KURZWEIL

V150
V110

Owner's Guide

The V150/V110 Front Panel
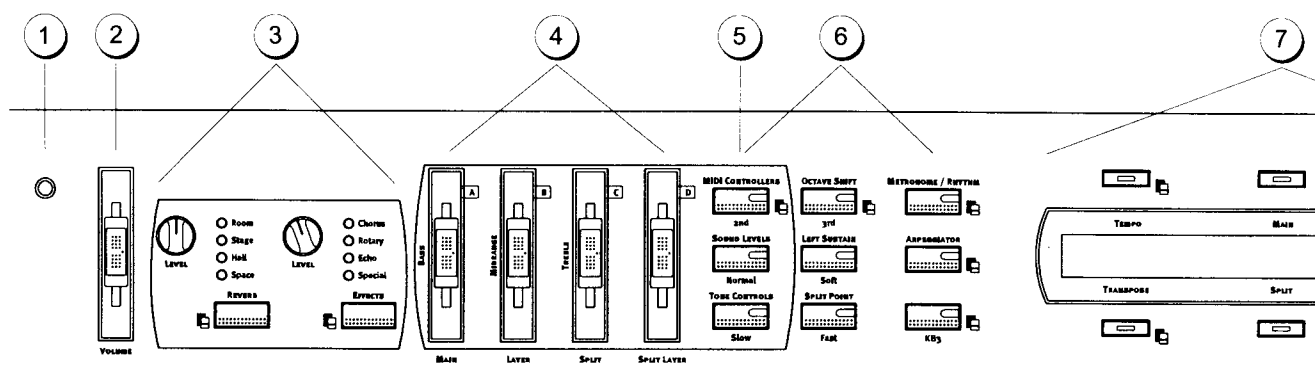
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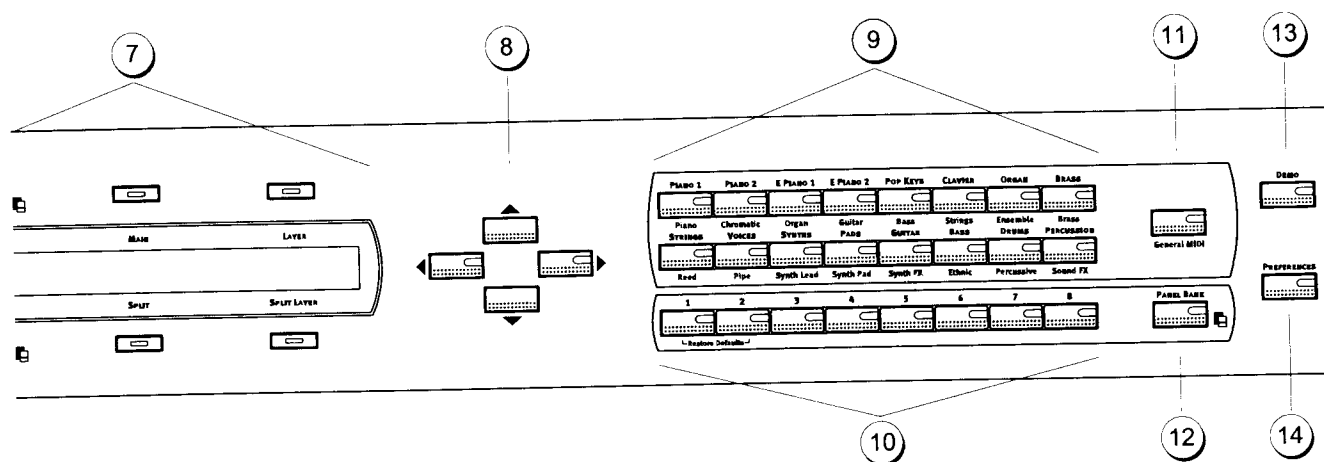
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Chapter 1
Introduction

Thank you for purchasing the Kurzweil V-series home digital ensemble! The features of the V150 and V110 instruments are essentially the same, with the exception of the cabinet and speaker systems. All sounds and playing features are identical; therefore this manual covers both instruments.

The V150 and V110 offer Kurzweil's high-quality sound development, and state-of-the-art sample playback, in attractive piano cabinets with built-in sound systems. Authentic digital representations of musical instruments are the starting point of our technology. These are enhanced with the latest in Digital Signal Processing techniques to present you with the ultimate musical experience, whether playing or listening.

About This Manual

This manual is divided into three chapters and three appendices. Chapter 1 will help you set up and start playing the V150/V110. Chapter 2 is a tutorial that walks you step by step through many of the V150/V110's features. Chapter 3, *Using Your V150/V110*, is a more detailed description of each of the V150/V110's features. Chapter 4, *MIDI* describes how you can connect your V150/V110 to other MIDI instruments or a personal computer. Appendix A contains information about maintenance and software upgrades, Appendix B provides specifications and technical information, and Appendix C lists the V150/V110's sounds, as well as the controllers you can use to modify them.

Typeface Conventions

We use three different type variations to indicate special meaning. The names of most buttons appear in **bold type**; so do the names of sliders and knobs. The names of the display buttons appear in **bold type** when we're discussing the normal operation of those buttons—that is, the **Transpose, Tempo, Main, Split, Layer,** and **SplitLayer** display buttons.

Sometimes these buttons have special functions that change depending on what you're doing. In this case, the names of the buttons appear in the display itself, and the normal, permanent labeling doesn't apply. When we're referring to these special functions, the names of the display buttons appear in a typeface that resembles the characters in the display—for example, "the display button labeled LOOP DEMO."

We use italics for emphasis, and to indicate the names of sections of this manual. We also use italics to indicate terms that might be new to you.

Setting Up the Instrument

The V150/V110 can be placed most anywhere in a room. Make sure that nothing underneath the instrument blocks the speaker ports so that the full power of the sound system can be heard. One end of the power cord plugs into the power socket of the instrument, and the other into a nearby outlet. Please read the section called *IMPORTANT SAFETY & INSTALLATION INSTRUCTIONS* on page ii of this manual for important information. Your V150/V110 has been designed for the supply voltages used in your area. If you move to another country, or if you have any doubts about power supply, please see your local Kurzweil dealer.

Because the V150/V110 is a digital instrument, there is a possibility that it may interfere with other electronic equipment. See the section called *RADIO AND TELEVISION INTERFERENCE* on page ii for information and suggestions for how to minimize any interference problems.

Battery

The V150/V110 has battery-backed memory that stores Panel Memories and user preferences even when the power is turned off. The batteries are accessible through a small panel on the instrument's underside. The V150/V110 was shipped from the factory with fresh batteries installed, but to preserve their charge during shipping a paper pulltab insulator was inserted between the batteries and metal contacts. Before you play the instrument for the first time you will need to remove this insulating paper. On page A-1 there's a procedure for replacing the batteries. Read the first few steps of this procedure to learn how to open the battery panel, then remove the insulation, close the battery panel, and you're ready to play.

Care of Your Instrument

Use a soft, dry cloth to dust the V150/V110 case. Do *not* use aerosol sprays on or near the instrument. To clean the keyboard, use a soft, damp (not wet) cloth. If necessary, dampen the cloth with a solution of dish soap and water. *Never* use solvents like alcohol or mineral spirits on any surface of the instrument.

Getting Started

Turn on the power with the main power switch, located underneath the keyboard on the left-hand side. The instrument takes a few seconds to initialize and run a brief self-check, and then it's ready to play!

Once you're up and running, look over the front panel illustration on pages iv and v. It's a sort of visual table of contents.

Warning: This instrument is capable of producing sound pressure levels in excess of 95dB, which may cause permanent hearing damage. Please exercise caution when playing through the internal speakers and especially when using headphones. Always start with the **Volume** slider at the minimum position.

Volume and Tone Controls

The **Volume** slider is found on the left side of the front panel, and should be adjusted for listening comfort. The V150/V110 sound system is quite powerful, so setting the volume at the middle of its range is about right for most listening situations. If you have a sound source connected to the Audio In jacks of the V150/V110, note that the **Volume** slider does *not* affect the level of sound from the external source.

The tone of your V150/V110 can be affected by its surroundings, so you might want to adjust the tonal quality to fit the environment. To do this, press the **Tone Controls** button which is near the group of four sliders labeled **A–D**. This enables the three leftmost sliders to act as bass, midrange, and treble adjustments. The display shows the increase or decrease in level for each part of the sound spectrum. Move the sliders up to emphasize a range. You can also press the display button underneath each range and adjust the tone with the **Up** and **Down** buttons. In general, if a room is furnished with heavy carpets or drapes you may want to increase the high frequencies (treble) and decrease lower ones (bass), whereas a bare room will sound better with less treble. Press **Tone Controls** again to return to normal operation.

The Keyboard

The keyboard of the V150/V110 has eighty-eight weighted keys, with an action designed to simulate the feel of an acoustic piano. The keyboard is *velocity sensitive*, which means that the harder (or faster) you play a note, the louder and brighter the resulting sound is. This is what makes the V150/V110 a truly expressive instrument. The degree of sensitivity can be adjusted to match your touch (see page 3-19 for details).

The V150/V110 keyboard also supports *aftertouch*. This special feature allows you to control the sound being heard by pressing down on one or more keys as you hold them against the key bed. Certain sounds in the instrument will change timbre, or add vibrato, or change volume, as you apply pressure. This allows you to add expressiveness without having to move your hands off the keyboard. See Appendix C for more details on which sounds respond to aftertouch.

Sliders A–D

There are four sliders to the left of the display. They're labeled **A–D**, and they control several different aspects of the sounds you're playing. We've already seen how you can use the sliders to adjust the tone control (treble, midrange, and bass). You can also use them for other functions. For example, if you press the **MIDI Controllers** button, the sliders change the nature of the sound, sometimes dramatically.

The Pitch Bender

To the left of the keyboard is a small pad. Pressing and running your finger along the pad will change the pitch of sounds currently being played on the instrument, a process called *pitch bending*. Touch the top part of the pad to raise the pitch, and the bottom part to lower it. This effect can be used to simulate rock guitar or trombone effects, among others.

The Pedals

The V150/V110 has three pedals which correspond to the standard pedals found on a grand piano. The function of these pedals, from left to right, is as follows:

Soft: Notes played while this pedal is pressed will sound softer

Sostenuto: Notes held when this pedal is pressed will sustain, but any note played *after* it is pressed will not

Sustain: Notes held or played while this pedal is pressed will sustain their sound, even after you lift your fingers from the keys

In addition to the usual piano pedals, the V150/V110 has a *controller* or *expression* pedal that adjusts the instrument's volume (this is similar to many organs). Pushing the pedal forward with your toe will make the sound louder, while pushing it back with your heel will make it softer. If you're not using this pedal, you'll probably want to leave it set to its loudest setting.

All of the pedals can be reprogrammed for other functions. See page 3-13 for details.

The Display

In the center of the front panel is a two-line forty-character liquid crystal display, which shows important information about the state of the V150/V110. When you first turn the instrument on, this display will show the Stereo Grand Piano sound name, which is always the default sound. Many other kinds of information may also be displayed, as you'll see.

The buttons around the display perform many functions. When you're playing sounds, they function according to the labels printed around the display: **Main, Split, Layer, SplitLayer, Transpose,** and **Tempo.**

When you're performing other tasks, like changing preferences, the buttons around the display have varying uses, depending on what you're doing. The words that appear in the display above or below the buttons indicate what the buttons do when you press them.

We refer to these buttons a lot in this manual. In general, we call them the *display buttons*. To save space, we'll describe each button as (for example) "the display button labeled Enter." We'll use a special typeface for the name of each button (like the word Enter).

When several items are displayed on the screen, one of the lights in the display button near an item is often lit. This means that the item can have its value changed using the **Up** and **Down** buttons (to the right of the display, and labeled with up and down arrows). Pressing the **Left** and **Right** buttons (labeled with left and right arrows) moves among various "pages" of information in the display. If there is information to be seen on other pages, one or both of the **Left** and **Right** buttons is lit Press either button to see the next page in that direction.

You can adjust the display contrast with the contrast knob found at the left end of the front panel (it's labeled with a half circle, as shown at left; see Number 1 on page v). Turn the knob until the display is most readable from where you usually sit.

Special Button Functions

Many buttons are labeled with a small icon (as shown on the left). This icon means that the button activates a menu related to the button. You can activate the menu by pressing and *holding* the button until the menu appears.

Fallboard Lights (V150 only)

On the V150, there's a string of lights along the fallboard, which enables you to see the keyboard and front panel when the surrounding lights are low. The lights have a separate power switch; it's the slightly smaller switch near the main power switch.

Choosing Sounds

The easiest way to select sounds is to use the Sound Category buttons to the right of the display. (Number 10 in the diagram on page v) Press a Sound Category button, and it lights up to show that it's the current category. The name of the sound appears in the display. When you press a Sound Category button, the first sound that gets selected is the one that was selected the last time you used that category.

Notice that the Sound Category buttons have labeling of different colors. The colors indicate the different sound categories available in different modes. The labeling above each button (in all-capital letters) shows the categories for normal operation mode. The labeling below the buttons (in mixed-case letters) shows the categories for General MIDI mode. To make it easier for you to remember, the labeling for the GM sounds is the same color as the labeling of the **General MIDI** button.

Use the **Up/Down** buttons to view the list of sounds. With this method, you can select all the sounds within a particular category by pressing the **Up** or **Down** button repeatedly. For example, if you're in the Piano 1 category, you'll scroll through all the pianos. If you start in a different category, you'll see all the sounds from that category. There's a list of all the sounds, arranged by category, in Appendix C (page C-2).

Playing a Demo

If you want to hear a demonstration of the range of music the V150/V110 can play, press the **Demo** button. A series of buttons in the sound selection area will blink, each representing one demonstration song. Press one of these buttons to hear a song. The display will show the name of the song and offer a button to stop the demonstration. You can also press the display button under the words LOOP DEMO to hear all the songs in order. To leave the demonstration, press the display button under the word EXIT, or press the **Demo** button.

Chapter 2
A Tutorial

The purpose of this tutorial is to help familiarize you with many of the features found in the V150/V110. To do this, we'll push a few buttons and configure the V150/V110 to play four different sounds. Then we'll adjust a few more features, and save everything to what we call a *Panel Memory*, which enables you to select that exact configuration at any time by pressing a single button.

This tutorial assumes you are already familiar with the general operation of the front panel navigation controls such as the display buttons (the ones surrounding the display), and the Up/Down/Left/Right buttons. See page 1-4 if you need a reminder.

Starting Point

You'll soon be adding sounds and placing them in different parts of the keyboard. You'll probably be doing a lot of this as you enjoy your V150/V110. But you'll often want to start over with just a single sound playing. There's a quick and easy way to do this: press the first and second **Panel Memory** buttons at the same time. This selects the Stereo Grand Piano sound, without any other sounds (this is the default Panel Memory). Play a few notes to make sure you're hearing just the Stereo Grand Piano sound.

You can use this short cut at any time to return to the default Panel Memory. You can also turn off sounds by pressing the corresponding display buttons (**Split, Layer,** and **SplitLayer**) *twice*—once to select a part of the keyboard, then again to silence it. You can't turn off the Main sound, by the way.

Layering a Sound

We're going to add a Layer sound now. Press the display button labeled **Layer.** Now press the **Voices** sound category button. Use the **Up/Down** buttons to select the sound called The Croons.

Play the sounds and listen to the scat vocals layered with the piano. If the balance between the two sounds isn't to your liking, don't worry—we'll balance them out a bit later in this tutorial.

