty.

Tape a note to the top of the unit describing the problem, include your name and a phone number where Alesis can contact you if necessary, as well as instructions on where you want the product returned. Alesis will pay for standard one-way shipping back to you on any repair covered under the terms of this warranty. Next day service is available for a surcharge.

Field repairs are not normally authorized during the warranty period, and repair attempts by unqualified personnel may invalidate the warranty.

Service address for customers in the USA:

Alesis Product Support  
12520 Wilkie  
Hawthorne, CA 90250

**Customers outside the USA:**

Contact your local Alesis dealer for warranty assistance. The Alesis Limited Warranty applies only to products sold to users in the USA and Canada. Customers outside the USA and Canada are not covered by this Limited Warranty and may or may not be covered by independent distributor warranty in the county of sale. Do not return products to the factory unless you have been given specific instructions to do so.





## APPENDIX B

# MIDI SUPPLEMENT

## MIDI Basics

Most current electronic instruments and signal processors, including the QuadraSynth Plus, contain an internal computer. Computers and music have been working together for decades, which is not surprising considering music's mathematical basis (consider frequencies, harmonics, vibrato rates, tunings, etc.). In the mid-70s, microcomputers became inexpensive enough to be built into consumer-priced musical instruments. They were used for everything from sound generation to storing parameters in memory for later recall.

In 1983, the MIDI (Musical Instrument Digital Interface) specification was introduced to better exploit the computers inside these new musical instruments, primarily to ensure compatibility of equipment between manufacturers. MIDI expresses musical events (notes played, vibrato, dynamics, tempo, etc.) as a common "language" consisting of standardized digital data. This data can be understood by MIDI-compatible computers and computer-based musical instruments.

Before electronics, music was expressed exclusively as written symbols. By translating musical parameters into digital data, MIDI can express not only the types of musical events written into sheet music, but other parameters as well (such as amount of pitch bend or degree of vibrato).

## MIDI Hardware

MIDI-compatible devices usually include both MIDI In and MIDI Out jacks, which terminate in 5-pin DIN-style connectors. The MIDI Out jack transmits MIDI data to another MIDI device. As you play a MIDI controller such as a keyboard, data corresponding to what you play exits the MIDI Out jack. Example: If you play middle C, the MIDI Out transmits a piece of data that says "middle C is down." If you release that key, the MIDI Out transmits another piece of data that says "middle C has been released."

If the keyboard responds to the dynamics of your playing, the note data will include dynamics information too. Moving the modulation wheels and pedals attached to many synthesizers will also generate data associated with the wheel or pedal being used.

The MIDI In jack receives data from another MIDI device. In addition to the type of performance data described above, rhythmically-oriented MIDI devices (e.g., drum machines) can often transmit and/or receive additional MIDI timing messages that keep other rhythmically-oriented units in a system synchronized with each other.

An optional MIDI Thru jack provides a duplicate of the signal at the MIDI In jack. This is handy if you want to route MIDI data appearing at one device to another device as well.

## MIDI Message Basics

There are two main types of MIDI messages. Channel messages, which are channel-specific, consist of Voice and Mode messages. System messages, which do not have a channel number and are received by all units in a system, include Common, Real Time, and Exclusive messages.

### Channel Messages: Mode Messages

There are two messages that determine the MIDI mode (i.e., how a device will receive MIDI data). The “Omni” message determines how many channels will be recognized. Omni On means that data from all channels will be received; Omni Off limits the number of channels, usually to one.

The “Mono/Poly” message deals with voice assignment within the synthesizer. In Mono mode, only one note at a time plays in response to voice messages; in Poly mode, as many voices can play notes as are available to play notes.

### Channel Messages: Voice Messages

A synthesizer’s voice is the most basic unit of sound generation. Usually, each voice plays one note at a time, so the number of notes you can play at one time will be limited by the available number of voices. MIDI messages that affect voices include:

**Note On.** Corresponds to a key being pressed down; values range from 000 (lowest note) to 127 (highest note). Middle C is 60.

