

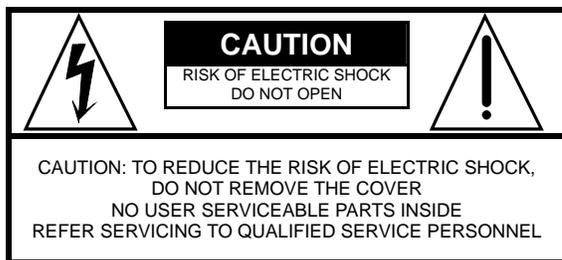
Kurzweil PC1

Musician's Guide

KURZWEIL
Music Systems

©2005 All rights reserved. PC1 is a trademark of Kurzweil. All other products and brand names are trademarks or registered trademarks of their respective companies. Product features and specifications are subject to change without notice.

Part Number: 910401 Rev.B



The lightning flash with the arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

IMPORTANT SAFETY & INSTALLATION INSTRUCTIONS

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

WARNING: When using electric products, basic precautions should always be followed, including the following:

1. Read all of the Safety and Installation Instructions and Explanation of Graphic Symbols before using the product.
2. Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should only be used with a stand or cart that is recommended by the manufacturer.
4. This product, either alone or in combination with an amplifier and speakers or headphones, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
8. This product may be equipped with a polarized line plug (one blade wider than the other). This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace your obsolete outlet. Do not defeat the safety purpose of the plug.
9. The power supply cord of the product should be unplugged from the outlet when left unused for a long period of time. When unplugging the power supply cord, do not pull on the cord, but grasp it by the plug.
10. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
11. The product should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged;
 - B. Objects have fallen, or liquid has been spilled into the product;
 - C. The product has been exposed to rain;
 - D. The product does not appear to be operating normally or exhibits a marked change in performance;
 - E. The product has been dropped, or the enclosure damaged.
12. Do not attempt to service the product beyond that described in the user maintenance instructions. All other servicing should be referred to qualified service personnel.
13. **WARNING:** Do not place objects on the product's power supply cord, or place the product in a position where anyone could trip over, walk on, or roll anything over cords of any type. Do not allow the product to rest on or be installed over cords of any type. Improper installations of this type create the possibility of a fire hazard and/or personal injury.

RADIO AND TELEVISION INTERFERENCE

WARNING: Changes or modifications to this instrument not expressly approved by Young Chang could void your authority to operate the instrument.

IMPORTANT: When connecting this product to accessories and/or other equipment use only high quality shielded cables.

NOTE: This instrument has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This instrument generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this instrument does cause harmful interference to radio or television reception, which can be determined by turning the instrument off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the instrument and the receiver.
- Connect the instrument into an outlet on a circuit other than the one to which the receiver is connected.
- If necessary consult your dealer or an experienced radio/television technician for additional suggestions.

NOTICE

This apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

AVIS

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

SAVE THESE INSTRUCTIONS

Kurzweil International Contacts

Contact the nearest Kurzweil office listed below to locate your local Kurzweil representative.

Kurzweil Co., Ltd.

178-353 Gajwa-Dong
Seo-Gu, Incheon, KOREA
Tel: 82-32-580-1500
Fax: 82-32-584-4863

A N D Music Corp.

10107 South Tacoma Way, Suite A-3
Lakewood, WA 98499, USA
Tel: 1-253-589-3580
Fax: 1-253-589-3585

Young Chang Canada Corp.

250 Victoria Park Ave. Suite # 105
Toronto, Ontario Canada M2H 3P7
Tel: (905) 948-8052

Official distributors in other countries are listed on the web site.

World Wide Web Home Page

<http://www.kurzweilmusicsystems.com>

Table of Contents

Chapter 1

Introduction	1-1
<i>Basic PC1 Features</i>	1-1
The Sound	1-1
Keyboard and Controllers	1-1
Effects	1-1
<i>Options</i>	1-2
Sound ROM Cards	1-2
Pedals.....	1-2
Ribbon Controller.....	1-2
Music Rack	1-2
<i>Unpacking your PC1</i>	1-2

Chapter 2

Startup	2-1
<i>Setup</i>	2-1
Installing the Music Rack.....	2-1
<i>Basic Connections</i>	2-2
Power.....	2-2
Audio.....	2-3
MIDI	2-3
Using the PC1 as a MIDI Master	2-3
Using the PC1 as a MIDI Slave	2-3
MIDI Out/Thru.....	2-4
Pedals.....	2-4
Ribbon	2-4
<i>Powering Up</i>	2-5
Display (LCD)	2-5
LEDs	2-5
Software Upgrades	2-5
Playing the Demo Sequences	2-6
Troubleshooting.....	2-6
No Text in Display	2-6
Low Battery	2-6
No Sound	2-6
No Sound from Receiving Instrument.....	2-7

Chapter 3

Performance Features	3-1
In This Chapter.....	3-1
<i>Overview</i>	3-1
Modes.....	3-1
Performance Modes	3-1
Program Mode	3-1
Setup Mode.....	3-1
Special Modes	3-2
MIDI Receive Mode.....	3-2
Global Mode.....	3-2

Objects.....	3-2
The Internal Setup.....	3-2
EQ.....	3-3
Effects.....	3-3
Physical Controllers.....	3-3
<i>The Front Panel</i>	3-4
The Performance Region.....	3-4
Knobs A - D.....	3-4
Assignable Switch Button.....	3-5
EQ.....	3-6
Solo.....	3-6
The Zone Region.....	3-6
Main.....	3-6
Layer.....	3-6
Split.....	3-7
Split Layer.....	3-7
The Display Region (LCD).....	3-7
Program Mode.....	3-7
Setup Mode.....	3-7
Edit.....	3-8
Menu.....	3-8
Effect.....	3-8
Panic.....	3-8
The Mode Region.....	3-8
Program.....	3-8
Setup.....	3-8
MIDI Receive.....	3-8
Global.....	3-9
The Program/Setup Select Region.....	3-9
Miscellaneous.....	3-9
Master Volume Slider.....	3-9
Cursor Buttons.....	3-9
Enter/Cancel (Yes/No).....	3-10
Plus/Minus buttons and Alpha Wheel.....	3-10
<i>Selecting Programs and Setups</i>	3-10
Program Mode.....	3-10
Setup Mode.....	3-10
By Using the Alpha wheel and Plus/Minus buttons.....	3-11
Programs Mode.....	3-11
Setup Mode.....	3-11
Program and Setup Organization.....	3-11
<i>EQ</i>	3-12
Changing the EQ.....	3-12
<i>Effects</i>	3-12
Controlling Effects.....	3-12
Changing the Effects Routing.....	3-13
Selecting Effects.....	3-13
Changing Wet/Dry Mix.....	3-14
Bypassing Effects.....	3-14
<i>Layering and Splitting</i>	3-15
Using AutoSplit for Quick Layers and Splits.....	3-15
How AutoSplit Works.....	3-16
Saving Quick Layers and Splits.....	3-17
Changing the AutoSplit Key Without Editing.....	3-17

Saving the AutoSplit Key	3-17
<i>Muting and Soloing</i>	3-18
Muting.....	3-18
Soloing.....	3-18
The AutoSplit Feature.....	3-18
<i>General MIDI Features</i>	3-19

Chapter 4

Programming Your PC1 4-1

In This Chapter..... 4-1

Basic Editing Concepts 4-1

 Overview..... 4-1

 Beginning to Edit 4-1

 Entering an Edit Mode 4-2

 Finding a Parameter and Changing its Value 4-2

 Naming and Storing 4-2

 Other Save-Dialog Functions 4-4

 Restoring Factory Effects..... 4-4

 Deleting Objects..... 4-4

 Dumping Objects..... 4-4

 Editing Short Cuts: Intuitive Entry..... 4-6

 Short Cuts for Changing Parameter Values..... 4-6

 Short Cuts for Navigating the Controllers Menu 4-6

 More About SysEx Dumps..... 4-7

 SysEx IDs..... 4-7

 Dumping the Entire Memory 4-7

The Program Editor..... 4-8

 Program Editing Basics 4-8

 Timbre..... 4-8

 Controller Value..... 4-8

 Effect..... 4-9

 Exiting the Program Editor..... 4-9

The Setup Editor 4-9

 Setup Structure..... 4-10

 Special Setups..... 4-10

 126 Internal Setup..... 4-10

 127 Clear Setup 4-10

 128 Default Setup 4-10

 Entering the Setup Editor 4-10

 Creating Setups..... 4-11

 Setting Initial Volume Levels for Different Zones..... 4-12

 Assigning Knobs to Control Wet/Dry Mix in Different Zones 4-12

 Assigning Entry Values..... 4-14

 A Few Important Points About Entry Values 4-14

 Velocity Switching..... 4-15

 Velocity Layering 4-15

 Switching Setups with a Pedal 4-16

 Transposing a Setup With a Button..... 4-16

Effects Edit Mode..... 4-17

 Effects Change Mode 4-17

 Setting the Effects Change Mode 4-17

 Entering Effects Edit Mode 4-17

 Selecting Different Effects 4-18

Editing Effects Parameters	4-18
Saving Effects.....	4-19
Other Effects-Mode Functions.....	4-20
Common Editing Tasks	4-20
Turning AutoSplit On and Off.....	4-20
Using Mono Audio Output.....	4-21
Editing the Internal Setup	4-21
Using the Arpeggiator	4-22
Using Pressure (Aftertouch) as an Arpeggiator Controller	4-23
Using the Arpeggiator with a Sequencer or External Controller.....	4-24
Using the PC1 to Control External Slaves	4-24
Sending Bank-Select and Program-Change Messages.....	4-24
Understanding Bank-Select Controllers	4-25
Sending Program Changes Only.....	4-26
Preventing Program Changes on Slaves	4-27
Working With an External Sequencer	4-28
Turn Local Control Off!	4-28
Global Method.....	4-28
Setup Method.....	4-28
Recording to a Sequencer While in Setup Mode	4-29
Troubleshooting	4-29

Chapter 5

Descriptions of Parameters

In This Chapter.....	5-1
Program Editor Parameters	5-1
Controller Value.....	5-1
Setup Editor Parameters	5-2
The MIDI Xmit Menu.....	5-3
MIDI Channel	5-3
Destination (Dest)	5-3
Bend Range, Semitones (BndRng ST)	5-3
Bend Range, Cents (BndRng ct)	5-3
Auxiliary Bend 1, Up (AuxBend1 Up).....	5-3
Auxiliary Bend 1, Down (AuxBend1 Dwn)	5-3
Auxiliary Bend 2 Range (AuxBend2 Rng).....	5-4
Auxiliary Bend Transmit (AuxBend Xmit).....	5-4
The Program Menu.....	5-4
Bank	5-4
Program ID and Name (No parameter name shown)	5-4
Entry Transmit.....	5-4
Bank Mode.....	5-5
Program ID Display Format (PNumDisp).....	5-5
Program Name Display Format (PNameDisp).....	5-6
The Key Range Menu.....	5-6
Low and Hi	5-6
Note Map.....	5-7
AutoSplit.....	5-7
AutoSplit Key.....	5-7
The Transpose Menu.....	5-8
Transposition.....	5-8
The Velocity Menu	5-8
A Bit of Background	5-8

Velocity Scale (Vel Scale)	5-8
Velocity Offset (Vel Offset)	5-9
Velocity Curve (Vel Curve)	5-10
Minimum Velocity (Min) and Maximum Velocity (Max)	5-11
The Controllers Menu	5-12
Entry Volume	5-12
The Controllers Menu: Continuous Controller Parameters	5-12
MIDI Controller Number (Ctrl Num)	5-12
Entry Value	5-13
Exit Value	5-13
The Controllers Menu: Ribbon Controller Parameters	5-13
Ribbon Section Configuration (Ribbon Sect)	5-13
Spring Switch	5-14
Ribbon Mode	5-14
Spring Position (Spring Pos)	5-14
The Controllers Menu: Switch Controller Parameters	5-14
Switch Type (SwType)	5-15
On Controller (On Ctrl)	5-15
On Value	5-15
Off Controller (Off Ctrl)	5-15
Off Value	5-15
Entry State	5-15
Exit State	5-15
Switch-Button Priority	5-16
The Arpeggiator Menu	5-16
Arpeggiator Activation (Arp Active)	5-16
Arpeggiator Region, Lower Limit (Low) and Upper Limit (Hi)	5-16
Zone Enable	5-16
Latch Mode	5-16
Play Order	5-18
Beats	5-18
Initial Tempo	5-19
Duration	5-19
Velocity Mode (Vel Mode)	5-19
Fixed Velocity (Fixed Vel)	5-19
Note Shift	5-19
Shift Limit	5-20
Limit Option (Limit Opt)	5-20
Glissando	5-21
<i>Effects Edit Parameters</i>	5-22
The FX Routing Parameter	5-22
The FXA Select Parameter	5-22
The FXB Select Parameter	5-22
Parameters for Current Effects - Variable	5-22
FX Wet/Dry Parameter	5-23
FX Bypass Parameter	5-23
<i>The MIDI Recv Menu</i>	5-23
Channel Activation (No parameter name shown)	5-23
Program ID and Name (No parameter name shown)	5-23
Volume (Vol)	5-23
Pan	5-24
FX Routing	5-24
A-to-B Wet/Dry Mix (Global A>B)	5-24
FX-A Wet/Dry Mix (A)	5-24
FX-B Wet/Dry Mix (B)	5-24

<i>The Global Menu</i>	5-234
Local Control	5-24
Clock	5-24
Transmit Clock	5-25
Touch	5-25
Setup Change Channel (Setup Chg Chan)	5-25
MIDI In.....	5-25
Exit Save	5-27
Drum Remap.....	5-27
Effects Change Mode (FX Chg Mode).....	5-28
Effects Channel (FX Channel)	5-28
Stored Effects (Stored FX)	5-29
Tuning	5-29
Receive Transposition (Recv Trans).....	5-29
Bank-Select Controller (Bank Sel Ctl).....	5-29
AllNotesOff	5-30
Device ID.....	5-30
Output Mode	5-30
Available RAM (Mem Avail)	5-30
Keyboard Version (Ver)	5-30
Expansion Block.....	5-30
Reset PC1?.....	5-31
Dump all objects?.....	5-31
MIDIScope?	5-31

Appendix A

Maintenance and Upgrades	A-1
<i>Replacing the Battery</i>	A-1
Before you Begin	A-1
Opening your PC1	A-1
Installing the Battery	A-1
Replacing the Option Panel.....	A-3
Powering up.....	A-3
<i>Boot Block</i>	A-3
Starting the Boot Block	A-3
About Software Upgrades	A-3
Setting Up For a Software Upgrade	A-4
Installing an Operating System or Setups	A-4
Installing a New Boot Block	A-4
Resetting the PC1	A-5
Running the Diagnostics.....	A-5

Appendix B

Reference	B-1
<i>Specifications</i>	B-1
Physical Specifications	B-1
Electrical Specifications	B-1
Voltage and Frequency Ranges.....	B-1
Power Consumption.....	B-1
Environmental Specifications.....	B-1
Audio Specifications	B-2
Line-Level Left and Right Analog Audio Outputs	B-2
Headphone Output.....	B-2

Parameter Reference B-3

- PC1 Audio Signal Routing B-6
- MIDI Controllers B-7
- Special Controllers B-7
- PC1 Effects and Effects Parameters B-8
 - Reverb B-8
 - Delay B-9
 - Chorus B-9
 - Flange B-10
 - Phase B-10
 - Chorus + Delay B-10
 - Chorus + Reverb B-10
 - Chorus + Delay + Reverb B-11
 - Flange + Delay B-11
 - Flange + Reverb B-11
 - Flange + Delay + Reverb B-11
 - Flange and Other B-11
- Filters B-12
- Laserverb B-12
- Distortion B-12
- Enhancer B-12
- Compressor B-13
- Simple Motion B-13
- Spatial B-13

MIDI Implementation Chart B-14

Appendix C C-1

- PC1 Programs and Controller Assignments* C-1
 - Factory Controller Assignments C-1
 - Programs and Controllers C-1

Index Index-1

Chapter 1

Introduction

Thanks for buying your PC1 MIDI performance controller! It combines 32 megabytes of renowned Kurzweil ROM sounds with an extensive set of flexible and easy-to-use performance and MIDI-control features--all in a portable keyboard that can help you sound like a pro on stage or in the studio. We hope you like it.

Basic PC1 Features

The Sound

The PC1 offers 64-voice polyphony with balanced type stereo analog outputs.

There are 384 factory programs and 128 GM programs, including Kurzweil's stereo triple-strike Grand Piano, Rhodes and Wurlitzer electric pianos, stereo strings, brass, and Take 6 vocal samples--as well as our critically-acclaimed keyboard, guitar, bass, drums, and percussion sounds. In addition, the PC1's *Orchestral ROM* includes String Sections, Solo Strings, Woodwinds, Orchestral Brass, Jazz Brass, Orchestral Ensembles, Choir, Organ, Harp, Nylon String Guitar, Orchestral Percussion, and Ethnic Percussion. There's also room for one Sound ROM Option card, for an additional 16 megabytes of ROM sounds.

Setups make the PC1 a versatile performance instrument and MIDI control keyboard. Each setup contains four zones that can cover any part of the keyboard, or overlap across the entire keyboard. You can program each zone independently--with different programs, physical controller assignments, and MIDI channels for each zone. Using the onboard arpeggiator, you can program setups with grooves that start automatically and evolve in countless variations as you play.

Keyboard and Controllers

There are two PC1 models. Both have the same features, with only one exception. The PC1X has a fully-weighted 88-key piano action, while the PC161 has a 61-key unweighted synth-style action. Both models have mono pressure (aftertouch), and have programmable velocity sensitivity. (By the way, whenever we mention the PC1 by name, we're referring to both models.)

You'll find the usual array of physical controllers--Pitch Wheel, Mod Wheel, continuous and switch pedal jacks, and multi-function front-panel buttons and knobs, and a unique ribbon controller. They're all fully programmable. There's an extensive list of programmable features for MIDI control--the PC1 isn't just a great-sounding performance keyboard; it's a serious tool for MIDI sequencing, and makes an excellent centerpiece for sophisticated MIDI studios. The PC1 is also well-equipped to receive MIDI from other instruments or external MIDI sources like computer-based sequencers.

Effects

To complement the ROM sounds, there are over 150 multiple effects and 30 reverbs. You can apply the effects to programs or setups, and you can easily control the Wet/Dry mix in real time. You can also program the multi-effects and reverbs for even more control in performance and recording.

Options

Ask your Kurzweil dealer about the following PC1 options:

Sound ROM Cards

The PC1 has a socket for one ROM expansion card that you can install yourself (the expansion kits come with complete instructions). An expansion card adds 16 megabytes of ROM sounds to the 32 megabytes of onboard ROM.