Adding a Split

We're going to split the keyboard, and play a different sound with the left hand. Press the display button labeled **Split.** Now press the **Bass** sound category button. Select the Upright Bass 2 sound using the **Up/Down** buttons. Note how the piano and vocals are limited to the right side of the keyboard, while the left side plays an acoustic bass.

Changing the Split Point

The default keyboard split point (the place where the left hand sound meets the right hand sound) occurs at the $F^{\#}$ below middle C, sometimes referred to as $F^{\#}$ 3. Let's change the split point to be $A^{\#}$ below middle C ($A^{\#}$ 3). Press the **Split Point** button and then strike the $A^{\#}$ 3 key on the keyboard. Play to confirm the split point is correct.

Adding a Layer to the Split Sound

Now for a bit more fancy left hand, add a layer to the Upright Bass 2 sound. Press the display button labeled **SplitLayer**. Now select the Voices sound category. Use the **Up/Down** buttons to and select the Scatman sound. Play the left hand to confirm that the Upright Bass 2 sound is layered with the Scatman vocal sound.

Adjusting the Playable Ranges

Notice the playing range of the Stereo Grand Piano and The Croons sound is limited to B below middle C and up. Also, the Upright Bass 2 and Scatman left-hand sounds are very low in pitch. Press the **Octave Shift** button and the instrument intelligently brings the right hand piano and vocal sound down one octave, while raising the left hand bass and vocal sounds one octave. This makes more sense musically and allows a greater playable range for all sounds.

Adjusting the Sound Levels

Press the **Sound Levels** button. Now Sliders **A–D** (the four sliders to the left of the **Sound Levels** button) can be used to change the separate levels of the individual sounds. The front panel labels the Main, Layer, Split and SplitLayer parts. Adjust the levels until you like the balance. Later, we'll save those levels (among other things) to a Panel Memory so you can recall all your settings at the touch of a button.

Assigning a Rhythm

The V150/V110 has a metronome that is very useful in developing a good sense of timing and rhythm. In addition, some great-sounding rhythm patterns are provided. You can use these as a fancy metronome, or to play a tune with a particular rhythmic feel. To select a rhythm, press and hold the **Metronome/Rhythm** button. Press the display button labeled Rhythm Style. Use the **Up/Down** buttons to select the Latin 3 rhythm.

Next we'll adjust the Tempo. Press the display button labeled **Tempo**, and use the **Up/Down** buttons to set the Tempo to 80 beats per minute. We can also adjust the volume of the rhythm track. Press the display button labeled Volume, then use the **Up/Down** buttons.

Using a Pedal for Rhythm Control

It would be very convenient to start and stop the rhythm from one of the pedals. Let's use the middle pedal. Press and hold the **MIDI Controller** button. The display will show the Controller preferences screen. Press the display button under the words PEDAL SETUP to enter the Pedal assignment menus. The first menu allows you to adjust the Left Pedal assignment. Press the **Right** button to select the Middle Pedal assignment menu. Now use the **Up/Down** buttons to select **Rhythm Start/Stop**.

Press the **MIDI Controller** button twice to dismiss the menus.

Sustaining the Split Sounds

Play the left hand region of the keyboard and try stepping on the sustain pedal. Notice that notes do not sustain when the sustain pedal is held down. To change this, press the **Left Sustain** button. Its light comes on, indicating that the Sustain pedal now works for the left-side sounds.

Adjusting the Reverb

Adjusting the amount of reverb on each part will finish this masterpiece off nicely. Press the display button labeled **Main** and then turn the **Reverb Level** knob until you like the amount of reverb you like for the piano sound. Be sure to play the right hand region of the keyboard to hear the sound you are affecting. To adjust the reverb on the crooning vocals sound, press the display button labeled **Layer** and turn the **Reverb Level** knob. To lower the reverb level on the bass, press the display button labeled **Split** and turn the **Reverb Level** knob all the way to the left. Finally, adjust the reverb on the scat vocal sound (play the left hand keyboard region to hear the vocals). Press the display button labeled **SplitLayer** and turn the **Reverb Level** knob to the desired amount.

Saving to a Panel Memory

Now we can save this configuration to a Panel Memory. This enables you to use other sounds, rhythms, and settings, yet still return to the exact layout you've just created.

Press and hold the **Panel Memory 1** button. The display shows that you've saved the V150/V110's current state in Panel Memory 1. The V150/V110 saves your settings, and remembers them when you turn the instrument off.

Chapter 3
Using Your V150/V110

Playing Sounds

The V150/V110 offers over 400 high-quality digitally sampled sounds. The instrument's sound engine is *multi-timbral*, which means that more than one sound can play simultaneously, allowing you to create rich and complex aural textures, and emulate an orchestra or combo with its separate parts.

The sounds are organized by instrumental category. Each category corresponds to one of the sound selection buttons found on the right side of the panel. To choose a sound from one of the categories, press the button with the appropriate name. The light in that button lights up to indicate which category is playing, and the name of the individual sound appears in the display.

Choosing a Sound Within a Category

There are many sounds available in each sound category. Use the **Up/Down** buttons next to the display to select among the various sounds in a category. As you change the sound, the name will change in the main display, and you can listen to the sound as you play on the keyboard.

The last sound chosen in each category will be remembered, so that if you choose another category and return to an earlier one, the sound you were playing will be recalled. These sound preferences will be remembered when the power is turned off if Remember Preferences is set to **Yes** (see page 3-20). There's a list of all the sounds, arranged by category, in Appendix C (page C-2).

General MIDI Sounds

The V150/V110 is compatible with the General MIDI (GM) standard for sound playback. This means that MIDI songs written to the GM specification will play correctly on the instrument if it is in the General MIDI mode of operation. This mode is controlled by the **General MIDI** button on the front panel, or by a special GM message which is usually contained in a GM song (see page 4-9 for more information about MIDI control of GM mode). The light in the General MIDI button is lit when GM mode is active, and the various sound selection buttons select only the GM sounds associated with each button. The GM sound categories (which are different from the V150/V110 categories) are listed underneath each button, in a different color.

Note: The KB3 organ sounds and the Metronome are unavailable when you're in General MIDI mode.

Using the Performance Sliders

Sliders A–D perform different functions, depending on which mode you set using the buttons to the right of the sliders. Set the mode of the sliders by pressing one of the buttons (labeled **MIDI Controllers, Sound Levels, Tone Controls**). You can move any of the sliders at any time while you're playing. The Sound Level and Tone Control modes are more general adjustments. See page 1-3 for information about tone control, and page 3-3 for information about sound level control. You'll probably use the sliders most often in MIDI Controllers mode, where they can

affect any number of the features of the sound. You can get some amazing effects with many of the sounds—try using the sliders with some of the sounds in the Synth and Pad categories. The effect varies with each sound. Appendix C contains information about what each slider does for each of the sounds.

Transposing the Keyboard

The transposition feature allows you to play in one key, and have the instrument play in another. This can be useful when accompanying a vocalist who may find the written key of a song too high or low, or when playing with a transposing instrument such as a clarinet or saxophone.

To change the transposition, press the display button labeled **Transpose**. A zero appears to indicate no transposition. Use the **Up/Down** buttons to change the transposition upward or downward as desired; each press raises or lowers the sound by one half-step. To restore the standard key, press both buttons simultaneously, and the display will again show no transposition. If Remember Preferences is set to **Yes**, transposition is remembered when the power is turned off. You can save transposition in a Panel Memory (see page 3-15 for details).

Tuning Adjustments

If you're playing with other instruments, you may find that those instruments are not tuned to the exact pitch of the V150/V110 (which never goes out of tune). Rather than tuning the other instruments, you can quickly adjust the tuning of the V150/V110. Press and hold the display button labeled **Transpose**. This selects the Tuning feature; you can adjust it using the **Up/Down** buttons. Press the **Preferences** button to return to normal operation.

See page 3-19 for more information about tuning.

Splits and Layering

The V150/V110 offers much more than simple keyboard playing. The instrument allows you to play two completely separate parts simultaneously, each one with two sounds combined. These features are referred to as *splitting* and *layering* the keyboard, and allow you to create a wide variety of instrumental textures and effectively play more than one part at the same time.

Splitting Sounds

To split the keyboard into separate sections, simply press the display button underneath the word **Split** in the display. The left side of the keyboard will now play a separate sound from the right side, and the name of the left side sound will be displayed above the word **Split**.

Note that the light in the display button goes on, indicating that the Split sound is being *edited*. This means that any sound selection button pressed will change the Split sound (the left-hand sound) instead of the Main sound (the right-hand sound). The **Up/Down** buttons will also change the Split sound. You can select any sound for the Split sound.

If you want to change the Main sound instead, press the display button labeled **Main**. Its light will light, indicating that that sound is now being edited.

To remove the keyboard split, simply press the display button labeled **Split** to edit the split sound, and then press the same button again. The Split sound name will be erased, indicating that no Split sound is active, and the Main sound will again be edited. The Main and Split sound choices can be saved in a Panel Memory (see page 3-15 for details).

Split Point

The key at which the left-hand and right-hand sounds meet is called the *split point*. This key is the F# below middle C by default, but you can change it easily. Press the **Split Point** button. The display will prompt you to press any key on the keyboard, which will then become the split point. The split point is at the highest key of the Split (left-hand) sound. The split point will be remembered when the power is turned off if Remember Preferences is set, and can also be saved in a Panel Memory.

Layering Sounds

Two sounds can be layered, which means that both will play simultaneously when a key is pressed. This feature allows you to build a custom sound by layering any two sounds together to create a new aural experience. Press the display button labeled **Layer**. The button will light up, indicating that the Layer sound is being edited, and the name of the Layer sound will be displayed. This sound can be changed in the same way as the Main or Split sounds, using the sound selection or **Up/Down** buttons. The split sound can also be layered, by pressing the display button labeled **SplitLayer**.

A Layer sound is disabled the same way as the Split sound: press the associated display button to edit the sound, and then press the button a second time to turn it off. The name will be erased and the sound will no longer be heard. Layer sounds can be saved in a Panel Memory.

Both layering functions can be activated using a shortcut. If the Main sound is edited, pressing a sound selection button and holding it down while pressing a second sound selection button will cause the second sound to become the Layer sound. The name of the first sound appears near the display button labeled **Main**, and that of the second sound will appear near the display button labeled **Layer**. This shortcut will also work if the Split sound is edited, creating a layer in the split section of the keyboard.

Sound Level Editing

When you create a Split or Layer sound, you may wish to vary the volume levels of the various sound components. We refer to the four sound components as *zones*, and their relative volumes can be adjusted using the **Sound Levels** button. When this button is pressed, its light is lit indicating that the four sliders to the left are active for balancing the levels of the sound currently being played. Each slider is labeled underneath with the zone it controls. Slide the sliders up and down and play notes to hear the variation in the component sound levels. To leave the various zone levels at a fixed point, press the **Sound Levels** button to return the sliders to their previous functions. The volume levels can be saved in a Panel Memory.

Octave Shift

When creating a multi-zone sound using splits and layers, it is often desirable to adjust the range of the keyboard for each sound separately. Most instrumental sounds do not sound their best at one extreme of the keyboard or the other. To make a more playable keyboard setup, press the **Octave Shift** button. The right hand sounds will be adjusted *downward* by an octave, while the left hand sounds will be adjusted *upward* by an octave.

Different sound arrangements may call for different shifts. To change the default shift values, press and hold the **Octave Shift** button to see a menu of shift choices. The amount of shift for each sound zone appears in the display, near the corresponding display button (**Main, Split, Layer, SplitLayer**).

To change the shift in a sound zone, press the display button for that sound zone. The light in the button goes on, indicating that the **Up/Down** buttons are active to change the value. You can listen to the way the sound plays while editing the various fields, finding the setting that works best. Pressing **Up** and **Down** together sets the selected sound zone's shift to zero. The zone shifts can be saved in a Panel Memory.

Left Sustain

Sounds used on the left side of a split keyboard are often instruments that do not have a sustain pedal, such as strings or percussion. For this reason, the sustain pedal does not cause sustain on Split sounds, by default. If you choose to use a piano on the left side, you may wish to activate the sustain pedal for the split. Press the **Left Sustain** button to do this. The light goes on to indicate that the sustain pedal is active for left-hand (Split) sounds. The left sustain setting can be saved in a Panel Memory.

Rhythm and Metronome

The V150/V110 can help you practice with a built-in metronome, or it can play a drum track that lets you sound like a one-man band. This powerful feature is activated with the **Metronome/ Rhythm** button. Press this button to hear a steady metronome click. The button lights up to indicate that the metronome is active, and the current tempo (in beats per minute) appears in the upper left of the display.

Note: The Rhythm and Metronome features are unavailable when you're in General MIDI mode.

Changing Tempo

To change the tempo, press the display button labeled **Tempo**. The button will light to indicate the tempo is edited. Use the **Up/Down** buttons to change the tempo value. Tempo can be set from 20 to 300 beats per minute. Pressing both **Up** and **Down** buttons together will set the default tempo of 120 beats per minute.

You can set the tempo by feeling (rather than by numbers) using the *tap tempo* feature. Press and hold the display button labeled **Tempo**. A menu will be displayed instructing you to press a key repeatedly—any key will do. Play the same key repeatedly at the tempo rate you desire. Press any button on the panel to dismiss the menu, and the new tempo will be set.

The tempo setting will be remembered when the power is turned off if Remember Preferences is set, and can also be saved in a Panel Memory (see page 3-15 for details).

Metronome/Rhythm Volume

You can adjust the metronome volume by pressing and holding the **Metronome/Rhythm** button, and simultaneously moving **Slider D**. The rhythm volume setting is remembered when the power is turned off if Remember Preferences is set, and also in a Panel Memory.

Metronome/Rhythm Reverb

You can adjust the metronome reverb level by pressing and holding the **Metronome/Rhythm** button, and simultaneously moving the **Reverb Level** knob.

Drum Tracks

The V150/V110 contains a large number of realistically programmed drum and percussion sounds. To make it easier to use these in your playing, the metronome can be turned into a drum machine playing a set of ready-to-perform drum loops in several different styles. To listen to drum tracks, press and hold the **Metronome/Rhythm** button. A menu will be displayed which allows you to alter the characteristics of the rhythm track. Press the display button under the words Rhythm Style label to edit the type of track. Use the **Up/Down** buttons to select different drum patterns. Each pattern is a *loop* which means that it repeats after a short time, usually two or four measures.

Customizing the Rhythm Player

The rhythm menu has several fields with parameters that can be changed as needed to alter the way the metronome or drum tracks play. The parameters are:

Rhythm Style	as described above, this allows you to choose among various drum patterns or the standard metronome. (Default: **Metronome**)
Rhythm Volume	this parameter can be set in the menu or using the slider as described above. Its range is from **0%** to **100%**. (Default: **80%**)
Rhythm Tempo	the tempo at which rhythms are played, in beats per minute. This is also shown on the main display, but is displayed here for easy access. The default is based on which rhythm pattern is chosen, or **120** for the metronome.
Rhythm Channel	the MIDI channel used to play the rhythm track. This may need to be changed if you are using the V150/100 in conjunction with other MIDI devices. (Default: **16**)
Rhythm Sound	each rhythm track has a chosen drum sound, but you can override that default with this parameter.
Metronome Note	chooses the note that is played repeatedly for the metronome sound. (Default: **A 6**)

To change one of these parameters, press the associated display button underneath the parameter, and use the **Up/Down** buttons to adjust the value. Pressing **Up** and **Down** together will reset a parameter to its default value. Rhythm parameters will be remembered when the power is turned off if Remember Preferences is set, and can also be saved in a Panel Memory.

