Chapter 9
Basic Effects Mode

Introduction

Effects mode puts the power of an entire studio—equalizers, signal processors, and mixers—inside your K2600. It allows you to define processing functions, signal paths, and balances, on sounds created by the K2600 and, in Live mode, sounds from *any* source.

When you're in Program, Setup, or Quick Access mode, you can take advantage of FX Modulation routings (FXMods, which are preset overrides for studio parameters) for real-time control over any aspect of your studio—either from the buttons, sliders, wheels, and pedals on your K2600, or from any MIDI source at all, like a sequencer or a dedicated controller.

Effects mode provides up to five individual effects processors. Four of these are designed to operate on their own individual buses, and the fifth, the "Auxiliary" processor, is designed to be global.

When the K2600 is being used multi-timbrally, Effects mode can provide separate processors for each of several instruments. For example, let's say four K2600 channels are in use, under the control of a sequencer. Each instrument on each channel can have its own processing: flanger for the piano, delay for the sax, compression for the bass, and tight reverb for the drums. Then all of these signals could go through a global Aux processor, where they could be given a room reverb. At the outputs of the K2600, the reverb could show up on one pair, while the other instruments' dry or processed (prereverb) signals could show up at the others, either in mono or stereo. Or the entire mix, carefully balanced and panned, could appear at a single pair, ready to be recorded or played through a PA.
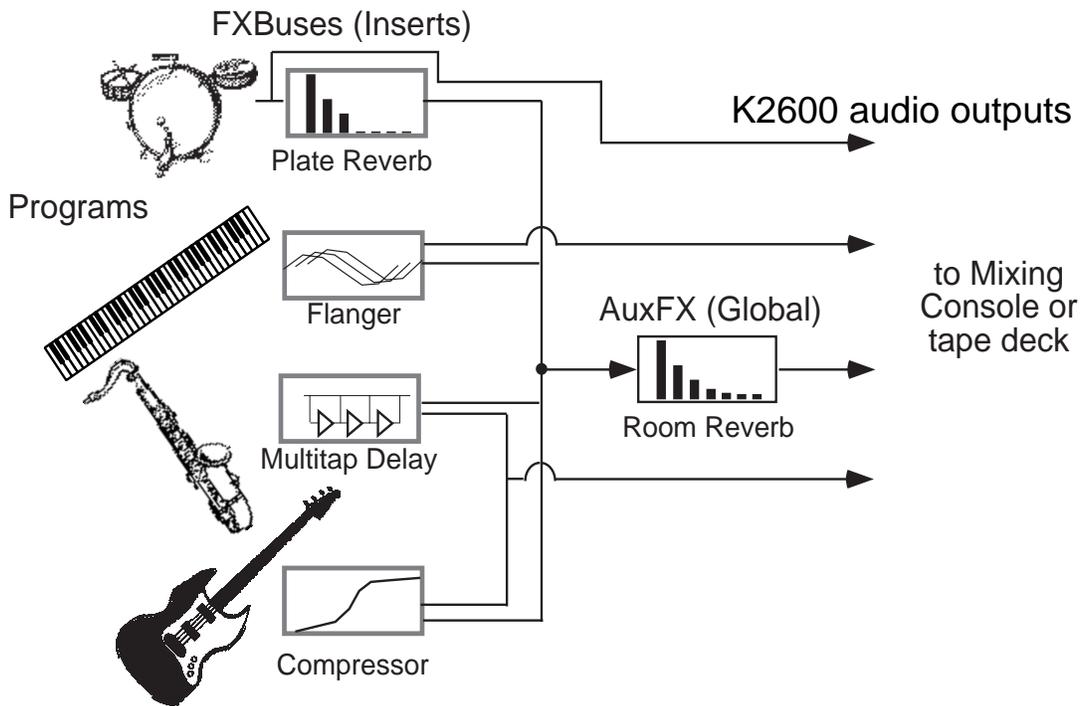
Figure 9-1   A typical KDFX Studio

Alternatively, in a live performance setting, you can use the KDFX in Setup mode as an entire orchestra, with different instruments layered on top of each other and mapped to different parts of the keyboard, all with their own signal processing—and that signal processing can change completely in an instant when you call up a new setup.

These are just two of the huge variety of scenarios possible with KDFX. The structure of KDFX is so flexible that you should never run out of ideas for how it can be used.

Terminology

Before starting to work with Effects mode, take a minute to familiarize yourself with the relevant terms. Understanding the words will help you get the concepts more quickly. Read this chapter first, and refer to it later if something isn't clear.

Studio

A studio is the entire Effects-mode environment, consisting of inputs, FXBuses, an Aux Bus, FX presets, parameter settings, overrides, and outputs. One studio is current at a time in Effects mode. Studios are objects, like K2600 programs, and have a number. They can be linked to programs or setups using the FX Mode setting. The K2600 comes with a large number of factory studios. You can modify them or create new ones and store them in RAM.

FXBus (also called Insert FXBus)

A signal path with some kind of processing —a delay, reverb, flanger, etc.—on it. It has stereo inputs and outputs, and contains an FX preset that determines the kind of processing to be applied. A studio has four insert FXBuses, each with its own FX preset, as well as a fifth FXBus, known as the Aux bus.

Aux FX Bus (Aux Bus)

A separate bus from the insert FXBuses, which is placed in the signal path after the output of the insert FXBuses, so that it can act as a global processor.

FX Preset

Determines the type of signal processing that is present on an FXBus or the Aux Bus. FX presets consist of an algorithm, plus the settings of the parameters associated with that algorithm. Any number of FX presets can use the same algorithm. The K2600 comes with a large number of FX presets, and you can modify them or create new ones and store them in RAM. Algorithms, however, are stored in ROM, so you can't change them. Each FXBus and the Aux Bus gets its own FX preset, so up to five FX presets can be active in a studio at a time.

Algorithm

A specific type of signal processing, like a hall reverb, plate reverb, chorus, flanger, pitcher, compressor, or rotary speaker, which is at the core of an FX preset. KDFX comes with a large variety of algorithms, which are stored in ROM, and are not user-definable. Additional algorithms, supplied by Kurzweil, can be loaded in from disk when they become available. Algorithm parameters (RT_{60}, delay feedback, pitch change, etc.) *are* user-definable; the K2600 stores the values of those parameters in RAM as part of an FX preset.

Size/PAUs

How big an algorithm is, in terms of how much processing power it needs to operate. Size is measured in Processor Allocation Units, or PAUs. The simplest algorithms require only 1 PAU, while more complex ones require 2, 3, or even 4. The total number of PAUs available to the four insert FXBuses is 4. PAUs can be allocated automatically as FX presets are assigned to FXBuses, or manually by the user. The Aux Bus has its own set of 3 PAUs, which are not shared with the insert FXBuses.

Parameters

Refers to the user-controlled settings for the different characteristics of an algorithm. For example, the user can set the reverb time (RT_{60}) of an algorithm to **3.5s**, or the delay feedback of a delay line to **90**%, or the dynamic ratio of a compressor to **10:1**. Parameters are stored, along with the algorithm they modify, as part of an FX preset. In certain cases, the parameter settings within a studio can be overridden, either using FXMods or bus overrides.

FXMods

FXMods give you real-time control over many of the parameters within a studio. Parameters on any of the pages of the Studio Editor can be controlled by MIDI commands—such as physical controller input or sequencer data—or by internal K2600 functions like LFOs, envelopes, clocks, or key states. FXMods are not part a studio or FX preset; they're part of a program or setup.

A program or setup can have up to 18 FXMods, as well as two dedicated LFOs, ASRs, and FUNs for further effects control. The FXMods and the LFOs, ASRs, and FUNs are defined on seven FX pages in the Program and Setup Editors.

Bus Overrides (or BusMods)

Bus overrides allow parameters within an FX preset to be controlled on the FXBus Editor page in the Studio Editor, outside the FX Preset Editor page. Any two parameters in an FX preset can be brought out to its FXBus page. Bus overrides are stored as part of the studio, not as part of the FX preset. They are useful when an existing FX preset is close to what you want, so that you can tweak it without having to create a new FX preset.

FX Mode

The effects mode is determined by the value of the FX Mode parameter, which is found on the Effects-mode page. It determines how the K2600 selects studios when you change programs or setups, and determines whether you have real-time control over studio parameters—in other words, whether FXMods are active.