Pedals

The PC1 has two pedal jacks for a stereo or mono switch pedal (for functions like sustain or program/setup changes) and a continuous pedal (for functions like volume control). The switch pedal jack allows two pedals to be plugged in simultaneously. Your Kurzweil dealer stocks the following optional pedals:

FS-1 Standard box-shaped switch pedal

KFP-1 Single piano-style switch pedal

KFP-2M Double piano-style switch pedal unit

CC-1 Continuous pedal

Ribbon Controller

There's a dedicated modular jack (like a telephone jack) on the rear panel for connecting this 600-mm (24-inch) ribbon controller. You can configure the PC1 to use the ribbon as a single large controller, or a three-section controller with independent settings for each section.

Music Rack

The sturdy acrylic music rack (model PC-MDS) fits into a bracket that you attach to the PC1's rear panel. You'll find installation instructions on page 2-1.

Unpacking your PC1

Your PC1 carton should contain the following:

- PC1 Performance Controller
- Power adapter
- Piano-style switch pedal
- Four adhesive-backed rubber feet
- This manual
- Warranty card
- CD-ROM
- Two overlays for orchestral and GM program categories

You might want to keep the PC1 carton and packing materials for easy shipping or transport.

Chapter 2

Startup

Setup

When setting up the PC1 for use it must be placed on a sturdy, level surface where both ends of the unit are supported. A conventional keyboard stand may be used if it is strong enough to support the unit's weight (about 50 pounds for a PC1X, 23 pounds for a PC161). If you are going to be using the unit on a table now or in the future, apply the four stick-on rubber feet to the bottom. Figure 2-1 shows the recommended locations marked with pairs of small guide holes. Remove the backing paper from each rubber foot and attach just forward of each set of guide holes. It is possible that these locations could interfere with some keyboard stand's supports, so check how the PC1 fits on your stand before applying the rubber feet.

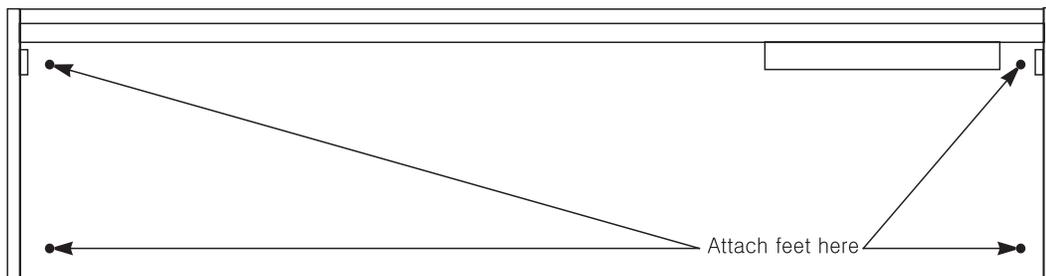


Figure 2-1 Attaching rubber feet

Installing the Music Rack (only for the PC1X model)

You'll need a Phillips screwdriver to install the optional music rack.

1. Remove the four screws on the rear panel of the PC1, as shown in Figure 2-2.
2. Use the screws to attach the music rack bracket, making sure that the rounded edge of the bracket is at the top.
3. Slide the music rack in from the top (as shown in the figure).

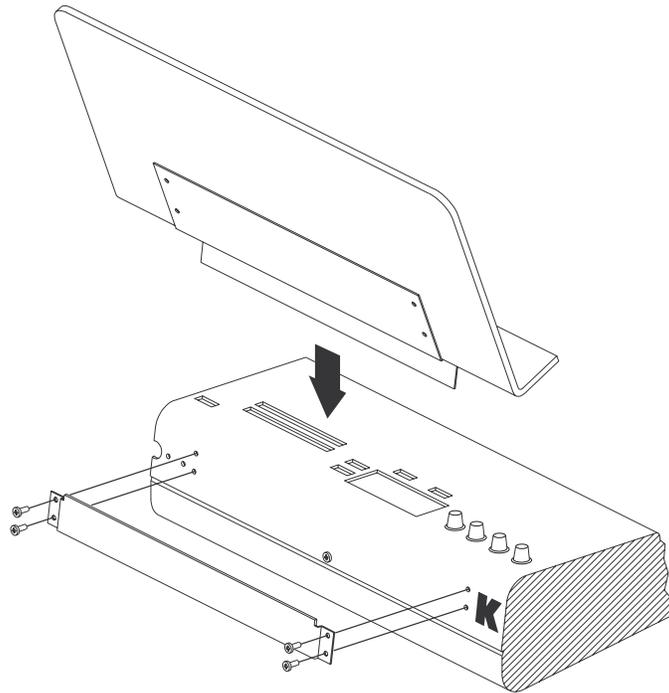


Figure 2-2 Installing the music rack

Basic Connections

Power

The PC1 has an external transformer/power supply with a standard electrical plug on one end, and a coaxial plug that connects with the PC1. This is a specialized power supply, and is not interchangeable with other power supplies.



Caution: Use only the power supply that comes with your PC1, or a replacement purchased from an authorized Kurzweil dealer. Using a different power supply can seriously damage your PC1!

Before connecting the power supply, make sure your PC1 is off

Place the power supply somewhere where it will stay dry and out of the way. We recommend keeping it on the floor. Never cover the power supply with anything; it needs adequate ventilation to prevent overheating.

Connect the plug at the other end of the power-supply cable into a standard power outlet. If you plan to take your PC1 to a location that uses a different voltage level, you'll need to get an additional power supply that's compatible with the local voltage.

Audio

The PC1 features balanced left and right analog audio outputs with 1/4-inch jacks. For best results, use balanced cables to connect to balanced, line-level inputs on your mixer or sound system.

It's important to use shielded, twisted-pair cables. The cables should each have 1/4-inch stereo (tip-ring-sleeve) plugs on one end to connect to the PC1. The other end of each cable should have either 1/4-inch stereo plugs or XLR plugs. Cables of this type provide balanced operation, which greatly reduces many types of noise. Unbalanced cables or sound-system inputs won't give you quite the same audio quality.

For best performance, set the PC1's Master Volume Slider to its maximum when adjusting mixer or sound-system levels. Otherwise, if you adjust the PC1's level by increasing the level of your sound system, you'll increase the noise level.

If you're using a monaural sound system or running the PC1's audio into a single mixer channel, we recommend configuring the PC1 for mono output, in which case the PC1 sends the same combined signal to the left and right sides of the analog outputs. See page 4-21 for information about using mono audio output mode.

The PC1 has a headphone jack, which carries the same signal as the main outputs (that's true whether you're using stereo *or* mono output). The headphone jack accepts a standard 1/4 -inch stereo plug, and is compatible with nearly all types of headphones. Plugging into the headphone jack does *not* mute the other audio outputs.

You can also use the headphone jack as an unbalanced stereo line-level output. Just connect a stereo cable from the headphone jack to a stereo input on your mixer or sound system. If you have only unbalanced inputs to your sound system, you'll get better audio quality using the headphone jack.

MIDI

The PC1 both transmits and accepts most standard (and several specialized) MIDI messages. In other words, it can serve as both a MIDI master and a MIDI slave.

Using the PC1 as a MIDI Master

Connect a MIDI cable from the MIDI Out port of the PC1 to the MIDI In port of the device you want to control--another MIDI musical instrument, or any device that accepts MIDI, such as a computer with a MIDI interface or an integrated MIDI In port. This makes the PC1 a MIDI control device, and you can use it to play other instruments, make recordings using sequencers, or send MIDI System Exclusive (SysEx) messages for storing programs, setups, and effects settings externally. When the PC1 is the MIDI master, you can configure it to control only its slaves, or to play its own sounds in addition to controlling the slaves.

Using the PC1 as a MIDI Slave

Connect a MIDI cable from the MIDI Out port of the instrument or device that you're using as the MIDI master to the MIDI In port of the PC1. This makes the PC1 a MIDI slave, enabling you to play its sounds from any MIDI instrument--keyboard, wind controller, drum pads, whatever--or to control it via MIDI devices like dedicated sequencers or computers running sequencing applications. The PC1 can receive 16 independent channels of MIDI information.

MIDI Out/Thru

This jack has two functions: it can be a MIDI Out port, enabling you to send directly to two different slaves, or it can be a MIDI Thru port, in which case it passes along whatever MIDI information that the PC1 receives at its MIDI In port (but *not* the MIDI information that the PC1 itself generates). This makes it easy to include the PC1 in a chain of multiple MIDI devices, which is a common configuration when you're using a computer for sequencing.

There's a small switch labeled Thru/Out on the PC1's rear panel (as you face the rear panel, the switch is to the left of the MIDI In port). Use a small pointed object to set the switch to the position you want--a ball-point pen works nicely.

Pedals

Plug your switch or continuous pedals into the corresponding jacks on the PC1's rear panel. We recommend using the Kurzweil pedals described on page 1-2, but you can use almost any switch or continuous pedal, as long as it adheres to the following specifications (as most pedals do):

Switch pedals	1/4-inch tip-ring-sleeve plug (tip goes to pedal 1, ring to pedal 2)
Continuous pedal	10-kOhm linear-taper potentiometer, 1/4-inch tip-ring-sleeve plug

If you use a third-party (non-Kurzweil) switch pedal, make sure it's connected before you turn on your PC1. This ensures that the pedal will work properly (it might function backward--off when it's down and on when it's up--if you turn on your PC1 before plugging in the pedal). Similarly, don't press any of your switch pedals while powering up, because the PC1 verifies each pedal's orientation during power up. If you're pressing a pedal, you might cause it to work backward.

The pedals are independently programmable within each zone of every setup. Here are the default settings for the two pedals you can use with the PC1:

Switch Pedal 1	Controller 64 (Sustain)
Continuous Control Pedal 1	Controller 11 (Expression)

If you use the double piano-style switch pedal, the other pedal works as Switch Pedal 2 - Controller 66 (Sostenuto)

Ribbon

Connect the optional Kurzweil Ribbon Controller into the modular Ribbon jack on the rear panel. The ribbon controller itself should rest on a flat surface; it fits nicely between the keys and the buttons and Knobs on the front panel.

The ribbon is a continuous controller. You can program the ribbon controller to send MIDI Controller messages 1-127, as well as several specialized messages. It generates values of 0-127 for whatever MIDI Controllers you assign it to send. Just press it, and slide your finger along the ribbon to change the value of the message it's sending.

You can configure the ribbon to have one control section that runs its entire length, or to have three sections of equal length. It sends its highest values when you press it at the end where the cable connects. When you configure it to have three sections, each section sends its highest values at the end closest to the cable.

The ribbon controller comes with an adhesive-backed foam strip and Velcro® fastener pads. The foam strip will hold it in place under most circumstances, but you might find it more convenient to attach it more securely with the Velcro fasteners (this is recommended when using the ribbon with a PC161). In that case, we recommend sticking the hook side of each pad to the underside of the Ribbon and the loop (softer) side to the keyboard. This helps to prevent the hooks in the Velcro from collecting crud when you don't have the ribbon attached.



Caution: *The modular jack is designed for connection to the Kurzweil Ribbon Controller option only. Don't plug any other modular plugs into the Ribbon jack.*

Powering Up

When you've made all your connections, turn on the PC1 by pushing the side of the power switch marked with the vertical line. All of the lights on the front panel flash, and the liquid-crystal display (LCD) shows a series of messages. When the PC1 is ready to play, the display looks like this:

```
Bank:0 Primary 1A  
000 Stereo Grand
```



Caution: *Before playing, we recommend that you slide the volume control nearly to the bottom and gradually push the control up while playing the keyboard. This way you won't cause any pain or damage if there's too much gain in your sound system.*

Display (LCD)

The PC1's 20x2-character liquid-crystal display tells you what's going on, whether you're playing or editing. Depending on your viewing angle (and possibly the temperature), you may need to adjust the **contrast** for better visibility. There's a small black knob on the rear panel, between the MIDI ports and the Digital Out jack. Use a screwdriver or your fingertips to turn the knob until you can read the display easily.

LEDs

Most of the buttons on the PC1's front panel contain light-emitting diodes that indicate the status of the features that the buttons control. They should all flash red three times as the PC1 starts up.

Software Upgrades

The PC1 contains a type of reloadable computer memory called Flash ROM, which makes software upgrades fast and easy. You can learn about new features from your Kurzweil dealer, or from our website (www.kurzweilmusicsystems.com). See *Boot Block* on page A-3 for software-installation instructions.

Playing the Demo Sequences

1. Press the Program Select buttons **N** and **P** simultaneously to enter Demo mode.(notice the word Demo on the front panel under these two buttons). The display shows the following:

```
Demo:1 Fandango  
Press Enter To Play
```

2. Press **Plus/Minus** button or turn the Alpha wheel to select demo song you want to play. Press **Enter** to play the demo. During playback, you can stop the demo by pressing **Cancel**.

Troubleshooting

No Text in Display

If no messages are displayed when you turn on the power on your PC1 and no LEDs flash, check the power adapter connections at the AC outlet and the PC1 Adapter In jack. But if the LEDs flash with no messages in the display, then adjust the **LCD contrast** knob in the rear panel.

Low Battery

When you turn your PC1 off, a lithium battery protects the memory that the PC1 uses to store user-defined programs and setups, and other editing changes that you've saved. Every time you turn on your PC1, it automatically checks the battery voltage. If it's getting low, you'll see a message like this before the PC1 finishes starting up:

```
Battery voltage is  
low (2.7 volts)
```

When you see this message, you should replace your battery immediately, to avoid losing your data. See page A-1 for instructions.

No Sound

If no sound comes from the audio or headphones outputs of your PC1 when you play the keyboard, check the following:

- The Volume Slider might be set too low
- There's no current program or setup selected (the display shows **Not Found**)
- Continuous control pedal 1: check the connection, and check the position of the pedal
- You might be in Setup mode with all zones muted (inactive): press any or all of the four buttons labeled **Zone 1-Zone 4**, and the lights in the buttons will turn green
- Local control might be off: press the **Global** button, then turn the Alpha wheel one click to the right
- The PC1 might be sending MIDI information only to External MIDI: In Setup mode, press the **Edit** button and then press **Enter** button to enter MIDI Xmit menu, then press the right cursor button under the display once, then turn the Alpha wheel until you see **Local** or **Local+MIDI**

No Sound from Receiving Instrument

If you are trying to control another instrument using MIDI and that instrument doesn't respond to your PC1, check the following:

- A working MIDI cable should connect the PC1's Out or Thru/Out jack to the In jack of the other instrument
- If you're using the MIDI Thru/Out port, flip the switch near the MIDI In port to the out position (a ball-point pen works well for this)
- Continuous control pedal 1: check the connection and pedal position
- The other instrument should be receiving on the same MIDI channel that the PC1 is using to transmit MIDI information
- All zones that you want to transmit must be active (the lights in the **Zone 1-Zone 4** buttons must be green)
- The PC1 might be sending MIDI information only to itself: In Setup mode, press the **Edit** button and then press **Enter** button to enter MIDI Xmit menu, then press the right-arrow button under the display once, then turn the Alpha wheel until you see **MIDI** or **Local+MIDI**

Chapter 3

Performance Features

In This Chapter

Chapter 3 shows you how to get the most out of your PC1 in performance settings. The overview introduces a few important features and concepts, while the following sections provide more detail.

- Overview 3-1
- The Front Panel 3-4
- Selecting Programs and Setups 3-10
- EQ 3-12
- Effects 3-12
- Layering and Splitting 3-15
- Muting and Soloing 3-18
- General MIDI Features 3-19

Overview

Modes

The PC1 has four modes. Each mode provides a different set of functions. You'll choose modes depending on what you want to do with the PC1. There are two kinds of modes: performance mode for *playing* sounds, and configuration modes for *setting up* the PC1.

The two main performance modes are Program mode, and Setup mode. You'll use one of these modes whenever you're playing your PC1. Each mode organizes sounds into *programs* or *setups*, which we'll describe below. Select a performance mode by pressing the corresponding button in the Modes region at the right side of the front panel.

There are also two configuration modes for making control assignments for each MIDI channel, and configuring the whole PC1.

Performance Modes

Program Mode

Program mode lets you play one Program at a time. A program consists of one or more sounds (like piano or strings), and the settings (parameters) that affect those sounds — for example, the highest and lowest notes for a particular sound. The PC1 always starts in the program mode, when you turn it on.

Setup Mode

Setup mode is what makes the PC1 such a powerful MIDI controller. In this mode you can play one setup at a time. A setup divides the PC1's keyboard into four zones, each of which can cover part or all of the keyboard. Each zone can also have its own controller assignment; the Mod Wheel can do something different in each zone of a setup.

Special Modes

While you're in Program mode, press **Main** to go to a special setup editor that controls the internal setup (see *Editing the Internal Setup* on page 4-21 for more information). The internal setup defines controller assignments and other characteristics for all the programs in Program mode. Pressing **Main** also enables you to create quick layers and splits, as described on page 3-17.

MIDI Receive Mode

Use *MIDI Receive* mode to configure each MIDI channel independently (this is the mode to use when you're driving your PC1 from a multi-channel sequencer). You might think of this mode as a special performance mode for configuring individual MIDI channels—program assignment, volume and pan settings, effects routing, and the Wet/Dry mix of the effects.

Global Mode

Use *Global* mode to make changes that affect the entire PC1—for example, tuning and transposition, MIDI clock source, program-change protocol, and more.

Objects

Throughout this manual, we'll occasionally mention *objects*, which may sound a bit technical, so we'll explain. *Object* is the collective term we use to refer to any chunk of information that the PC1 stores or processes. Many of these objects are invisible to you, but you'll be working regularly with the highest-level object types: programs, setups, and effects. When you're editing programs, you might also use System Exclusive (SysEx) messages to store programs, setups or effects to an external device—or use a single SysEx message to store *all* the objects you've modified while editing.

The Internal Setup

The two performance modes are quite different from a musician's viewpoint. The most noticeable difference is the way the liquid-crystal display (LCD) looks in each mode, as you'll learn on page 3-7.

Behind the scenes, however, the performance modes aren't as different as they seem. In fact, they have quite a bit in common. For example, consider that familiar controller the Pitch Wheel. Push it up and you bend notes up; pull it down and you bend notes down. This works in both performance modes.

The Pitch Wheel does what it does because the PC1 is programmed that way— but you could program it for other functions if you wanted. In a *setup*, the Pitch Wheel can do something different *in each zone*— and that's true for all the assignable physical controllers: Mod Wheel, knobs, pedals, and more.

In a *program* (Program mode), things are different. From the viewpoint of you the musician, programs don't *have* zones, so each physical controller can do only one thing, but it's up to you to decide what each physical controller does. That information gets stored in the *internal setup*, which has only one zone, but is otherwise exactly like a setup in Setup mode.

Every program in Program mode uses the internal setup to determine the assignments of the physical controllers—and many other characteristics.

EQ

Whichever mode you're in, the PC1 can apply three-band equalization (EQ) to the programs you're playing. Press the Global button to view the current EQ setting. See page 3-12 for more about changing the EQ settings.

Effects

There are over 150 preset effects, including reverbs, delays, choruses, flangers, phasers, tremolo, panners, envelope filters, distortions, rotary speakers, compressors, enhancers, waveform shapers, and multi-effect combinations. There are also 30 preset reverbs. See page 3-12 for more information about effects.