The Arpeggiator

An *arpeggio* is the notes of a chord played in sequence, rather than all at once. The term comes from the Italian word for harp, and represents a style of playing that adds rhythmic interest to many kinds of music. The V150/V110 contains a built-in *arpeggiator* which will automatically play the notes on the keyboard in the form of arpeggios. Press the **Arpeggiator** button to enable this feature.

As you play notes on the keyboard, the arpeggiator keeps track of what you've played, and plays them back using its own methods. Holding the keys down will keep the notes *latched* in the arpeggiator (see below for more details on this). When you release a key that note will no longer sound, but others may continue. Play some notes and try it out!

The tempo at which notes are arpeggiated is that used by the rhythm player. It can be changed in the same way, using the main display or the tap tempo feature. The tempo rate represents a quarter note (see the Clock Rate parameter below). Press the **Arpeggiator** button again to turn off arpeggiation.

There are a multitude of ways to create arpeggios, and you can design your own using several parameters. These can be fairly simple or rather complex, but it can be interesting to try various combinations. Press and hold the **Arpeggiator** button to enter the arpeggiator parameter menu. As with other menus, the parameters are changed by selecting the display button underneath the parameter, and using the **Up/Down** buttons to vary the parameter value. All arpeggiator parameters can be saved in a Panel Memory (see page 3-15 for details).

Playing Parameters

Play Order

This parameter sets the order in which arpeggiated notes are played. There are several options:

Played	notes are played back in the order in which they were struck.
Upwards	notes are played back in ascending order.
Downwards	notes are played back in descending order.
Up and Down	notes are played ascending and then descending. The notes at the top and bottom play only once per cycle.
Up/Down Rpt	notes are played ascending and then descending. The notes at the top and bottom are repeated each time the direction changes.
Random	notes are played randomly from those being arpeggiated.
Shuffle	notes are played randomly from those being arpeggiated, but no notes are repeated until all of the others have been played in a cycle.
Walking	notes are played randomly from those being arpeggiated. Each note is either the next-highest or the next-lowest from the one just played.

The default Play Order is **Upwards**.

Clock Rate

This sets the rate arpeggiated notes are played. This parameter is specified in note names, from quarter notes (one note per tempo beat) to thirty-second note triplets (12 notes per tempo beat). The default Clock Rate is **16th notes**.

Note Duration

Determines how long the notes will play within the rhythm. This is expressed as a percentage of the available time that an arpeggiated note will sound: **100%** means that a note will sound until the next one is played, **50%** means that the note will sound only half the time, etc. The shortest duration is **1%**, which produces a staccato effect. The default Note Duration is **70%**.

Note Shift Parameters

The arpeggiator can create interesting patterns by changing what it plays each time it runs through the cycle of latched notes. Note shifting is applied to all the notes in the arpeggio at the end of the arpeggiated cycle. It is controlled by three parameters.

Note Shift

Sets the amount the arpeggiator transposes the notes each time it plays through them, in half steps. The transposition is cumulative from one cycle to the next. For example, if you choose 2 as the shift value after the initial cycle the arpeggiation will be raised a whole step, after the next cycle it will be raised two whole steps, and so on. Shift values can run from –12 to +12. The default Note Shift is 0 (no shift transposition).

Shift Limit

Determines how far up or down the arpeggiator will shift from the original note, in half steps. The range is 0 to 88. What happens when the arpeggiator reaches the limit is determined by the *Limit Option* parameter. The default Shift Limit is 24.

Limit Option

Determines what happens when the shift limit is reached. Options are:

Stop	when the shifted notes reach the limit, the arpeggiation stops.
Reset	when the shifted notes reach the limit, the arpeggiator returns to the original pitch and starts over again, continuing to transpose as it plays.
Unipolar	when the shifted notes reach the limit, the arpeggiator starts shifting notes in the opposite direction, using the same interval. The shift reverses direction again when the original note is reached. For example, if the original note is C 4 and the Shift Limit is 24, the arpeggiator starts at C 4, shifts up to C 6, shifts down to C 4, and repeats. Compare to **Bipolar.**
Bipolar	similar to **Unipolar**, but after reversing direction the arpeggiator shifts past the original note and continues until the limit is reached in the opposite direction before reversing again. For example, if the original note is C 4 and the Shift Limit is 24, the arpeggiator starts at C 4, shifts up to C 6, shifts down to C 2, shifts up to C 6, and repeats. Compare to **Unipolar.**
Float Reset	when the shifted notes reach the limit, the arpeggiator returns to a pitch *floating* (varying) from the original pitch. The amount of the float is determined by comparing the first note that would exceed the shift limit with the limit itself. The interval between these notes is used to transpose the original pitch.
Float Unipol	similar to **Float Reset**, but instead of floating from the original pitch, these modes float in the opposite direction from the limit at each end. Thus if the first note which exceeds the limit is over by four half steps (a major third) the new starting point will be four steps *below* the limit. The limits on each end are as in unipolar or bipolar modes. **Float Bipolr** is the bipolar equivalent of **Float Unipol.** See **Bipolar** earlier in this subsection for an explanation of bipolar limit options.

The default value for the Limit Option parameter is **Unipolar.**

Glissando

When set to **On**, this causes the arpeggiator to play a chromatic sequence between the various latched notes. This is an alternative to the shift modes; if Glissando is **On**, the Note Shift, Shift Limit, and Limit Option parameters are ignored. The default for Glissando is **Off**.

Latching Parameters

Latching describes the way that the arpeggiator reads the notes that you've played and uses them in a repeating pattern. The most basic method is to hold the desired keys down, but there are other modes which can be useful in performance. Note that any of the three pedals can be assigned to be the *Latch Pedal* (see *Assigning Pedals* on page 3-13 for details).

Latch Mode

This determines how the arpeggiator latches notes for its usage. Options are:

Keys	the arpeggiator latches notes held down on the keyboard. As you press keys, notes get added to the arpeggio, and as you release keys notes are removed.
Overplay	the arpeggiator latches notes that are being held when the Latch Pedal is pressed. These notes remain latched even after you release them on the keyboard, and are removed when the Latch Pedal is released. Notes played after the Latch Pedal is pressed sound normally and are not arpeggiated.
Arpeg	similar to **Overplay** in that any notes held when the Latch Pedal is pressed are latched until the pedal is released. Notes played and held *after* the pedal is pressed will also be latched, but only until you release them.
Add	similar to **Arpeg** except that notes you play after the Latch Pedal is pressed will be latched until the *pedal* is released. This allows you to build a complex arpeggio without continuing to hold down many keys. When the Latch Pedal is released, all notes are unlatched and the arpeggio stops.
Auto	the arpeggiator latches each note played, as long as at least one note continues to be held down. Like Add mode, this allows you to continuously build an arpeggio, but without the use of the pedals. If at any point no key is held down, all notes are unlatched and the arpeggio stops.
Pedals	the arpeggiator uses two pedals to control latching, in a way analogous to the Sustain and Sostenuto functions on a piano. Notes held down on the keyboard will be latched, as well as keys held down when the Latch Pedal or Latch Pedal 2 is pressed. The Latch Pedal will work in Add mode, so that as long as it is held all notes played will be latched. Latch Pedal 2, however, will work in Overplay mode, and notes played after it is pressed will *not* be latched.

The default Latch Mode is **Keys**.

Low Key and High Key

These define the range of keys that can be latched by the arpeggiator. The range of keys is the full range of MIDI notes, from C –1 to G 9. When either of these parameters is edited in the menu, pressing a key on the keyboard will change the value to that key. The default Low Key is C –1 and the default High Key is **G 9**.

Zone Selection

You can set up the arpeggiator to send notes to selected zones. The top line of the display shows Active in. Use the display button labeled Active in to select from the available values. The choices are

All Zones	All zones
Main Zone	Main zone only
Layer Zone	Layer zone only
Split Zone	Split zone only
SpLayer Zone	SplitLayer zone only
Both lyr zones	Layer zone and SplitLayer zone

Arpeggiated Volume

Velocity Mode

Determines how the note velocity (loudness) of notes played by the arpeggiator is set. There are several options:

Fixed	All notes sound at the same volume set with the Fixed Value parameter.
Played	Each note repeats at the velocity it was played on the keyboard.
Last	All notes play at the velocity of the most-recently-played note.
Aftertouch	The keyboard pressure Controller determines the velocity.
Ctrl 117	MIDI Controller 117 determines velocity. This Controller may be assigned to the controller pedal or a front-panel slider (see page 3-13).

The default Velocity Mode is **Played**.

Fixed Value

Determines the arpeggiated note velocity used when Velocity Mode is set to **Fixed**. The range is 1–127. The default Fixed Value is **100**.

All of this may seem a little confusing, but if you spend some time with it you can get some very musical results. Don't be afraid to experiment!

KB3 Drawbar Organ Simulation

The V150/V110 features a special simulation of the classic drawbar organ used in jazz, rock, and gospel music. This simulation is referred to as KB3. Unlike other sounds in the instrument, the KB3 sounds are not created with samples but instead with a complex series of digital signal processing algorithms that accurately recreate the drawbar sound. The sound timbre is altered with controllers known as drawbars, which refers back to the traditional electromechanical organs.

Using KB3

To access the KB3 model, press the **KB3** button on the front panel. The Main sound will be replaced with a KB3 drawbar organ sound. In this mode, the four sliders are automatically assigned to change drawbar values. Try them out! Note that unlike other values controlled by the sliders, the drawbar sound will increase as you pull the sliders down and decrease as you push them up. This simulates the traditional drawbar action.

To enable you to see the settings of all 9 drawbars, press the **Right** button next to the display. A special drawbar edit page will be displayed, with graphical representation of the various drawbars, along with their organ pipe-length designations. Note that the drawbar images move as you slide the four sliders. You can also see the drawbar edit page by pressing and holding the KB3 button.

Note: The KB3 organ sounds are unavailable when you're in General MIDI mode.

Assigning Drawbar Controls

Since there are 9 drawbars in the organ model, but only 4 sliders on the V150/V110, it is necessary to assign the sliders to particular drawbars. By default, the first four drawbars (16', 5-2/3', 8' and 4') are assigned to the sliders. Press the middle lower display button to shift to the next four drawbars (2-2/3', 2', 1-3/5', 1-1/3'), or the middle upper display button to shift to the last four drawbars (2', 1-3/5', 1-1/3', 1'). Press the left lower display button to return to the first four drawbars.

You can assign specific drawbars to the sliders in the drawbar assignment editor. This is usually determined by how you're playing the organ in performance, and which timbre changes you're likely to make while playing.

When you're on the drawbar edit page, press the **Right** button to enter the assignment menu. The top line of the display shows the current assignments. Press the lower left button to choose a slider to reassign; press the lower middle button to choose which drawbar that slider will affect.

Note: If you choose one of the preset assignment configurations, you'll lose some or even all of the KB3 slider and drawbar assignments you've made. If you want to preserve custom slider and drawbar assignments, you can save them in a Panel Memory (see page 3-17).

Percussion, Chorus/Vibrato, and Rotary Speaker Effects

In the drawbar edit page, you can press the right-hand display buttons to turn on and off the Percussion and Chorus/Vibrato features of the organ model. These features provide distinctive variations to the organ sound.

Press the lower-right display button to turn the percussion effect on, and press it again to turn it off. When Percussion is active, the six buttons just to the right of the sliders are reassigned to vary the Percussion parameters listed below them. The three parameters are:

Percussion 2nd / 3rd Harmonic: varies the tone of the percussion sound

Percussion Normal / Soft: varies the volume of the percussion sound

Percussion Slow / Fast: varies the decay rate of the percussion sound

These buttons simulate the traditional rocker switches found on drawbar organs: either the left or the right hand side is lit, indicating which way the virtual rocker switch is tilted. Turning off the percussion effect will turn off all the lights in these buttons.

Note: While in KB3 mode, the buttons used by percussion don't work for their primary functions. For example, the **Octave Shift** button becomes the **3rd**-Harmonic button for KB3 sounds.

Press the upper-right display button to turn the Chorus/Vibrato effect on, and press it again to turn it off. When the Chorus/Vibrato is turned on, the name of the effect is listed in the display field. The **Up** and **Down** buttons change the type of Chorus/Vibrato. The types available are V1, V2, V3, C1, C2, and C3, corresponding to the sound of traditional drawbar organs.

Emulation of the rotary speaker often used with drawbar organs is done in the Effects section of the V150/V110. The left pedal—usually assigned to the Soft function when playing a piano sound—is assigned to switch the rotary sound from slow to fast.

Reverb and Effects

The V150/V110 utilizes state-of-the-art digital signal processing (DSP) to simulate a range of sound ambiance, both natural and artificial. These DSP methods are referred to as *reverb* and *effects processing*. Both the reverb and the effects have been carefully designed by Kurzweil to enhance all of the sounds on the instrument, and you can simply enjoy them as is. However, if you are using the V150/V110 to create songs, or to play with other instruments, you may wish to alter the default settings.

What is Reverb?

Reverb is short for reverberation, which refers to the natural echoing effect of sound reflecting off the walls of an enclosed space. These reflections blend together to produce a mix or "wash" of sound that adds warmth and ambiance to music. The V150/V110 simulates a number of different performance spaces, from small to large. These are grouped into general categories: Room, Stage, Hall, and Space.

All the sounds in the V150/V110 use reverb as an enhancement. When you choose a sound using the sound selection or **Up/Down** buttons, a reverb is chosen along with that sound. The category of the reverb is shown in the Reverb lights directly above the **Reverb** button. You can choose another type of reverb by pressing the **Reverb** button, which will cycle through the

categories. After the last choice (Space), pressing the button again will turn the Reverb lights off, indicating that no reverb is currently applied (this is referred to as a dry sound). Another press selects a Room reverb.

What is an Effect?

The V150/V110 provides simulations of a number of popular electronic effects which are commonly used in amplified music to add interest to sounds. These are often applied to electric organ, guitar, and synthesizer sounds, and less frequently to acoustic instruments such as piano, drums, or horns. The categories of effects are:

Chorus: a mixing effect simulating two identical instruments playing together
Rotary: a tremolo/vibrato effect simulating a rotating organ speaker
Echo: a repetition and fading of a sound
Special: other specialized electronic effects such as flanging

Effects are chosen the same way as reverb, by pressing the Effects button to change categories. Many sounds have no effect associated with them, and no Effects light will be lit when choosing such a sound. You can try out any of the effects by pressing the Effects button, and cycling through the different types.

Both reverb and effects choices can be saved in a Panel Memory (see page 3-15 for details).

Reverb and Effects Activation in Zones

Both Reverb and Effect choices are determined by the sound chosen in the Main zone. This means that the Reverb associated with sounds in the split or layer zones are not activated when those sounds are chosen. Instead, the sounds from the other zones are routed through the reverb associated with the Main sound. You can imagine this as all the group members of a combo playing in the same room at one time.

Since an Effect is usually specific to a certain sound choice, it is handled differently. The Effect associated with the Main sound is active, and the Effect associated with a Split or Layer sound is not active. In addition, the other zones are not routed through the effects processing by default. For example, if you choose an electric guitar sound in the Main zone which has an echo effect, a bass playing in the Split zone will not have the echo applied to it. It is possible to reroute the other zones through an effect using the menus described below.

Adjusting Reverb and Effect Levels

Both reverb and effects processing can be varied in intensity using the associated level knob. Turn the **Reverb Level** knob clockwise to increase the mix level of the reverb simulation. You can hear the increasing intensity of the reverb as the level increases, and the greater subtly achieved when the knob is turned counter-clockwise. The **Effect Level** knob affects an active effect simulation in a similar way.

Both level knobs are active in the zone which is selected for editing on the display. This allows you to adjust the reverb levels for each zone separately if you wish. Reverb and effects levels can be saved in a Panel Memory.