If the value of FX Mode is **Program** or **Auto**, then as you change programs in Program mode, the K2600 also loads the studio linked with that program. This activates all the FXMods defined within the program.

If the value of FX Mode is **Setup** or **Auto**, then as you change setups in Setup mode, the K2600 also loads the studio linked with that setup. This activates all the FXMods defined within the setup.

If the value of FX Mode is **Auto**, and the value of FX Channel is **Current**, then when you're in Program, Setup, Quick Access, or Song mode, programs, setups and songs automatically use their corresponding studios. In Program, Setup, and Quick Access modes, the studio corresponds to the current program or setup. In Song mode, the studio corresponds to the program on the song's assigned effects channel (which is determined by the value of the EffectChan parameter on the COMMON page in the Song Editor).

If the value of FX Mode is **Master**, changing programs or setups does not load an associated studio; the current studio is defined by the Studio parameter on the Effects-mode page. Any FXMods defined in the current program or setup are inactive.

Studio Editor

To get to the Studio Editor, go to the Effects-mode page, highlight the current studio, and press **Edit**. The Studio Editor contains the following pages:

The INPUT page, where signals coming from the K2600's four stereo output buses are routed to one or more FXBuses.

The FXBUS page, for assigning FX presets to the four FXBuses, and for defining bus overrides.

The AUXFX page, for assigning an FX preset to the Aux Bus, and for defining bus overrides.

The OUTPUT page, where the signals coming from the FXBuses and Aux bus are routed to the K2600's eight physical outputs (analog and digital).

The FX Preset Editor, which is nested within the Studio Editor, and which contains three pages. The FX Preset Editor is where you select algorithms and set parameters for the FX presets, as well as doing administrative things like naming and saving. You can get to the FX Preset Editor from the either the FXBUS page or the AUXFX page, by highlighting the current FX preset and pressing **Edit**.

Name, Save, Delete, and **Dump**, for doing file management on your collection of studios.

You can also get to the Studio Editor from the Program and Setup Editors, by pressing **Edit** when the Studio parameter is selected (this is the most convenient method for getting into the Studio Editor). In both the Program and Setup Editors, the Studio parameter is on the KDFX page.

The Effects Mode Page

```
EffectsMode     XPose:0ST    <>Channel:1
FX Mode:Auto
FX Chan:Current
Studio :199 Default Studio


Dither :Medium        DigOut: 16 Bit
Octav- Octav+ Panic            Chan-  Chan+
```

Parameter	Range of Values	Default
FX Mode	Program, Setup, Auto, Master	Auto
FX Chan	None, 1–16, Current (varies according to FX Mode value)	Current
Studio	Studio List	199 Default Studio
Dither	None, Flat, Minimum, Medium, Maximum	Medium
DigOut	16 Bit, 20 Bit	16 Bit

FX Mode

This parameter determines which studio the K2600 selects when you select programs or setups. It also determines whether FXMods are active. There's a complete description on page 9-4. **Auto** is the most commonly-used value for FX Mode, since it's the most flexible.

Effects Channel (FX Chan)

This parameter is closely linked to the FX Mode parameter—the values available for FX Chan depend on the setting for FX Mode. FX Chan affects both studio selection and real-time control of KDFX—again, depending on the value of FX Mode.

When FX Mode is Master

The effects channel is irrelevant when FX Mode is **Master**. KDFX is under the control of the studio you select with the Studio parameter. No FXMods apply.

When FX Mode is Program

The available values for FX Chan are **Current**, and **1–16**. When FX Chan is **Current**, studio selection is determined by whatever program is assigned to the current K2600 channel (as shown in the top line of the display in Program mode or Effects mode). That program's FXMods are also enabled, and they respond to MIDI Controller messages received on the current channel.

When FX Chan is any value from **1** to **16**, studio selection is determined as follows: in Program mode it's determined by the program assigned to that channel; in Setup mode, it's determined by the program in the zone assigned to that channel. FXMods respond to MIDI Controller messages as follows: in Program mode, the FXMods of the program on the channel specified by FX Chan respond to messages on that channel; in Setup mode, the FXMods of the program in the zone using the channel specified by FX Chan respond to messages on that channel.

The Studio parameter disappears, since studio selection is under program control.

When FX Mode is Setup

The only available value for FX Chan is **None**, since studio selection and FXMods are determined by the program in Zone 1 of the current setup. The FXMods of the program in the zone using the channel specified by FX Chan respond to MIDI Controller messages on that channel. The Studio parameter disappears, since studio selection is under setup control.

When FX Mode is Auto

The available values for FX Chan are **Current**, and **1–16**. When FX Chan is **Current**, studio selection and FXMods are determined as follows: in Program mode, it's determined by the program assigned to the current K2600 MIDI channel; in Setup mode, it's determined by the program in Zone 1 of the current setup; in Song mode (or during song playback regardless of mode), it's determined by the program on the channel designated as the song's effects channel—as specified by the EffectChan parameter on the COMMON page in the Song Editor. FXMods respond to MIDI Controller messages as follows: in Program mode, the FXMods of the program on the K2600's current channel respond to messages on that channel; in Setup mode, the FXMods of the program in Zone 1 of the current setup respond to messages on the channel used by Zone 1.

When FX Chan is any value from **1** to **16**, studio selection is determined as follows: in Program mode it's determined by the program assigned to that channel; in Setup mode, it's determined by the program in Zone 1 of the setup (ignoring the FX CHan setting). FXMods respond to MIDI Controller messages as follows: in Program mode, the FXMods of the program on the channel specified by FX Chan respond to messages on that channel; in Setup mode, the FXMods of the program in Zone 1 of the setup respond to messages on that channel (again, ignoring FX Chan).

Studio

When FX Mode is **Master**, the Studio parameter selects the studio for the entire K2600. When FX Mode is **Program** or **Setup**, this parameter is unavailable, since setup selection and FXMods are determined by program or setup selection. When FX Mode is **Auto**, setup selection and FXMods are under program or setup control, but the Studio parameter is still available; its value reflects the studio assignment for the program or setup that was current before you entered Effects mode. You can change the value of the Studio parameter while in Effects mode, so you can hear how different studios affect the current program or setup, without having to enter the Program or Setup Editor. Any changes you make here revert to their previous settings when you exit Effects mode.

Dither

Dithering adds a small bit of noise to a digital signal to lower quantization distortion. Use the Dither parameter to select different digital noise floor characteristics. No setting is superior to another—each one is a tradeoff between perceived noise level and artifacts.

Flat—the digital noise floor is spectrally flat, so it's a good choice for resampling the K2600's own output, as there will be no addition of noise in the process. This is sometimes known as triangular dither.

Minimum, **Medium**, **Maximum**—these utilize noise shaping in varying degrees. The noise floor has been essentially equalized to make it softer at midrange frequencies, and louder at bass and treble frequencies. The overall power level of the noise is actually higher than at the **Flat** setting, but due to the ear's spectral response at low levels, the noise floor appears lower at these settings.

These values are not as useful as **Flat** for resampling, since the boosted noise may become quite noticeable if the sample is played transposed down a couple of octaves. In addition, repeated resampling would cause buildup at the boosted frequencies.

None—no dither. This is provided primarily for completeness. You generally never want to use this setting, unless you are studying dither in a classroom, or you specifically want to hear digital artifacts. Low-level signals are extremely distorted using this setting.

Digital Word Length (DigOut)

This parameter is available only if you have the sampling option in your K2600.

The K2600 is capable of producing 20-bit digital audio signals. Normal 16-bit digital audio provides a maximum dynamic range of about 96 dB; adding the extra four bits adds some 24 dB to the dynamic range. There's an increasing number of products on the market that can handle 20-bit digital signals, including tape and hard-disk recorders, mixers, and signal processors, and the K2600 can talk to these devices with the highest degree of fidelity.

The DigOut parameter toggles between 16-bit and 20-bit operation. The value for DigOut determines the word length used for the KDS eight-channel output, and also for the standard digital output, provided it is in Direct mode (as set on the SampleMode page).

If you are using your K2600 with a Kurzweil DMTi, set DigOut to **16 Bit**, since the DMTi currently operates only in 16-bit mode. If you're connecting the digital output to a 20-bit (or more) capable device, set DigOut to **20 Bit** and you can take advantage of the significantly reduced noise floor.

Note that the setting of DigOut doesn't affect any of the K2600's inputs: those are always operating in 16-bit mode. Likewise, DigOut doesn't affect the K2600's own DACs (digital-analog converters). They always operate in 18-bit mode.