Physical Controllers

The PC1 provides a wide variety of physical controllers for modifying your sound as you play. There are two basic types: switch and continuous. Switch controllers generate MIDI messages with one of two possible values: On (127) and Off (0). Continuous controllers generate MIDI messages with values from 0 to 127.

The PC1's onboard switch controllers include four programmable buttons, labeled **SW1-SW4**. You can make these buttons *momentary* (they stay on only when you press and hold them) or *toggle* (they alternate between on and off each time you press them). Each of these buttons has a red LED that lights up when the button is on. These buttons have preset functions in each performance mode, but you can reprogram them to do all sorts of things.

There is a jack on the rear panel for a dual switch pedal (the PC1 comes from the factory with one switch pedal). The terms of 'dual' means you can connect up to 2 pedals by using Y cable and these pedals can also be programmed to be momentary or toggle, and can control a wide range of performance features.

The onboard continuous controllers include Pitch Wheel, Modulation Wheel, four knobs, and mono pressure (aftertouch). There are also two jacks on the rear panel for connecting a continuous controller pedal, and a ribbon controller. These continuous controllers are also fully programmable, with an extensive choice of options.

The Front Panel

The buttons, wheels, and knobs on the front panel control your PC1, both during performances, and when you're editing. Figure 3-1 identifies everything. In the PC161, Pitch Wheel, Mod Wheel, SW3 and SW4 are located on left part of the front panel above the keys.

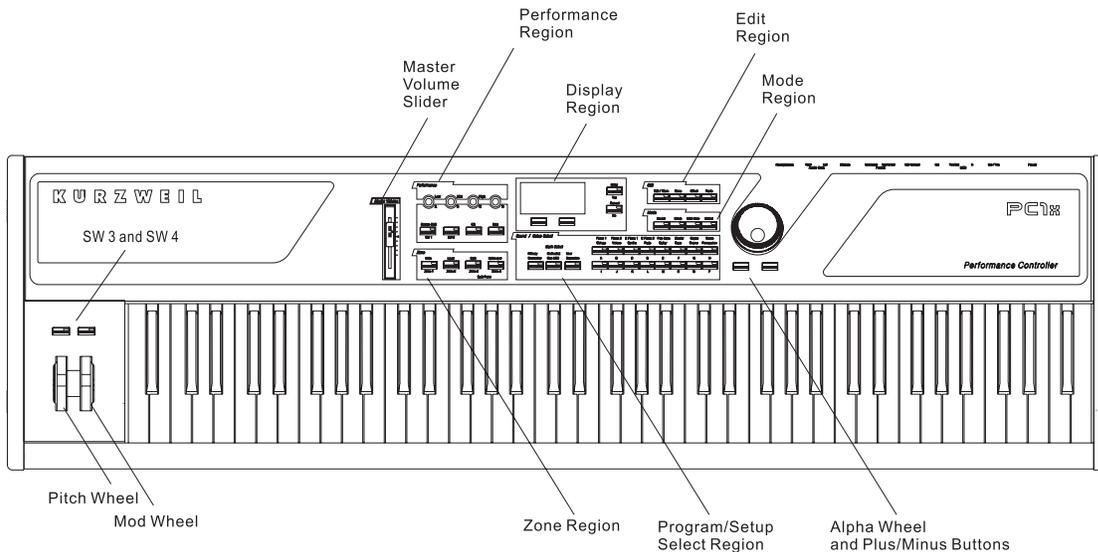


Figure 3-1 The PC1

There are six main regions on the PC1's front panel

The Performance Region

The behavior of most of the buttons and knobs in this region depends on the performance mode.

Knobs A - D

The functions of Knobs **A-D** depend not only on the performance mode, but also depend on whether the **EQ** button is on. When the **EQ** button is off, the knobs operate as follows:

Program mode

- Knob **A** controls the wet/dry mix for FX-A, the multi-effect block. You will notice a change in the effect level if the **Effect** button's LED is Green or Amber.
- Knob **B** controls the wet/dry mix for FX-B, the reverb block. You will notice a change in the reverb level if the **Effect** button's LED is Red or Amber.
- Knob **C** is usually a timbre control, although it can vary from program to program.
- Knob **D** has different functions depending on the current program.

Remember that controller assignments in Program mode are defined by the internal setup, which you can edit in AutoSplit mode (which is a subset of the Setup Editor)—while in Program mode, press **Main**; hold **Global** and move a knob to select its Ctrl Num parameter; change its value;

press **Store**; press the **Program** button at the Save prompt. See page 3-17

Setup mode

Knobs **A–D** are also programmable in Setup mode, and like the programmable buttons, they can do different things in each zone of each setup.

Assignable Switch Button

Program mode

Button **SW1** (also labeled **Octave Shift**) is a convenient way to “transpose” the entire PC1 down one octave in Program mode. Press **SW1** once to activate transposition, and the LED will light. This causes a “note shift” that for most programs lowers the pitch an octave. What’s actually happening is that the programs get shifted so that each key plays a different MIDI note number (for example, C4 normally plays Note Number 60, but with octave shift on, it plays Note Number 48). We mention this because in most programs, it seems that you’re transposing down an octave. For non-pitched programs like drums and percussion, however, each sound gets moved an octave upward (so if you play C4 to play a snare with octave shift off, you’ll play C5 to get the same snare when octave shift is on). Press **SW1** again to remove the shift

If you’ve used the AutoSplit feature to make quick layers and splits, the octave shift transposed the layers in the lower part of the keyboard (corresponding to the **Zone 3** and **Zone 4** buttons) *up* one octave, and transposes the layers in the upper part of the keyboard (corresponding to the **Zone 1** and **Zone 2** buttons) *down* one octave. This keeps the low notes from being too low, and the high notes from being too high.

Button **SW2** activates or deactivates the chorus and vibrato effects built into many of the organ voices in Program mode. Button **SW2** also has uses in some of the non-organ programs. Check out Program **96** and listen for the changes in the sound as you switch the button on and off.

Although Buttons **SW3** and **SW4** aren’t in the same region as **SW1** and **SW2**, they work in a similar manner (they’re located near the Pitch Wheel and Mod Wheel). By default, **SW3** activates the arpeggiator when it’s on, and deactivates it when it’s off. The default setting for **SW4** is to send MIDI Controller 29 with a value of **127** when it’s on; it sends MIDI Controller 29 with a value of **0** when it’s off.



*Note: The functions of **SW1–SW4** in Program mode are defined by the internal setup, but they’re programmable. If you want them to do something else, you can edit the internal setup and change the buttons’ assignments. Keep in mind, however, that this will affect all programs in Program mode.*

Performance Features

Front Panel

The following table is the summary of controller assignment in Program mode (Internal Setup)

Controller	Assignment	MIDI Control Num
Knob A	FX-A Depth	MIDI 91
Knob B	FX-B Depth	MIDI 93
Knob C	Assignable (Timbre)	MIDI 06
Knob D	Assignable (Timbre)	MIDI 13
SW1	Octave Shift	No MIDI Message
SW2	Assignable (Timbre)	MIDI 09
SW3	Arp On/Off	No MIDI Message
SW4	Assignable (Timbre)	MIDI 29
MW	Assignable (Vibrato)	MIDI 01
Mpress	Aftertouch	MIDI 33
Ribbon	Pitchbend	MIDI 21/53
CCPed	Expression	MIDI 11

Setup mode

Buttons **SW1-SW4** are programmable in Setup mode. They can have different functions for each zone in every setup. In other words, you can change what one of these buttons does in Zone 1 of a setup, for example, and it won't change what that button does in the other zones of that setup (or in any other setup).

EQ

The PC1 has its own three-band global equalization (EQ). See *EQ* on page 3-12 for details.

Solo

In either Program mode or Setup mode, pressing this button turns on the solo feature (if you're in Program mode, the PC1 switches to AutoSplit mode—a special performance configuration of Setup mode.). When the **Solo** feature is on, (that is, when its LED is lit), pressing one of the **Zone** buttons *solos* that zone, so you hear that zone only. See page 3-18 for more about muting and soloing program.

The Zone Region

Main

In Program mode, this button takes you to AutoSplit mode—a special performance and editing configuration of Setup mode. In this case, the **Zone 2-Zone 4** buttons add splits or layers, as indicated (See page 3-15 for more information about layering and splitting). In Setup mode, this button selects Zone 1 for viewing or editing. Press it again to mute/unmute the zone.

Layer

In Program mode, this button switches the PC1 into AutoSplit mode, and adds a layer.

In Setup mode, this button selects Zone 2 for viewing or editing.

Split

In Program mode, this button switches the PC1 into AutoSplit mode, and adds a new Program below a preset split point.

In Setup mode, this button selects Zone 3 for viewing or editing.

Split Layer

In Program mode, this button switches the PC1R into AutoSplit mode, and adds a layer to the Program below the split point.

In Setup mode, this button selects Zone 4 for viewing or editing.

In any performance mode, pressing **Split** and **Split Layer** together is an editing shortcut that displays the AutoSplit Key parameter. You can then use the Alpha Wheel to change the AutoSplit key (or hold down the **Enter** button and play a note on the keyboards). Press **Cancel** to return to your performance mode.

The Display Region (LCD)

The display looks quite different in each mode, so we'll show you examples of each.

Program Mode

When you turn on your PC1, the display should look like this:

Bank ID	Bank name	Bank index (category and program)
Bank:0	Primary	1A
000 Stereo Grand		
Program ID and name		

This is Program mode, where the PC1 always starts when you turn it on (to get to Program mode from another mode, press the Program button). The top line gives you information about the bank, while the bottom line shows the ID and name of the current program.

Setup Mode

Press the Setup button to enter Setup mode, and the display looks like this:

Setup ID	Setup name
S001	Dance C7
A01	1:Beat Box
Bank index	Current zone Program assigned to current zone

The setup ID usually begins with **S** to indicate that you're playing a setup—although in setups that have the AutoSplit feature turned on, the **S** is replaced by a caret (^). Notice that the bank index is a letter followed by a numeral, which is the opposite of the way the bank index looks in Program mode.

The Edit Region

There are four buttons in the Edit region. This region also includes the **Panic** button. For programming your PC1, you can access Edit mode with the buttons in this region.

Edit

Press the **Edit** button to enter the edit mode corresponding to your current performance mode. This is where you make changes to the parameters that define programs, setups, and effects. See Chapter 4 for specifics about programming your PC1.

Once you're in an edit mode, this button becomes the **Store** button. Press **Edit** to bring up a Save dialog, then either press **Yes** to save the current object, or use the cursor buttons to select another related function. See Naming and Storing on page 4-2 for more information.

Menu

When you're editing programs or setups, press **Menu** to select the first menu of programming parameters in the current edit mode. Use the cursor buttons to view the available menus, then press **Enter** to view the parameters in the current menu. When you're finished viewing parameters, press **Menu** again to return to the list of menus.

Effect

The **Effect** button takes you to FX parameters in the edit mode that corresponds to your current performance mode. From FX parameters, you can assign a different effect to the current program or setup, and you can edit the current effect. See 3-12 for more information about editing effects.

Panic

This button sends All Notes Off messages and Reset All Controllers messages on all MIDI channels-both to the PC1's sound engine and its MIDI Out port

The Mode Region

The four buttons in the Mode Region take you to various performance and editing modes.

Program

Press this button to get to Program Mode from any performance or editing mode. Program is the mode to use for playing Programs.

Setup

Press this button to get to Setup mode from any performance or editing mode. Use Setup mode when you want to play programs on up to four different MIDI channels.

MIDI Receive

This button takes you to MIDI Receive mode, where you can configure how the PC1 responds to incoming MIDI information. The first time you enter MIDI Receive mode after powering up, the display shows Channel 1, because the PC1 resets the MIDI Receive channel each time you shut down. Until you shut down again, the PC1 tracks which channel you're viewing even after you've left MIDI Receive mode, so the next time you enter MIDI Receive mode, the display shows the channel you were most recently viewing.

Use the cursor buttons to select the parameters for each channel. You can scroll beyond the parameters for a given channel and move to the parameters for the next higher or lower channel. A faster way to jump to a different channel is to select the channel parameter (that is, to move the cursor under the channel number), then use the Alpha Wheel to change channels. You can press either **MIDI Recv** or **Cancel** to jump immediately to the Channel parameter.

Another navigation short cut is to press both cursor buttons at the same time. When you do this you jump to the corresponding parameter for the next higher channel (or back to Channel 1 if you're looking at channel 16)

You can set the following parameters for each channel. See page 5-23 for more information about using MIDI Receive mode.

- Channel On/Off
- Program
- Volume
- Pan
- Effects routing
- Wet/Dry mix from output of FX-A to input of FX-B
- Wet/Dry mix to input of FX-A
- Wet/Dry mix to input of FX-B

Global

The **Global** button takes you to a list of parameters and functions affecting the entire PC1. There's a description of each global parameter/function beginning on page 5-24.

The Program/Setup Select Region

You can access banks, programs, and setups directly by using buttons in this area. The three buttons on the left side of this region are used for choosing banks and the two rows of buttons on the right side are for selecting programs. We'll call the upper 8 buttons "Category Select Buttons" and the lower 8 buttons "Program Select Buttons". Each button has an LED and two labels. When the red LED is lit, the upper label is selected. And when the green LED is lit, the lower label is selected. And there is a special LED for indicating that a category button has more than 8 programs. See the next section for the detail.

Miscellaneous

There are other things that have not been explained yet. We will explain these one by one from the left side of the front panel to the right.

Master Volume Slider

There is a Master Volume Slider on the leftmost side of the front panel. As the words already suggest the meaning, the slider adjusts the overall volume of the PC1's audio output. We recommend that you set this slider all the way down before you turn on your PC1.

Cursor Buttons

These are the Left and Right arrow buttons under the display. We call them cursor buttons. They control the cursor, which is a bar that appears under one of the characters in the display. The

position of the cursor indicates what's selected for changing or editing.

In Program mode, these buttons select the bank ID parameter or program ID parameter, when you press one of them.

You'll also use the cursor buttons when editing to select what you want edit. See Basic Editing Concepts on page 4-1 for more about the cursor buttons.

Enter/Cancel (Yes/No)

There are **Enter/Cancel(Yes/No)** buttons on the right side of display.

Use the **Cancel/No** button to exit from edit modes, and to answer "No" to prompts in the display (like **Save Program 1?**).

Use the **Enter/Yes** button to enter program or setup categories in performance modes, to get into menus while editing, and to answer "Yes" to prompts in the display.

Plus/Minus buttons and Alpha Wheel

There are **Plus/Minus** buttons and an Alpha Wheel on the rightmost side of the front panel.

In performance mode, all of these controllers change the program (or setup) one by one. Press the **Minus** button or turn the Alpha Wheel to the left to decrease the program (or setup). Press the **Plus** button or turn the Alpha Wheel to the right to increase the number.

Selecting Programs and Setups

Select a performance mode by pressing the **Program** or **Setup** buttons in the Mode Select region (we call these mode-selection buttons). The mode you're in affects how the Program/Setup Select region buttons work.

Program Mode

There are 3 bank buttons for selecting 6 different banks in Program Mode. The Red and Green colors of the button's LED correspond to two banks. So, you can select one of **Primary**, **Secondary**, **Orchestral**, **General MIDI**, **User** and **Expansion**.

16 buttons on the right side are divided into 8 Category Select buttons in the upper row and 8 Program Select Buttons in the lower row. One Category Select button can choose 2 different categories, the LED color of the button shows what category you have selected.

Program Select Buttons are used to select a specific program within a category. Once it's pressed, the program is remembered as the preference of the category. For example, if you select "004 Solo Grand Piano" in the "Piano 1" category and then select other categories, "004 Solo Grand Piano " is restored when the "Piano 1" category is selected again.

If a category has more than 8 programs, the separate green LED turns on. It indicates that you can select more than 8 programs. For example, the "Solo String" category in the Orchestral bank includes 14 programs, so when it's selected, the 1st through the 6th Program Select Buttons have both Red and Green colors to choose the 9th through the 14th program.

Setup Mode

The **Primary/Secondary** and **Orchestral/Gen MIDI** bank button LEDs have only the red color in Setup mode, whereas the **User/Expansion** bank button LED has both Red and Green colors like

in Program Mode, so you can select user or expansion ROM setups, if expansion ROM is installed.

In Setup mode, 16 buttons on the right side are all equally used to select a setup. They all have both Red and Green colors so that 32 setups can be chosen with the buttons, which comprise a setup group. A setup bank has four setup groups, you may move to the adjacent group by Double-Pressing the **Plus** and **Minus** buttons.

It's especially useful when you're storing your own setups in the User bank, because you can store the setups in logical groups of 32, which is convenient for organizing setups to a play list.

By Using the Alpha wheel and Plus/Minus buttons

There are two other ways to select a program or setup:

- Scroll through the list using the Alpha Wheel
- Scroll through the list using the **Plus** or **Minus** button under the Alpha Wheel

Programs Mode

When using the Alpha Wheel or the **Plus** or **Minus** button, you can scroll through program categories. For example, if you're playing the program at bank entry **1H**, you can turn the Alpha Wheel one click to the right to scroll to bank entry **2A**.

Using the Alpha Wheel or the **Plus** or **Minus** button also enables you to scroll through banks.

You can scroll through all six banks within each performance mode, and you can scroll from the Primary bank to the Expansion bank and backward.

Setup Mode

Using the Alpha Wheel or the **Plus** or **Minus** button scrolls through all the occupied banks in Setup mode, but won't scroll into the Programs.

Program and Setup Organization

The PC1's programs and setups are arranged in banks; each bank can contain 128 programs or setups. The PC1 has a total of eleven banks, as shown in the following table:

Mode	Bank ID	Bank Name	Bank Contents	Comment
Program	0	Primary	Programs 0-127	Factory programs
	1	User	Empty	Can store 128 user-defined programs numbered 0-127
	2	Orchestra	Programs 0-127	Factory programs
	3	Expansion	Empty	Reserved for programs contained in future expansion block
	4	Gen.MIDI	Programs 0-127	Factory programs
	6	Secondary	Programs 0-127	Factory programs
	7	GM Drum	Programs 0-127	Factory programs
Setup	0	Primary	Setups 1-32 and 126-128	Factory setups and setup templates
	1	User	Empty	Can store 128 user-defined setups numbered 129-256
	2	Orchestra	Setups 257-288	Factory setups
	3	Exp	Empty	Reserved for factory setups contained in future expansion block.

EQ

The PC1 comes with its own three-band equalization (EQ), or tone controls. The EQ is global which means that there is only one setting that is used all of the time regardless of which program or setup is selected. Its purpose is to adjust the PC1 for individual listening situations.

Changing the EQ

1. Press the **EQ** button to light its LED, and the EQ parameters appear in the display:

```
EQ: Low  Mid  High  
    +0dB +0dB +0dB
```

Each band starts at **0 dB** when you turn on your PC1 (this is called *flat* equalization).