Customizing Reverb and Effects

If you change the Main sound, the reverb and effect will switch to those assigned to that sound. When you select a different category of reverb or effect using the **Reverb** or **Effect** button, you'll hear a typical effect of that type. There are many choices of reverbs and effects within each category, which you can select with the following procedure.

First, press and hold the **Reverb** button. The display shows the category and name of the current reverb.Use the **Up/Down** buttons to select a different reverb. The reverb category will change as you scroll through the list.

Press **Up** and **Down** together to select the default reverb for whatever sound is currently the Main sound. The display shows DEFAULT when you do this.

Press the **Right** button to view the current wet/dry mix levels. For each active zone, there's a routing/level value next to the label for that zone. If the routing/level value is Off, it means that that zone's sound is not routed through the reverb processor at all. To activate the reverb for a zone, press the corresponding display button, and the value of Off will change to a numerical value indicating the amount of reverb— 0% for none, 100% for full. Then use the **Up/Down** buttons to change the value. Press the display button again to turn off the reverb routing.

The effects menu works in a similar way, and is activated by pressing and holding the **Effects** button. All routing choices and mix levels—for both reverb and effects—can be saved in a Panel Memory.

Reverb and Effects for KB3 Sounds

KB3 sounds use special effects processing that simulates the vibrato/chorus and rotary speakers of traditional drawbar organs. These simulations are complicated, and require quite a bit of processing. Consequently, by default KB3 sounds bypass the reverb (which would require even *more* processing). You're not likely to notice this unless you layer or split another sound with the KB3 sound. Those sounds won't have any reverb either.

If you want to play a KB3 sound with Split or Layer sounds, but you want reverb for those sounds, you'll need to select a different effect for the KB3 sound. Use the Effects menu to select an effect that isn't the default KB3 rotary effect.

Assigning Pedals and Controllers

The V150/V110 offers four sliders, three switch pedals, and a variable controller pedal—all of which can serve a variety of purposes. These controllers, as they are called in the world of MIDI, send messages to the V150/V110 itself or to other instruments via a MIDI connection. The assignment of messages to the controllers is programmable and can be set up to support a wide variety of instrument setups and methods of playing. The following information can be used in conjunction with the detailed MIDI specifications found on page B-6, and with the sound controller lists in Appendix C.

Assigning Pedals

There are three switch pedals that correspond to the pedals of a grand piano. By default, these emulate the standard pedals on a piano: Soft, Sostenuto, and Sustain (from left to right). We call these pedals *switch* pedals because they control functions that can be turned on or off. In addition, the V150/V110 comes with a variable control pedal that emulates the expression pedal of an organ. This pedal sends a variable-value message, with the low value sent when the heel of the pedal is down, and the high value when it is up. All of these pedals can be reassigned to perform other functions specific to the V150/V110 or another MIDI instrument.

Pedal reassignment can be done in the Pedals menu. Press **Preferences**, and then press the display button under the words CONTROL PREFS, and then the display button under the words PEDAL SETUP. You can use the **Right/Left** buttons to view the current assignment of each pedal. To change the assignment, use the **Up/Down** buttons to scroll through the possible functions. The switch pedals can be assigned to perform these functions:

Soft	The current sound on all four zones is reduced in volume while the pedal is held down. For sounds using the Rotary Speaker effect, this message causes the rotary emulation to speed up and slow down.
Sostenuto	A note held down at the time the pedal is pressed will be sustained in sound until it is released. Notes played after the pedal is pressed are unaffected.
Sustain	All notes held down at the time the pedal is pressed, or played afterwards, will be sustained until it is released.
Rhythm Start/Stop	Performs the same function as the **Metronome/Rhythm** button on the front panel. This allows you to start and stop a drum track without taking your hands off the keyboard.
Controllers 9, 12, 13, 29	These Controllers do different things in different sounds. See Appendix C for specific information.
Arpeggiator On/Off	Performs the same function as the **Arpeggiator** button on the front panel. This allows you to activate or deactivate the arpeggiator.
Arpeggiator Latch, Latch 2	This function is specific to certain arpeggiator latching modes (see page 3-8).

The continuous controller pedal can be assigned to perform a much greater variety of functions. By default it's assigned to MIDI 11 (Expression). It can be assigned to any of a wide range of MIDI channel Controllers (1–119) and Tempo. Many of the Controllers are displayed with a name (like Expression) which corresponds to their usual meaning on MIDI instruments, but most are simply called by their number. To change the Controller assignment, use the **Up/Down** buttons to scroll through the full list.

Pedal assignments can be saved in a Panel Memory (see page 3-15 for details).

Assigning Sliders

The four sliders found on the V150/V110 front panel are more flexible than the pedals. These sliders send MIDI messages which may have various meanings depending on the sound being played. They are also very useful if you have other instruments connected to the V150/V110 via MIDI, which you wish to control while sitting at the keyboard. Like the continuous controller pedal, the sliders can be assigned to many MIDI Controllers (1–119) and Tempo.

See Chapter 4 for a more complete discussion of MIDI and how it works with this instrument. Some MIDI Controllers are general, and apply to all instruments, and some are specific to a given instrument. Appendix C will help you understand how the various Controller messages work with the V150/V110's sounds.

Slider reassignment can be done in the Sliders menu. Press **Preferences**, and then press the display button under the words CONTROL PREFS, and then the display button under the words SLIDER SETUP. You can use the **Right/Left** buttons to view the current assignment of each slider. Like the continuous controller pedal, each slider can be assigned to one of the MIDI channel Controllers.

The default Controller assignments are:

Slider A: Controller 1 (Mod Wheel or Modulation)
Slider B: Controller 4 (Foot Controller)
Slider C: Controller 6 (Data MSB)
Slider D: Controller 13

Slider assignments can be saved in a Panel Memory (see page 3-15 for details).

Pedal and Slider Zone Assignments

The Pedals and Sliders menus also allow you to define which sounds will be affected by a given slider. The V150/V110 will send the Controller message on whichever zones are specified in this menu. By default, all zones are active for each pedal and slider assignment, but depending on how complex a sound you've built, you may wish to reassign the activity so it affects only a certain zone. To do this, press the display button labeled Active On in the Pedals or Sliders menu, and use the Up/Down buttons to scroll among the choices of individual zones.

Pedal and slider zone assignments can be saved in a Panel Memory (see page 3-15 for details).

Panel Memories

After you've set up the V150/V110 to play in the way you like, with certain sounds in the various zones, or with certain rhythm or arpeggiator settings, you may wish to save the state of the instrument for later use. Or perhaps you want to play a set of musical numbers in which each uses a different configuration. The V150/V110 provides a way to do this easily, using what is called a Panel Memory.

At any time when you have a setup that you like, press and hold one of the eight numbered panel memory buttons located at the bottom of the sound selection area. The display will indicate that you've saved the state. If there is already a memory stored in the location you've selected, a prompt screen will be displayed giving the choice of overwriting the existing memory or leaving it as is.

When you want to restore the instrument state to one of the saved panel memories, simply press the associated button without holding it, and all the saved selections will be immediately restored. The light in the associated panel memory button will light to indicate that the memory is restored, and will go out when any other button is used to change the panel state.

Panel memories are saved when the instrument is turned off, using the battery-backed memory. See Appendix A for information about replacing the batteries.

What's in a Panel Memory?

The Panel Memory stores a number of items that determine the state of the instrument:

- Main Zone Sound, Volume, Channel
- Layer Zone Sound, Volume, Channel, and Active state
- Split Zone Sound, Volume, Channel, and Active state
- SplitLayer Zone Sound, Volume, Channel, and Active state
- General MIDI state
- Octave Shift On/Off and shift values
- Left Sustain On/Off
- Split Point
- KB3 drawbar assignments and settings
- KB3 percussion and chorus settings
- Reverb setting and zone routing and mix values
- Effect setting and zone routing and mix values
- Pedal assignments and controller pedal value
- Slider assignments and values
- Arpeggiator On/Off state
- Arpeggiator settings
- Rhythm On/Off state
- Rhythm Pattern, Volume, Sound choice, Reverb Level
- Tempo
- Transposition

Note that values are saved for the sliders and controller pedal. This means that you can set the sliders to a desired position and then save the exact state in the Panel Memory. When the Panel Memory is recalled, the value of the Controllers associated with the sliders and pedal will be restored from the saved state, regardless of the current position of the sliders and pedal themselves.

The Default Panel Memory

As you play your V150/V110, you may enjoy adding splits and layers for a combination sound. But sometimes you want to get back to just a single sound. There's a quick and easy way to do this: press the first and second **Panel Memory** buttons at the same time. This selects the Stereo Grand Piano sound, without any other sounds (this is the default Panel Memory).

Panel Memory Banks

If you have a large number of panel settings you'd like to save, don't despair! The V150/V110 has eight memory slots called Panel Banks, each of which can store eight panel Memories. To choose a Panel Bank, press the **Panel Bank** button. You will be prompted to press one of the **Panel Memory** buttons, which will select the respective bank. Pressing any other button will remove the prompt screen without changing the Panel Bank. Now any Panel Memory saved will be in the bank you've selected, and Panel Memories restored will also be from that bank. When the instrument is turned on, Panel Bank 1 is always active.

To make it easier to keep track of Panel Banks you can give them names. Press and hold the **Panel Bank** button to see the bank menu. Use the **Up/Down** buttons to select a bank. The bank's name appears in the display. Every Panel Memory button that lights up indicates a Panel Memory that you've stored.

To rename a bank, press the middle display button underneath the bank's name. The existing name (or blank space, if the bank is unused) appears with a cursor under one of the characters. Use the **Right** and **Left** buttons to move back and forth in the name, and the display button labeled DELETE to remove characters.

Insert characters by pressing keys on the keyboard: white keys for letters, black keys for digits or spaces. The lowest white key on the keyboard (A 0) corresponds to "A," proceeding along the white keys to "Z "at E 4. The next key (F 4) corresponds to "a" (lowercase "A") and proceeds to "z" at the high end of the keyboard. The digits are represented by the lowest black keys on the keyboard, followed by punctuation marks and spaces. When you've chosen the name you like, press the display button labeled OK, or press the display button labeled CANCEL to leave the name unchanged.

Saving Panel Memories

You can save all of your panel memory banks on a computer disk using MIDI to send the data to the computer. This is a good idea if you've set up elaborate or complex memories which would take time to restore. The details of MIDI connections are specified in Chapter 4. You must also have an appropriate computer-based sequencer running on the computer. Once this setup is in place, press the display button underneath the words PANEL MEM SAVE in the panel bank menu. The V150/V110 will display a screen prompting you to set up the MIDI connection and sequencer. When everything is set up, press the display button labeled START MIDI SYSEX to write the panel memory data to your computer via MIDI.

Panel memory data saved in this manner are in the form of a Kurzweil-specific Sysex Data Stream that can be loaded back into the V150/V110 using MIDI. Each panel memory is restored to the position it was in (both number and bank) when it was saved. The details of how to do this are dependent on the sequencer you have running on your computer, and are beyond the scope of this manual. You should be aware, however, that loading panel memory data into the V150/V110 may overwrite existing panel memories, so be careful to save any existing work on the instrument before loading new data.

Pedal Stepping

If you are using the Panel Memory feature to assist in performance, you may wish to change the setting while continuing to play. To make this "hands off" method possible, the V150/V110 supports Pedal Stepping of panel memories. In this mode of operation one of the pedals will cause the selection of the next panel memory setting. The light associated with the new panel memory will be lit to indicate which panel memory is active. When the last memory in a panel bank is active and a step occurs, the next bank gets selected, and the first Panel Memory in the new bank is selected.

You can enable pedal stepping from the panel bank menu. Press the display button labeled Pedal Step. Use the **Up/Down** buttons to choose a pedal to assign to panel memory stepping. When pedal stepping is assigned to a pedal, any other assigned functions for that pedal are ignored. When the instrument is powered up, pedal stepping is always inactive (assigned to Off.)

Preferences

There are quite a few user preferences that can be set on the V150/V110. Many of these have already been discussed in previous chapters, along with the features they control. The Preferences button gives you access to a set of menus that control these features as well as some others that are general in nature.

Press the **Preferences** button to enter the preference menu system. The **Left/Right** buttons will move among the various pages of menu choices. Pressing one of the display buttons will either enter another set of menus, or activate a field which can then be edited with the **Up/Down** buttons. Some menu pages which are entered using the display buttons have an up-arrow character, which indicates that you can return to the previous menu from which you entered. Press the associated display button to return to the previous menu. At any time, you can press the **Preferences** button again to return to the main display.

The first page of menu choices is:

```
CONTROL PREFS        MIDI PREFS                RESET
```

Press **Right** to see the second page of menu choices:

```
Tuning       Output Mode
```

Press **Right** to see the third page of menu choices:

```
METRO/RHYTHM       OCTAVE SHIFT        ARPEGGIATOR
```

Press **Right** to see the fourth page of menu choices:

```
REVERB                EFFECT
```

Press **Right** to see the last page, showing the instrument state and editing the Remember Preferences feature.

Control Preferences

Setting Keytouch

Choosing CONTROL PREFS on the first menu page offers another menu of choices:

PEDAL SETUP   SLIDER SETUP   KEYTOUCH

We've already discussed pedal and slider setup on pages 3-14 and 3-14. The third option is KEYTOUCH. Pressing the display button associated with this function displays a menu showing the current velocity sensitivity of the instrument. There are seven levels ranging from **Lightest** to **Hardest**. The names refer to the degree of force needed to produce a sound of a certain volume and brightness when striking the keyboard. Lighter settings mean that a relatively light touch is needed to make the instrument sound louder, while harder settings mean that a more aggressive striking of the keys is necessary to achieve louder volumes.

Use the **Up/Down** buttons to adjust the sensitivity setting. You can try out the setting by playing the keyboard while adjusting, until the touch you like best is reached. When the Keytouch menu is on display, the right and middle pedals can be used to adjust the keytouch as well; this allows you to play with both hands while adjusting the touch.

The keytouch setting is always remembered when the power is turned off, and is not saved as a part of a Panel Memory. The default keytouch setting is **Normal**.

MIDI Preferences

The V150/V110 is compatible with the MIDI standard for digital musical instruments, and can be customized to match your MIDI setup. Choosing MIDI PREFS on the first menu page displays a series of menu pages which allow you to program various MIDI parameters.See page 4-5 for a description of the MIDI preferences.

Tuning

The V150/V110 is a digitally controlled instrument and will never go out of tune. However, you may need to play with other instruments that are not in tune with the usual standard (A-440) and thus wish to tune the V150/V110 up or down from that point. Press the display button labeled **Tuning**, then use the **Up/Down** buttons to adjust the tuning. The unit of tuning is the cent, which represents 1/100 of a half step. You can tune the V150/V110 up or down as much as 50 cents. The default tuning is 0 cents.

Press **Up** and **Down** together to return to standard tuning. The Tuning setting will be remembered when the power is turned off if Remember Preferences is selected in the Preferences menu.

You can also reach the tuning parameter by pressing and holding the display button labeled **Transpose**. This allows you to adjust both transposition and tuning of the instrument in a convenient fashion.

Audio Output Mode

The V150/V110 produces sound in stereo, which is almost always desirable as it gives the instrument a greater sense of depth and realism. If your instrument is connected to a PA system with a single cable, however, it may be helpful to treat it as a monophonic sound source. Press the display button labeled Output Mode, then use the Up/Down buttons to choose between **Stereo** and **Mono** (the default is **Stereo**). Output Mode setting will be remembered when the power is turned off if Remember Preferences is selected in the Preferences menu.