The Structure of Kurzweil Digital Effects (KDFX)

The Studio

All Effects-mode functions are contained in a studio. Only one studio is active at a time.

Each studio has four stereo or eight mono inputs. The sources for these inputs are the four output pairs available in two places: the Pair parameter on the OUTPUT page in the Program Editor, and the Out parameter on the CN/PRG page in the Setup Editor. In both cases, the available values are KDFX-A, KDFX-B, KDFX-C, and KDFX-D. Instead of going directly to the

K2600's physical outputs, these program outputs go to the inputs of a studio. Only after going through the studio does the audio output appear at the physical outputs. The inputs to the studio can come from one multi-layered program, or from several programs, or from the K2600's own sample input when the instrument is in Live mode.

The input signals pass through an input routing system, as specified by the settings on the INPUT page in the Studio Editor. Here, the signals go through individual two-band equalizers, or EQs. Then each input, mono or stereo, is routed to any two of the four FXBuses.

Each of the FXBuses contains its own signal-processing program, called an FX preset. Each FX preset has a set of parameters: for example the RT_{60} value on a reverb, or the Feedback level on a delay line. These parameters can be fixed as part of the FX preset, or they can be externally controlled, from one of two different places. The four FXBuses are also called Insert FX, because in a conventional studio, that's where they would be found: in the insert loop of a mixer, between the channel input and the Mix bus.

There is also a fifth FX preset, which is located on the Auxiliary FX Bus (the Aux bus). The Aux bus follows the four main FX presets in the signal path, and is normally configured as a global processor.

Each FX preset consists of an algorithm, modified by user-definable parameters. An algorithm is a processing function, like a reverb, flanger, or compressor; or a combination of processing functions in a particular order, like a flanger followed by a delay followed by a reverb. The algorithms themselves are fixed in ROM, like Kurzweil ROM samples, but you can change the values of their operating parameters.

Each algorithm requires a certain amount of processing power, which is expressed in Processing Allocation Units (or PAUs). Simple algorithms require 1 PAU, while more complex algorithms require up to 4 PAUs. The amount of processing power available in each FX preset is set by its Allocation parameter. When you are selecting an FX preset for an insert bus, the number of PAUs its algorithm requires appears on the display, so you can keep track of how many PAUs are in use.

PAUs are shared among the four insert buses. There is a limit to the total number of PAUs that the insert buses can use, and that limit is four. PAUs can be manually preassigned to specific FXBuses, or using "Auto" mode they can be assigned automatically as FX presets are assigned to the buses. The Aux bus has a separate set of PAUs—three of them—which are *not* shared with the insert buses.

Finally, the outputs of the FX presets are passed through to an output routing system—as specified by the settings on the OUTPUT page in the Studio Editor—where they are sent to the physical outputs of the K2600.

The following equation summarizes studio structure:

Studio = EQs + Input-page settings + FX presets + Output Editor settings

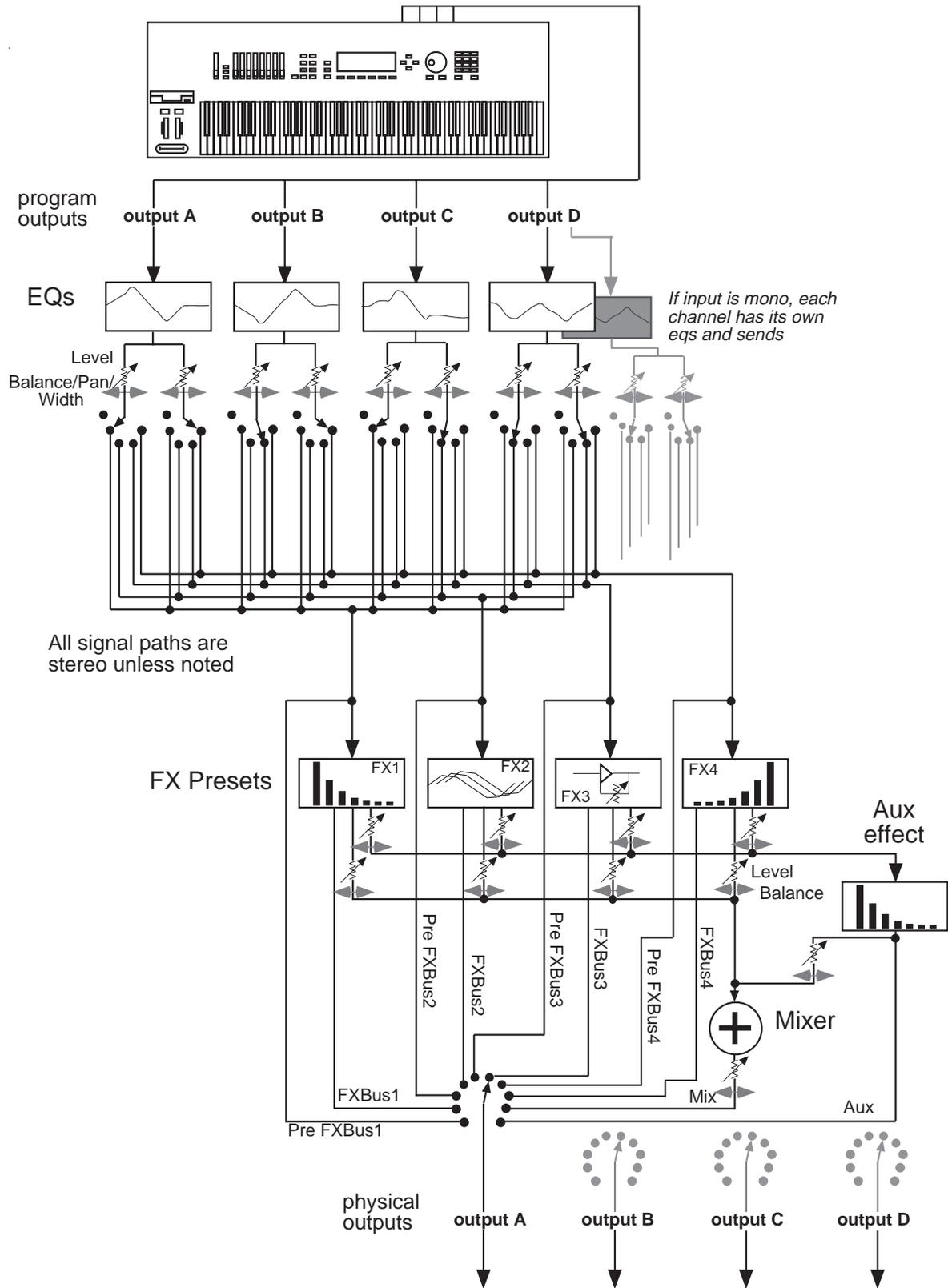The next page shows a schematic overview of studio structure.

Figure 9-2   KDFX structure

Normal Studio Structure

Many of the studios provided in ROM follow an overall organizational plan, which uses Effects mode's resources efficiently and clearly. While you're by no means required to follow this structure when creating your own studios, it's a good idea to get familiar with it, to see how Kurzweil's own engineers have approached the issue of studio organization.

Inside the ROM programs and setups, the outputs KDFX-A through KDFX-D are assigned based on the type of effects processing that would most likely be appropriate for that sound.

- Input A/FXBus1 contains a relatively simple reverb with a low Size requirement.

- Input B/FXBus2 contains an effect that does not increase the "length" of the sound (that is, no reverb or delay), something like chorus, flange, distortion, pitcher, or EQ.

- Input C/FXBus3 contains effects that take up lots of time, such as delays, and delays with reverb.

- Input D/FXBus4 is dry.

- The Aux bus contains a larger reverb (Size:3), a compressor, or a graphic EQ.

Software Organization

Like K2600 programs, the software user interface of a studio is organized in a "top-down" way: A studio is an "object" in K2600 terms, and the FX presets within a studio are also objects, "dependent" to the studio, the way a keymap is to a program. Studios and FX presets that you modify or create are stored in program RAM. A studio contains up to five FX presets. The same way that one keymap can be used in multiple programs, a particular FX preset can be used in multiple studios.

Like ROM samples in the K2600, effects algorithms are stored in ROM and are unchangeable. Each FX preset contains one algorithm. Just as you can use the same sample in more than one keymap, you can use the same algorithm in as many FX presets as you like. Although you cannot modify algorithms, additional effects algorithms will be available from Kurzweil on disk.