**Note Off.** Corresponds to a key being released; values are the same as note on.

**Velocity.** Corresponds to dynamics; values range from 001 (minimum velocity) to 127 (maximum velocity). A velocity of 000 is equivalent to a note-off message.

**Pressure.** Indicates the pressure applied to a keyboard after pressing a key. Mono pressure (Aftertouch) represents the average amount of pressure applied by all keys. Poly Pressure produces individual pressure messages for each key.

**Program Change.** Sending a Program Change command from a sequencer or other MIDI keyboard can change synth patches automatically. There are 128 Program Change command numbers.

Also note that not all units number programs consistently. Some number them as 000-127, others as 001-128, and still others arrange programs in banks of 8 programs (such as A1-A8, B1-B8, C1-C8, etc.).

**Pitch Bend.** This “bends” a note from its standard pitch.

**Continuous Controller.** Footpedals, breath controllers, and modulation wheels can vary sounds as you play, thus adding expressiveness. MIDI allows for 64 continuous controllers (these act like potentiometers in that you can choose one of many different values) and 58 continuous/switch (these can act like continuous controllers but some are assumed to choose between two possible states, such as on/off).

Each type of controller is stamped with its own controller identification number. Not all controller numbers have been standardized for specific functions, but the following indicates the current list of assigned controllers. Numbers in parenthesis indicate the controller range.

#	Function
1	Modulation Wheel (0-127)
2	Breath Controller (0-127)
3	Early DX7 Aftertouch (0-127)
4	Foot Controller (0-127)
5	Portamento Time (0-127)
6	Data Slider (0-127)
7	Main Volume (0-127)
8	Balance (0-127)
10	Pan (0-127)
11	Expression (0-127)
16	General Purpose #1 (0-127)
17	General Purpose #2 (0-127)
18	General Purpose #3 (0-127)
19	General Purpose #4 (0-127)
32-63	Least Significant Bits, Controllers 0-31 (0-127)
64	Sustain Pedal (0 or 127)
65	Portamento On/Off (0 or 127)
66	Sostenuto Pedal (0 or 127)
67	Soft Pedal (0 or 127)
69	Hold 2 (0 or 127)
80	General Purpose #5 (0 or 127)
81	General Purpose #6 (0 or 127)
82	General Purpose #7 (0 or 127)
83	General Purpose #8 (0 or 127)
92	Tremolo Depth (0-127)
93	Chorus Depth (0-127)
94	Celeste Depth (0-127)
95	Phase Depth (0-127)
96	Data Increment (0 or 127)
97	Data Decrement (0 or 127)
98	Non-Registered Parameter MSB (0-127)
99	Non-Registered Parameter LSB (0-127)
100	Registered Parameter MSB (0-127)
101	Registered Parameter LSB (0-127)
121	Reset All Controllers (0)
122	Local Control On/Off (0 or 127)
123	All Notes Off (0)
124	Omni Off (0)

125 Omni On (0)  
126 Mono On (0-16; 0=Omni Off)  
127 Poly On (0)

## System Common Messages

Intended for all units in a system, some of these MIDI messages are:

**Song Position Pointer.** This indicates how many “MIDI beats” (normally a 16th note) have elapsed since a piece started (up to 16,384 total beats). It is primarily used to allow different sequencers and drum machines to auto-locate to each other so that if you start one sequencer, the other device will automatically jump to the same place in the song, whereupon both continue on together.

**System Exclusive.** This message (called Sys Ex for short) is considered “exclusive” because different manufacturers send and receive data over MIDI which is intended only for that manufacturer’s equipment.  
*Example:* Sending a QuadraSynth Plus message to an Alesis D4 Drum Module won’t do anything, but the message will be understood by other QuadraSynth Plus. This data often contains information about individual instrument programs.