2. Adjust the level of each frequency range using Knobs **A**, **B**, and **C**, which correspond to the low, middle, and high frequency range. You can go from **-12 dB** (lowering the level) to **12 dB** (raising the level). You'll hear the sound change as you adjust each level (depending on the sound, the change can be quite subtle).
3. You can also use the cursor buttons and Alpha Wheel to change the EQ settings.
4. Press **EQ** again to return to your previous performance mode (alternatively, you can press **Cancel**, or press one of the mode-selection buttons).

Effects

The PC1's digital multi-effects consist of two independent effects blocks called FX-A and FX-B. The current program or setup determines whether the signal from the PC1's sound engine goes through either effect block (every program and every setup zone has a parameter called Routing that determines whether the signal goes through FX-A, FX-B, or both).

You can use most of the PC1's effects on FX-A. FX-B is primarily for reverbs (these reverbs are also available for FX-A).

Controlling Effects

By default, most programs and setups use at least one of the effects blocks (the **Effect** LED is lit), which means that you hear some kind of effect along with the sounds. You can vary the effects in real time by changing the Wet/Dry mix of FX-A and FX-B independently using MIDI Controller messages. (When you're in Program mode, you can use Knobs **A** and **B** to control the Wet/Dry mixes for most programs.)

Send the following MIDI Controller messages to the PC1 to change the Wet/Dry mix. A value of 0 for one of these messages sets the mix level to fully dry (0%); a value of 127 makes the mix fully wet (100%).

MIDI 91	FX-B
MIDI 92	FX-A to B
MIDI 93	FX-A

You can also change the Wet/Dry mix from the PC1's front panel, using the FX Wet/Dry parameters. See *Wet/Dry Mix* on page 3-14 for more information.

Send a MIDI Controller message of 94 to change effects routing. A value of 0–31 switches the routing to None; a value of 32–63 switches to FX-A; a value of 64–95 switches to FX-B; a value of 96–127 switches to Both.

Changing the Effects Routing

The Routing parameter determines whether the sound of a program or setup gets sent to one or both of the effects blocks. Think of the Routing parameter as an effect send, routing the audio signal from the sound engine to the effects processor (or bypassing it).

When you select a program or setup, the LED in the **Effect** button indicates the effects routing, as follows:

Off	None
Green	FX-A
Red	FX-B
Amber	Both

One way to change the effect you hear with a program or setup is to change the effects routing so that you hear a different effect, a combination of effects, or no effect at all.

1. Press the **Effect** button (In MIDI Receive mode, there's no FX Routing parameter, because effects routing is part of the MIDI Receive menu).
2. Use the **Plus/Minus** buttons or Alpha Wheel to change the value of the Routing parameter.
3. If you're changing effects routings for a setup, press one of the zone buttons to select a different zone, and change the effects routing for that zone as well, if desired.
4. Save your changes (see *Naming and Storing* on page 4-2), unless you want the routing to revert to its original state the next time you select the program or setup.

Selecting Effects

1. Press the **Effect** button.
2. Press the **Right** cursor button. The FXA Select parameter appears. Press the **Right** cursor button again to get to the FXB Select parameter. The bottom line of the display shows the ID and name of the current effect. The top line shows the name of the current menu, as well as the editing mode. (If you entered FX mode from MIDI Receive mode, the FXA Select parameter appears right away, and you don't have to press the **Right** cursor button.)
3. Use the **Plus/Minus** button or Alpha Wheel to select a different effect.
4. Save your changes (see *Naming and Storing* on page 4-2), unless you want the effect to revert to its original state the next time you select the program or setup.

Changing Wet/Dry Mix

Most of the PC1's factory programs and setups route the audio signal into FX-A and not directly into FX-B. In this case, the PC1 automatically routes the signal from the output of FX-A into FX-B before it goes to the audio outputs. (See drawing on page B-6) This means that there are three Wet/Dry variables; therefore there are three Wet/Dry parameters:

- A** Controls how much of FX-A's effect gets applied to the dry signal coming from the sound engine
- B** Controls how much of FX-B's effect gets applied to the dry signal coming from the sound engine.
- Global A>B** Controls how much of the processed signal coming from FX-A goes to FX-B and gets FX-B's effect applied to it.

In Setup mode, Global A>B affects every zone in the setup (and every MIDI channel), but the settings for A and B are independent in each zone, and on each MIDI channel.

1. Press the **Effect** button, then press the **Right** cursor button until you see the FX Wet/Dry parameter.
2. The display should look something like this:

```
FX Wet/Dry: A>B:22 %  
A: 64 % B: 15 %
```

If you're coming from Setup mode, the top line is shown like "Z:1 Global A>B:22 %". The numeral following the Z indicates the current zone. Use the zone buttons to change the current zone.

Note the parentheses around the value for B. This indicates that the current zone is not routed to FX-B. In this case, editing the value of B won't change the Wet/Dry mix for FX-B. If you routed the zone to FX-B, the parentheses would disappear.

In Program mode, you can change the Wet/Dry mix for both FX-A and FX-B without going to the Effect editing mode. When an effect block is in use, the corresponding knob (Knob A for FX-A and Knob B for FX-B) adjusts the Wet/Dry mix. If you are in the Wet/Dry parameters of the Effect Editor, you can see amount of Wet/Dry by turning knob in real-time. This is a Program mode feature only. If you want to change the Wet/Dry mixes permanently, you'll need to use the Wet/Dry parameters, then save either the resulting effect or the entire program or setup. There's a diagram of the PC1's audio signal routing on page B-6.

Bypassing Effects

Suppose you're in the recording studio, and the engineers are using their own external effects processor, or perhaps a global reverb setting for all channels. You want to silence the PC1's effects and/or reverb temporarily (without making permanent changes to the programs or setups you're playing during recording. You can quickly bypass either or both of the effects blocks globally, using the FXA Bypass and FXB Bypass parameters.

1. Press the **Effect** button

2. Press the **Right** cursor button until the FX Bypass parameter is displayed.
3. Select which effect is bypassed by using the cursor buttons
4. Change the value to On
5. Press **Cancel** to return to the previous performance mode.

Bypassing FX-A or FX-B in any program or zone bypasses the corresponding effect block in *all* programs or zones. When you no longer need to bypass effects, go to the FXA Bypass or FXB Bypass parameter in *any* program or zone, and set its value to **Off**. This removes the bypass in *all* programs and zones.

Layering and Splitting

In Program mode, you can play one program at a time, since Program mode is based on the internal setup, which contains a single zone. If you wanted to create a multi-zone setup with different programs in each zone, you could go to Setup mode, then start programming (editing): assigning MIDI channels and programs to zones, assigning physical controllers, and so on. This gives you a great deal of control and flexibility, but it takes a bit of time.

If you're on stage and you suddenly decide that your solo needs two Programs instead of one, you don't want to take the time to edit a setup; you just want to add another Program as quickly as possible. Fortunately, the PC1 makes it easy to do this kind of thing without doing any actual editing.

Layering is playing two programs on the same part of the keyboard. Splitting is playing two programs on different parts of the keyboard. Using the PC1's AutoSplit feature, you can create a layer or a split by pressing a single button. With a few more button presses, you can change the programs in the layers or splits, and create combinations of layers and splits. We'll show you how to do it, then we'll explain what's going on.

Using AutoSplit for Quick Layers and Splits

We're going to start with piano, layer it with strings, add a split with bass, then layer the bass with drums--and we'll do it with six button presses. If you're not already in Programs mode and playing Program **000 Stereo Grand**, press the **Program** button, then the **Primary** button (in the Mode region), then the Category Select Button **Piano 1** (Red Light) and the Program select **A**.

1. Press **Layer** (in the Zone Select region--also labeled **Zone 2**).
2. Press the Category Select button **Strings** (Green light) then press the Program select button **A**. Now you have piano and strings layered across the entire keyboard.
3. Press **Split (Zone 3)**.
4. Press the Category Select button **Bass** (Green light) then press the Program select button **A**. Now you have a plucked electric bass from the bottom of the keyboard up to G# 3, and layered piano and strings from A 3 up.
5. Press **Split Layer (Zone 4)**.
6. Press the Category Select button **Clavier** (Red light) then press the Program select button **A**. That's it: bass layered with clavier in the lower part of the keyboard, and piano layered with strings in the upper part.

How AutoSplit Works

We'll go through the same procedure again, explaining what's going on with each step. If you want to follow along, start by pressing **Program** to return to Program mode. Program **000 Stereo Grand** should appear in the display. Notice the four zone buttons: Zone 1 is active (the LED in the **Zone 1** button is green), while Zones 2-4 are muted (Orange LEDs).

1. Press **Layer (Zone 2)**. The first thing to notice is that you're in Setup mode. That's because you now have two active zones, and as you know, you can't have more than one zone in Program mode (because Program mode is based on the internal setup, which has only one zone.) Consequently the PC1 automatically switches to Setup mode so that it can activate Zone 2. Notice that the LED for Zone 2 is now green, confirming that Zone 2 is active.

As soon as you press **Layer**, Zone 2 becomes active, and whatever program is assigned to Zone 2 gets layered with the piano. As it happens, the strings program is already selected for Zone 2. That's because it's the program most recently assigned to Zone 2 (the first time we went through this exercise). If you had selected a different setup before returning to Program mode, you'd most likely see a different program in Zone 2 now.

Zone 2 is also the *current* zone, which we know from the information in the top line of the display (whichever zone number you see is the current zone). Incidentally, the word `auto` means that the AutoSplit feature is on (if it weren't, none of this would work).

2. Press the Category select button **Strings** (Green light) then press the Program select button **A**. OK, you didn't need to in this case, but pretend that you did. In Step 1 we created the layer by activating Zone 2; now we've assigned a program to it.
3. Press **Split (Zone 3)**. The PC1 automatically splits the keyboard at a predetermined point (it's called the AutoSplit Key, and by default it's G# 3, although you can change it). Zones 1 and 2 play above the AutoSplit Key. Zone 3 becomes active (and becomes the current zone), and whatever program is assigned to Zone 3 plays below the AutoSplit Key.
4. Press the Category select button **Bass** (Green light) then the Program select button **A**. In Step 3 we created the split by activating Zone 3 below the AutoSplit Key; now we've assigned a program to it.
5. Press **Split Layer (Zone 4)**. Zone 4 becomes active (and becomes the current zone), and whatever program is assigned to Zone 4 gets layered with the bass.
6. Press the Category select button **Drums** (Green light) then the Program select button **A**. In Step 5 we created the layer by activating Zone 4 and layering it with Zone 3; now we've assigned a program to it.

Saving Quick Layers and Splits

With practice, you can use AutoSplit to create layers and splits in seconds, which is a great performance feature. If you come up with something you like, you might as well save it for future use.

1. Press **Store** (in the Functions region of the front panel). The display looks something like this, prompting you to save the setup at the lowest-available ID in the User bank for setups:

```
Save setup 129?  
A01 Setup 129
```

2. Press **Yes**. the display briefly shows **Setup NNN saved!** then returns to Setup mode.

When you save a setup this way, the PC1 turns the AutoSplit feature off for that setup, and sets the low and high notes of each zone. See *Muting and Soloing* on page 3-18 to learn about how this affects playing setups. If you want, you can edit the setup and turn AutoSplit back on (there's a good reason to do so, described in *The AutoSplit Feature* on page 3-18). See *Turning AutoSplit On and Off* on page 4-20 to learn how.

Changing the AutoSplit Key Without Editing

Every setup can have its own AutoSplit Key. The internal setup also has an AutoSplit Key that determines where the split point goes when you make a setup out of a program by adding a layer or split.

You can change the AutoSplit Key without leaving Program Mode or Setup mode.

1. Press **Zone 3** and **Zone 4** simultaneously. The display looks like this (the top line is blank):

```
AutoSplit Key: G#3
```

2. Use the Alpha Wheel to change the value. You can put it anywhere from C -1 to G 9, but in most cases, you'll want it somewhere within the central range of your keyboard.

Instead of using the Alpha Wheel, you can press and hold **Enter**, and hit the key that you want to be the split point. This is called Intuitive Entry; see page 4-6 for a full description.

3. Press **Zone 3** and **Zone 4** simultaneously to return to your previous performance mode.

Changing the AutoSplit Key this way is a performance feature only; as soon as you leave your current performance mode, the change is lost. You *can* save it, however. Read on.

Saving the AutoSplit Key

If you're in Setup mode, just save the setup, as described in *Saving Quick Layers and Splits* above.

Muting and Soloing

Setups can give you a nice thick sound, with a different program in each of the four setup zones (you can arrange the zones so that they all play on different parts of the keyboard, or you can have them all overlap). You can make your setups even more versatile by muting or soloing zones, changing the sound by pressing a single button.

Muting

You can mute any or all zones in a setup. Muting one zone has no effect on the other zones. To mute (or unmute) a zone, it must be the current zone (the bottom line of the display shows the number of the current zone, followed by the name of the program assigned to that zone). When a zone is current, each press of its zone button toggles between muting and unmuting. If a zone is not the current zone, press its zone button *twice* to mute or unmute the zone (the first press makes the zone current, then each subsequent press toggles between muting and unmuting).

Soloing

Not surprisingly, you can solo only one zone at a time, and that's the only zone you'll hear, regardless of the status of the other zones. When you press the **Solo** button, whatever zone was current at the time becomes the soloed zone (the LED in its zone button turns red). Once the **Solo** button is on, pressing any zone button once solos that zone.

The AutoSplit Feature

Muting and soloing are slightly different depending on whether the AutoSplit feature is on. When it's on, a soloed zone expands to cover the entire keyboard--it doesn't matter what the settings are for the AutoSplit key or for the zones low and high notes (key range). Similarly, if you mute both of the zones above the AutoSplit key, the zones below the AutoSplit key expand to cover the entire keyboard, and vice versa. This is great for performance situations, because you can use the whole keyboard no matter which zone(s) you're using.

If you press the octave shift button (**SW1**) when the AutoSplit Feature is on, it transposes the layers in the lower part of the keyboard up one octave, and transposes the layers in the upper part of the keyboard down one octave.

When AutoSplit is off, soloed zones remain within the limits defined by the setup. Likewise, unmuted zones stay within their limits if you mute both of the zones on the other side of the split point. This silences part of the keyboard, which isn't as useful as it could be.

By default, AutoSplit is on in the internal setup, enabling you to make quick layers and splits at any time when you're in Program mode (we recommend that you leave it this way). All of the factory setups have AutoSplit turned *off*, and when you save a quick layer or split, the resulting setup also has AutoSplit turned off. You can turn it back on for any setup, however, as described on page 4-20.

There's one more thing to remember about AutoSplit. When you make a quick layer or split, you're in a kind of transition between Program mode and Setup mode. You start off in Program mode, but as soon as you press one of the **Zone** buttons, the **Setup** button lights up and the **Program** button becomes unlit. As long as you stay in this quick-layer-and-split semi-mode, you can mute and unmute each zone with a single button press; you don't have to make the zone current first. It's a nice performance feature. (By the way, soloing works the way it usually does.)

Once you save your quick layer or split, it becomes a regular setup, with AutoSplit turned off. Even if you turn it back on (to make soloed and unmuted zones expand across the entire keyboard), you're no longer in the special quick-layer-and-split mode when you're playing the setup--you're in regular Setup mode. Consequently, you have to make a zone current before you can mute or unmute it.

General MIDI Features

When you have downloaded MIDI files and want the PC1 to play them from an external sequencer, you may hear different sounds from what you expected. It is likely that those files are intended for General MIDI instruments. General MIDI is a convention for a standard set of sounds located at specific program numbers, a standard drum note layout, and a standard velocity response and effects curve. The PC1 has a special GM bank to support General MIDI, and the programs in the GM bank are intended for that.

There is a parameter to control the PC1's GM functions. You can find it in the Global menu. If you set it to On, the PC1 locks all MIDI channels (except Channel 10, the Drum channel) to play programs in the GM Bank (Bank 4). Channel 10 plays programs in Bank 7; these are the drum programs. Also the velocity response and FX scales are reconfigured to match the GM specification.



Note: If General MIDI is On, other banks can't be selected from the front panel or external program change message. To select programs in other banks, you must turn General MIDI off.

Chapter 4

Programming Your PC1

In This Chapter

Chapter 4 shows you how to program your PC1. The overview introduces a few important features and concepts, while the following sections provide more detail.

- Basic Editing Concepts 4-1
- Program Editor 4-8
- Setup Editor 4-9
- Effect Editor 4-17
- Common Editing Tasks 4-20
- Using the Arpeggiator 4-22
- Using the PC1 to Control External Slaves. 4-24
- Working with an External Sequencer 4-28
- Trouble Shooting 4-29

Basic Editing Concepts

So far we've explained the PC1 primarily from a performance standpoint, covering the fundamentals of selecting programs and setups, and applying real-time controls and effects. There's much more to the PC1, however—you can modify existing programs, setups, and effects in countless ways, or create completely new ones. We call this editing, and there are a few concepts that apply to editing in general, whether you're working on programs, setups, or effects.

Overview

Editing consists of changing the value of one or more *parameters*. A parameter defines one particular component of a program or setup (or the PC1 itself). These parameters are organized into *menus*—groups of related parameters. There are separate menus for programs, setups, and more. There's also a set of global parameters affecting the entire PC1.

For example, in every MIDI setup, each zone has a parameter called MIDI Channel. This parameter's value determines the channel on which the PC1 transmits (and possibly receives) MIDI information. Every parameter has a default value set at the factory.

Beginning to Edit

If you want to change the value of any parameter, there are three basic steps:

- Entering an edit mode
- Finding a parameter and changing its value
- Naming and storing (saving)

Entering an Edit Mode

There are two buttons that take you into the PC1's various edit modes:

- | | |
|---------------|---|
| Edit | This button takes you to the first menu in the edit mode corresponding to the performance mode you were in. |
| Effect | This button takes you to the first Effect edit parameter corresponding to the current mode. |

You can get to Effects edit mode, MIDI receive mode, or Global mode from any performance mode; just press **Effect**, **MIDI Receive**, or **Global**.

To edit programs or setups, you must first select the performance mode corresponding to the object you want to edit (select Program mode, for example, if you want to edit a Program). When you've selected a performance mode, press **Edit**. When you press **Edit**, you go to the first menu in the edit mode corresponding to the performance mode you were in when you pressed **Edit**. You'll see one of the following displays:

Program mode

```
Sound Parameters
  Timbre >
```

Setup mode

```
Zone Parameters
  MIDI Xmit >
```

Finding a Parameter and Changing its Value

To navigate through the PC1's menus, use the Alpha Wheel or the cursor buttons (the **Left** and **Right** arrow buttons under the LCD display) and the **Enter** button.

Notice the arrows (>) in the display examples above. They indicate that you can view more menus of parameters by pressing the **Right** cursor button. The reason you don't see any left arrows in these examples is that when you enter an edit mode, you're always at the top menu. As soon as you move away from the top menu, you'll see a left arrow in the display as well.