Controlling Effects

Studios can be called up from the front panel, or they can be assigned to specific K2600 programs or setups. If you set the FX Mode parameter on the Effects-mode page to **Program**, **Setup**, or **Auto**, then changing a program (if the current channel agrees with the FX Channel) or setup will select the studio associated with the new program or setup. Of course, just as you can use the same keymap in multiple programs, you can use the same studio in multiple programs or setups. Setting FX Mode to **Master** means that the studio does not change with the program or setup.

Studio parameters are set in the Studio Editor and are initially set up with fixed values, but they can be also be controlled in real time by a wide range of control of sources, including K2600 onboard knobs, sliders, and ribbons; various internal software functions; and external MIDI commands like those coming from a sequencer or a dedicated controller.
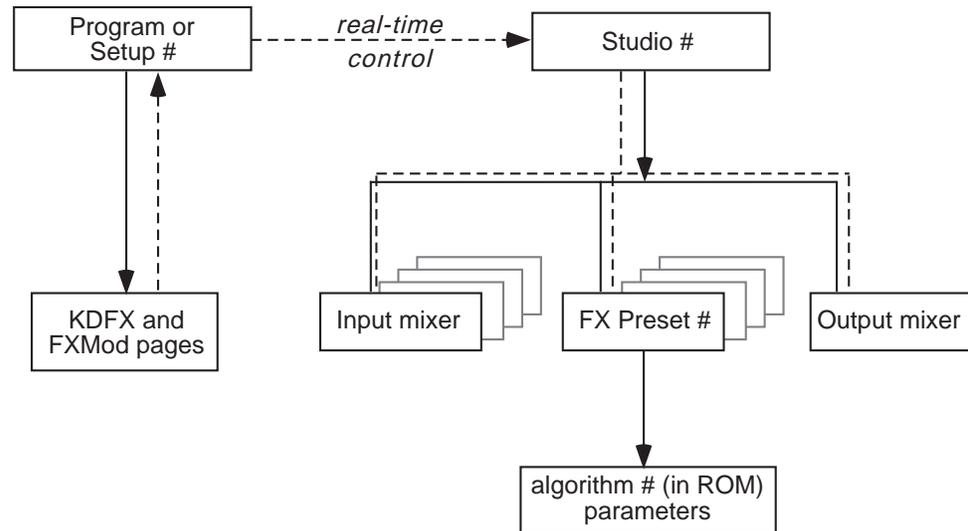
Figure 9-3   KDFX Software organization

Controlling Effects with a Sequencer

A useful technique for sequencer users is to set up the program controlling the studio parameters to be a dummy program with no keymaps but with all of the FX Mods you need in place—this program produces no sound by itself, and exists only to control the studio. That way you can use a dedicated MIDI channel for studio control. See page 15-29 and page 12-21 for more information.

Controlling Effects with SysEx messages

You can also control KDFX by sending MIDI system-exclusive (SysEx) messages to the K2600. See Appendix B in the *Musician's Reference* for specific information.

A Tour of Effects Mode

Let's take a tour through several studios. After you do this, you should have a pretty good idea of what it's like to work with Effects mode. You will still, of course, have many questions—answering them is the job of the rest of this manual.

Load the Tutorial files

From the K2600 Demos disk that came with your K2600, load the file **KDFXTUTR.K26** into bank 200...299. You can use a different bank if you like, but then your numbers and the ones in this chapter will be different.

1. Insert the disk into the drive

2. Press **Disk** to go into Disk mode

3. Set Current Disk to **Floppy**

4. Press **Load**

5. Cursor down to **KDFXTUTR.K26**

6. Press **OK**

7. In the "Load this file as:" dialog, select **200...299**

8. Press **OK**

9. Press **OverWrt** (this will erase all objects in the 200s bank, so you should save anything you want to keep before doing this; press Cancel if you want to save objects before proceeding).

10. Press **Exit** to get back to Program mode.

A Simple Studio

Call up Program #199 on your K2600. In Program mode, either scroll the Alpha wheel to Program 199 (Default Program), or press **1-9-9-Enter** on the Alphanumeric pad.

Now go into Effects mode by pressing the **Effects** button, and you'll see this page:

```
EffectsMode    XPose:0ST        <>Channel:1
FX Mode:Master
FX Chan:None
Studio :199 Default Studio
Effect :1 Sweet Hall
Wet/Dry:0%Wet
Dither :Flat          DigOut :16 Bit
Octav-  Octav+  Panic          Chan-  Chan+
```

If the page looks very different from this, then put the cursor on the FX Mode parameter and scroll the Alpha wheel until it says **Master**. Now use the **Down** cursor button to highlight the Studio parameter. Scroll the Alpha wheel until the Studio parameter's value is **200 Simple**.

The FXBus Page

Now press **Edit**, and this page appears:

```
Edit:Studio:FXBUS Size:1 Free:3 <>FXBus:1

FX1→ 200*4 Tap BPM ──────→ Aux → Mix →

Wet/Dry    :35%wet    Lvl:3.5dB Lvl:-4.5d
Tempo      :120BPM    Bal:0%    Bal:0%
Allocation:Auto
 <more   INPUT   FXBUS   AUXFX   OUTPUT  more>
```

This is the FXBus page for FXBus1. It is where an FX preset is assigned to the FXBus. Put the cursor on the box containing **200*4 Tap BPM**—this is the current FX preset, a four-tap delay whose speed is expressed in terms of tempo (Beats Per Minute). Use the Alpha wheel to scroll through the many other FX presets that come with KDFX. Like all K2600 objects, those that are in RAM (like this one) will have an asterisk in their name, and those that are in ROM will not. There are three more FXBuses, which you can view by pressing the **Chan/Bank** buttons. In this studio they are all empty (No Effect).

Go back to **4 Tap BPM** on FXBus1, and play the piano sound from your keyboard. The arrow next to FX1 flashes, showing that there is audio passing through this FXBus. The arrow keeps flashing as long as the FXBus is processing audio.

Below the FX preset selector is a Wet/Dry control, which determines how much of the signal will pass through the FX preset. Below that is a Tempo control, which sets the timing of the delays. These parameters are called "bus overrides," because they override parameters which are actually inside the FX preset itself—these parameters can be adjusted from inside the FX preset, or they can be set from out here, where they are much more convenient. If you change FX presets, these values change, because their values inside the various FX presets are all different. More about bus overrides a little later in this chapter.

Levels

To the right are two sets of level controls from the FX preset to the output mixer. The first set, Lvl and Bal, determines how much of the sound will go to the global or Auxiliary effects bus, and how its two channels are balanced. On this FXBus, the signal to the Aux bus is boosted 3.5 dB. The second set determines how much of the sound goes to the Mix bus. On this FXBus, the Mix signal is attenuated -4.5 dB.

Allocation

The Allocation parameter determines how many processor allocation units (PAUs) are reserved for this FXBus. The number of PAUs an FX preset uses is dependent on the algorithm at the core of the FX preset. Algorithms can use anywhere from 1 to 4 PAUs, depending on their complexity. As you scroll through the FX presets, the number of PAUs required by each one is shown on the top line of the display (Size:), along with the number of PAUs that are available (Free:) for other algorithms.

The four insert FXBuses have 4 PAUs to share among them, so if any bus uses more than one PAU, it means that some buses cannot be assigned an FX preset. This is a very common situation, as you shall see. The Auxi bus has its own set of 3 PAUs, which are completely independent and are not shared with the insert FXBus PAUs.
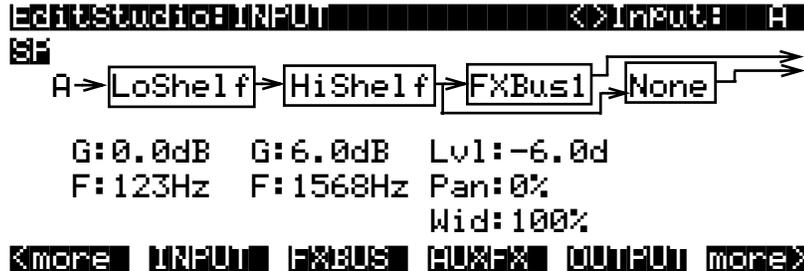
You can preassign a PAU value to an FXBus, in which case any FX presets that require more PAUs than you have given the bus cannot be loaded into the bus. If you try to put an FX preset into a bus that requires more PAUs than are currently available on that bus, the preset's name appears in parentheses—exactly the way a KB3 program appears if you try to select it on a channel that's not the KB3 channel.