**Timing Clock.** A master tempo source (such as a sequencer) emits 24 timing messages (clocks) per quarter note. Each device synchronized to the sequencer advances by 1/24th of a quarter note when it receives the clock message, thus keeping units in sync after they’ve both started at the same time. Many devices subdivide this clock signal internally for higher resolution (e.g., 96 pulses per quarter note).

**Start.** Signals all rhythmically-based units when to start playing.

**Stop.** Signals all rhythmically-based units when to stop playing.

**Continue.** Unlike a Start command, which re-starts a sequencer or drum machine from the beginning of a song each time it occurs, sending a continue message after stop will re-start units from where they were stopped.

## General MIDI

General MIDI is an extension of the MIDI standard designed to meet the demands of the ever-growing multimedia industry, and to make simple the act of playing commercially produced MIDI sequences. The General MIDI standard utilizes all 16 channels available in MIDI. The QuadraSynth Plus is a perfect General MIDI companion, since its Mix Mode uses 16 channels. Although many channels are commonly used for specific types of instruments (*Example:* Channel 1 is usually piano, channel 2 is usually bass, etc.), channel 10 is always used for drums.

General MIDI also standardizes the placement of sound types in a sound device’s memory bank. The QuadraSynth Plus’ Preset 4 Bank is designed specifically for General MIDI, and organizes its sounds according to the General MIDI specification. This means, when a sequencer sends a MIDI program change message that is supposed to call up a particular sound, the correct sound on the QuadraSynth Plus will be called up, even if the composer of the sequence used a different sound device. The Programs in Preset Bank 4 use the General MIDI

names (in some cases abbreviated) with the letters GM added to indicate their are designed specifically for use in General MIDI mode.

There are three MIDI registered parameters which the QuadraSynth plus will recognize in Mix Play Mode when General MIDI Mode is enabled. These are:

- **MIDI Registered Parameter 0** (Pitch Bend Sensitivity): This will directly effect the Pitch Wheel Range parameter of all four Sounds of the Program on the received MIDI Channel of the Mix. If the Channel is selected using the MIDI [♦] and [∅] buttons, the word “Edited” will appear next to the Program Number in the display if this parameter is received. However, if you are viewing the Pitch Wheel Range parameter in the display (Program Edit Mode, Pitch Function, Page 2, Quad Knob [2]), the display will not be updated to reflect the new setting. If you go to another Page or Function and then return to it, the display will now reflect the updated setting.
- **MIDI Registered Parameter 1** (Fine Tune): This will directly effect the Detune Amount parameter of all four Sounds of the Program on the received MIDI Channel of the Mix. If this MIDI registered parameter is received, the QuadraSynth will automatically make sure that all four Sounds of the Program have their Detune Type parameter set to “Normal” (Program Edit Mode, Pitch Function, Page 1, Quad Knob [4]). If the Channel is selected using the MIDI [♦] and [∅] buttons, the word “Edited” will appear next to the Program Number in the display if this parameter is received. However, if you are viewing the Detune Amount parameter in the display (Program Edit Mode, Pitch Function, Page 1, Quad Knob [3]), the display will not be updated to reflect the new setting. If you go to another Page or Function and then return to it, the display will now reflect the updated setting.
- **MIDI Registered Parameter 2** (Coarse Tune): This will directly effect the Tune Semitone parameter of all four Sounds of the Program on the received MIDI Channel of the Mix. If the Channel is selected using the MIDI [♦] and [∅] buttons, the word “Edited” will appear next to the Program Number in the display if this parameter is received. However, if you are viewing the Tune Semitone parameter in the display (Program Edit Mode, Pitch Function, Page 1, Quad Knob [1]), the display will not be updated to reflect the new setting. If you go to another Page or Function and then return to it, the display will now reflect the new setting.