Other Preferences

The third page of preferences controls the Metronome/Rhythm player (these preferences are described beginning on page 3-4), Arpeggiator (described on page 3-5), and Octave Shift (page 3-3). The fourth page contains preferences for Reverb and Effects (described on page 3-11). Each of these menus is described in detail in the appropriate section. For your convenience, these menus are also accessible with the **Preferences** button.

Remember Preferences

The last preferences menu page shows the state of the V150/V110, including version numbers of the installed firmware and the amount of memory available. There is also an editable choice called Remember Prefs which can be changed with the Up/Down buttons. Choosing **Yes** for Remember Prefs will cause a number of user choices to be saved when the power is turned off, using the battery-backed memory. Choosing **No** will cause the choices to be restored to the factory default values when the instrument is powered on.

When the Remember Preferences feature is on, the following preferences are remembered even when you turn off your V150/V110:

Transposition and tuning

Stereo/Mono output setting

Main, Layer, Split and SplitLayer sounds

Octave shift settings

Left sustain state

Metronome/Rhythm settings

Tempo

The keytouch setting and the tone controls (Bass, Midrange, and Treble) are *always* remembered, even if the Remember Preferences feature is off. You can restore all preferences to their original settings using the RESET menu, as described below.

Resetting the instrument

Choosing RESET on the first menu page offers a menu of choices for resetting various preferences that have been stored in the battery-backed memory of the V150/V110. The choices for reset are:

CLR PANELMEM	Remove all stored Panel Memories, in all panel banks. The factory-supplied Panel Memories are available in Bank 1.
CLR PREFS	Clear all preferences that are remembered with the Remember Prefs setting. All default values are restored. Remember Prefs is set to **No**.
FACTORY RESET	Restore the instrument to its factory settings. No user-defined preferences are preserved, including tuning, tone settings, and keytouch.

Chapter 4
MIDI

Overview

MIDI, which stands for *Musical Instrument Digital Interface*, enables electronic musical instruments to communicate in the numeric language of computers. You can connect your V150/V110 to other MIDI instruments, or to a computer that has a MIDI interface (either a set built-in MIDI connectors, called ports, or an external device with one or more MIDI ports and a standard connection to the computer).

Connecting to other MIDI instruments enables you to control them from the V150/V110's keyboard—or to control the V150/V110 from *their* keyboards. Connecting to a personal computer enables you to record the music you play into software that creates *sequences*, which are computerized recordings of the music you've played.

A computer connection to your V150/V110 also enables you to update the internal software, should a revision become available.

MIDI Information

MIDI isn't exactly *music*—it's a standardized language for representing musical *data* with numbers (0s and 1s, to be exact). Information such as what notes you're playing, how hard you're playing them, and whether they're sustained—all gets translated as numbers and gets sent along a MIDI cable as a series of electrical pulses that represent the numbers.

In practical terms, that means that you'll think a little differently about the sounds you play when you start using MIDI connections with other instruments. For example, suppose you're controlling a MIDI organ from your V150/V110. Playing a piano sound on the V150/V110 obviously can't play a piano sound on an organ. Instead, you'll hear whatever sound has the same *sound ID* (also known as MIDI Program Change number) as the piano sound. If you're playing the Stereo Grand Piano sound (which has a sound ID of 0) on the V150/V110, you'll play whatever sound has ID 0 on the organ as well. This enables you to add even more layers of sound to your music.

You can find the sound IDs for all of the V150/V110's sounds, in Appendix C, in the tables that list the sounds by banks.

MIDI Connections

On the bottom panel are three MIDI ports: In, Thru, and Out. You'll connect MIDI cables between one or more of these ports and similar ports on other MIDI instruments, including MIDI-capable computers.
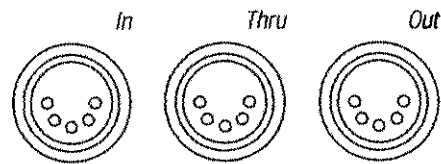
Figure 4-1   MIDI ports

- In receives MIDI information from other MIDI instruments
- Thru sends whatever MIDI information is received at the In port out to other MIDI instruments
- Out sends MIDI information generated by the V150/V110 to other MIDI instruments

The way you connect the cables determines how the instruments communicate. There are several combinations, but there's one simple rule: one end of the cable connects to an In port, and the other end to either an Out port or a Thru port.

Basic Connection: Master/Slave

Many people connect a second instrument to their favorite keyboard—for example, you might want to connect a Kurzweil PC2R or other sound module to your V150/V110 to increase the number of sounds you can play. Connecting two instruments via MIDI enables you to play both instruments together in what is known as a master/slave configuration, with the second instrument (the slave) controlled from the keyboard of the first (the master). Figure 4-2 shows the simplest MIDI connection, with the cable connecting the MIDI Out port of the master keyboard with the MIDI In port of the slave (in this case a sound module).
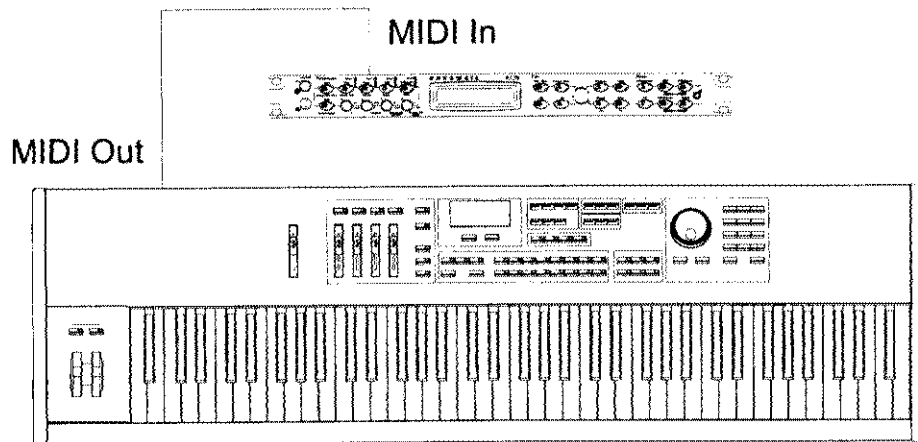

Figure 4-2   Simple master/slave connection

The slave can be any MIDI instrument or device, including computers and effects processors. If it's a sound-generating instrument, you can plug its audio output into your sound system or into the Audio In jacks on the V150/V110 bottom panel.

Two-Way Connection

Another common type of connection enables either instrument to be master or slave. This is the typical configuration used to connect an instrument to a computer for recording and playback. Figure 4-3 shows a two-way connection between a MIDI instrument and a computer. The cables connect the computer's MIDI Out to the instrument's MIDI In, and the instrument's MIDI Out to the computer's MIDI In.
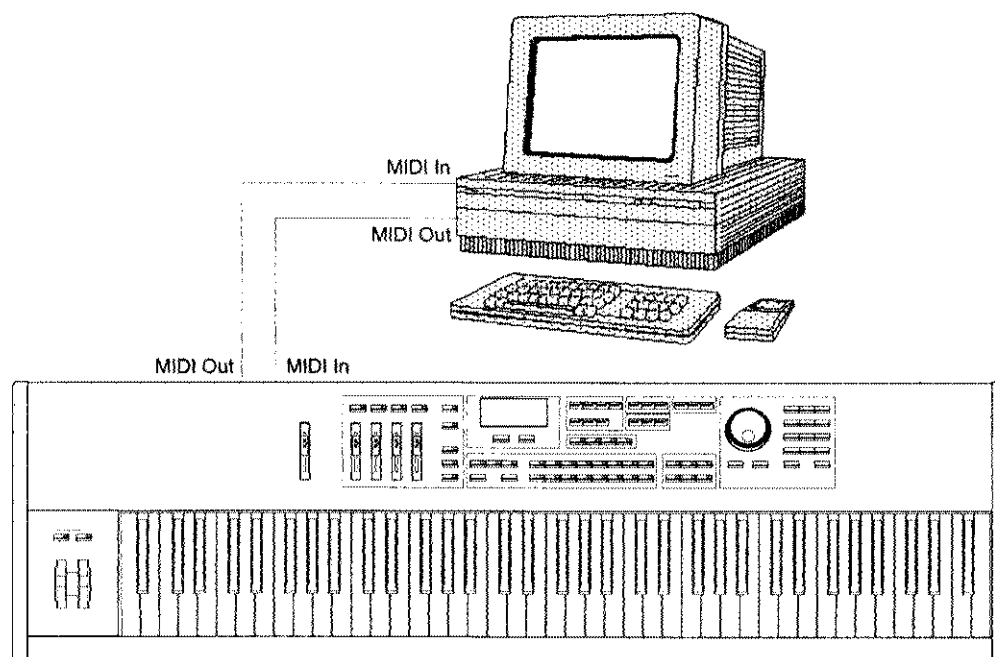
Figure 4-3   Two-way connection

MIDI Thru

If you have more than two MIDI instruments, you may want to connect them in a MIDI chain, which enables you to control multiple slaves from a single master. A typical example of this is a configuration with a computer controlling a first slave, which passes the MIDI information through to a second slave—as shown in Figure 4-4. In this case, there's a master/slave connection between the first and second instruments, and a two-way connection between the first instrument and the computer. This enables recording from the first instrument to the computer, and playback on both instruments. During playback, the first instrument receives MIDI information from the computer, and passes it via its Thru port to the second instrument.
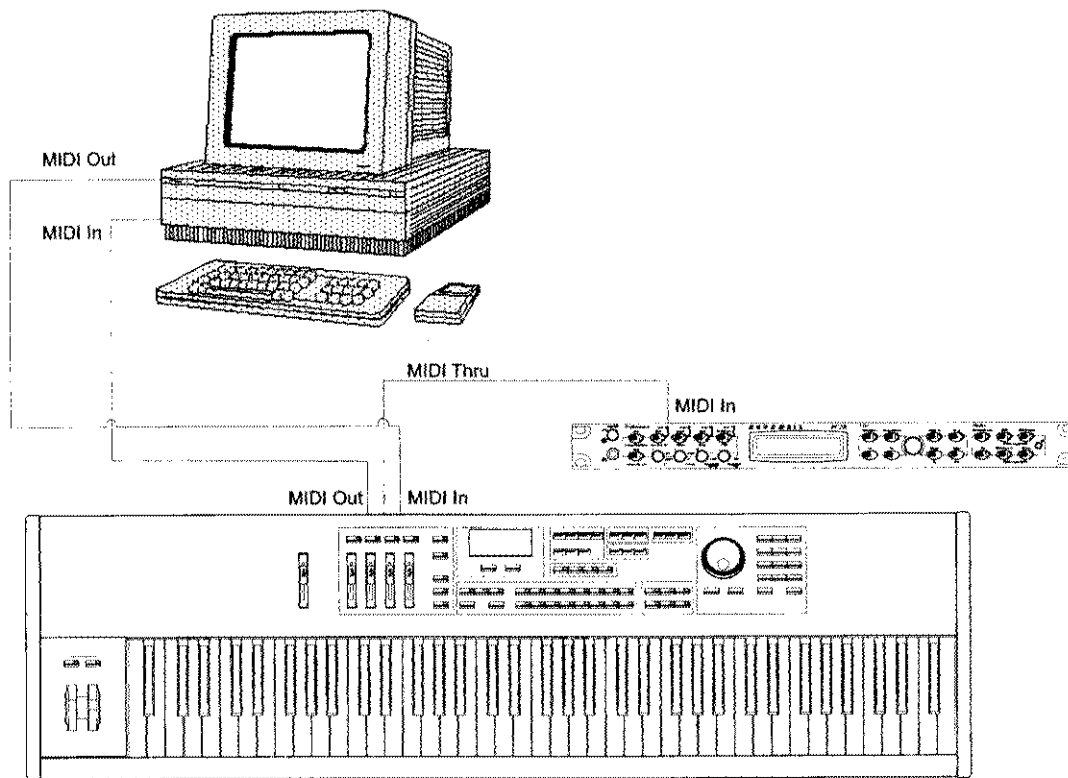
Figure 4-4   MIDI Thru

If the second instrument also had a Thru port, you could chain a third instrument to the second. We don't recommend chains of more than three or four instruments—any longer and you may have problems with delayed notes. If you have a large number of MIDI instruments, you may want to use a multi-port MIDI interface connected to your computer, or a MIDI Thru box, which provides multiple Out (technically Thru) ports from a single In port.

Adjusting MIDI Preferences

If you're using your V150/V110 with other MIDI instruments, you may want to adjust some of the V150/V110's MIDI settings. This includes things like which MIDI channels the V150/V110 uses, and how it responds to messages from other instruments.

To view and edit the MIDI preferences, press the **Preferences** button. The bottom line of the display shows the available options:

```
CONTROL PREFS     MIDI PREFS        RESET
```

Press the display button labeled **MIDI PREFS**, and you'll see the first preference: Main Channel. Use the **Left** and **Right** buttons to move through the menu. Use the **Up** and **Down** buttons to change the value of the currently visible preference.

When you're in the MIDI Preferences menu, you'll see a small arrow at the upper left or upper right of the display. When you want to leave the MIDI Preferences menu, press the display button above the arrow.

Zone Channels

The first four preferences determine which MIDI channel the V150/V110 uses for each part (zone) of the keyboard. There's a preference for each of the Main, Layer, Split, and SplitLayer sounds. Usually you'll want to keep each part on a different channel.

Each part of the keyboard can be assigned to any of the 16 MIDI channels. By default, the Main sound is on Channel 1, the Layer sound is on Channel 2, the Split sound is on Channel 3, and the SplitLayer sound is on Channel 4.

Local Control

Local Control determines whether the V150/V110s keyboard controls its own internal sounds. You can turn Local Control off, which causes the V150/V110's keyboard to control only the MIDI Out port (and hence other MIDI instruments). This can be useful if you're using an external sequencer to record your music.

For example, suppose you're recording a track to an external sequencer using another MIDI instrument that you're controlling from the V150/V110 (on a different MIDI channel). If you don't want to record the V150/V110 itself, you can set Local Control to **Off**. In this case, the V150/V110 won't make any sound, and you'll hear only the other instrument as you record.

By default, Local Control is set to **On**. Every time you turn on the V150/V110, Local Control resets to **On**, even if it was disabled when you turned the V150/V110 off.

Ignore All Notes Off

The V150/V110 responds to MIDI All Notes Off messages. When the V150/V110 receives this message, it stops all notes that are playing (on the MIDI channel where the All Notes Off message occurred). The All Notes Off message is useful, because sometimes notes get "stuck" while playing, and there's no other quick way to silence them (stuck notes are rare; they may occasionally occur if you have several MIDI instruments connected to each other). You can send an All Notes Off message and an All Controllers Off message to the V150/V110 and to all 16 MIDI channels by pressing the General MIDI and Demo buttons together. This "Panic" feature is a quick way to silence every instrument in your MIDI system.

By default, the V150/V110 responds to All Notes Off messages. There's one potential disadvantage to this: some MIDI instruments and sequencers send an All Notes Off message whenever there's a pause in your playing and all the keys are up. If you're controlling your V150/V110 from one of these devices, you might find that the V150/V110's notes sometimes shut off abruptly when they shouldn't. This is caused by the occasional All Notes Off message sent by the instrument or sequencer (this is a non-standard use of the All Notes Off message, by the way).

If you're experiencing this problem, you can avoid this situation by making the V150/V110 ignore the All Notes Off message. Set the value of Ignore All Notes Off (in the Preferences menu) to **Yes**, and your notes won't cut short.

External Sync

This feature controls the synchronization of the V150/V110's metronome and arpeggiator with other MIDI instruments or sequencers (using MIDI clock signals). See page 4-11 for more about synchronization.