1. Once you've entered an edit mode, use the Alpha Wheel or the cursor buttons to find the menu you want.
2. Press **Enter** to enter the menu.
3. Use the cursor buttons to view the parameters in the menu. In most cases, there's just one parameter visible at a time. In that case, when you see the parameter you want to edit, turn the Alpha Wheel left or right to change the value. In some cases, you can see more than one parameter at a time (for example, Wet/Dry parameters for FX-A, FX-B, and A to B in Effect Editing parameter). When there's more than one parameter visible, use the cursor buttons to move the cursor under the value you want to change. Then turn the Alpha Wheel to change the value.

Naming and Storing

Storing (saving) is optional, of course. If you don't want to store any of your changes, press **Cancel** one or more times to return to the mode you were in before you started editing.

Although naming is obviously optional as well, we'll assume you're going to name the object you're editing before storing it.

This procedure describes storing a setup, so it assumes that you're in Setup mode. The process is similar for naming and storing other objects.

1. Press **Store** (in the Functions group of buttons). The display will show either `Save Setup NNN?` or `RePlace Setup NNN?` where `NNN` is the setup ID.
 - If you're in the Internal bank of setups, the display will show `Save Setup NNN?` where `NNN` is the first available setup ID in the User bank of setups.
 - If you're in the User bank, the display will show `RePlace Setup NNN?` where `NNN` is the ID of the current setup. Use the Alpha Wheel to change the ID if you want to save a new setup instead of replacing the current one.
2. Press the **Right** cursor button to display `Rename Setup NNN?`
3. Press **Yes (Enter)**. The display shows the name of the current setup, if any. The cursor highlights the character that's selected for editing.
4. Use any naming method to change the character highlighted by the cursor. Use the cursor buttons to move the cursor. The naming method are described below
5. When the name looks the way you want it, press **Yes**. The display again shows either `Save Setup NNN?` or `RePlace Setup NNN?` depending on where you were when you started storing.
6. Press **Yes** (or press **No** if you don't want to store the setup after all). The display briefly shows `Setup NNN saved!` then returns to Setup mode.

Methods For Naming Objects And Special Characters.

Used Button	Functions
Category select buttons	Select the letter A-H or a-h directly
Program select buttons	Select the letter I-P or i-p directly
Zone 1 button	Switch a letter from upper to lower case, or vice versa
Zone 2 button	Insert a space at the cursor, moving the remaining characters to the right
Zone 3 button	Delete the character at the cursor, moving the remaining characters to the left
Zone 4 button	Move the cursor to the end of the name.

You can choose the letter from A to P with the Category select buttons and the Program select buttons, and each letter corresponds to the label below each button. Press the same button twice to toggle between capital and lowercase.

Here are all the characters available for object names, in the order in which they appear:

```
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9
: ; < = > ? @ A through Z
[ \ ] ^ _ ' a through z (space)
```

Other Save-Dialog Functions

Restoring Factory Effects

If you've changed the effect settings associated with a factory program, you can quickly restore the factory settings. In the Save dialogs for programs and effects, there are options for restoring the effects for either the current program, or for all programs.

1. Enter the Save dialog by pressing the **Store(Edit)** button twice or the **Effect** and **Store** buttons. Depending on the edit mode you're in, you'll see either a prompt to replace the current effect, or to save or replace the current program.
2. Press the **Left** cursor button repeatedly until you see either **Restore Current Factory Effects?** or **Restore All Factory Effects?**
3. Press **Yes** to restore, or **No** to cancel.

If you choose to restore the current effect, the PC1 resets only the current program to its factory effect settings. If you choose to restore *all* effects, the PC1 resets all programs to their factory effect settings.

Deleting Objects

You can delete user-defined programs, setups, or effects by entering the Save dialog for the Program Editor, or Setup Editor—or in the Save dialog for Effects edit mode.

When you enter the Save dialog, you'll see a prompt asking you whether you want to save or replace an object (the object type depends on which edit mode you're in). The prompt for dumping the object is at another location in the dialog, as you'll see.

1. Enter the Save dialog by pressing the **Store** button twice or the **Effect** and **Store** buttons. Depending on the edit mode you're in, you'll see either a prompt to replace the current effect, or to save or replace the current program or setup.
2. Press the **Right** cursor button repeatedly until you see a prompt asking you to delete the object.
3. Press **Yes**. The display will show another prompt asking you if you're sure.
4. Press **Yes** again. The display will show `Deleted!` briefly, then return to the performance mode you were in before entering the edit mode. You'll also see `-Not Found--` in the display, indicating that the object is gone.

At any of these prompts, you can press **No** to cancel the operation.

Dumping Objects

If you've created a lot of programs, setups, and effects settings, you may want to store them externally, using a MIDI System Exclusive (SysEx) dump. This has several benefits: you can load the objects into another PC1 or PC2/X/R that accepts SysEx; you can preserve them in a more permanent backup archive (in case anything happens to the PC1's battery-backed memory), and you can create libraries of objects customized for particular performance or recording situations.

You can dump objects to any MIDI recording device that accepts SysEx messages; most MIDI sequencers manufactured today accept SysEx. A SysEx dump can consist of a single object of any type, or all objects of a given type—it can also include *all* user-defined objects. You can initiate

most of these dumps from the Save dialogs of the Program, Setup, or the save dialog in Effects edit mode. Each object you dump is a separate SysEx message.

When you enter one of these dialogs, the first thing you see is a prompt asking you whether you want to save or replace an object (the object type depends on which edit mode you're in). The prompt for dumping the object is at another location in the dialog, as you'll see.

You should prepare your MIDI recording device before initiating the dump. For example, if you're dumping to a sequencer application, open the file to which you want to dump, and get the application ready to record. Make sure you have a MIDI cable connected from the MIDI Out port of the PC1 to the MIDI In port of the recording device. Don't start recording just yet, however.

1. Enter the Save dialog by pressing **Store**. Depending on the edit mode you're in, you'll see either a prompt to replace the current effect, or to save or replace the current program or setup.
2. Press the **Right** cursor button repeatedly until you see a prompt asking you if you want to dump a single object, or to dump *all* objects of the current type (the current type is determined by the performance mode you were in when you entered the edit mode).
3. Start recording with the MIDI recording device, then press **Yes** on the PC1's front panel.
4. The PC1 dumps the object or objects to the MIDI recording device as a normal file. The display indicates when the dump is finished.

Reloading a Dump

1. Connect a MIDI cable from the MIDI Out port of the external device to the PC1's MIDI In port.
2. Initiate the dump or playback of the object file from your external device.

You don't have to put the PC1 in any special mode to receive the dump. When a dump is sent back to the PC1, the information goes to the memory location for the corresponding object types.



***Note:** Reloading a dump does not update the edit buffer. Consequently you won't have access to the objects until you select them in one of the performance modes. For example, suppose you recently dumped an object (we'll assume it's Setup **129**), but by coincidence you were editing Setup **129** just before you reloaded it. You might expect to be able to play and edit the reloaded version as soon as you've finished reloading, but in fact, you would be playing the copy of the setup that's in the edit buffer. To play the reloaded setup, return to Setup mode (without replacing Setup **129**—save to a different ID if you really want to save what's in the edit buffer) and select Setup **129**. Only then will you be able to play the reloaded version.*

If you plan to make frequent use of SysEx dumps, you should run at least one test cycle of dumping and reloading before you put a lot of effort into editing. You don't want any surprises, for example, when you have to dump your entire memory to protect it because your PC1's battery is running low.

For example, you might dump a setup, then make a simple change to the version on your PC1 (like renaming it). Reload it, then select it, and check whether the name has reverted to its original. If it hasn't, you haven't reloaded successfully.

Turn to page 4-7 for more information about SysEx dumps.

Editing Short Cuts: Intuitive Entry

If you do a lot of editing, you'll spend a fair amount of time finding parameters and changing values. The PC1 has quite a few parameters, and many of those parameters have long lists of values. Intuitive entry can help speed up the editing process in several ways.

Short Cuts for Changing Parameter Values

You can use any continuous physical controller (Wheels, Pedals, Ribbons, Pressure, or Knobs **A–D** on the PC1) to change the value of the current parameter very quickly. You can also use the keyboard in some cases. Here are three quick examples.

Transposing Setup Zones

1. Go to Setup edit mode if you aren't already there, and press **Edit**.
2. Find the Transpose menu (it's fourth in the list). Press **Enter**.
3. Press **Enter** again, and hold it down. Then play a note from the keyboard. The distance of that note from C 4 (Middle C) sets the number of semitones of transposition. For example, if you played E 4, you'd transpose the current zone up a third (four semitones).

Setting the Key Range of a Setup Zone

1. Go to Setup edit mode if you aren't already there, and press **Edit**.
2. Find the Key Range menu (it's third in the list). Press **Enter**.
3. Press and hold **Enter**, then play a note on your keyboard. This sets the low key, since the Low parameter becomes current when you press **Enter**.
4. Select the Hi parameter.
5. Press and hold **Enter**, then play another note, which sets the high key.

Short Cuts for Navigating the Controllers Menu

The Controllers menu contains over a hundred parameters. Scrolling through them one by one can be time-consuming, so we've made it easier to get around.

Instant Parameter Selection

This technique works for all physical controllers, including mono pressure.

1. Go to Setup edit mode if you aren't already there, and press **Edit**.
2. Press and hold the **Global** button in the mode region.
3. Move any controller on the PC1. This selects the Ctrl Num parameter for the corresponding controller. For example, holding down the Global button and moving Mod Wheel instantly selects Ctrl Num parameter for the Mod Wheel

Parallel Parameter Selection

Every physical controller shares a common set of basic parameters, organized into groups—the same (or nearly the same) group of parameters for each controller. Suppose you're setting the Ctrl Num parameters for Knobs **A–D** in the current zone of the setup you're editing. You don't have to scroll through all Knob **A** parameters to get to the Ctrl Num parameter for Knob **B**.

Just press both cursor buttons together, and you'll jump directly to the Ctrl Num parameter for Knob **B**.

This works for *any* parameter in the Controllers menu; press the cursor buttons at the same time, and you jump to the corresponding parameter for the next controller in the menu. But you can't jump backward in the menu.

Setting the Controller Values of a Setup Zone

When a parameter has a long list of values, using a continuous controller to change the value like the following can be faster than using the Alpha Wheel.

1. Go to Setup edit mode if you aren't already there, and press **Edit**.
2. Select a controller parameter by using the above method.
3. Press and hold **Enter**, and move one of the continuous controllers on your PC1 (this is the intuitive entry part of the procedure). You'll see the value of the Ctrl Num parameter change.

This technique is convenient for moving quickly from one end of the list to the other. You can then release the **Enter** button and use the Alpha Wheel to scroll through the list more precisely.

More About SysEx Dumps

SysEx IDs

If all you're doing is dumping objects from your PC1 to a sequencer and loading them back, you won't have to worry about the PC1's SysEx ID. Just make sure that you don't change it after dumping objects, because you won't be able to reload them if the PC1's SysEx ID is different from the one contained in the incoming messages.

The SysEx ID for the PC1 is defined by the Device ID parameter in the Global menu.

Dumping the Entire Memory

1. Make sure that you have a MIDI connection from the PC1's MIDI Out port to the MIDI In port of your external device.
2. Press the **Global** button, then press the **Right** cursor button until you see
`DUMP all objects?`
3. Start recording on your external device, and press **Enter** on the PC1. The LED in the **User bank** button blinks and the display shows you the object being dumped. The PC1 shows which objects it's dumping, then returns to the `DUMP all objects?` Prompt when finished.

The Program Editor

If you press **Edit** while in Program mode, you enter the Program Editor, where you can make changes to a wide variety of parameters that affect individual programs.

Program Editing Basics

You'll remember from *Basic Editing Concepts* on page 4-1 that the general procedure for editing involves three steps: entering an edit mode (in this case the Program Editor), finding a parameter then changing its value, and storing your changes—either replacing the current program, or creating a new one, renaming it as well if desired.

Timbre

The PC1 offers a quick way to change the timbre of the program just by moving controllers which are assigned to timbral parameters, instead of directly editing parameters like cut-off frequency, resonance, LFO rate, and so forth.

Press the **Edit** button in Program Mode. The Timbre Menu is shown like this.

```
Sound Parameters
Timbre >
```

Controller Value

The timbre of each program is edited by five physical controllers: Knob C, Knob D, Mod Wheel, SW2 and SW4.

Appendix C, "Programs and Controller Assignments", describes the timbral parameters and the corresponding controllers which are already programmed for all programs of the PC1.

For example, in Program **080 Solar Lead**, Knob C (which by default sends MIDI 6) controls Low Pass Filter cut-off frequency. If you turn Knob C either way, you can hear the brightness of the sound change. This works either before entering the program editor or after.

If you enter Controller Value parameters in the program editor, they are visually represented on the LCD. And, just by moving one of those controllers, you can select it and change its value.

```
Controller Value
Knob C: 22
```

1. Select Program **080 Solar Lead**
2. Press **Edit**, then **Enter** to get to Controller Value in the Timbre menu, the controller value for Mod wheel is displayed.
3. Turn Knob C to the right slowly, then Knob C is instantly selected and the current controller value is seen in real-time.

Once the controller value is saved in the program editor, when you select the Program again, the PC1 sets the saved value as a starting point. And note that Controller Value which is displayed by the program editor is actually the 'Current Controller Value'. For example, if you turn Knob C before entering the program editor, the new value will be displayed instead of the previously stored value.

Short-cut to editing timbre

As described above, the timbre of a program may be changed before entering the program editor by moving the physical controllers. So, if you press **Edit** twice and then save it after setting controller values for a program as desired, it can quickly become a user program.

Effect

If you press the **Right** cursor button in the Sound Parameters Menu to get to the Effect Menu, and then press **Enter**, the effect parameters are shown. These parameters are exactly the same as what you see when the **Effect** button is pressed, except that it's saved as a program object after editing them.

Refer to the Effect Edit mode (4-17) for details of effect parameters.

Exiting the Program Editor

There are several ways to get out:

- Press **Cancel/No** one or more times.
- Press **Store** to begin the Save dialog; when you've finished saving, the PC1 returns to Program mode.
- Select a performance mode by pressing a mode-selection button.

The Setup Editor

The Setup Editor lets you make changes to setups, then store the modified setups in the User setup bank. The PC1 comes from the factory with 67 setups, all in the Internal bank. The User bank is empty, so the first time you go into the Setup Editor, you'll be editing one of the setups in the Internal setup bank. The PC1 won't let you store setups in the Internal bank, but you can store them anywhere in the User bank, either replacing the setup you started with, or assigning it a different setup ID.

In this section, we'll use a number of practical examples to help you learn your way around the Setup Editor. All the setup editing you'll do involves these basic steps:

- Selecting a setup
- Entering the Setup Editor
- Changing the values of one or more parameters
- Storing (saving) the setup

You should already know how to select a setup. If not, see *Selecting Programs and Setups* on page 3-10. You should also be familiar with the three basic steps of editing: Entering an edit mode, Finding a parameter and changing its value, Naming and storing. See *Basic Editing Concepts* on page 4-1 if you need to refresh your memory.

Setup Structure

A setup is a combination of up to four programs, each of which can use a different MIDI channel. Setups are structured in four zones; each zone has an independent set of parameters, including program, MIDI channel, controller assignments, and more. Even if you have an external MIDI source that can transmit on only one channel, you can make use of the four zones in a setup; the PC1 can remap incoming MIDI information to each of the channel in a setup, so you can play all four programs from one stream of MIDI information.

Before we begin with the details of setup editing, we'll mention three important setups that can help you keep track of your editing efforts.

Special Setups

Naturally you can edit any setup you want, changing values for any of the dozens of available parameters. Here's something to consider, however: the factory setups often have complex interactions between several parameters. Changing the value of one parameter can have a greater impact than you anticipated. Consequently, we've made it easy for you to keep things simple.

In the Internal setup bank are three template setups: **126 Internal Setup**, **127 Clear Setup**, and **128 Default Setup**. They're included to make it easier for you to get started editing setups.

126 Internal Setup

Setup **126** is a generic setup with controller assignments in Zone 1 that match the factory default settings for the internal setup. It's convenient for restoring the default controller assignments to the internal setup. To do this, select Setup **126**, press **Edit** to go into the Setup Editor, press **Store**, then press **Program**, then press **Yes**.

127 Clear Setup

Setup **127** is completely "blank" — that is, it has no controller assignments whatsoever.

128 Default Setup

Setup **128** has a handful of typical controller assignments (Pitch Bend, for example). As you learn to edit setups, you're likely to find it easier to keep track of things if you start with one of these setups and make a few changes at a time. As you learn what kinds of features you like in your setups, you can store them in the User bank, and use *them* as templates for further editing.

In any case, the examples we provide in this section begin with Setup **128**, and build from there. In each example, we'll refer to the setups we create using the names we suggest in the examples.

Entering the Setup Editor

1. Press the **Setup** button to enter Setup mode.
2. Select the setup you want to edit.
3. Press **Edit**. This takes you to the Zone parameters menu, the first of the nine menus in the Setup Editor.
4. Use the cursor buttons to view the menus. When you see the menu you want, press **Enter** to view the parameters in the menu.

Creating Setups

If you've read *Layering and Splitting* on page 3-15, you know how to create layered setups using the AutoSplit feature. Doing it this way, however, adds a lot of other features to the resulting setup, and you may not want that. Sometimes it's better to start from scratch.

1. Start by selecting Setup **128 Default Setup**. (Don't press **Edit** yet.)
2. Press each of the **Zone 1** through **Zone 4** buttons once (notice the zone numbers labeled in blue below the buttons). As you press each button, notice how the bottom line of the display shows you the corresponding zone number. You'll also notice that every zone already has a program assigned to it. That's fine, because you can always mute zones (or turn them off) if you don't want to hear them. In fact, all the zones are muted now (their zone buttons are amber). You muted Zone 1 when you pressed its button, because it was the current zone. Let's shut two of the zones off, to make the setup as simple as possible.
3. Press **Edit**, which displays the MIDI Xmit menu.
4. Press **Enter**, which displays the first parameter (MIDI Channel) in the MIDI Xmit menu.
5. Press the **Zone 3** button. The display looks like this:

```
Zone: 3-      0:105
MIDI Channel: 03
```

The top line indicates the current zone, as well as the current bank and program ID. Notice the minus sign after the zone number, indicating that the zone is muted.

6. Turn the Alpha Wheel to the left until you see **Off** in the bottom line of the display. Notice that the **Zone 3** button is now unlit, indicating that the zone is off.
7. Repeat Steps 5 and 6 for Zone 4. You now have a two-zone setup (the setup still has four zones, but two of them are completely inactive).
8. Press the **Zone 1** button to make Zone 1 the current zone. Press it again to unmute the zone, if necessary. The **Zone 1** LED should be green.
9. Press **Menu** to return to the list of menus.
10. Press the **Right** cursor button to view the Program menu, and press **Enter** to view the Program ID and name parameter. This is one of the rare cases in which you don't see the *name* of the parameter, just its value. You should see **000 Stereo Grand** on the bottom line of the display. If you don't, select it now.
11. Press the **Zone 2** button to make Zone 2 the current zone. Press it again to unmute it, if necessary. The **Zone 2** LED should be green.
12. Select the program **064 Lyrical Strings**.
13. Press **Store** to display the Save dialog:

```
Save setup 129?
001 Setup 129
```

Notice that the PC1 suggests a setup ID of **129**, which is the first unused setup ID in the User bank. We'll use that ID, but we'll rename the setup before storing it.