(Parts of this appendix are abridged versions of material from Power Sequencing with Master Tracks Pro/Pro 4 and The Complete Guide to the Alesis HR-16 and MMT-8, copyright 1990 and 1989 respectively by AMSCO Publications, and is adapted with permission.)

# MIDI IMPLEMENTATION CHART

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1 — 16	1 — 16	Memorized
	Changed	1 — 16 each	1 — 16 each	
Mode	Default	Mode 3	Mode 3	
	Messages Altered	X * * * * *	X	
Note Number	Default	0 — 127	0 — 127	
	True Voice	* * * * *	0 — 127	
Velocity	Note On	○	○	
	Note Off	○	○	
After Touch	Key's	X	○	
	Ch's	○	○	
Pitch Bender		○	○	
Control Change	0 — 120	○	○	
Prog Change	Default	○ <sup>1</sup> 0 — 127	○ <sup>1</sup> 0 — 127	
	True #	* * * * *	0 — 127	
System Exclusive		○	○	
System Common	Song Pos	X	X	
	Song Sel	X	X	
	Tune	X	X	
System Realtime	Clock	X	X	
	Commands	X	X	
Aux Messages	Local On/Off	X	○ <sup>2</sup>	
	All Notes Off	X	○	
	Active Sense	X	X	
	Reset	X	○ <sup>2</sup>	
	GM On	X	○	
Notes				
<sup>1</sup> ○, X is selectable <sup>2</sup> Recognized as ALL NOTES OFF				

Mode 1: OMNI ON, POLY      Mode 3: OMNI OFF, POLY      ○ : Yes  
Mode 1: OMNI ON, MONO      Mode 4: OMNI OFF, MONO      X : No

## APPENDIX C:

## PARAMETERS INDEX

## Program Parameters

Parameter	Function	Page	Quad Knob	Page in Manual
Aftertouch Depth: Amp	Amp	1	2	61
Aftertouch Depth: ALFO	ALFO	2	3	71
Aftertouch Depth: Filter	Filter	2	2	60
Aftertouch Depth: FLFO	FLFO	2	3	70
Aftertouch Depth: Pitch	Pitch	2	2	57
Aftertouch Depth: PLFO	PLFO	2	3	68
AENV Level	AENV	3	3	77
AENV Trigger	AENV	2	4	77
ALFO Delay	ALFO	1	3	70
ALFO Depth	Amp	1	3	62
ALFO Level	ALFO	2	1	71
ALFO Mod. Wheel Depth	ALFO	2	2	71
ALFO Speed	ALFO	1	2	70
ALFO Trigger	ALFO	1	4	70
ALFO Waveform	ALFO	1	1	70
Attack: Amp	AENV	1	1	76
Attack: Filter	FENV	1	1	74
Attack: Pitch	PENV	1	1	71
Decay: Amp	AENV	1	2	76
Decay: Filter	FENV	1	2	74
Decay: Pitch	PENV	1	2	72
Drum Mode	Misc.	1	1	79
Effect Bus	Effect-Level	1	2	56
Effect Level	Effect-Level	1	1	56
Effect Program	Effect	1	1	56
Effect Type	Effect	1	3	56
FENV Depth	Filter	2	4	60
FENV Level	FENV	3	3	75
FENV Trigger	FENV	2	4	75
FENV Velocity Depth	FENV	3	4	75
Filter Frequency	Filter	1	1	59
FLFO Delay	FLFO	1	3	69
FLFO Depth	Filter	2	3	60
FLFO Level	FLFO	2	1	69
FLFO Mod. Wheel Level	FLFO	2	2	70
FLFO Speed	FLFO	1	2	69
FLFO Trigger	FLFO	1	4	69
FLFO Waveform	FLFO	1	1	69
Keyboard Tracking	Filter	1	2	59
Keyboard Mode	Pitch	3	4	58