If you want the metronome or arpeggiator to be driven by MIDI clock signals from an external MIDI instrument, set the value of External Sync to On. Otherwise, leave it at its default value of Off. In this case, the V150/V110 sends MIDI clock signals to its MIDI Out port whenever you're using the metronome or arpeggiator.

MIDI Channel Assignments

There are 16 more preferences, each corresponding to one of the MIDI channels. Each preference indicates the sound assigned to that channel, as shown in the example below:

```
Channel                  Sound
   1           Stereo Grand Piano        0:0
```

Press the display button labeled **Channel** to indicate that you want to view or edit a different MIDI channel. Use the **Up** and **Down** buttons to select a different MIDI channel.

Next, press the display button under the name of the sound assigned to that channel. This indicates that you want to change the sound assigned to the current channel. Use the **Up** and **Down** buttons to select a different sound. Notice that the name of the sound is followed by two numbers separated by a colon. These numbers are the bank ID and the sound ID of the current sound.

MIDI Messages

This section describes the many MIDI messages that the V150/V110 sends and receives. The MIDI implementation chart on page B-6 gives more information.

Keep in mind that MIDI messages have an effect only on the channel on which they're sent. A message sent on Channel 1, for example, affects only the sounds on Channel 1.

The V150/V110 normally sends MIDI messages on one or more of five channels, corresponding to the Main sound, the Layer sound, the Split sound, the SplitLayer sound, and the Metronome.

Note On, Note Off

Note On messages control the start of each note you hear from the V150/V110. The message contains information stating which MIDI channel the note is on, what note it is, and how hard the key was struck (the attack velocity). When the V150/V110's sound-producing components receive this message (either from the V150/V110's keyboard or from an external MIDI source), the information gets translated into the note you hear. When you release a key, a similar Note Off message is sent saying that a note has ended, on which channel, what note, and how fast the key was released (the release velocity).

Aftertouch

Aftertouch is a Controller message that affects sounds that are already playing. Many V150/V110 sounds respond to aftertouch in various ways (by changing timbre, for example).

To use aftertouch, play a note, then hold the key down and press on it. The V150/V110 uses *channel* aftertouch, which means that pressing on just one key affects all the notes that are playing on that MIDI channel.

Pitch Bender

Touching the Pitch Bend pad sends MIDI Pitch Bend messages that change the pitch of all the notes that are currently playing.

Program Change Messages

Whenever you select a sound, the V150/V110 sends a MIDI Program Change message. This message is always preceded by a Bank Select message (described below). The V150/V110 also can receive Program Change messages from external MIDI instruments. To change a sound on the V150/V110 this way, you should send a Bank Select message, followed by a Program Change message.

Control Change Messages

Control Change messages make up the largest category of MIDI messages. The V150/V110 can send many different Control Change messages, making it easy for you to modify sounds—whether you're playing live or playing a prerecorded song (sequence).

Bank Select

By definition, MIDI offers exactly 128 values for the Program Change message. Since the V150/V110 contains several hundred sounds, there aren't enough Program Change values for you to select all the sounds directly with MIDI Program Change messages. Consequently, there's a Bank Select message, which enables you to select several banks of 128 sounds (by sending a Bank Select message followed by a Program Change message). The V150/V110 responds to MIDI Controller 0 and Controller 32 messages as Bank Select messages (except when in General MIDI mode).

To change banks, send MIDI Controller 32 message with a value corresponding to the bank you want to select. See Appendix C to find the right combination of Bank Select and Program Change messages to select the V150/V110's sounds. These correspond to the bank number and sound ID of the sounds in the various tables.

Mod Wheel (Modulation)

The V150/V110 recognizes Mod Wheel (MIDI Controller 1) messages, which affect different sounds in different ways (by adding vibrato, for example). By default, Slider A sends Mod Wheel messages to the V150/V110 for many sounds.

Volume

The V150/V110 recognizes MIDI Volume (Controller 7) messages. Moving the **Sound Levels** sliders causes the V150/V110 to send Volume messages on each of the four MIDI channels corresponding to the Main, Layer, Split, and SplitLayer zones.

Pan

The V150/V110 recognizes MIDI Pan (Controller 10) messages, which adjusts the location of the sound within the stereo field (from left to right). A value of 0 is full left, 64 is centered, and 127 is full right.

Expression

The V150/V110 sends and receives MIDI Expression (Controller 11) messages, which regulate the volume of V150/V110 sounds. By default, this is controlled by the V150/V110's Expression pedal, which enables you to vary the volume from nothing up to the volume set by the MIDI Volume level.

Sustain, Sostenuto, and Soft Pedals

These messages are named for the corresponding pedals on many acoustic pianos: Sustain allows all notes to continue sounding until they fade out or the Sustain message ends; Sostenuto is similar, but affects only the notes whose keys were held down when the Sostenuto message began; Soft reduces the volume of all notes until the message ends.

By default, the V150/V110's right foot pedal sends Sustain (MIDI Controller 64), the center pedal sends Sostenuto (MIDI Controller 66), and the left pedal sends Soft (MIDI Controller 67).

Reverb and Effects

Adjusting the wet/dry mix of the Reverb with the **Reverb Level** knob sends a Controller 91 message to the V150/V110 (and to the MIDI Out port). The value of the message depends on the percentage of the wet/dry mix: 0 for a fully dry signal (0% wet, no reverb); 127 for full effect (100% wet).

Adjusting the wet/dry mix of the Effects with the **Effects Level** knob works the same way, using Controller 93.

The V150/V110 also recognizes Controllers 91 and 93 if received from an external MIDI source

Controller 94 controls the effects routing. The values of this message select effects routing as follows:

0–31	No Reverb or Effects
32–63	Effects on, reverb off
64–95	Reverb on, Effects off
96–127	Reverb and Effects on

Other Controllers

There are several other MIDI messages that affect different the V150/V110 in different ways. They are Controller 2 (Breath), Controller 4 (Foot), Controller 6 (Data), Controller 9, Controller 12, Controller 13, and Controller 29. See Appendix C, for information about Controller messages and their effects on V150/V110 sounds.

System Exclusive Messages

MIDI messages like Note On and Control Change affect the musical portion of a performance or song. There's another type of message, called System Exclusive (SysEx), that you can use "behind the scenes" to control other V150/V110 features that aren't directly part of the music—for example, putting the V150/V110 in General MIDI mode, as described below.

All messages are shown in hexadecimal (base-16) notation, which is standard for SysEx messages. Each two-character string represents a byte, or eight bits, of information.

Turning General MIDI On

The V150/V110 recognizes the General MIDI On message. To turn General MIDI on, send the following six-byte message to the V150/V110's MIDI In port, or include it in a song (typically using an editor on your computer).

F0 7E 00 09 01 F7

The third byte (00) is the device ID of the receiving instrument—in this case 00, which is the device ID of the V150/V110. (To address other instruments, use a different value for the third byte. It can be anything from 00 to 7F. A value of 7F means "Broadcast," or send to all.)

Turning General MIDI Off

The V150/V110 recognizes the General MIDI Off message. To turn General MIDI off, send the following six-byte message to the V150/V110's MIDI In port, or include it in a song (typically using an editor on your computer).

F0 7E 00 09 02 F7

The third byte (00) is the device ID of the receiving instrument—in this case 00, which is the device ID of the V150/V110. (To address other instruments, use a different value for the third byte. It can be anything from 00 to 7F. A value of 7F means "Broadcast," or send to all.)

Device Inquiry

The V150/V110 recognizes the Device Inquiry message. If you're not sure that your V150/V110 is receiving SysEx messages, use the Device Inquiry message to check (typically sent from a computer connected to the V150/V110's MIDI In port). If the V150/V110 receives the message, it sends back a response.

This is the Device Inquiry message:

F0 7E 00 06 01 F7

Any device that receives this message will respond. This is the V150/V110's response message:

F0 7E 00 06 02 07 31 00 0B xx nn nn nn nn F7

The byte represented by *xx* distinguishes between the models in the V series. It will be *01* for the V150 and *02* for the V110. The bytes represented by *nn* indicate the operating system version, as shown in the following table:

Byte	Description
F0	Beginning of SysEx message (SOX)
7E	Universal non-real-time SysEx ID
00	Device ID of the receiving instrument (00 for V150/V110); can be from 00 to 7F
06	Sub ID 1 (general information)
02	Sub ID 2 (Device ID message)
07	Manufacturer ID (07 is Kurzweil)
31 00	Device family code (14 bits, LSB first)
0B xx	Device family member code (14 bits, LSB first; xx = 01 for the V150, 02 for the V110)
nn nn nn nn	Software revision: tens, ones, tenths, hundredths (00 01 00 00 = version 1.00)
F7	End of SysEx message (EOX)

Other System Messages

The V150/V110 also recognizes certain System Common, System Real Time, and Auxiliary messages, as described below.

Local Control On/Off

Local Control determines whether the V150/V110's keyboard controls its own internal sounds. You can turn Local Control on and off by sending the V150/V110 a Local Control message from an external MIDI source. See page 4-5 for more about the use of Local Control.

All Notes Off

The V150/V110 sends and responds to MIDI All Notes Off messages. When the V150/V110 receives this message, it stops all notes that are playing (on the MIDI channel where the All Notes Off message occurred). See page 4-5 for more about the All Notes Off message.

Pressing the **General MIDI** and **Demo** buttons together stops all the V150/V110's notes and zeros its controllers; it also sends All Notes Off and All Controllers Off messages on all 16 MIDI channels.

MIDI Clock Messages

The V150/V110 can send or receive MIDI clock signals. These messages enable you to synchronize recording or playback with other MIDI instruments (or a computer sequencer). The External Sync parameter in the MIDI preferences menu determines how the V150/V110 handles MIDI clock signals. See page 4-6 for details.

You can set the V150/V110 to either send these signals when you use the arpeggiator or metronome, or to receive these signals from external MIDI instruments. When External Sync is set to **Off**, the V150/V110 sends sync messages whenever you use the arpeggiator or metronome. This makes the V150/V110 the "master" instrument. When External Sync is set to **On**, the V150/V110 is a "slave"; the arpeggiator and metronome don't do anything until they receive sync signals from another MIDI instrument that's acting as the master.

Note: When External Sync is off, the Metronome and Arpeggiator send MIDI clock signals, but not Start, Stop, or Continue messages. Similarly, when External Sync is on, the Metronome and Arpeggiator *receive* MIDI clock signals, but not Start, Stop, or Continue messages.

About External Sequencers

If you plan to use your V150/V110 with an external MIDI sequencer, this section will help you work more effectively.

Basic Recording

Generally you'll want to record each part of a performance on a different MIDI channel. Some sequencers "rechannelize" incoming MIDI information, so that every new track automatically gets recorded on a different MIDI channel, regardless of the channel you were using when you recorded the track.

If your sequencer doesn't rechannelize, and you want each sound on a different MIDI channel, change the Main Sound Channel (see *Zone Channels* on page 4-5) before you record each track.

Soft Thru

Depending on the sequencer you're using, you may want to use its "soft thru" feature. This enables you to create a MIDI "loop" that connects your sequencer's MIDI Out port to the V150/V110's MIDI In port, and the V150/V110's MIDI Out port to the sequencer's MIDI In port. If your sequencer's soft thru feature is enabled, then while you're recording, the V150/V110's notes get recorded into the sequencer, go through the sequencer and back to the V150/V110. It's like inserting the sequencer between the V150/V110's keyboard and its sound components.

If you use your sequencer's soft thru feature, you should set the V150/V110's Local Control to **Off**, to prevent notes from getting played twice while you're recording.

Arpeggiator and External Sync

When you're recording arpeggiated notes into a sequencer, you'll need to make sure that the sequencer receives the MIDI clock signals from the V150/V110. Therefore you should set the V150/V110's External Sync to **Off**, and the corresponding feature on the sequencer to **On**. (You could also do it the other way around, with the V150/V110's External Sync to **On**, and the corresponding feature on the sequencer to **Off**. It doesn't matter, as long as one is on and one is off.

Multi Recording

Some sequencers offer a "multi record" feature, enabling you to record more than one MIDI channel at a time (normally, each track represents an individual sound on an individual MIDI channel, but multi record sequencers can simultaneously record from several MIDI channels at once.

If your sequencer can multi record, then you can play layers and splits on the V150/V110, and record all of the sounds at once (remember that each part of a layer or split uses a different MIDI channel, so if your sequencer doesn't multi record, you'll be able to record only one part of a layer or split at a time).

Keep in mind, however, that some sequencers multi record to multiple tracks simultaneously, and some record all MIDI channels to a single track. Either way works, but if you record multiple channels to a single track, it will be more difficult to edit that track using your sequencer software.

If your sequencer multi records to a single track, and you don't want to have multiple channels recorded on your tracks, you can record layers and splits one part at a time using the basic recording method. Set your sequencer to record a single track, then turn off all but the Main sound, using the **Split**, **Layer**, and **SplitLayer** buttons. Record the first track. Then create a new track on the sequencer. Select a new sound, then select a new Main Sound channel. Record another track. Repeat this process until you've recorded all the parts of the layer or split.

Recording Program Change Messages

You can record Program Change messages as part of a sequence track. Recording Program Change messages at the beginning of each track ensures that the sequence always uses the correct sound.

The easiest way to get Program Change messages into your recording is to leave an unrecorded measure or two at the beginning of the sequence. During this "countoff" period, select the sound that you want to use for the track you're recording. The Program Change message gets recorded as an event in the countoff period.

Most sequencers enable you to insert Program Change messages manually, so you can probably make changes in the sequence after recording as well.

Appendix A
Maintenance and Upgrades

Replacing the Battery

When you turn off your V150/V110, changes that you've made to the settings are preserved by three standard AA alkaline batteries that provide backup power to the V150/V110's memory. When it is time to replace your battery, the V150/V110 will display
`Battery voltage is low` for a few seconds when you turn it on. If this happens, you should replace the batteries as soon as possible (within a week). If the batteries fail, you'll lose your custom settings.

Changing the batteries is easy; you need three fresh AA alkaline batteries and a small Phillips screwdriver. The first time you change batteries, you may also need a knife, scissors, or wire cutters, since the original batteries may have been taped or tied to the battery holder for protection during shipping.

Caution: Make sure that you have fresh batteries to install before you start the installation. Once you remove the old batteries, the memory lasts for only about 30 seconds. You'll lose your Panel Memories and other custom settings if you don't get the fresh batteries installed quickly enough.

1. Turn off the V150/V110 and disconnect the power cable.

2. Remove the screw that attaches the battery plate to the V150/V110's rear panel. Keep the screw handy for reinstallation.

3. Tilt back the top of the battery plate, then lift it a few inches away from the V150/V110. The plate is connected by a short cable, so be careful not to pull too hard.

4. When you have the fresh batteries ready to insert, remove the old batteries. The old batteries might be fastened into the holder with tape or a plastic tie; you'll need to remove these.

5. *Within 30 seconds*, insert the new batteries. Be sure to match the positive (+) and negative (–) ends of the batteries with the markings on the battery holder.

6. Reattach the battery plate, making sure that the lip on the bottom of the plate goes inside the V150/V110's rear panel. Reinstall and tighten the screw.

Powering up

When you have finished, plug in the V150/V110 and turn the power on. You should see the usual start up messages. If the `Battery voltage is low` message still appears, review the battery replacement steps to see if you missed something. If you have problems, call your Kurzweil dealer or service center.

Boot Block

Although the V150/V110 comes from the factory with an operating system (OS, also called engine software) and factory sounds already installed, you may decide to upgrade the software at a later time to add more features or sounds. The V150/V110 boot block lets you install new software and factory sounds into Flash ROM. The boot block also provides hard reset and diagnostic options.