14. Press the **Right** cursor button; the display prompts you to rename the setup. Press **Yes**.
15. Press **Zone 3** repeatedly until you've erased the entire name. (This is optional; you can also write over each existing character in turn, if you prefer. You can also press **Zone 1** to switch a letter from upper to lower case and back. Press **Zone 2** to insert a space at the cursor and move the remaining characters to the right, or press **Zone 4** to move the cursor to the end of the name.)
16. Enter a name that you can remember, because we'll refer to it in later examples. Use the Alpha Wheel or the Category and Program select buttons to insert characters and the cursor buttons move the cursor. We'll call this setup **Piano&Strings**. Refer to *Naming and Storing* on page 4-2 if you need a reminder about naming objects.
17. When you've entered the name, press **Yes**. The Save prompt returns. Press **Yes** again to save the setup. The display tells you that the setup is saved, the returns you to Setup mode.

Setting Initial Volume Levels for Different Zones

Suppose you want the program in one zone of a setup to be at a lower volume than the others.

We'll edit our two-zone setup to lower the volume of the strings.

1. Start with Setup **129 Piano&Strings**, which we created in the previous example.
2. Press **Edit**, then press the **Right** cursor button until you see the Controllers menu. Press **Enter**. The display probably looks like this:

```
Zone:2      0:064  
Entry Volume: 127
```

Notice that the cursor is under the "1" in "127," indicating that this is the current parameter. (In this case, it doesn't really matter, since there's only one parameter visible. Sometimes, however, there's more than one parameter visible, in which case you can use the cursor buttons to move the cursor under the parameter you want to edit.)

3. Using the Alpha Wheel, change the value to **75**.
4. Press **Store** to display the Save dialog. Notice that the display prompts you to replace Setup **129**. We don't want to do this.
5. Turn the Alpha Wheel one click to the right; the display prompts you to save Setup **130**.
6. Rename the setup as **EntryVol**, and save it at ID **130**.

Assigning Knobs to Control Wet/Dry Mix in Different Zones

Many of the factory programs use Knobs **A** and **B** to control the Wet/Dry mix of the effects assigned to FX-A and FX-B. The setups in these examples don't use either of these knobs.

Our next example creates a setup that uses Knob **A** to control FX-A's Wet/Dry mix (but only in Zone 1), and Knob **B** to control FX-B's Wet/Dry mix (but only in Zone 2). By using variations on this procedure, you can make a single knob control different functions in each zone of a setup, or use different knobs to control the same function in different zones.

1. Start with Setup **130 EntryVol**, which we created in the previous example.
2. If necessary, press the **Zone 1** button to make Zone 1 current.
3. Press **Edit** button.
4. Hold the **Global** button, and turn Knob **A**. You'll see the Ctrl Num parameter for Knob **A**.
5. Turn the Alpha Wheel to the right until the value is **93 FXAWet**.
6. Press the **Zone 2** button to make Zone 2 the current zone. Press the button again to unmute the zone, if necessary. Now you're looking at the Ctrl Num parameter for Zone 2.
7. Hold the **Global** button, and turn Knob **B**. Change the value of the Ctrl Num parameter to **91 FXBWet**.
8. Save the setup as **131 KnobFX**.

Now Knobs **A** and **B** control the Wet/Dry mix of whatever effects are assigned to FX-A and FX-B. Turning these knobs won't necessarily change anything, however. In order for them both to have an effect, the setup must route some or all of its audio signal through both effects blocks. So let's check the effects routing.

The easiest way to check the effects routing is to look at the LED in the **FX** button while you're in Setup mode, which is where we are now. The color of the LED indicates the effects routing of the current zone. If you press each of the zone buttons in turn, you'll see that the **FX** button's LED is red for Zones 1 and 2, and green for Zones 3 and 4 (Zones 3 and 4 are off, but they still have effects routings). This means that Zones 1 and 2 are routed through FX-B only, and Zones 3 and 4 are routed through FX-A only. (Off is None, green is FX-A, red is FX-B, and amber is Both. Each zone can be routed independently.)

Let's change the effects routing so that Zone 1 is routed through FX-A.

1. Select Setup **131**, and make sure that **Zone 1** is the current zone.
2. Enter the Setup Editor. Press the **Right** cursor button until you see the Effect menu.
3. Press **Enter** to display the Routing parameter.
4. Change the value to **FXA**. Notice that the **FX** LED changes to green.
5. Play some notes on your PC1, and move Knobs **A** and **B**. You should hear the level of the effects (a chorus controlled by Knob **A** and a reverb controlled by Knob **B**) change as you move the knobs.
6. Save the setup, replacing Setup **131**.

Assigning Entry Values

Suppose you have a setup with an effect whose Wet/Dry mix is controlled by a knob on your PC1. You want to make sure it's active when you start playing the setup. Entry values are a convenient way to specify initial settings for any controller. We'll edit **KnobFX**, and set an entry level for Knob **A** in Zone 1 so that the Wet/Dry mix of the reverb is at about 75% as soon as we select the setup.

1. Start with Setup **131 KnobFX**. Make Zone 1 active, if it isn't already.
2. Press **Edit**.
3. Hold the **Global** button, and turn Knob **A**. You'll see the Ctrl Num parameter for Knob **A**.
4. Press the **Right** cursor button until you see the Entry Value parameter in the bottom line of the display. Use the Alpha Wheel to change its value to **95** (about 3/4 of the full range of **0–127**).
5. Save the setup as **132 EntryFX**.

A Few Important Points About Entry Values

Crossing the Entry Value

Suppose that Knob **A** happens to be all the way to the right when you select Setup 132. Wet/Dry mix is now at 95 on Channel 1. Now you want to use the Knob **A** to fade the chorus out. If you move the knob, you don't want it to suddenly jump to the current value; since the knob is all the way up (sending a MIDI Controller message with a value of 127), it would jump to 126 the moment you moved the knob down, and the chorus would suddenly get much wetter. To avoid this problem, the PC1 is designed so that once you set an entry value for a physical controller, it won't become active until you pass the point of the entry value. So as you turn Knob **A** to the left for Setup 132, nothing happens until you reach 85. At that point, the knob takes effect, giving you a smooth fade.

Avoiding Extra Controller Motion

Now suppose you want to have a piano-and-string setup like Setup 132, but you don't want to hear the chorus at all when you select the setup. Instead, you want to bring it in later. To do this, you could set the entry value for Knob **A** in Zone 1 to 0. Imagine that the knob is all the way to the left when you first call up the setup. Remember that the knob must go past the entry value before it becomes active. In this example the entry value is 0 and the current MIDI Controller value sent by the knob is 0 (minimum). When you move the knob up, the MIDI Controller value goes to 1, and therefore hasn't crossed the entry value, and therefore nothing happens as you continue to turn the knob. You'd have to turn the knob to the right slightly, then back to the left so that it goes to MIDI Controller value 0, then the next time you turn it to the right, the knob will be active. To avoid having to turn the knob right, left, and right again, set the entry value to a very low number other than 0, such as 5. The value is so low that you won't hear the reverb, but as you turn the knob to the right the first time, it will go past value 5 and become active.

Setting Exit Values

Suppose that you're using Setup 132 in a performance, and you finish a tune by fading out the chorus with Knob **A**. Its MIDI Controller value is now 0, and will stay at 0 until you turn the knob again (or until something else changes the value).

Unless, of course, you reset Channel 1's Wet/Dry mix somehow. That's where exit values come in; they let you specify MIDI Controller values when you leave a setup. We recommend that you get in the habit of setting exit values for physical controllers whenever you set entry values. This is less of a problem for some controllers, like volume and Wet/Dry controls, since the PC1 has default entry values for these controllers. It's just something to keep in mind when you're creating your own setups.

Let's revisit Setup 132, and specify some exit values.

1. Select Setup 132. We'll assume that Zone 1 is current.
2. Press **Edit**.
3. Hold the **Global** button, and turn Knob **A**.
4. Press the Right cursor button until you see the Exit Value parameter for Knob **A**.
5. Set a value of 127 (Wet/Dry mix of 100%).
6. Save the setup, this time replacing Setup 132 without renaming it.

Velocity Switching

You can use your keystroke velocity (how hard you play) to change sounds. This is how program **000 Stereo Grand** works: there are actually three sets of samples, one for soft, one for medium, and one for loud.

1. Create a two-zone setup. Go to the Program menu in the Setup Editor. Assign program **022 Soft E Piano** to Zone 1, and program **023 Hybrid E Piano** to Zone 2. Make Zone 1 current if it isn't already.
2. Press **Menu** to exit the Program menu, then press the **Right** cursor button until you see the Velocity menu. Press **Enter**.
3. Press the **Right** cursor button four times to select the Max parameter. Note that this is one of those cases in which there are two parameters visible at a time.
4. Set the value of the Max parameter to **80**. Note that the Min value for Zone 1 is **1**. This is good.
5. Make Zone 2 current. Press the **Left** cursor button to select the Min parameter. Set its value to **81**. Note that the Max value for Zone 2 is **127**. This is also good.

The soft piano plays at velocities from 1 to 80, and the Hybrid piano plays from 81 to 127. This gives you a nice thump when you play hard. You can create three- and four-zone setups to switch between even more sounds.

Velocity Layering

Another use for the velocity parameters is to add a layer instead of switching between layers. To do this, have one layer play at velocities from 1 to 127, and another at velocities from 100 to 127. For the higher-velocity layer, use a program with a percussive attack, and possibly bring its entry volume down for a more subtle mix (you can use the entry- and exit- value approach we discussed on page 4-14, or you can simply set the Entry Volume parameter for that layer to something less than **127**).

Switching Setups with a Pedal

You can use a pedal to select Setups 129–256 on the PC1, which is convenient in performance situations if the PC1 isn't within easy reach.

For this example, you'll need a dual switch pedal plugged into the Switch Pedal jack, so that you can access the second pedal (the first pedal is usually preset to provide sustain).

1. Create a setup with one or more zones. Don't forget to save...
2. Go to the Setup Editor (press **Edit**). Go to the MIDI Channel parameter in the MIDI Xmit menu, and note the channel used by the current zone.
3. Press and hold **Global**, and press Pedal 2. You should see the On Ctrl parameter for SwitchPdl 2 in the display.
4. Change the value of Ctrl Num to **GoToSetup** (it's near the end of the list of values, so this might be a good time to hold **Enter** and use a controller to change the value).
5. Press the **Right** cursor button to select the On Value parameter. Set its value to 129 lower than the setup you want to select. For example, a value of **0** selects Setup **129**, a value of **1** selects Setup **130**, and so on).
6. Save! If you press Switch Pedal 2 before you save, you'll change setups, and your edits will get erased.

As an alternative, you can use a value of **Setup Inc** for On Ctrl and a value of **127** for On Value.

If you do this for a string of consecutively-numbered setups, you can step through them without taking your hands off the keys. You might also use **GoToSetup** for the highest-numbered setup in this sequence to take you back to the lowest-numbered setup in the sequence.

Transposing a Setup With a Button

If you don't have the time to learn a tune in a different key, you can have the PC1 transpose a setup with one press of a button. This example transposes up a fourth, but it's up to you to decide both the direction and the interval. For this example, we will use **SW4**.

1. Create and save a setup with one or more zones. Make Zone 1 current.
2. Press and hold the **Global** button, and press **SW4**. This displays the On Ctrl parameter for **SW4** in Zone 1
3. Change the value of On Ctrl to TransUp (it's near the end of the list of values). This automatically changes the value of the Off Ctrl parameter to TransUp as well. Select the On Value parameter, and set its value to 5.
4. Select the Off Ctrl parameter, and change its value to **TransDown**.
5. Select the Off Value parameter, and set its value to 5.
6. Repeat this procedure for all zones in the setup (unless you want to transpose some zones and not others).

Now when you press **SW4**, it transposes the setup up a major fourth. Press it again to remove the transposition.

Effects Edit Mode

Effects edit mode has two functions: changing the effects associated with the current program or setup (or the entire PC1), and modifying the nature of the effects that are currently in use.

Effects Change Mode

The effects change mode determines whether the PC1 automatically selects effects when you select a program or setup. The effects change mode is controlled by the FX Chg Mode parameter, which is one of the parameters in Global mode (press the **Global** button to get to Global mode).

By default, this parameter's value is **Auto**, which means that regardless of your performance mode, the PC1 automatically selects the effects associated with whatever object you select—a program or a setup. FX Chg Mode is closely tied to the FX Channel parameter, which determines whether a program change on a particular channel can also change the current effect.

If you change the value of FX Chg Mode to **Panel**, the PC1 *doesn't* automatically select effects when you select a program or setup, and the only way to change the effects is to select them manually in Effects edit mode, using the FXA Select and FXB Select parameters (Press the **Effect** button to enter Effects edit mode). When the value of FX Chg Mode is **Panel**, the effects you select manually apply to whatever program or setup you select, regardless of your performance mode.

The value of FX Chg Mode resets automatically to **Auto** every time you turn on the PC1.

Setting the Effects Change Mode

In many cases, you can leave both FX Chg Mode and FX Channel at their default settings (**Auto** and **Current**). If you want the effect to change when you select programs on channels other than Channel 1, set the value of FX Channel to match that channel (or set it to **Current**, so the effect changes regardless of which channel you're on). There's one additional case in which you might want to change the settings of FX Chg Mode and FX Channel.

Applying Effects Globally

Suppose you're in the studio, and you want to use the same reverb settings regardless of the programs or setups you play. In this case, set FX Chg Mode to **Panel**, which prevents program changes (either from the PC1 or via an external MIDI source) from changing any effects settings. The only way to change the current effect is by changing it manually in Effects edit mode.

There's another important point to remember about using **Panel** as the value for FX Chg Mode: you can still edit the current set of effects, but you can't save them to the current program or setup. Our explanation of Effects edit mode assumes that you have FX Chg Mode set to the default setting of **Auto**. See *Effects Change Mode (FX Chg Mode)* on page 5-28 for a more detailed description of FX Chg Mode.

Entering Effects Edit Mode

You can get to the Effects edit mode from any performance mode by pressing the **Effect** button. The Effects edit mode is actually a special "subeditor" of your current performance mode—for example, if you press **Edit** and select the Effect menu then press **Enter** while in Program mode, you end up at the Effect parameter in the Program Editor.

```
FX Routing :Program  
Routing :FXA
```

The top line of the display indicates that we've come from the Program mode—you'd see "FX Routing :Setup" if you had come from the Setup mode. (If you've changed the value of the FX Chg Mode to **Panel**, the top line shows **FX Routing :Panel** regardless of where you started).

You can also get to Effects edit mode when you're in MIDI Receive mode, by pressing the **Effect** button. In this case the top line of the display shows **FXA view :MIDI Recv** or **FXA select :Panel** depending on FX Channel and Mode. To get back to MIDI Receive mode, press **MIDI Recv**.



*Note: When FX Chg mode is set to **Panel**, effects are not part of the setup or program. So, if you try to enter the effect editor from either the program or setup editor when FX Chg mode is set to **Panel**, there will be no response to pressing the **Enter** button in the Effect Menu.*

Selecting Different Effects

On page 3-14, we briefly described performance aspects of changing effects. Here we'll go into a bit more detail about selecting effects.

1. Enter Effects edit mode as described in the previous subsection.
2. Find the FXA Select or FXB Select parameter.
3. Use the Alpha Wheel to change the effect displayed on the bottom line.

This procedure applies to any performance mode, as long as you're using one of the standard effects in both effect blocks.

You can change the effect associated with the current program or setup as often as you like without actually affecting the program's or setup's definition. Unless you save your changes, the original effect gets reapplied to the program or setup as soon as you exit Effects edit mode. See *Saving Effects* on page 4-19 to learn how to save the current effect settings to the current program or setup.

Editing Effects Parameters

Most effects have four parameters that control various aspects of the effect. Our sound engineers determine which parameters go with which effects; you don't get a choice of parameters, but you can edit their values any way you want.

1. Select the effect you want to edit, using the FXA Select or FXB Select parameter.
2. Press the **Left** and **Right** cursor buttons at the same time to get to four FX parameters. These actually work as a "sub-level parameters" of the FXA Selects or FXB Select parameter.
3. Press the **Right** cursor button one or more times to select one of the four parameters associated with the current effect.
4. Change the value of the current parameter.
5. If you finish changing parameter, press the **Left** and **Right** cursor buttons at the same time again to get back to the FXA Select or FXB Select parameter.
6. If desired, save your changes, as described below.

Saving Effects

If you've made changes while in Effects edit mode, you must store the changes if you want to preserve them when you leave Effects edit mode. The basic procedure is as follows, although you have different options depending on whether you're working with programs or setups, and whether you're in the Internal bank or the User bank. We'll get to that in a minute. For now we'll assume that you've edited the effects for a program in the Internal bank.

1. Change the effects as desired (either assign a new effect to one or both effect blocks, or edit the parameters associated with one or both of the current effects).
2. Press **Store**. The Save dialog appears, looking something like this:

```
RePlace Effect:30?
Digital E Piano
```

3. The top line shows the ID of the program whose effects you've changed, and the bottom line shows the program's name.
4. Press **Yes**, and the display tells you that the effects are saved to the current program.

You've modified the factory settings of the current effect, but *only with respect to Program 030*. The effect retains its factory settings in other programs or setups that use that effect. So you've really modified only the current *program*, overwriting its factory settings (don't worry; you can get them back, as described in *Restoring Factory Effects* on page 4-4).

You don't *have* to modify the factory programs when editing effects; you can create a new program in the User bank instead.

1. Repeat Steps 1 and 2 from the preceding procedure. When you see the Save dialog, press the **Right** cursor button. The Save dialog changes:

```
Save Program N?
Digital E Piano
```

N stands for the lowest-available program ID in the User bank for Program mode. At this point, you can either proceed to the next step, or select a different program ID. If the ID is unused, the dialog doesn't change. If you select an ID that already has a program assigned to it, **Save** changes to **RePlace**.

2. Press **Yes** to save to the current program ID (or rename the program first, as described on page 4-2).

If you've entered Effects edit mode from the *User* bank of Program mode, the Save dialog starts by asking if you want to replace the current effect assignment for the current program (just as it does for programs in the Internal bank). If you press the **Right** cursor button, the Save dialog doesn't jump to the lowest-available program ID in the User bank; it asks you if you want to replace the current program. Again, you can select a different ID if you want. The dialog says **Save** or **RePlace** depending on whether you select an ID that's already in use.