In most factory studios, the Allocation parameters are set to Auto, in which case PAUs are assigned dynamically as you assign FX presets to the various buses. As you unassign FX presets from buses, or assign FX presets with smaller PAU requirements, the PAUs freed up are automatically reassigned to other buses where they are needed.

A value of Auto for this parameter allocates PAUs to lower-numbered FXBuses first, as needed.

The INPUT Page

Press the soft button labelled **INPUT**. This page appears:

```
EditStudio:INPUT           <>Input:   A
SP
  A→ LoShelf → HiShelf → FXBus1 → None ────────→

     G:0.0dB   G:6.0dB   Lvl:-6.0d
     F:123Hz   F:1568Hz  Pan:0%
                         Wid:100%
  <more   INPUT   FXBUS   AUXFX   OUTPUT   more>
```

This is the INPUT page. It is showing Input A, as indicated both on the left side and in the upper right corner—use the **Chan/Bank** buttons to view the other three inputs. Input A is the first stereo signal pair coming from the K2600 Program Editor's Output section. Depending on how the K2600 is set up, this could be a single layer of a single program, or multiple layers, or multiple programs, or one or more zones from a setup, or the output from one or more MIDI channels.

The **S** at the upper left says that the Input A is being handled as a stereo feed; this can be changed to two mono feeds. The P means that the stereo feed has a Pan control; you can choose to make this a Balance control instead, by setting this parameter to **SB**.

If you play on the keyboard, you can see the arrow next to the letter A flashing, as audio is being passed through this part of the studio. The arrow on this page flashes only as long as there is an input signal present.

Equalization

The first two blocks are the low and high EQs on the input. Put the cursor on either box and turn the Alpha wheel, and you will see the options you have available for types of EQ—these include **None**, which bypasses that EQ. The first block has more choices than the second.

The G underneath each block is its Gain; **0.0dB** is unity gain; the signal passes through without change. (There is no Gain parameter when a block is set to LoPass or HiPass.) F is the equalizer's frequency. In this input section, the high frequencies are boosted 6.0 dB above 1568 Hz.

Sends

The third and fourth blocks determine the destinations of the Input A signal: each block can be set to route the signal to any of the four insert FXBuses, or to None. You cannot, however, set both blocks to the same destination.

The Lvl control is the FXBus send; it sets the level of the signal to the FXBus above it. In this input section, the level is backed off 6.0 dB, to compensate for the treble boost in the equalizer, so that the signal doesn't overload the FXBus.

Pan determines the position of the signal respective to the left and right sides. Width (which is not shown when you are using mono inputs) determines how much the left and right sides' signals will be separated or blended.

The AUXFX Page

Press the **AUXFX** soft button. This page appears:

```
EditStudio:AUXFX Size:3 Free:0

Aux→ 204*Big Chamber ──────→ Mix ─┐
                                   └→

Wet/Dry   :58%wet          Lvl:0.0dB
Out Gain  :1.5dB           Bal:0%


<more   INPUT   FXBUS   AUXFX   OUTPUT   more>
```

This is the Global AUXFX page, and shows us what is happening on the Auxiliary effects bus. The Aux bus is a second processor, which follows the four insert FXBuses. It has its own FX preset, with bus overrides, and level and balance controls to feed it into the Mix bus. It doesn't share PAUs with the FXBuses; it has three PAUs of its own, and consequently doesn't have an Allocation parameter. The Aux bus can be routed all by itself to an output, as we'll see. In this studio, the Aux bus contains a chamber reverb.

The OUTPUT Page

Press the **OUTPUT** soft button.

```
EditStudio:OUTPUT

Mix Lvl:0.0dB        Output A:Mix
Mix Bal:0%           Output B:FXBus1
                     Output C:Off
                     Output D:Off


<more   INPUT   FXBUS   AUXFX   OUTPUT   more>
```

The OUTPUT page is the interface to the real world. It determines which of the signals going through the various effects buses show up at the K2600's four sets of *physical* outputs: A, B, C, and D. These four outputs, all stereo, are both analog and digital (through the KDS bus). Output A also goes to the K2600's AES/EBU digital output.

In this studio, Output A is carrying the Mix, that is, the combination of the outputs of the four FXBuses (only one of which is in use) and the Aux bus. Output B is carrying FXBus1, which is the signal after it passes through the delay on FXBus1, but before it gets to the reverb on the Aux bus. The other outputs are carrying no signal.

*Note: If you're using the Mix audio outputs, keep in mind they carry the summed signals of audio outputs A through D. Normally you would assign each of the audio outputs differently. In the example above, you might set Output B to **Off**, or Output A to **AuxFx**, to avoid applying the FXBus1 effect to the entire program.*

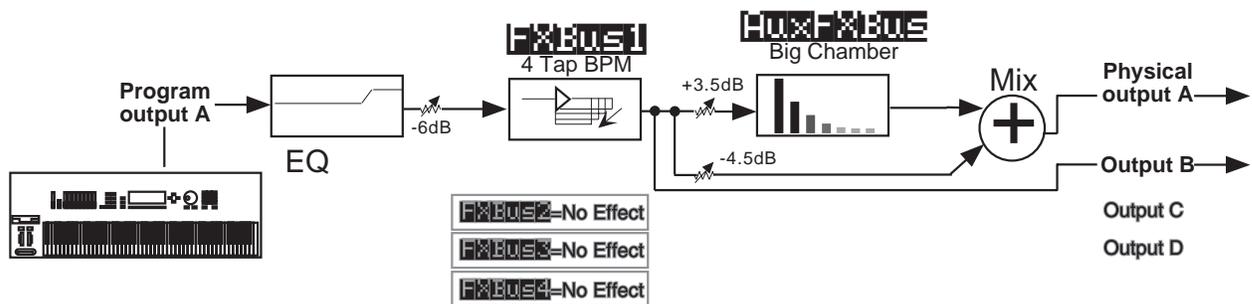Here's a diagram of what this studio looks like:

Figure 9-4   Structure of Studio 200*

A more complex Studio

Press **Exit** to get to the Effects-mode page, and again to get to Program mode. Call up Program **201 ElecPno/Distgtr**. This is a split keyboard program: On Layer 1, which has been assigned to the KDFX-A outputs, is an electric piano, whose key range goes up to B4. On Layer 2, which goes to the KDFX-B outputs, is a distorted guitar, whose key range starts at C5.

Press the **Effects** mode button and make sure that FX Mode is **Master**, then call up Studio **201 RngMd/PFD/Plt**. Press **Edit** to look inside of this studio.

FXBus1

On the first FXBus is an FX preset called **201*Tut Ring Mod**. The algorithm this uses is a ring modulator, which is a processor that takes the sounds coming into it and combines them with

static waveforms by adding and subtracting their frequencies, thereby creating interesting nonharmonic effects. Notice that this FX preset uses 1 PAU.

```
Edit:Studio:FXBUS Size:1 Free:1 <>FXBus:1

FX1→201*Tut Ring Mod    →Aux   Mix

Wet/Dry   :100%wet  Lvl:0.0dB Lvl:0.0dB
Out Gain  :0.0dB    Bal:0%    Bal:0%
Allocation:Auto
<more  INPUT  FXBUS  AUXFX  OUTPUT  more>
```

As you play on the lower part of the keyboard, the arrow next to FX1 flashes, but as you play on the upper part it doesn't. That's because the upper part of the keyboard (the guitar sound) is routed to a different FXBus.

Bus Overrides

There are two FX preset parameters on this page: Wet/Dry mix and Output Gain. These parameters actually exist inside the FX preset, and are placed on this page so you can control them without editing the FX preset itself. These are bus overrides, as described earlier. You can change both the value of the override parameter *and* the name of the parameter that shows up in the bus override: to select a different parameter, simply highlight its name and scroll the Alpha wheel. As you do so, you will see the other parameters inside the FX preset that can be brought out to this page.

These overrides (that is, which parameters are available, and their values) are stored as part of the studio, not as part of the FX preset, and therefore you don't have to create new FX presets just because you want to change a couple of parameters. There are two bus overrides available for each of the four insert FXBuses and the Aux bus.

If you don't want any parameter control on this page, select the parameter's names, then scroll the Alpha wheel until you see **None**.