Parameter	Function	Page	Quad Knob	Page in Manual
Mod. Wheel Level: ALFO	ALFO	2	2	71
Mod. Wheel Level: Filter	Filter	2	1	60
Mod. Wheel Level: FLFO	FLFO	2	2	70
Modulation Destination	Mod	1–6	2	66
Modulation: Gate Mode	Mod	1–4	4	66
Modulation Level	Mod	1–6	3	66
Modulation: Quantize Mode	Mod	5–6	4	64
Modulation Source	Mod	1	1	64
Name (Program)	Name	1–10	1	79
Output	Level	1	3	56
Pan	Level	1	2	55
PENV Depth	Pitch	2	4	58
PENV Level	PENV	3	3	73
PENV Trigger	PENV	2	4	72
PENV Velocity Depth	PENV	3	4	73
PLFO Delay	PLFO	1	3	67
PLFO Depth	Pitch	2	3	57
PLFO Level	PLFO	2	1	68
PLFO Mod. Wheel Level	PLFO	2	2	68
PLFO Speed	PLFO	1	2	67
PLFO Trigger	PLFO	1	4	67
PLFO Waveform	PLFO	1	1	67
Pitch Wheel Range: Pitch	Pitch	2	1	57
Portamento	Pitch	3	1	58
Portamento Rate	Pitch	3	3	58
Range Lower limit	Range	1	1	62
Range Upper Limit	Range	1	2	62
Release: Amp	AENV	1	4	76
Release: Filter	FENV	1	4	74
Release: Pitch	PENV	1	4	72
Sound Enable	Misc.	1	4	79
Sound Overlap	Range	1	3	63
Sustain: Amp	AENV	1	3	76
Sustain: Filter	FENV	1	3	74
Sustain: Pitch	PENV	1	3	72
Sustain Decay: Amp	AENV	2	2	77
Sustain Decay: Filter	FENV	2	2	74
Sustain Decay: Pitch	PENV	2	2	73
Sustain Pedal: Amp	AENV	3	2	77
Sustain Pedal: Filter	FENV	3	2	75
Sustain Pedal: Pitch	PENV	3	2	73
Time Track: AENV	AENV	3	1	77
Time Track: FENV	FENV	3	1	75
Time Track: PENV	PENV	3	1	73
Track Input	Track	1	1	79
Track Points (0–10)	Track	1, 2–3	2–4, 1–4	79

Tuning: Semitone	Pitch	1	1	57
<b>Parameter</b>	<b>Function</b>	<b>Page</b>	<b>Quad Knob</b>	<b>Page in Manual</b>
Tuning: Detune	Pitch	1	3	57
Tuning: Type	Pitch	1	4	57
Velocity	Filter	1	4	59
Velocity Curve/Crossfade	Amp	1	1	61
Voice Select: Group	Assign Voice	1	1	54
Voice Select: Sound Name	Assign Voice	1	3	54
Volume	Level	1	1	55

## Mix Parameters

Parameter	Function	Page	Quad Knob	Page in Manual
Aftertouch	Range	3	2	43
Controllers A-D	Range	3	4	43
Effect Channel	Effect	1	4	44
Effect MIDI	Effect	1	2	44
Keyboard	Range	2	4	43
MIDI In	Range	2	1	43
MIDI Out	Range	2	3	43
Name (Mix)	Name	1—10	1	44
Pitchbend and Mod Wheels	Range	3	1	43
Program Effect Bus	Effect-Level	1	2	44
Program Effect Level	Effect-Level	1	1	43
Program Enable	Program Assign	1	4	41
Program Output	Level	1	3	41
Program Pan	Level	1	2	41
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Program Select: Number	Program Assign	1	1	41
Program Select: Type	Program Assign	1	3	41
Range Lower limit	Range	1	1	42
Range Upper Limit	Range	1	2	42
Sustain Pedal	Range	3	3	43
Tuning: Octave	Pitch	1	1	42
Tuning: Semitone	Pitch	1	3	42