The Save dialog operates in exactly the same way if you enter Effects edit mode from the Program Editor except that the dialog says 'Save Program N?' at first. If you're coming from Setup mode, the dialog is a bit different, since setup effects are stored as part of the entire setup, not its constituent programs. Consequently, the dialog doesn't ask you if you want to replace the current effect; it asks you if you want to save the setup (if you're coming from the Internal bank) or replace the setup (if you're coming from the User bank). Otherwise, the Save dialog operates the same as it does for Program mode.

Other Effects-Mode Functions

There's more to Effects-mode Save dialog than just storing the results of your editing. You can also do the following:

- Dump effects via MIDI System Exclusive messages to an external MIDI recording device
- Restore the factory settings for the effects of the current program (applies to programs in the Internal bank ; this doesn't apply to setups or to programs in any User bank)
- Restore the factory settings for the effects of *all* programs in the Internal banks (doesn't apply to setups or to programs in any User bank). We describe all of these procedures in *Other Save-Dialog Functions* on page 4-4.

Common Editing Tasks

Turning AutoSplit On and Off

The AutoSplit feature is on by default for all programs in Program mode (as defined by a parameter in the internal setup). In Setup mode, AutoSplit is off for most factory setups. Here's how to turn it on and off.

1. In Setup mode, press **Edit** to enter the Setup Editor.
2. Find the Key Range menu and press **Enter**.
3. Press the **Right** cursor button until you see the AutoSplit parameter. Change its value as desired.
4. Press **Store**. The Save dialog appears, prompting you to save the change to the lowest available setup ID. You have two options:
 - Press **Yes** to save the change to the current setup (of course, you can change the setup ID and name before saving if you want)
 - Press the **Program** button; this brings up a prompt asking if you want to save the change to Program—we'll assume you do, so press **Yes**.

In the former case (saving to a setup) saving creates a new setup with AutoSplit either on or off as you specified. (Alternatively, if you change the setup ID to that of an existing setup before saving, you replace that setup.)

In the latter case (saving to Program), saving stores the new setting to the internal setup, thereby enabling or disabling AutoSplit for *all* Programs. When you're in Program mode, AutoSplit is so convenient that we recommend that you always leave it on (it's the factory default setting). In Setup mode, there are advantages and disadvantages to having AutoSplit on. See *The AutoSplit Feature* on page 3-18 for more information.

Using Mono Audio Output

If you have a monaural sound system, or have only one available input to your mixer, you might want to play your PC1 in mono mode, in which case the full audio signal gets sent to both sides of the analog outputs (there's no separation of left and right).

1. Press **Global**, then press the **Right** cursor button until you see the Output Mode parameter.
2. Set its value to **Mono**, then return to any performance mode.

Editing the Internal Setup

You can edit the internal setup and store your changes, thereby changing the zone parameters for every program in Program mode. As an example, we'll transpose the internal setup up an octave.

1. Start in Program mode, using any program.
2. Press **Main** to go to the Internal Setup Editor. If necessary, press **Main** again to unmute Zone 1 (the **Main** LED should be green before you proceed).
3. Press **Menu**, which displays the Program menu. Find the Transpose menu, then press **Enter**. This displays the Transposition parameter.
4. Change the value to **12**. If you play notes on your keyboard, you'll hear the transposition.
5. Press **Store**. The display prompts you to save the setup at the next-available ID (or it prompts you to replace the setup if you were in the User bank of setups when you entered the Internal Setup Editor).
6. Press the **Program** button. This displays a prompt asking you if you want to save to the internal setup. Press **Yes**. The display briefly shows `Internal setup saved!`, then returns to Program mode.
7. Select a few different programs, and you'll notice that they're all an octave higher when you play them.

Using the Arpeggiator

The arpeggiator takes input from PC1's keyboard (or via MIDI) and turns it into a constant rhythmic pattern. You can control the speed and nature of the pattern in real time. The arpeggiator resembles what were called "sequencers" on old analog synths—playing a finite series of notes repeatedly, with changes in the series controlled by the notes you play. The arpeggiator can affect both the PC1 and any MIDI instruments that are slaves of the PC1. The notes produced by the arpeggiator in a given setup zone go to all of that zone's destinations: local, MIDI, or both.

The concept behind the PC1's arpeggiator is fairly simple, although the options are extensive. Think of it as a "note processor," generating complex output from relatively modest input. You can select any number of notes for the input, and tell the arpeggiator to recognize and remember them. This is called "latching" the notes. The arpeggiator then processes them by playing them repeatedly, and/or transposing them up and down. You have control over several processing parameters: tempo, velocity, order, duration, transposition, and whether the intervals between notes are filled chromatically. You can also tell the arpeggiator how to deal with new information coming from the keyboard. The settings you define in the Arpeggiator menu apply to all zones for which arpeggiation is activated; you can program each zone individually to respond to or ignore the setup's arpeggiation values. Figure 4-1 shows the processing order the PC1 uses to create arpeggios from your input:

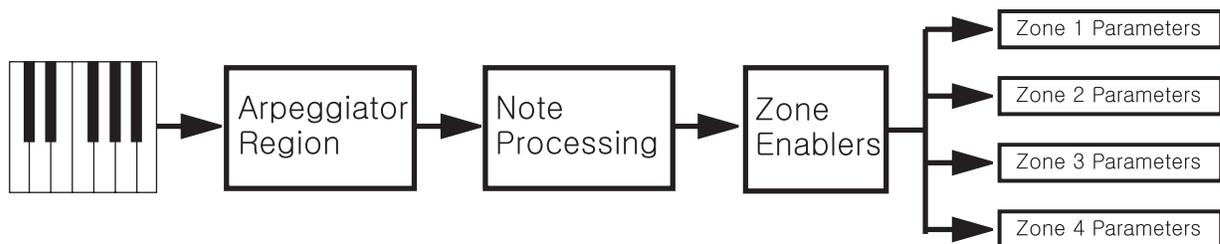


Figure 4-1 Arpeggiator Processing Sequence

Many of the PC1's factory setups make use of the arpeggiator—for example, those that include notes in the setup's name, like setup **001 Dance C7**. There are others as well; you'll know them when you find them.

The PC1's arpeggiator can be a lot of fun to play with; you can get many interesting and unusual effects. The following tutorial will get you started.

1. Start in Setup mode. To best hear the effects of the arpeggiator, you might want to start with a program that has a percussive attack, such as piano, marimba, or guitar. Select a program you like, then mute the other zones in the setup.
2. Press **Edit**, then find the Arpeggiator menu and press **Enter**.
3. The Arp Active parameter appears. Set its value to **On**, if isn't there already. Play a chord on the keyboard, and hold it on. You should hear arpeggiated notes. If you hear nothing at all, go to the Global menu and check to make sure the Clock parameter is set to **Internal**. If you hear notes but they aren't arpeggiated, go back to the Arpeggiator menu (if you've left it), find the Zone Enable parameter, and make sure its value is **On**. Find the Latch Mode parameter and make sure its value is **Keys**.

Play and hold a single note. Notice that it is repeated. Try adding more notes. As you press them they are added to the arpeggio. Let go of one of the keys. Notice that note is dropped from the arpeggio while the others continue. Notice that the arpeggiator plays the notes in the specific order that you strike them. Also notice that the loudness of the arpeggiated notes depends on how hard you strike the keys.

Hold the sustain pedal and let go of the keys. Notice that even though the notes sustain normally, the arpeggiation stops. In order for the arpeggiator to work, the keys must be held down, or otherwise latched (see the descriptions of the arpeggiator parameters beginning on page 5-16).

4. Select the Hi parameter. Hold **Enter** and play Middle C to set the Hi parameter to **C 4**. Now play a chord in the bass and a melody in the treble. Notice that any notes up to C 4 are arpeggiated but all notes above that are played as normal. The Key Range parameter lets you set a range of notes that will be affected by the arpeggiator while others can be played normally. Hold **Enter** and play the top note to put the arpeggiator back to playing across the “keyboard.”
5. Select the Zone Enable parameter. This enables you to arpeggiate one or more setup zones, and play others normally. Several of the preset setups do this.

Using Pressure (Aftertouch) as an Arpeggiator Controller

In this example, we’ll use aftertouch to control the volume of arpeggiated notes.

1. First, make sure that keyboard aftertouch is sending the Pressure controller message. Find the Ctrl Num parameter for MPressure (in the Controllers menu in the Setup Editor), and set its value to **Pressure** (it’s near the end of the list of values).

Aftertouch is somewhat similar to the Pitch Wheel, in that it functions like a spring; it returns to 0 as you release the pressure. You can assign aftertouch to send any MIDI controller number. However typically, aftertouch is assigned to Pressure, which is a separate MIDI message.

One final thing to understand: There are actually two different types of aftertouch: Mono Pressure and Poly Pressure. On most MIDI keyboards, Mono Pressure has a single strip running across the keyboard, so pressing down on any note will generate controller info that will affect *all* the notes played on that MIDI channel. Poly Pressure has a separate sensor for each key, so pressing down on a key only affects that key. The PC1 uses Mono Pressure.

2. Press the **Menu** button, then find the Arpeggiator menu and press **Enter**.
3. Find the Vel Mode parameter, and set its value to **Pressure**. Now when you hold notes and apply pressure, the volume of each arpeggiated note is controlled by how much pressure you apply.

Using the Arpeggiator with a Sequencer or External Controller

If you are sequencing and you use a setup with arpeggiation, the PC1 sends the actual notes generated by the arpeggiator to the sequencer. When you play back the sequence, it simply sends back those notes and does not activate the arpeggiator.

But if, for some reason, you need to have the sequencer or other MIDI source send notes to the arpeggiator itself, you must use the Remap function. To do this, press the **Global** button, then press the **Right** cursor button until you see the MIDI In parameter. If you set this to **Remap**, then *all* incoming MIDI note messages will be treated as if you played those notes on the keyboard of the PC1 itself.

The MIDI channel info on the incoming data is ignored; The PC1 simply takes the note numbers (and controller messages) and sends them to each zone based on the note range settings for that zone. It's the same as playing that note on the keyboard itself. So you probably wouldn't want to send more than one channel of MIDI information from your source, since the note messages will get mixed together.

Using the PC1 to Control External Slaves

Anything you play or transmit from the PC1 can control an external keyboard or module in addition to—or instead of—the PC1's internal sounds. There is really only one parameter you need to set.

1. Start with Setup **128 Default Setup**. Press the **Edit** button and then press the **Enter** button to enter the **MIDI Xmit** menu , then set the channel to the channel number that you wish to use to control your external slave.
2. Press the **Right** cursor button. Set the Dest parameter to **MIDI**.
3. Edit any other parameters you need to control your slave (such as setting the bank and program change, controller settings, etc.).

When you set the Program parameter for zones assigned to MIDI only, the Program parameter will display **External Program**, since—of course—the PC1 doesn't know the names of the programs on your external slave. But you will always see the program and bank numbers.

If you want to make a setup that layers PC1 sounds with external sounds, the simplest way to is to set some zones to MIDI (to play the external slave) and other zones to Local (to play the PC1).

It's possible to have a zone set to Local+MIDI (and in fact the default does just that). In this case, one zone can play both the PC1 and external slave.

Sending Bank-Select and Program-Change Messages

This feature is useful when you're using the PC1 to control other instruments or a sequencer, in which case you'll be sending lots of program-change messages via MIDI. Since many instruments contain multiple banks or programs, you'll also be sending bank-select messages.

You'll need to know which MIDI message the receiving devices use for selecting banks (it's usually MIDI 0 or MIDI 32 with a value from **0** to **127**; many instruments, including the PC1, can accept MIDI 0 *and* MIDI 32 as a single bank-selection message, allowing you to select banks numbered from 0 to 16,383).

1. Set the **MIDI Xmit** parameters like step 1 and 2 above
2. Press the **Menu** button then the **Right** cursor button to select the Program menu. Press **Enter**.
3. Then press the **Left** cursor button, you can see the bank parameter.
4. Turn the Alpha wheel to set the number of the bank you want to select. You can enter a number from 0 to 16,383 (not all instruments can handle numbers higher than 127, however).
5. Press the **Right** cursor button, and you will see the Program parameter. The display will show External Program, since the PC1 doesn't know the names of programs on external slave.
6. Turn the Alpha wheel to set the ID of the program you want to select.

For more information, see *Understanding Bank-Select Controllers*.

Understanding Bank-Select Controllers

Most newer keyboards have more than 128 different programs, but MIDI allows only 128 values for the Program Change message. The bank-selection controller enables you to have multiple banks of programs: each program bank can store up to 128 programs.

There are actually *two* bank-selection controllers: Controller 0 and Controller 32. Some manufacturers use just 0, some use just 32, and some use both. Since each bank-selection controller can have 128 values, that means that the total number of possible banks is $128 \times 128 = 16,384$ (numbered as 0–16,383). Since each bank can have 128 programs in it, that means the total number of possible programs in an instrument is 2,097,152! In practice, most instruments tend to have 10 or fewer banks.

By default, the PC1 responds to Controller 0 with a value of **0**, followed by Controller 32 with a value corresponding to the desired bank (although you can use either controller). There are six standard program banks (**0–4**, and **6**). When working with external slaves, you may find they require very different values for the banks. Many Roland keyboards, for example, use values of **80** or **81** for Controller 0.

The PC1 actually has a transmit parameter called Bank Mode, within the Program menu. This allows you to choose either **0** or **32** or **0/32** for an individual zone. However, if the value of this parameter is not the same as the Bank Sel Ctl (Bank Selection Control) reception parameter found in the Global menu, it causes the PC1 to display the bank values in a very confused manner. Therefore, we recommend that you leave the Bank Mode parameter set at the default value of **0/32**, which is the same as the default Global Bank Sel Ctl value.

If you have an instrument like a Roland, which responds only to Controller 0 for bank selection, you have to know how to calculate the bank number. Controller 0 is the Most Significant Byte (MSB) and Controller 32 is the Least Significant Byte (LSB). If you see the two bank controllers together, they are normally shown as MSB/LSB. This means that you count by incrementing the number in the LSB column before incrementing the MSB. In essence, you are counting in base 128.

Programming your PC1

Using the PC1 to Control External Slaves

To make it obvious for the majority of us who prefer to think in base 10, the following numbers show how the banks increment:

Controller 0/32 Value	Bank Number
0/0	0
0/1	1
0/2	2
...	...
0/127	127
1/0	128
1/1	129
...	...
2/0	256
...	...

When you've selected the Bank parameter in the PC1, the display shows you both the **0/32** value and the bank number equivalent. With other parameters selected, the display shows only the bank number equivalent, followed by a colon (:), followed by the program number.

To figure out which bank number equivalent you need, follow this formula:

MSB x 128 + LSB

Using the Roland example, if they require you to send Controller 0 with a value of 80 and no value of Controller 32, then you would have $80 \times 128 + 0 = 10,240$. With the Bank parameter selected, if you scroll to **10240**, you will see the display show both 80/0 and 10240.

Another example: If the Roland required you to send Controller 0 with a value of **81** and Controller 32 with a value of 2, then you would have $81 \times 128 + 2 = 10,370$. Again, setting the value of the Bank parameter to **10370** will show both 81/2 and 10370.

Sending Program Changes Only

Imagine that you're playing the PC1, and playing another keyboard at the same time. You want to be able to change programs on the second keyboard when you change setups on the PC1, so you need to send MIDI to the second keyboard. You don't want to send *note* information to the second keyboard, however, since you're actually playing the second keyboard (and not slaving it from the PC1). You can easily create a setup that sends program change information, but doesn't play notes on the second keyboard.

1. Go to Setup mode and select Setup **128 Default Setup**.
2. Press **Edit**, then select the Controller menu. Press **Enter**.
3. Press **Zone 2** button twice to enable Zone 2
4. Set the value of the Ctrl num parameter to None for all controllers in Zone 2. You can use the editing short cut of pressing both cursor buttons together to jump to the next controller in the list.
5. Press **Menu**, then select MIDI Xmit menu. Press **Enter**. Set the MIDI channels that you want for Zones 1 and 2.
6. Press the **Right** cursor button to select the Dest parameter. Set the value for Zone 2 to **MIDI**, and Zone 1 to **Local**.

7. Press **Menu**, then find the Programs menu and press **Enter**.
8. Select the program that you want for Zone 1 and 2.
9. Press **Menu**, then find the Key Range menu and press **Enter**.
10. Make sure Zone 2 is current, then find the NoteMap parameter, and change its value to **Off**.
11. Name and save your setup.

Now when you call up the setup, it will send a program change to your second keyboard, but since the note map for that zone (and therefore MIDI channel) is turned off, no note information is sent to the external keyboard when you play your keyboard.

You can use this technique to send program changes to any device, like an effects processor or sequencer. You can also use the same technique for zones assigned to the PC1 itself! Let's say you have two keyboards. On the PC1 keyboard, you want to play an internal program or programs (up to three). On your external keyboard, you want to play its own sounds and also play a program from the PC1. But your external keyboard doesn't have the abilities the PC1 has for calling up different programs. So you create a zone in the PC1 setup to call up the internal sound you want, but set the Note Map for that zone to Off. So when you call up the setup, it chooses the sound you want to be played from the external keyboard, but the PC1 won't play that zone.

Preventing Program Changes on Slaves

You might want a slave instrument to play the same sound regardless of what the PC1 is playing, or you might want to change programs from the slave's own front panel. You can create setup that sends note and controller information to the slave, but doesn't transmit program change messages.

1. Create a two-zone setup. In the MIDI Xmit menu, set a value of **Local** for the Dest parameter in Zone 1 and a value of **MIDI** for the Dest parameter in Zone 2.
2. Make sure that Zone 2 is current. Press **Menu**, then find the Program menu and press **Enter**.
3. Find the Entry Transmit parameter, and set its value to **Off**.
4. Name and save this setup. Now when you select the setup from your keyboard, the program-change message goes only to the PC1, although both instruments get note and controller information.



Note: There is another way to prevent program changes on slaves. Press the **Global** button, then press the **Right** cursor button until display shows 'Xmit Prog Chg'. If you set this parameter to Off, the PC1 will not send program change messages to any external devices

Working With an External Sequencer

To state the obvious, you need to have MIDI cables going from the Out of the PC1 to the In of the sequencer or MIDI interface, and the In of the PC1 hooked to the Out of the sequencer.

Turn Local Control Off!

This is the first thing you need to do when using *any* keyboard hooked to *any* external sequencer.

This is to avoid causing a MIDI loop problem. If the Patch Thru function of the sequencer (sometimes referred to as Soft Thru or Echo) is turned on, the sequencer takes all information coming into the MIDI In port and sends it back out the MIDI Out port on whatever MIDI channel is assigned to the currently recording track.

If you don't turn local control off, the note gets played twice - once by the PC1 playing itself and once by the note going out to the sequencer and coming back. By turning local control off, the keyboard sends data out the MIDI Out port only, and not to itself. So the signal just goes to the sequencer and is sent back, and does not get played twice.

Some software sequencers (Cakewalk is one example) will send the Local Control Off message automatically when you boot up the program. If your program doesn't do this, you'll need to do it yourself. There are two ways to do it: the global method, and the setup method.