The Wet/Dry value is **100%**, and the Output Gain is **0.0dB**—unity. The signal on this FXBus goes both to the Aux bus and the Mix bus at unity gain (**0.0 dB**).

FXBus2

Press the **Chan/Bank Up** button to get to FXBus2.

```
Edit:Studio:FXBUS Size:2 Free:1 <>FXBus:2

FX2→202*Ptc+Flg+Dly14538→Aux   Mix

Wet/Dry   :90%wet   Lvl:-9.5d Lvl:0.0dB
Out Gain  :-2.5dB   Bal:0%    Bal:0%
Allocation:Auto
<more  INPUT  FXBUS  AUXFX  OUTPUT  more>
```

On this bus is an FX preset called **Ptc+Flg+Dly145BP**, which uses a combination algorithm that has a pitch shifter, a flanger, and a delay all rolled into one. The **145BP** part refers to the fact that the delay times are based on a tempo of 145 BPM,

As you play the guitar sound, the arrow next to FX2 flashes, and it keeps on flashing as long as the various feedback delays are sounding. It doesn't flash when you play on the lower part of the keyboard.
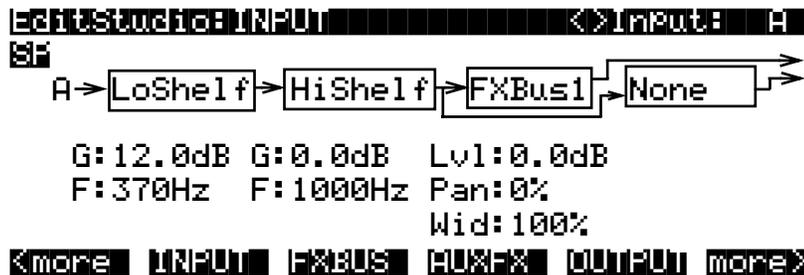
This FX preset uses 2 PAUs. Along with the 1 PAU in use on FXBus 1, this makes 3 of the 4 available PAUs accounted for, so the Free parameter has a value of **1**.

The output configuration of this FXBus has the signal going to the Aux bus attenuated by -9.5 dB, and going to the main Mix bus at unity gain.

The other two FXBuses are empty, which you can confirm by pressing the **Chan/Bank** buttons a few times.
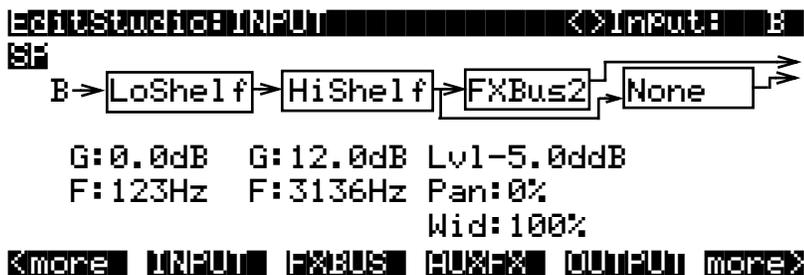
Inputs

Now let's look at the inputs to the FXBuses. Press the **INPUT** soft button, and see this page:

```
EditStudio:INPUT              <>Input:   A
BP
   A→⎡LoShelf⎤→⎡HiShelf⎤→⎡FXBus1⎤→⎡None⎤
                                         
    G:12.0dB  G:0.0dB   Lvl:0.0dB
    F:370Hz   F:1000Hz  Pan:0%
                        Wid:100%
 <more  INPUT  FXBUS  AUXFX  OUTPUT  more>
```

Input A carries the electric piano, coming from the program's KDFX-A outputs. Play on the piano part of the keyboard, and the arrow next to A flashes.

This input is configured to be stereo. It has a large bass boost: 12.0 dB of everything at 370 Hz and below, which adds a strong low-frequency emphasis to the signal being ring-modulated. Its signal is being sent only to the first FXBus. The stereo separation (Width) of the signal is at maximum.

Use the **Chan/Bank Up** button to go to Input B.

```
EditStudio:INPUT              <>Input:   B
BP
   B→⎡LoShelf⎤→⎡HiShelf⎤→⎡FXBus2⎤→⎡None⎤
                                         
    G:0.0dB   G:12.0dB  Lvl-5.0ddB
    F:123Hz   F:3136Hz  Pan:0%
                        Wid:100%
 <more  INPUT  FXBUS  AUXFX  OUTPUT  more>
```

This is the distorted guitar, coming from the program's KDFX-B outputs. It is also stereo. The incoming signal has a strong treble boost on it. It is sent directly to FXBus2 at -5 dB below unity

gain (to compensate for the treble boost), and full width. Play on the guitar part of the keyboard, and the arrow next to B flashes.

The other two inputs, C and D, are not assigned to any FXBus.

AuxFX Bus

Now let's look at the Auxiliary FX Bus (Aux bus). Press the **AUXFX** soft button to look at its page.

```
EditStudio:AUXFX Size:3 Free:0

Aux→ 203*MedWarmPlate ────→ Mix ──────→

Wet/Dry    :100%wet          Lvl:0.0dB
Out Gain   :0.0dB            Bal:0%

<more   INPUT  FXBUS  AUXFX  OUTPUT  more>
```
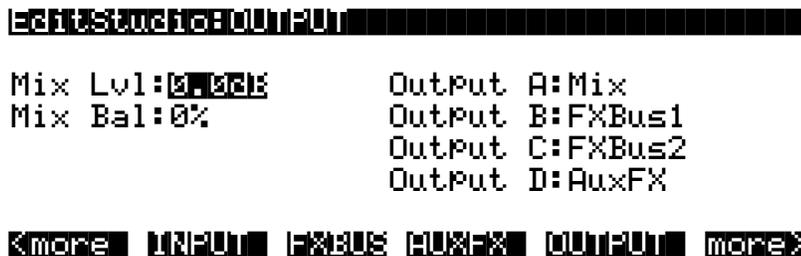
Here is an FX preset called **MedWarmPlate**, which is just what it sounds like: a medium-sized, warm-sounding plate reverb. It has two bus overrides, Wet/Dry mix, and Output Gain. The Aux bus is sent to the main Mix bus at unity gain.

Since both Insert FXBuses have signal going to the Aux Bus, the arrow next to Aux will flash as long as any signal processing is going on in either of the insert FXBuses.

Outputs

Finally, press the **OUTPUT** soft button to get to the OUTPUT page. Here we see that the four physical output pairs all are passing different parts of the studio. If the outputs are connected to an external mixer, you can treat each of them separately: recording them on different tracks of a tape deck, sending them to different outboard processors, or mixing them differently in a monitor mix.

```
EditStudio:OUTPUT

Mix Lvl:0.0dB        Output A:Mix
Mix Bal:0%           Output B:FXBus1
                     Output C:FXBus2
                     Output D:AuxFX

<more   INPUT  FXBUS  AUXFX  OUTPUT  more>
```

Output A has the Mix bus. This is the combined output of the two FXBuses, plus the reverb on the Aux bus. Its gain and balance are at unity.

Output B has the output of FXBus1, that is, the ring-modulated piano, without any reverb.

Output C has the output of FXBus2, the delayed/flanged/distorted guitar, without any reverb.

Output D has the output of the Aux bus, which is *just* the reverb signal, with no dry component, since the value of Wet/Dry on the AUXFX page is **100**%.

*Note: If you're using the Mix audio outputs, keep in mind they carry the summed signals of audio outputs A through D. Normally you would assign each of the audio outputs differently. In the example above, you might set Outputs B through D to **Off**, or Output A to **Off**, to avoid overlapping assignments.*

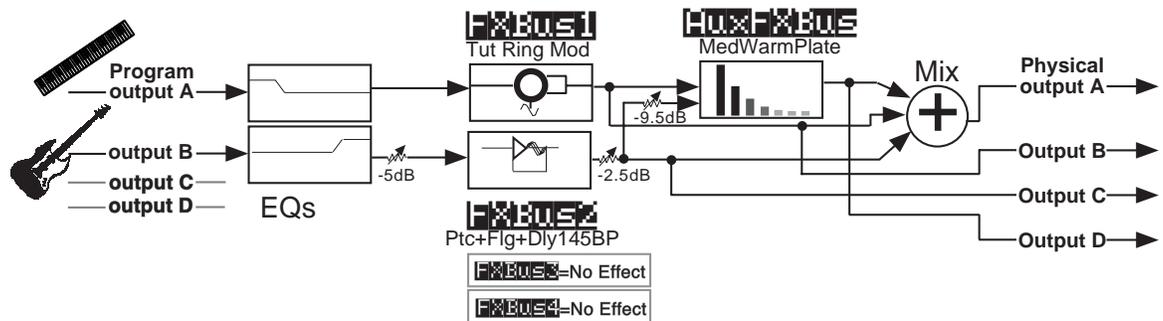Here is the overall structure for this studio:

Figure 9-5   Structure of Studio 201

A Complex Studio With Real-time Control

The third studio is a bit more complex, not least because it's under real-time control. Getting real-time control of a studio requires doing some advance work. Most noticeably, you have to define a program or setup that uses a particular studio, then define a set of FXMods in that program or setup—the FXMods provide the settings that link physical controllers like sliders to studio effects like wet/dry mix.