Execution of any function in the boot block may cause or require a hard reset causing erasure of the Panel Memories that you have created. To save them, back them up using a MIDI Sysex dump as described in the section called *Saving Panel Memories* on page 3-17.

Starting the Boot Block

When you power up the V150/V110, it displays Waiting for scanner, then displays Please wait after a couple of seconds. When you see Please wait, press and release the **Demo** button.

After the boot block message banner and version number are displayed, the first of several menu items appears on the screen. Pressing the **Left/Right** buttons selects different menu items. Pressing the display button labeled **Enter** executes the selected menu item.

About Software Upgrades

You can get software upgrades for your V150/V110 from Kurzweil's FTP website (www.kurzweilmusicsystems.com/downloads.html) or from your Kurzweil dealer. A computer (Mac or PC) with a MIDI interface and sequencer is necessary for transferring the software to your V150/V110 using MIDI Sysex. A list of compatible software sequencers will accompany your software upgrade kit. If you don't have a computer, your V150/V110 can be upgraded by a Kurzweil Service Center.

The software upgrades are encoded as one or more standard MIDI files. Filenames are in the format **V10XNNN.MID**, where **X** is the block being updated (**b** for boot block, **k** for operating system, **s** for sounds, and **g** for General MIDI sounds), and **NNN** is the version number (**N.NN**, so **100** would be **1.00**). Don't attempt to install files with names that don't conform to this format; it won't work.

Setting Up For a Software Upgrade

1. Connect a MIDI cable from the MIDI Out of the computer's MIDI port or interface to the MIDI In of the V150/V110.

2. Launch the sequencer application.

3. Open the first .MID file using the sequencer program.

4. Start the boot block on the V150/V110 using the directions above.

Installing an Operating System or Sounds

This procedure is for installing operating system software. See *Installing a New Boot Block* on page A-3 if you want to install a new boot block.

⚠️

Caution: Installing an operating system or sounds involves doing a hard reset, which erases the V150/V110's user-defined memory (like your Panel Memories). If you want to save these, you should do so before you begin to install the operating system or sounds. See page 3-17.

1. Select `Install engine` by pressing the display button labeled `Enter`.

2. Select `via MIDI` by pressing the display button labeled `Enter`.

3. Start playing the MIDI file from the sequencer. While loading, the bottom line of the V150/V110's display will show a message `segment X of Y` where X starts at 1 and counts up to the total number of segments, which is represented by Y. If the display continues to show `waiting for MIDI` after starting the sequencer, stop and restart the sequence.

4. Depending on the size of the file, it may take several minutes to load, at which point the bottom line of the display will show `done`. Then, if you have another file to load, open that file from the sequencer and start playing it.

5. After you have completed loading all of the MIDI files (except a boot block file), press the display button labeled `Cancel` twice to get back to the main boot block menu, use the **Right** or **Left** buttons to scroll to the `HARD RESET` menu item, and select it by pressing the display button labeled `Enter`. Press the display button labeled `Yes`; the V150/V110 will restart with the new operating system.

Installing a New Boot Block

If the file you are loading is a boot block file with the letter **b** as the fourth letter in the filename, follow instructions in *Setting Up For a Software Upgrade* on page A-2, then continue:

1. Scroll to `Update boot block` and select by pressing the display button labeled `Enter`.

2. Select `via MIDI` by pressing the display button labeled `Enter`.

3. Start playing the MIDI file from the sequencer. While loading, the bottom line of the V150/V110's display will show a message `segment 1 of 1`. If the display continues to show `waiting for MIDI` after starting the sequencer, stop and restart the sequence.

4. After about a minute, the V150/V110 will reset and start running normally.

Resetting the V150/V110

If you select `HARD RESET` by scrolling and pressing the display button labeled `Enter`, the display will ask `Erase RAM objects?` which gives you an important opportunity to think about what you are doing. This resets all of the V150/V110's memory back to the initial factory state. This is necessary if you are upgrading the software. If you're not concerned about losing all of your Panel Memories, or if you've saved them using a MIDI Sysex dump (see *Saving Panel Memories* on page 3-17), then press the display button labeled `Yes`. The V150/V110 will execute a hard reset and start running normally.

Running the Diagnostics

The `Run diags` option executes the V150/V110's internal diagnostic tests. Some diagnostic tests will erase the V150/V110's memory, which will cause a hard reset when the V150/V110 is powered on again. Turn your V150/V110 off then on again to leave Diagnostics mode and return to normal operation.

Appendix B
General Reference

This appendix contains the following information:

Specifications

Specifications are subject to change without notice.

Physical Specifications

V150

Height	39.75 in	101.0 cm
Width	58.25 in	148.0 cm
Depth	59.00 in	150.0 cm
Weight	512.0 lb	233.0 kg

V110

Height	34.8 in	88.5 cm
Width	56.7 in	144.0 cm
Depth	43.7 in	111.0 cm
Weight	233.7 lb	106.0 kg

Electrical Specifications

Voltage and Frequency Ranges

	120 VAC	230 VAC
Safe voltage range	100–125 Volts RMS	200–250 Volts RMS
Safe frequency range	48–65 Hz	48–65 Hz

Current Consumption (V150)

Voltage Level	Idle	Nominal	Max
100–125 volts RMS	0.5 A	0.65 A	1.6 A
200–250 volts RMS	0.3 A	0.4 A	0.8 A

Current Consumption (V110)

Voltage Level	Idle	Nominal	Max
100–125 volts RMS	0.5 A	0.6 A	1.5 A
200–250 volts RMS	0.35 A	0.45 A	0.8 A

Environmental Specifications

	Minimum		Maximum	
Operating temperature	40 F	5 C	104 F	40 C
Storage temperature	-13 F	-25 C	185 F	85 C
Operating humidity	5%		95% (non-condensing)	
Storage humidity	5%		95% (non-condensing)	

Audio Specifications

V150

200-Watt 4-way Amplification	Woofer: 1 x 80 Watts Midrange: 2 x 20 Watts for down-facing speakers, 2 x 20 Watts for up-facing speakers Tweeters: 2 x 20 Watts
7 Speakers	Woofer: 1 x 12 in (30 cm), in ported enclosure Midrange: 2 x 6.5 in (16.5 cm) facing down; 2 x 5 in (12.5 cm) facing up Tweeters: 2 x 1 in (2.5 cm) dome tweeters
Audio Outputs	0.7 volts RMS for ff piano music with Volume slider at maximum and EQ sliders centered. Maximum output level is 2v peak-to-peak. Output impedance is 500 ohms. Using these outputs does not affect the volume of the speakers.
Audio Inputs	0.5 volts RMS produces a level equivalent to ff piano music Input impedance is 5K ohms. Volume and EQ sliders do not affect the signal delivered through these inputs
Headphone Outputs	Source impedance is 47 ohms; recommended headphone impedance is 50 ohms or greater. Level is 0.5 volts RMS = 2.5 mW at 100 ohms for ff piano music with Volume slider at maximum and EQ sliders centered; 5.7 volts RMS = 325 mW absolute maximum. Plugging headphones into either jack switches off the speakers.

V110

130-Watt Biamplification	Woofer: 2 x 50 Watts Tweeters: 2 x 15 Watts
4 Speakers	Woofers: 2 x 6.5 in (16.5 cm), in ported enclosure Tweeters: 2 x 1 in (2.5 cm) dome-type tweeters
Audio Outputs	0.7 volts RMS for ff piano music with Volume slider at maximum and EQ sliders centered. Maximum output level is 2v peak-to-peak. Output impedance is 500 ohms. Using these outputs does not affect the volume of the speakers.
Audio Inputs	0.5 volts RMS produces a level equivalent to ff piano music Input impedance is 5K ohms. Volume and EQ sliders do not affect the signal delivered through these inputs
Headphone Outputs	Source impedance is 47 ohms; recommended headphone impedance is 50 ohms or greater. Level is 0.5 volts RMS = 2.5 mW at 100 ohms for ff piano music with Volume slider at maximum and EQ sliders centered; 5.7 volts RMS = 325 mW absolute maximum. Plugging headphones into either jack switches off the speakers.

Warning: This instrument is capable of producing sound pressure levels in excess of 95dB, which may cause permanent hearing damage. Please exercise caution when playing through the internal speakers and especially when using headphones. Always start with the **Volume** slider at the minimum position.

MIDI Controllers

0	Bank MSB	32	Bank LSB	64	Sustain	96	DataInc
1	Mod Wheel	33	Mod Wheel LSB	65	Port Switch	97	DataDec
2	Breath	34		66	Sostenuto	98	NRg LSB
3		35		67	Soft	99	NRg MSB
4	Foot Control	36		68	Legato	100	Rg LSB
5	Port Time	37	Port Time LSB	69	Hold2	101	Rg MSB
6	Data	38	Data LSB	70	SndCtl1	102	
7	Volume	39	Volume LSB	71	SndCtl2	103	
8	Balance	40	Balance LSB	72	SndCtl3	104	
9		41		73	SndCtl4	105	
10	Pan	42	Pan LSB	74	SndCtl5	106	
11	Expression	43	Expression LSB	75	SndCtl6	107	
12	EfxCt 1	44		76	SndCtl7	108	
13	EfxCt 2	45		77	SndCtl8	109	
14		46		78	SndCtl9	110	
15	AuxBnd2	47		79	SndCtl10	111	
16	Gen 1	48		80	Gen 5	112	
17	Gen 2	49		81	Gen 6	113	
18	Gen 3	50		82	Gen 7	114	
19	Gen 4	51		83	Gen 8	115	
20		52		84	PortCtl	116	ArpOn
21	AuxBnd1 MSB	53	AuxBnd1 LSB	85		117	ArpVel
22		54		86		118	Latch2
23		55		87		119	Latch1
24		56		88		120	
25		57		89		121	
26		58		90		122	
27		59		91	FXBWet (Reverb)	123	
28		60		92		124	
29		61		93	FXAWet (Effects)	125	
30		62		94	FXRoute	126	
31		63		95	Ef5 Depth	127	

KB3 Controllers

There's a subset of the MIDI Controller numbers dedicated to controlling KB3 features. The first column in the following table lists the KB3 features that send (and respond to) MIDI Controller messages. The second column lists the Controller numbers corresponding to those features.

If you're controlling another MIDI instrument from your V150/V110, using the features in the first column (while you're playing a KB3 sound) sends the corresponding MIDI message from the second column.

If you're controlling your V150/V110 from an external MIDI source, you can use the MIDI controller numbers in either the second or third column to control the corresponding KB3 feature in the first column. For example, to control Drawbar 1, you can send either MIDI 6 or MIDI 12. (The Controller numbers in the third column are the ones used by the Voce™ MIDI Drawbar Controller, a common drawbar control device.)

KB3 Control Feature	MIDI Controller Number	
	V150/V110	Voce
Drawbar1	6	12
Drawbar2	22	13
Drawbar3	23	14
Drawbar4	24	15
Drawbar5	25	16
Drawbar6	26	17
Drawbar7	27	18
Drawbar8	28	19
Drawbar9	1	20
Expression Pedal	4	8
Percussion On/Off	73	N.A.
Percussion High/Low	72	72
Percussion Loud/Soft	71	71
Percussion Fast/Slow	70	70
Rotating Speaker Slow/Fast	68	68
Vibrato/Chorus On/Off	95	95
Vibrato/Chorus Selector	93	93
Key Click Level	89	89
Leakage Level	90	90

MIDI Implementation Chart

Model: Kurzweil V150/V110

Manufacturer:
Young Chang
Digital Pianos

Date: 08/01/01
Version 1.0

Function		Transmitted		Recognized		Remarks
Basic Channel	Default		1		1	
	Changed		1 - 16		1 - 16	
Mode	Default		Multi*		Multi*	memorized
	Messages		X		Modes 1 & 3	memorized
	Altered		X			
Note Number			0–127		0–127	key range
	True Voice		1–128		1–128	C 0–C 8
Velocity	Note ON		O		O	
	Note OFF		O		O	
After Touch	Keys		X		X	
	Channels		O		O	
Pitch Bender			O		O	
Control Change**	0, 32		O		O	bank select
	1		O		O	mod wheel
	4		O		O	foot controller
	6		O		O	data entry
	7		O		O	volume
	10		O		O	pan
	11		O		O	expression
	64		O		O	sustain pedal
	66		O		O	sostenuto pedal
	67		O		O	soft pedal
	91		O		O	FXB wet dry
	93		O		O	FXA wet dry
	94		O		O	FX route
	96		O		O	data increment
	97		O		O	data decrement
	98, 99		O		O	non-registered param num
	100, 101		O		O	registered param num
	116		O		O	arpeggiator on/off
	117		O		O	arpeggiator velocity ctl
	118		O		O	arpeggiator latch 2
	119		O		O	arpeggiator latch 1
	120		O		O	all sound off
	121		O		O	reset all controllers
Program Change		O	0–127	O	0–127	
	True #		0–127		0–127	
System Exclusive			O		O*	GM 1 On/Off
System Common	Song Pos.		X		X	
	Song Sel.		X		X	
	Tune		X		X	
System Real Time	Clock		O		O	
	Messages		X		X	
Aux Messages	Local Control		O		O	
	All Notes Off		O		O	
	Active Sense		X		X	
	Reset		X		X	
Notes		*Manufacturer's ID = 07 Device ID: default = 0;		*Use Multi to assign different sounds to each MIDI channel **The V150/V110 can send any control change		

Mode 1: Omni On, Poly   Mode 2: Omni On, Mono   O = yes
Mode 3: Omni Off, Poly   Mode 4: Omni Off, Mono   X = no

Appendix C
Sound and Controller Information

This appendix contains the following information:

V150/V110 Sounds (Organized by Sound Category)

PIANO 1 (Piano)

Stereo Grand Piano
Classic Grand
Dynamic Grand
Warm Grand Piano
Solo Grand Piano
Concert Grand
Mono Grand Piano
Combo Piano
Sweet Ivories
Nice Touch Grand
Piano Solitude
Piano Recital
Full Bloom Piano
Pianetta
Suite Piano
Dreamy Piano
Grand Piano
Bright Grand
Electric Grand
Honky Tonk Piano
Elec Piano 1
Elec Piano 2
GM Harpsichord
Clavinet

PIANO 2 (Chromatic)

Hard Rock Piano
Rock Grand Piano
Ensemble Piano
Mono Stage Piano
Dyn Stage Piano
Ragtime Piano
Tack Piano
Piano & Strings
Basement Upright
Chorused Piano
Way Back Piano
Dance Piano
Cloud Ride Piano
Organic Piano
Piano & Wash
Piano & Vox Pad
GM Celesta
Glockenspiel
Music Box
Vibraphone
Marimba
Xylophone
Tubular Bells
Dulcimer

E PIANO 1 (Organ)

Classic Elec Piano
Serious Classic EP
70's Elec Piano
Hard Elec Piano
Lounge Elec Piano
DynoMy Elec Piano
Soft Elec Piano
Hybrid Elec Piano
Mellow Elec Piano
Tines Square
Chorused Wurly
Classy Roadz
OD Elec Piano
Clean & Soft
Ballad Keys
Lotus Keys
Drawbar Organ
Percussion Organ
Rock Organ
Church Organ
Reed Organ
GM Accordion
Harmonica
Bandoneon

E PIANO 2 (Guitar)

My Old Wurly
Big Red Wurly
Super T's Wurly
Soft Wurly
Wurly Road
Pearly Keys
Digital Elec Piano
Ballad Elec Piano
Soft Ballad EP
70's FM Tines
90's FM Ballad
Chorus Rock Piano
Bright Pianotone
Family Portrait
Harpsi-Piano
Fantasy Keys
Nylon Guitar
Steel String Gtr
Jazz Guitar
Clean Elec Guitar
Muted Guitar
Overdrive Guitar
Distortion Guitar
Guitar Harmonics