Equally importantly, the FX Mode parameter on the Effects-mode page must be set to a value of **Program** (if you want only programs to affect studio selection and controls) or **Setup** (if you want only setups to affect studio selection and controls)—or **Auto** if you want to affect studio selection and control whenever you select a program *or* a setup.

In this example, we'll work with *setup* control over a studio—the procedure for working with program control is almost exactly the same.

Setting the FX Mode

To enable real-time control of the studio from the setup, we have to put the K2600 in the right Effects mode. Go to the Effects-mode page, and set FX Mode to **Setup**. FX Channel automatically goes to **None**.

```
EffectMode    XPose:0ST    <>Channel:1
FX Mode:Setup
FX Chan:None


Dither :Medium      DigOut :16 Bit
Octav-  Octav+  Panic         Chan-  Chan+
```

If FX Mode was **Master** before you switched it to **Setup**, you'll notice that the Studio parameter disappeared when you switched. That's because when FX Mode is set to **Setup**, you can't view the current studio except from inside the setup. We do this so you can't make any changes in the studio that the setup doesn't know about

The Setup

Now let's look at the setup that we're going to use to control our studio. Press **Setup** to go into Setup mode, and select **200 KDFXCombo**.

This is a four-zone setup, with bass and drums at the bottom, electric piano in the middle, and a breathy flute-like sound on the top. Each layer goes to a separate KDFX output pair, so they can all get different processing.

If you edit the setup and look at the various zones, you'll see this:

• Zone 1: **Gtr Jazz Band**, a layered bass and drum program, going to KDFX-A.

• Zone 2: **Dual Slap Bass**, also going to KDFX-A. This and the previous zone are active from the bottom of the keyboard up to A3.

• Zone 3: **Pno & Epno & Pad**, an electric piano and pad program, going to KDFX-C, which is active from A$^{\#}$3 to F$^{\#}$5.

• Zone 4: **Hybrid Vox**, going to KDFX-A, and active from G5 and up.

Looking at the Studio

To view the studio, press **Edit**, then **more>** three times, and then the **KDFX** soft button. The name of the studio associated with this setup, **202*Complex**, appears.

```
EditSetup:KDFX                All Zones
Studio:202*Complex

Bus: Param:      Adjust:  Source:  Depth:
FX1  In/Out      Out      SoftPd   1
FX1  Aux Lvl     -50.0dB  MIDI27   52dB
FX2  L Fdbk Lvl  0%       MIDI26   120%
<more   KDFX   FXMOD2 FXMOD3 FXMOD4 more>
```

Highlight the studio's name and press **Edit**, and let's dig into this studio.

Press **INPUT** if you'd like to look at the INPUT pages. These are all set up straightforwardly, with Input A going to FXBus1, Input B going to FXBus2, etc.

On the FXBus Pages

Press **FXBUS** to look at the FXBuses. On FXBus1 is **205*CompresHK**, a hard-knee compressor.

```
EditStudio:FXBUS Size:1 Free:0 <>FXBus:1

FX1→205*CompresHK       →Aux → Mix →

In/Out     :FXMod      Lvl:FXMod Lvl:0.0dB
None       :           Bal:0%    Bal:0%
Allocation:Auto
<more   INPUT   FXBUS   AUXFX   OUTPUT  more>
```

Look at the In/Out parameter. This is a bus override, meaning this parameter is actually inside the FX preset but it can be changed from here. However, instead of saying **In** or **Out** it says **FXMod**. This means that this parameter isn't controlled from inside the studio at all—it's controlled by something outside the studio.

As it happens, it's controlled by the soft pedal, MIDI Controller 67—Switch Pedal 3 for K2600 keyboard users. We'll see how this is done in a moment. Pressing this pedal causes the compressor to kick in, squashing the sound. The MakeUpGain inside the compressor is set to 6.0 dB, so the level doesn't change much when the compressor is engaged.

This type of control is useful on this program, which uses velocity-switching to change drum sounds. As you play harder, the drum sounds change, but they also get louder, which you may not want. With the compressor engaged, the drum sounds can change *without* getting louder.

There's another FXMod, which is assigned to the Aux bus send level. On the Aux bus is a reverb, so this FXMod controls how much of the signal coming through here will get reverb. It's under the control of Slider G, MIDI Controller 27. Play the bass and drums and move that slider, and hear the reverb go in and out.

How are these controls set up? That's back on the KDFX page in the Setup Editor. Exit the Studio Editor (if you have made any changes, don't save them—that will only confuse things!), then press the **KDFX** soft button. Take a look at the settings for the first FXMod:

```
Edit:Setup:KDFX              All Zones
Studio:202*Complex

Bus:  Param:     Adjust:   Source:   Depth:
FX1   In/Out     Out       SoftPd    1
FX1   Aux Lvl    -50.0dB   MIDI27    52dB
FX2   L Fdbk Lvl 0%        MIDI26    120%
 <more   KDFX   FXMOD2 FXMOD3 FXMOD4 more>
```

The first FXMod affects the signal on the FX 1 bus, as shown by the Bus parameter. The Param parameter indicates which parameter is affected on the FX1 bus—in this case, the In/Out parameter. The Adjust parameter defines the initial condition of the parameter controlled on this bus—in this case, the In/Out parameter has an initial value of **Out** (disengaged).

The Source parameter determines what MIDI Controller affects the In/Out parameter. For the first FXMod it's **SoftPd** (that's MIDI 67, which is Soft Pedal according to the MIDI specification, and which the K2600 uses as the default destination for Switch Pedal 3). While this setup is current, *any* K2600 controller—be it a wheel, slider, ribbon, or button—that's programmed to send MIDI 67 will affect the In/Out parameter on the FX1 bus of this studio.

The Depth parameter defines how much the soft pedal affects the In/Out value, and here it is **1**.

For parameters with binary value, likes **In/Out** or **On/Off**, the Depth parameter can have only three values: **1**, **0**, or **-1**. If it is set to **1** or **-1**, then changing the state of the Source (in this case, depressing the soft pedal), changes the parameter's state—in this case, going from Out to In. (If it's set to **0**, then the Source has no effect on the value of the parameter.)

Now look at the second FXMod. It sets the Aux Lvl on the FX1 bus to an initial value **-50 dB**. The Source, **MIDI 27**, can raise that level by as much as 52 dB, to put it at +2 dB—and in fact, that's what you're hearing as you move Slider F, which defaults to MIDI 27.

Let's go back into the Studio Editor and look at FXBus 2. Here's our piano and string pad, going through an FX preset called **206*Fast&RichChorus**.

```
Edit:Studio:FXBUS Size:2 Free:0 <>FXBus:2

FX2→206*Fast&RichChorus →Aux → Mix →

L Fdbk Lvl:FXMod    Lvl:FXMod Lvl:0.0dB
R Fdbk Lvl:FXMod    Bal:0%    Bal:0%
Allocation:Auto
 <more   INPUT   FXBUS   AUXFX  OUTPUT  more>
```

The two bus overrides are L Fdbk Level (Left Feedback Level) and R Fdbk Level, and they are both under FXMod control. The Aux Lvl, as on FXBus1, is also under FXMod control. Press **Edit**

to go into the FX Preset Editor, then press PARAM3, you'll see that the Left and Right LFO1 Rates are *also* under FXMod control.

```
EditFXPreset:PARAM3          Dual Chorus 2
L LFO1Rate:FXMod     R LFO1Rate:FXMod
L LFO2Rate: 0.50Hz   R LFO2Rate: 0.50Hz
L LFO3Rate: 0.50Hz   R LFO3Rate: 0.50Hz
L LFO1Drth:9.5ct     R LFO1Drth:9.5ct
L LFO2Drth:10.0ct    R LFO1Drth:10.0ct
L LFO3Drth:5.0ct     R LFO1Drth:5.0ct
<more   PARAM1 PARAM2 PARAM3 PARAM4 more>
```

Exit out of the FX preset and the studio, to the setup's KDFX page (see the diagram on page 9-23). Here we see that on FXBus2, L Fdbk Lvl has a starting value of **0**%, and will change, using MIDI Controller 26 (Slider F), up to **120**%.

Press **FXMOD2** to go to the next page of FXMods, and you'll see the same slider changing the R Fdbk Lvl, only in this case the Depth is **-120**%, meaning the feedback on this channel will be out of phase with the main signal.

```
EditSetup:FXMOD2              All Zones
Bus:  Param:      Adjust:  Source:  Depth:
FX2   R Fdbk Lvl  0%       MIDI26   -120%
FX2   L LFO1Rate  0.50Hz   MIDI25   8.25H
FX2   R LFO1Rate  0.52Hz   MIDI25   8.25H
FX2   Aux Lvl     -15.5dB  MIDI27   15dB
FX3   L Feedback  17%      MIDI24   120%
<more   KDFX   FXMOD2 FXMOD3 FXMOD4 more>
```

Further down the FXMOD2 page are the assignments to the LFO rates: MIDI Controller 25 (Slider E) is assigned to the left and right LFO1 Rates, with minimum values of **0.50** and **0.52 Hz**, respectively, and maximum change of **8.25 Hz**. Set the feedback level high and you can really clearly hear the LFO rate changing.

Finally on this bus, MIDI Controller 27, Slider G, controls the Aux Level send, thereby determining how much reverb will appear on the signal. We also used Slider G on the KDFX page to control the wet/dry mix for FXBux1. There are no limits to how many FXMods a single Source can be assigned to. (In fact, there are also no limits on how many different Sources can be assigned to the same parameter, and you may find uses for that feature somewhere—but not here.)

On to FXBus 3. Here's where our breathy flute sound is, and it's going through a delay FX preset called **207*Adj Delay**.

```
EditStudio:FXBUS Size:1 Free:0 <>FXBus:3

FX3→207*Adj Delay           →Aux ┐→Mix ┤→
                                 │        
L Wet/Dry :50%wet     Lvl:FXMod Lvl:0.0dB
L Wet/Dry :50%wet     Bal:0%    Bal:0%
Allocation:Auto
<more   INPUT   FXBUS   AUXFX   OUTPUT  more>
```

Go into the FX Preset Editor, and press PARAM2, and on that page, you'll see that the left and right Delay times and the left and right Feedback settings are all under FXMod control.

```
EditFXPreset:PARAM2        Dual MovDelay
L Delay    :FXMod    R Delay    :FXMod
L LFO Mode:ChorTri   R LFO Mode:ChorTri
L LFO Rate:0.90Hz    R LFO Rate:0.50Hz
L LFO Dpth:9.6%      R LFO Dpth:9.6%
L Feedback:FXMod     R Feedback:FXMod
L HF Damp :25088Hz   R HF Damp :25088Hz
<more   PARAM1   PARAM2              more>
```

Go back out to the setup, and look at the bottom of the FXMOD2 page. Here we see the L Feedback parameter is under the control of MIDI Controller 24 (Slider D), with a minimum of **17**% and a maximum of 17+82=**99**%. Go to the FXMOD3 page and you'll see the same assignment is in place for the R Feedback parameter.

```
EditSetup:FXMOD3               All Zones
Bus: Param:     Adjust:  Source:   Depth:
FX3  R Feedback 17%      MIDI24    82%
FX3  L Delay    50.0ms   Foot      200.0
FX3  R Delay    74.0ms   Foot      200.0
FX3  Aux Lvl    -61.0dB  MIDI27    62dB
None None                OFF
<more   KbFX   FXMOD2  FXMOD3  FXMOD4  more>
```

Also on this page, the Left and Right Delay times are controlled by the Foot Pedal, controller 4—CC Pedal 1 for K2600 keyboard users. Here it varies the left decay time between **50** and **250 ms**, and the right decay time between **74** and **274 ms**.

Finally, the Aux Level from this bus, controlling the reverb send, is once again assigned to MIDI controller 27, Slider G.

So here's a summary of the FXMods in this studio:

• Soft pedal puts compression on the bass and drums.

• Slider F controls the feedback on the chorus on the piano/string pad. Slider E controls the LFO speed on that chorus.

• Slider D controls the feedback on the delay on the breathy flute.

• Foot Pedal controls the delay time on the breathy flute.

• Slider G controls the reverb send for all three zones.
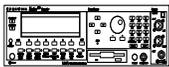
A Note About Effects in Setups

This applies primarily to K2600R users who are playing their units with a conventional MIDI keyboard. In order to play setups, which normally require a multi-zoned/multichannel keyboard like the K2600 or PC 88, the K2600R includes a parameter called Local Keyboard Channel (LocalKbdCh), which is found on the MIDI-mode RECEIVE page. If you set this parameter to the transmitting channel of the keyboard, then the K2600 takes all incoming MIDI data on that channel and treats it as if it was coming from a local keyboard—that is, it plays all the zones in the setup.

However, when you use this feature, the K2600 will respond to certain MIDI Controller messages coming in on this channel only if the Controller has been specified as a destination on the controller assignment pages in the setup (SLIDER, SLID/2, etc.)—and then, only if the setup assigns the customary physical controller to that MIDI Controller.

For example, Slider A is customarily assigned to Data (MIDI Controller 6), but if on the setup's SLIDER page, Slider A has been reassigned to something else, then Data messages coming from the external keyboard on the local keyboard channel will not be recognized. Therefore, any MIDI Controller message that is not in its customary place in the setup cannot be used as a KDFX Source, because the setup will not recognize it. See Table 10-1 on page 10-8 for a list of physical controllers affected by using the local keyboard channel.

This is not an issue in Program mode, or when using the K2600 with a sequencer. In those cases the LocalKbdCh should be set to **None**, and there is no restriction on the MIDI data passing through. More on this in Chapter 15.

Building your own

Now that we've walked you through a complex studio, here are some hints on how to go about building your own.

First, you want to decide whether you want the studio to be static, or to be dynamic under FXMod control from the K2600 keyboard and/or an external MIDI source. If it's to be static, the value of FX Mode must be **Master**, while if it's to be dynamic, the value of FX Mode must be **Program**, **Setup**, or **Auto**, depending on how you want to approach it.

Then you need to look at how your program outputs are arranged, so you can design the studio intelligently. If you're using internal setups, look at the output assignments on the various zones, and change them so that sounds that need different effects are separated, and those that can use the same effects are grouped. If you're using a MIDI sequencer, you might want to use the Channel output overrides in MIDI mode, and arrange your sequence so that the assignment of tracks to FXBuses is determined by the tracks' MIDI channel assignments.

Now set up your studio, assigning FX presets to the program outputs/KDFX inputs. Many of the ROM studios follow a common organizational plan, which might be a good starting point for your studios:

- FXBus 1 contains a relatively simple reverb with a low Size requirement.

- FXBus 2 contains an effect that does not increase the "length" of the sound (that is, no reverb or delay), something like chorus, flange, phaser, distortion, shaper, pitcher, enhancer, EQ, or EQ morpher.

- FXBus 3 contains effects that take up lots of time, such as delays, delays with reverb, or other "Lead" sounds.

- FXBus 4 is dry, since the first three FXBuses have probably used up all the PAUs.

- The AUXFXBus contains a larger reverb (Size: 2 or3), a compressor, or a graphic EQ. It can often be used instead of an FXBus reverb, such as the one on FXBus1. If you use it in this way (set the Aux Lvl on FXBus 1 to 0dB or higher), it frees up FXBus1 for use as an Enhancer, Stereo Image, Flanger, etc.

Finally, set up your FXMods in the setup or program you plan to use. If you're using a sequencer, you might want to dedicate a program *just* to the studio and FXMods, with no sound coming from that program.

Keep in mind that FXMods don't always have to be dynamic—they can be used to assign static (Source: OFF) values to the parameters in a studio that are different from the studio's normal parameters. This lets you create and store multiple variations on a studio without making each one a separate studio—when you want to call up the variation, merely call up the program that contains the correct FXMods.

Don't forget to Save your Studio!

And don't forget to have fun. Check out Chapter 15 for an in-depth look at Effects mode.