POP KEYS (Bass)

Electro Grand
Digital Elec Grand
Rock Elec Grand
Elite Elec Piano
Dulcimer Grand
Celestial Keys
Comp Time
Buzzy Synth
Janet's Comp
Mild Sheen
Scrape Glass
Air Society
Sharp Air Attack
Dronin'
Alien Salt Mine
Imperfect Storm
Acoustic Bass
Finger Bass
Picked Bass
Fretless Bass
Slap Bass 1
Slap Bass 2
Synth Bass 1
Synth Bass 2

CLAVIER (Strings)

Clavinet Classic
Touch Clavinet
Dual Wah Clavinet
Real Harpsichord
Modern Harpsichord
Crystal Clavichord
Accordion
Celesta
Modern Clavier
Belly Celeste
Harpsichordion
Circus Keys
Cosmic Calliope
Calliope Keys
Chiff Attack
Spaced Harmonix
Violin
Viola
Cello
Contrabass
Tremolo Strings
Pizzicato Strings
Harp
Timpani

ORGAN (Ensemble)

Reverend's B
Ballad Organ
Prog Rocker B
All Bars Out
Grungy Overdrive
Uptown Gospel
Solid State Organ
Electric Pipes
Background Organ
MelloTone Wheel
Piped Organ
Playful Piper
Peter's Pan
Imaginary Flute
Synth Winds
Bouncin' Bass
Cathedral Pipes
Church Pipes
Ensemble Strings
GM Slow Strings
Synth Strings 1
Synth Strings 2
Choir Aahs
Voice Oohs
Synth Vox
Orchestra Hit

BRASS
(Brass)

Big Brass
Saxes/Trumpets
Split Section
Broadway Brass
Trombones
Bari/Tenor Section
Solo Tenor Sax
Soundtrack Brass
Octave Riff Sect
Fatso Sax
Big & Beefy Saxes
Goosed Unison
Analog Brass
Honk'n Dyn Sax
Saxy Lush
Classical Brass
Soft Trumpet
Solo French Horn
French Horn Sect
HarmonMute Trumpet
Brass & Horn
Soaring Brass
Dyn Hi Brass
Dyn Low Brass
Solo flute
Double Reeds
Woodwind Section
Trumpet
Trombone
Tuba
Muted Trumpet
French Horn
Brass Section
Synth Brass 1
Synth Brass 2

STRINGS
(Reed)

Lyrical Strings
Slow Strings
Marcato Strings
Layer Strings
Fast Strings
Touch Strings
Velocity Strings
Phantom Strings
Fast Key Strings
Emotional String
Octave Strings
Emphatic Strings
Rosin Section
Resolute Section
Tender Strings
Flute & Strings
Stereo Pizzicato
Dry Pizzicato
Tremolo Strings 2
Mono Pizzicato
Mono Tremolo
Baroque Strings
Chamber Section
Dynamic Harp
Harp Glissando
Total Orchestra 1
Total Orchestra 2
Soprano Sax
Alto Sax
Tenor Sax
Baritone Sax
Oboe
English Horn
Bassoon
Clarinet

VOICES
(Pipe)

Ooh><Aah
Doo><Daa
Baa Bop
Doo Doop
Daa Dot
Scatman
The Croons
Cathedral Vox
Bright Voices
Crystal Voices
Vox & Organ
Big Ooh Voices
Big Voices
Bright Syn Vox
Theater Vox
SynthVox & Strings
KChoir
Cathedral Choir
Piccolo
Flute
Recorder
Pan Flute
Bottle Blow
Shakuhachi
Whistle
Ocarina

SYNTHS
(Synth Lead)

Solar Lead
Vox Lead
Lyrical Lead
Slow Wood Flute
Groove Bass
Pulse Bass
Sweeper Bass
Lowdown Bass
80's Poly Synth
Rez Bass/Poly
Technicolor
Elan Lead
Sun Spot Lead
80's Mono Lead
Resonant Sweeper
Reverse Feedback
Square Wave
Sawtooth Wave
Synth Calliope
Chiffer Lead
Charang
Solo Vox
5th Saw Wave
Bass & Lead

PADS (Synth Pad)

Rez Aah Pad
Ethereal Air
Meteor Strings
Orchestra Pad
Neptune
Analogy
Dream Catcher
Synth Orchestra
Poseidon
Analogica
Anti Rez
Synth Chorale
Ethereal Strings
Resonant Notch Vox
Ooh><Ahh Pad
Vocalicious
Fantasia
Warm Pad
Polysynth
Space Voice
Bowed Glass
Metal Pad
Halo Pad
Sweep Pad

GUITAR (Synth FX)

Acoustic Guitar
Strummer 12 String
Rich 6 String
12 String Guitar
Chorus Elec Guitar
Elec 12 String
Jazzy Frets
Lead Rock Guitar
Titanium Guitar
Latin Lover
Roto 12 String
Electric 12
Twangy Guitar
Chr Elec & Mute
Cmp Chr Elec Gtr
Trashed Tubes
Classical Guitar
Ice Rain
Soundtrack
Crystal
Atmosphere
Brightness
Goblins
Echo Drops
Star Theme

BASS (Ethnic)

Round Wound
Punch Bass
Two Finger Bass
Dual-Tri Bass
Funk Slap Bass
Synth Fretless
Upright Bass 1
Upright Bass 2
V Finger Bass
Bright Elec Bass
Bright A Bass
Triangle Bass
Yow Bass
Mono Synth Bass
Power Fuzz Bass
Bass in Face
Sitar
Banjo
Shamisen
Koto
Kalimba
Bagpipe
Fiddle
Shanai

DRUMS (Percussion)

Studio A Drums
Studio B Drums
Ambient Rock Kit
Coliseum Kit
Resonant Traps
Tripkit
Beat Box
Electro Kit
Radio Kings
Ripper Kit
LA Drums
Compact Kit
Tube Traps
Acoustric Kit
Dirt Kit
Sump Pump Kit
Jazz Drum Set
GM Std Kit
GM Room Kit
GM Power Kit
GM Elec Kit
GM Synth Kit
GM Jazz Kit
GM Brush Kit
GM Orchestra Kit
Tinkle Bell
Agogo
Steel Drums
Wood Block
Taiko
Melodic Tom
Synth Drum
Reverse Cymbal

PERCUSSION (Sound FX)

Virtuoso Perc
Rhythm Maker
Woody Marimba
African Marimba
Vibes
New Fluid Vibes
Aborigine Jam
Drums & Bells
Marimba
Milky Way Vibes
Percussionist
Carnival Perc
Primitive Perc
Bunch of Perc
Percussion Party
Percussion Circle
Orchestra Perc
Guitar Fret Noise
Breath Noise
Seashore
Bird
Telephone
Helicopter
Applause
Gun Shot

KB3

All Out
Testify
Prog Rock Organ
Reverend Al's
Steve's B
Even Drawbars
Gospel Organ
Synth Rock Organ
Uncle Clark's
Loungin'
Live Drawbars
Keith's Revenge
Bars 1-3
Fine Overdrive
Odd Ones Out
Vox Organ Split

V150/V110 Sounds (Organized by Sound ID)

The lists of sounds in this appendix are organized into memory banks. These aren't the same as the panel banks you use to select categories of sounds. The memory banks organize the sounds by a numeric ID. The IDs in each bank range from 0 to 127. There are 128 sounds in Banks 0, 2, and 6, and a smaller number of sounds in Banks 1, 4, and 7.

If you're controlling your V150/V110 from an external MIDI instrument, you can change sounds on the V150/V110 by sending Program Change messages from the MIDI instrument. The value of the Program Change message should be the ID of the sound you want to select. To change banks from the MIDi instrument, send a Bank Select message—a MIDI 0 message (with a value of 0) followed by a MIDI 32 message with a value corresponding to the bank you want to select. After the Bank Select message, send a Program change message to select a sound within that bank.

Some MIDI instruments display sound IDs (Program Change numbers) in the range from 1–128, instead of from 0–127, as the V150/V110 does. If your V150/V110 is connected to one of these instruments, you may find that selecting sounds from the other MIDI instrument doesn't work the way you expect. (for example, selecting sound ID 32 from the MIDI instrument might select Ballad Elec Piano on the V150/V110 (which is sound ID 31).

Bank 0 Sounds

PIANO 1		POP KEYS		STRINGS		GUITAR
0	Stereo Grand Piano	32	Electro Grand	64	Lyrical Strings	96	Acoustic Guitar
1	Classic Grand	33	Digital Elec Grand	65	Slow Strings	97	Strummer 12 String
2	Dynamic Grand	34	Rock Elec Grand	66	Marcato Strings	98	Rich 6 String
3	Warm Grand Piano	35	Elite Elec Piano	67	Layer Strings	99	12 String Guitar
4	Solo Grand Piano	36	Dulcimer Grand	68	Fast Strings	100	Chorus Elec Guitar
5	Concert Grand	37	Celestial Keys	69	Touch Strings	101	Elec 12 String
6	Mono Grand Piano	38	Comp Time	70	Velocity Strings	102	Jazzy Frets
7	Combo Piano	39	Buzzy Synth	71	Phantom Strings	103	Lead Rock Guitar
	PIANO 2		CLAVIER		VOICES		BASS
8	Hard Rock Piano	40	Clavinet Classic	72	Ooh><Aah	104	Round Wound
9	Rock Grand Piano	41	Touch Clavinet	73	Doo><Daa	105	Punch Bass
10	Ensemble Piano	42	Dual Wah Clavinet	74	Baa Bop	106	Two Finger Bass
11	Mono Stage Piano	43	Real Harpsichord	75	Doo Doop	107	Dual-Tri Bass
12	Dyn Stage Piano	44	Modern Harpsichord	76	Daa Dot	108	Funk Slap Bass
13	Ragtime Piano	45	Crystal Clavichord	77	Scatman	109	Synth Fretless
14	Tack Piano	46	Accordion	78	The Croons	110	Upright Bass 1
15	Piano & Strings	47	Celesta	79	Cathedral Vox	111	Upright Bass 2
	E PIANO 1		ORGAN		SYNTHS		DRUMS
16	Classic Elec Piano	48	Reverend's B	80	Solar Lead	112	Studio A Drums
17	Serious Classic EP	49	Ballad Organ	81	Vox Lead	113	Studio B Drums
18	70's Elec Piano	50	Prog Rocker B	82	Lyrical Lead	114	Ambient Rock Kit
19	Hard Elec Piano	51	All Bars Out	83	Slow Wood Flute	115	Coliseum Kit
20	Lounge Elec Piano	52	Grungy Overdrive	84	Groove Bass	116	Resonant Traps
21	DynoMy Elec Piano	53	Uptown Gospel	85	Pulse Bass	117	Tripkit
22	Soft Elec Piano	54	Solid State Organ	86	Sweeper Bass	118	Beat Box
23	Hybrid Elec Piano	55	Electric Pipes	87	Lowdown Bass	119	Electro Kit
	E PIANO 2		BRASS		PADS		PERCUSSION
24	My Old Wurly	56	Big Brass	88	Rez Aah Pad	120	Virtuoso Perc
25	Big Red Wurly	57	Saxes/Trumpets	89	Ethereal Air	121	Rhythm Maker
26	Super T's Wurly	58	Split Section	90	Meteor Strings	122	Woody Marimba
27	Soft Wurly	59	Broadway Brass	91	Orchestra Pad	123	African Marimba
28	Wurly Road	60	Trombones	92	Neptune	124	Vibes
29	Pearly Keys	61	Bari Tenor Section	93	Analogy	125	New Fluid Vibes
30	Digital Elec Piano	62	Solo Tenor Sax	94	Dream Catcher	126	Aborigine Jam
31	Ballad Elec Piano	63	Soundtrack Brass	95	Synth Orchestra	127	Drums & Bells

Bank 6

Bank 6 contains another 128 sounds, organized into the same categories as the sounds in Bank 0.

Bank 6 Sounds

PIANO 1		POP KEYS		STRINGS		GUITAR	
0	Sweet Ivories	32	Janet's Comp	64	Fast Key Strings	96	Titanium Guitar
1	Nice Touch Grand	33	Mild Sheen	65	Emotional String	97	Latin Lover
2	Piano Solitude	34	Scrape Glass	66	Octave Strings	98	Roto 12 String
3	Piano Recital	35	Air Society	67	Emphatic Strings	99	Electric 12
4	Full Bloom Piano	36	Sharp Air Attack	68	Rosin Section	100	Twangy Guitar
5	Pianetta	37	Dronin'	69	Resolute Section	101	Chr Elec & Mute
6	Suite Piano	38	Alien Salt Mine	70	Tender Strings	102	Cmp Chr Elec Gtr
7	Dreamy Piano	39	Imperfect Storm	71	Flute & Strings	103	Trashed Tubes
PIANO 2		**CLAVIER**		**VOICES**		**BASS**	
8	Basement Upright	40	Modern Clavier	72	Bright Voices	104	V Finger Bass
9	Chorused Piano	41	Belly Celeste	73	Crystal Voices	105	Bright Elec Bass
10	Way Back Piano	42	Harpsichordion	74	Vox & Organ	106	Bright A Bass
11	Dance Piano	43	Circus Keys	75	Big Ooh Voices	107	Triangle Bass
12	Cloud Ride Piano	44	Cosmic Calliope	76	Big Voices	108	Yow Bass
13	Organic Piano	45	Calliope Keys	77	Bright Syn Vox	109	Mono Synth Bass
14	Piano & Wash	46	Chiff Attack	78	Theater Vox	110	Power Fuzz Bass
15	Piano & Vox Pad	47	Spaced Harmonix	79	SynthVox & Strings	111	Bass in Face
E PIANO 1		**ORGAN**		**SYNTHS**		**DRUMS**	
16	Mellow Elec Piano	48	Background Organ	80	80's Poly Synth	112	Radio Kings
17	Tines Square	49	MelloTone Wheel	81	Rez Bass/Poly	113	Ripper Kit
18	Chorused Wurly	50	Piped Organ	82	Technicolor	114	LA Drums
19	Classy Roadz	51	Playful Piper	83	Elan Lead	115	Compact Kit
20	OD Elec Piano	52	Peter's Pan	84	Sun Spot Lead	116	Tube Traps
21	Clean & Soft	53	Imaginary Flute	85	80's Mono Lead	117	Acoustric Kit
22	Ballad Keys	54	Synth Winds	86	Resonant Sweeper	118	Dirt Kit
23	Lotus Keys	55	Bouncin' Bass	87	Reverse Feedback	119	Sump Pump Kit
E PIANO 2		**BRASS**		**PADS**		**PERCUSSION**	
24	Soft Ballad EP	56	Octave Riff Sect	88	Poseidon	120	Marimba
25	70's FM Tines	57	Fatso Sax	89	Analogica	121	Milky Way Vibes
26	90's FM Ballad	58	Big & Beefy Saxes	90	Anti Rez	122	Percussionist
27	Chorus Rock Piano	59	Goosed Unison	91	Synth Chorale	123	Carnival Perc
28	Bright Pianotone	60	Analog Brass	92	Ethereal Strings	124	Primitive Perc
29	Family Portrait	61	Honk'n Dyn Sax	93	Resonant Notch Vox	125	Bunch of Perc
30	Harpsi-Piano	62	Saxy Lush	94	Ooh><Ahh Pad	126	Percussion Party
31	Fantasy Keys	63	Classical Brass	95	Vocalicious	127	Percussion Circle

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