Global Method

1. Press the **Global** button
2. Set the Local Control parameter to **Off**.

This shuts off every connection between the PC1's sound engine and its keyboard and controllers. In other words, the PC1 no longer sends any MIDI information to itself. This method is quick, but you may find the setup method more useful in the long run.

Setup Method

Start from Setup **128 Default Setup**. Press **Edit**, then press **Enter** to enter the MIDI Xmit menu. And select a MIDI Channel (it really doesn't matter which one, but Channel 1 is a logical choice). Press the **Right** cursor button. Set the Destination to **MIDI**.

Name and save the setup-you might want to name it something Like **Local Off** or **Seq Control**.

Now you have a MIDI-only setup with a single zone-which is equivalent to being in Program mode with the Local Control parameter turned off.

There are several advantages to the setup method. First of all, the Local Control parameter sets itself to **On** each time you power up the PC1. The second reason is that you can edit the MIDI-only setup to assign controllers to specific values useful for sequencing.

The final reason has to do with selecting programs. A typical way to choose programs for each recording track is to choose them in your sequencer-by selecting them manually, or by inserting bank-select and program-change messages in each track.

Many people prefer to make these program changes on the receiving instruments themselves, which you can do very conveniently on the PC1 using the MIDI Recv menu-but not if you've used the quick method to turn local control off globally.

If you have the MIDI-only setup, however, you can leave the Local Control parameter set to **On**, enabling you to use the MIDI Recv menu to select programs for each channel. So when you're sequencing, just call up the MIDI-only setup, and you're ready to go.

Recording to a Sequencer While in Setup Mode

Setups transmit MIDI information on multiple MIDI channels, playing different programs on different channels. This is the same thing a sequencer does: you have different tracks, sending information on different channels. But on most sequencers, a track can be assigned to a single channel only. Therefore one track can't play a setup; it can play only a program.

To record a setup, you must set a sequencer to multi-record. Typically this involves recording to two or more tracks simultaneously, with each track set to a different channel. (There are some sequencers that let you multi-record to a single track, and the sequencer keeps the various channels of information separate even though they are on one track.) As you record into the sequencer, the data is then routed to different tracks depending on what channel the information is on. Then once you play back the sequence, each track plays the individual programs on the different channels, exactly the same way you played them in the setup.

You will have to consult your sequencer manual to find out how to set it up for multi-recording. You should also remember that if a zone in your setup has the Destination parameter set to **Local**, the information won't be sent to the sequencer.



Note: Sequences which are composed for use with General MIDI often contain a SysEx message that turns on GM. If you find that you can only select GM programs, your PC1 is in GM mode. You can turn off GM by selecting the General MIDI parameter in Global mode, and setting the value to Off.

Troubleshooting

If you run into problems while playing or programming, there are several things you can do to help troubleshoot the problem.

First of all if you are not getting the expected results from your programming or are having strange results when hooked to an external device, you can use the MIDI Scope utility to see exactly what MIDI messages are being received by the PC1's sound engine.

Press the **Global** button, then find the MIDI Scope prompt (it's the last item in the menu). Press **Enter**, and the display says 'MIDI Scope any button quits.'. Now the display will show every MIDI message that the sound engine of the PC1 receives. You'll see exactly what type of message it is along with the value of that message. For example, a Note On message will show you the note number, along with the attack velocity. A Controller message will show the controller number along with the controller value. It also shows you the MIDI channel of the message. To leave MIDI Scope, press any button on the PC1's front panel.

A limitation of MIDI Scope is that it can display only one message at a time. Therefore it can be confusing if you are sending multiple channels of information at the same time. It's best to mute all the zones but one so that you can see only that zone's information (or you could use the **Solo** button). If you are playing a sequence, try muting all tracks except for the one that is causing problems.

If you suspect a physical problem with the PC1, you can use the diagnostics to test it. See appendix A for more information.

Chapter 5

Descriptions of Parameters

In This Chapter

This chapter contains a description for each of the PC1's editing parameters. They're organized into the following sections:

- Program Editor Parameters 5-1
- Setup Editor Parameters 5-2
- Effects Edit Mode 5-22
- MIDI Receive Parameters 5-23
- Global Parameters 5-24

Within each of these sections, the descriptions are organized according to the order in which they appear in the editing menus. We've included lists of values only where necessary to explain what those values mean.

For quick reference to all parameters, their possible values, and (where applicable) default settings, see *Parameter Reference* on page B-3 (Appendix B).

Program Editor Parameters

There are two primary menus in the Program Editor, represented by pressing the **Edit** button:

The Timbre menu provides you with Controller Value parameters. Controller Value can set the specified value when you choose a program.

The Effect menu also acts as an adjunct to the Program Editor, enabling you to replace a program's effect settings, or save edited effects as part of a new program. See *Effects Edit Mode* on page 4-17 for more information about saving effects to programs. Also see page 5-20 for a description of all Effects Edit Mode parameters.

Controller Value

Sends MIDI Controller messages with the specified value when you select the program. For example, if you want to hear the full effect of the Mod Wheel on a layer as soon as you start playing, set the initial value of the Mod Wheel parameter to **127**.

Keep in mind that these controller values have an effect only under one or both of the following conditions:

- The program is defined at the factory to use one or more of the MIDI Controllers listed below to modify the program in some way
- The physical controller assignments for the internal setup use one or more of the same MIDI Controllers to modify all programs in some way

You can set controller values for the following MIDI Controllers:

Descriptions of Parameters

Setup Editor Parameters

Mod Wheel (MIDI 1)
SW 2 (MIDI 9)

Knob C (MIDI 6)
SW 4 (MIDI 29)

Knob D (MIDI 13)

You may be wondering why you can set initial values for *these* MIDI Controllers and not others. It's because most of the PC1's programs use at least one of these MIDI Controllers to do something (a common example is MIDI 1, which the Mod Wheel sends by default, and which controls vibrato or tremolo in many programs). Appendix C contains a list of programs and which MIDI Controllers the physical controllers are assigned to in each program.

Note that Controller Value which is displayed by the program editor is actually the 'Current Controller Value'. For example, if you turn Knob C before entering the program editor, the new value will be displayed instead of the previously stored value

Setup Editor Parameters

There are seven menus in the Setup Editor. With one exception, each zone in a setup has an independent set of these seven menus (the exception is the Arpeggiator menu, in which all parameters but Zone Enable affect all zones in a setup):

MIDI Xmit	Various MIDI-related features (like what MIDI channel each zone uses)
Program	Bank and program assignments, and other program-related parameters
Key Range	Activation/deactivation of keys, pitch control
Transpose	Uniform pitch-shifting of entire zone
Velocity	Response to your playing style
Controllers	Functions of physical controllers (wheels, Knobs, ribbon, pedals, buttons)
Arpeggiator	Activation/deactivation and control of arpeggiator

The Effects menu also acts as an adjunct to the Setup Editor, enabling you to modify the effects associated with a setup. See page 5-22 for a discussion of Effects Edit Mode parameters.

Each zone in every setup has an independently-programmable set of Setup-Editor parameters; when you change a value for one of these parameters, you're affecting only the current zone in the current setup (except for the Arpeggiator parameters, which affect the entire setup). Always check to make sure you've selected the zone you want to edit before you make changes.

If you want to reprogram the internal setup, use the Setup Editor to edit Zone-1 parameters, then save your changes to the internal setup.

Throughout this section, we'll refer only to setup editing. Remember, however, that any changes you make to Zone 1 in the Setup Editor can also be applied to the internal setup.

The MIDI Xmit Menu

The parameters in the MIDI Xmit menu control several aspects of the MIDI information that the PC1 generates. By default, the MIDI Xmit parameters affect both the PC1 and external MIDI equipment. This is true in all performance modes. By changing the value of the Dest parameter, you can make these parameters affect only the PC1, or only external MIDI equipment.

MIDI Channel

Determines which MIDI channel the current zone uses. Use a value of **Off** to disable a zone. In the default setup, each zone corresponds to the channel number (Zone 1 uses Channel 1, Zone 2 uses Channel 2, and so on).

Destination (Dest)

Determines whether the zone transmits only to the PC1, only to MIDI, or to both. The default-setup value is both (**Local+MIDI**). If you set the value to Local, the zone sends it MIDI information only to the PC1. If you're using the PC1 to control other instruments or to record to an external sequencer, use a value of **MIDI** or **Local+MIDI**.

Bend Range, Semitones (BndRng ST)

Sets the number of semitones of pitch bend applied by any physical controller that sends either the Pitch Up, Pitch Down, Pitch, or Rvrs Pitch MIDI Controller message, when that controller is at its maximum (sending a value of 127). In the default setup, the Pitch Wheel controls pitch bending.

The value of this parameter gets added to the value of BndRng ct. You can think of BndRng ST as a coarse adjustment, and BndRng ct as a fine adjustment. For example, if you want the maximum amount of pitch bend to be slightly more than a whole note, set BndRng ST to **2**, and BndRng ct to a relatively low number like **10**.

In the default setup, BndRng ST is **2**, and BndRng ct is **0**, so pushing the Pitch Wheel all the way up bends the pitch two semitones up, and pulling it all the way down bends the pitch two semitones down.

Bend Range, Cents (BndRng ct)

Sets the number of cents (100ths of a semitone) of pitch bend applied by any physical controller that sends either the Pitch Up, Pitch Down, Pitch, or Rvrs Pitch MIDI Controller message, when that controller is at its maximum. The value of this parameter gets added to the value of BndRng ST. In the default setup, BndRng ct is 0.

Auxiliary Bend 1, Up (AuxBend1 Up)

Sets the number of semitones of upward pitch bend applied by any physical controller that sends AuxBnd1 (MIDI 21), when that controller is at its maximum. In the default setup and the internal setup, the optional ribbon controller is set to send AuxBnd1.

Auxiliary Bend 1, Down (AuxBend1 Dwn)

Sets the number of semitones of downward pitch bend applied by any physical controller that sends AuxBnd1 (MIDI 21), when that controller is at its maximum. In the default setup, the optional ribbon controller is set to send AuxBnd1.

Auxiliary Bend 2 Range (AuxBend2 Rng)

Sets the number of semitones of pitch bend applied by any physical controller that sends AuxBnd2 (MIDI 15), when that controller is at its maximum. In the default setup, there aren't any controllers set to send AuxBnd2.

Auxiliary Bend Transmit (AuxBend Xmit)

Determines whether the Auxiliary Bend messages are transmitted or not. By default, the value is off.

The Program Menu

Bank

When you select this parameter, the top line of the display shows the current zone of the setup you're editing, as well as the bank ID and program ID of the program assigned to the zone. The bottom line shows the ID and name of the bank that the current zone uses.

This parameter selects the bank for the current zone. It also determines which bank-select value the zone sends via MIDI when you select the setup (the zone won't send a bank-select message to the MIDI Out port if it has a value of **Local** for the Dest parameter in the MIDI Xmit menu).

Program ID and Name (No parameter name shown)

When you select this parameter, the top line of the display shows the current zone of the setup you're editing, as well as the bank ID and program ID of the program assigned to the zone. The bottom line shows the ID and name of the program assigned to the current zone.

This parameter selects the program for the current zone. It also determines which program-change value the zone sends via MIDI when you select the setup (the zone won't send a program-change message to the MIDI Out port if it has a value of **Local** for the Dest parameter in the MIDI Xmit menu).



Note: When you press the **Program** button, the first parameter you see is the Program ID and Name parameter. To get to the Bank parameter, press **left** button once.

Entry Transmit

Determines whether the current zone sends a program-change command when you select the setup. If its value is **On**, the zone transmits the program ID of the program assigned to the zone (as shown in the top line of the display when you're viewing this parameter). This is the setting for each zone in the default setup. The program-change message may include a bank-select message, depending on the value of the Bank Mode parameter.

If the value of Entry Transmit is **Off**, the zone doesn't send a program change when you select the setup.

The function of this parameter depends on the setting of the Dest parameter. If the current zone's setting for Dest is **Local**, the zone doesn't send a program-change command to the MIDI Out port when you select the setup, even if Entry Transmit is set to **On**.

Bank Mode

Determines what type of bank-select message, if any, the zone sends when you select the setup.

A value of **None** prevents the zone from sending a bank-select message. If the value is **0**, the zone sends a MIDI 0 message, with a value equal to the ID of the current bank. If the value is **32**, the zone sends a MIDI 32 message with a value equal to the ID of the current bank. Values of **0** and **32** enable you to select banks numbered from 0-127.

If the value of Bank Mode is **0/32**, the zone sends both MIDI 0 and MIDI 32, combined as a single value. This enables you to select banks numbered from 0-16,383. Since many of today's MIDI instruments respond to this form of bank-select message (as recommended by the MIDI specification), **0/32** is the value of Bank Mode in each zone of the default setup.

There are two other values for Bank Mode: **K2000** and **K1000**. These enable you to send bank-select and program-change commands to older Kurzweil instruments, which use a different system for numbering programs. The manuals for these instruments explain the numbering system thoroughly.

The function of this parameter depends on the setting of the Dest parameter in the MIDI Xmit menu. If the current zone's setting for Dest is **Local**, the zone doesn't send a bank-select command to the MIDI Out port when you select the setup, regardless of the setting for Bank Mode.

Program ID Display Format (PNumDisp)

This parameter is primarily a convenience for when you're sending MIDI to other instruments or to a sequencer. If you're using the PC1 by itself, there's no need to edit this parameter.

Different MIDI instruments and sequencers refer to program numbers differently: some start counting at 0, and others start at 1. Still others arrange them in groups of 8, with the first digit (or letter) denoting the group, and the second digit denoting the number within the group. PnumDisp lets you display program numbers in the same format as the receiving MIDI equipment. It doesn't change the outgoing MIDI information in any way; it just makes it easier for you select the desired programs on the receiving gear without having to convert the PC1's program ID into the receiving instrument's format.

- 0-127** For instruments that start numbering IDs at 0 (the setting for each zone in the default setup)
- 1-128** For instruments that start numbering IDs at 1
- 11-88** Compatible with many Roland instrumentss
- A1-P8** For instruments that organize programs in groups of 8

Program Name Display Format (PNameDisp)

This is another parameter designed to help you keep track of programs when you're sending MIDI to other instruments or to a sequencer. It determines the program name you see when you're viewing the Program Name and ID parameter for the current zone (the parameter you see when you press the **Program** button). It doesn't affect the program ID that you see, nor does it affect the MIDI information that the zone sends.

The idea behind this parameter is that you use it only for zones that are sending to MIDI (that is, the zone has a value of either **MIDI** or **Local+MIDI** for the Dest parameter in the MIDI Xmit menu). For any zone that sends to MIDI, PNameDisp lets you choose between viewing what gets selected on the *PC1* when you select the setup, or what gets selected on the *receiving* instrument when you select the setup.

If the value is **Internal**, the display normally shows the name of the program that the *PC1* uses in that zone. This is the value for each zone in the default setup.

There's one exception when the value of PNameDisp is **Internal**: if the zone has a value of **MIDI** for the Dest parameter (making it a MIDI-only zone), the display shows a name of **External Progr** regardless of the current program ID. This makes sense, since the zone won't select *any* program for the *PC1*, it'll select a program only for the receiving instrument. The *PC1* can't determine the *name* of that program, so it reminds you that it's programmed to select *some* external program with the ID shown in the display.

Use a value of **Gen. MIDI** when the receiving instrument is a General-MIDI instrument. In this case, the *PC1* *can* determine the name of the program it's going to select on the receiving instrument, it shows you both the ID and the name.

Use a value of **Off** when you want the *PC1* to remind you that the zone will select a program on a non-General-MIDI external instrument when you select the setup. In this case, the display shows **External Progr** regardless of the program ID.

The Key Range Menu

Low and Hi

The primary function for the Key Range menu is determining where a zone plays on the keyboard. This is controlled by the values of the Low and Hi parameters. In the default setup, all zones range from C -1 to G 9. An 88-note keyboard ranges from A 0 to C 8 (and a 76-note keyboard from E 1 to G 7), but you can transpose a zone so that it sends note numbers below or above those ranges--it won't generate notes, but it'll still generate MIDI information, which can be useful).

The *PC1* ignores the values of these parameters when the AutoSplit parameter has a value of **On** (the values appear in parentheses to indicate that these parameters are inactive. When AutoSplit is set to On, the value of the AutoSplit Key parameter determines the split points for all the zones in the setup (Zones 3 and 4 cover the region from the bottom of the keyboard up to--and including--the split point, while Zones 1 and 2 cover the region from the top of the keyboard down to the note above the split point).

Intuitive entry makes it easy to edit these parameters; just hold down the **Enter** button and strike a key to set the value.

Note Map

This parameter determines how the PC1 responds to each note on the keyboard. If you're using the PC1 as a solo instrument, you'll probably never need to edit the note map for the internal setup. If you play a lot of setups, or control external instruments, different note maps can be useful in a number of ways.

In the default setup, each zone has a value of **Linear** for Note Map. This gives you a normal keyboard: playing C 4 triggers the note C 4, just as you would expect. Assuming the zone's Dest parameter is at its default value of **Local+MIDI**, every note you play goes both to the PC1 and to the MIDI Out port.

If the value of Note Map is Off, the PC1 generates no note information, but still generates all non-note information like MIDI Controller messages.

The next group of values--**1 of 2** through **4 of 4**--generate note information only for specific notes. We call these alternating note maps. They're handy when playing a setup that sends MIDI information to multiple external instruments, because they enable you to play the external instruments as if they were a single instrument, thereby increasing your available polyphony.

A value of **Inverse** reverses the keyboard: high notes at the bottom and low notes at the top. A value of **Constant** causes all the keys to play the same note. By default this is C 4, but you can change it with the Transpose parameter. Setting a zone's Note Map parameter to **Constant** is useful when you want the sound from a particular note to play with every note of another zone--for example, playing a ride cymbal with every note in a bass line.

AutoSplit

Turns the AutoSplit feature on and off *for all zones in the setup*. In the default setup, this value is **Off**. The AutoSplit feature is intended primarily for making quick layers and splits from Program mode, but enabling AutoSplit for a setup is useful if you like to solo and mute zones while performing. See *The AutoSplit Feature* on page 3-18 for more information.

AutoSplit Key

When the value of the AutoSplit parameter is **On**, this parameter sets the split point *for all zones in the setup*, overriding each zone's key range settings. Depending on the key ranges you've set for the zones in any particular setup, this may not be useful. On the other hand, you may enjoy the flexibility it provides for muting and soloing. See *The AutoSplit Feature* on page 3-18 for more information.

When the value of AutoSplit is **Off**, the value of AutoSplit Key appears in parentheses, indicating that it's inactive. In this case, the setup uses the values of the Low and Hi parameters to determine the key ranges of each zone.

The Transpose Menu

Transposition

Sets the amount of transposition for the current zone. In the default setup, there's no transposition on any of the zones. Intuitive entry is handy for editing this parameter. There's an example on page 4-6 that describes how it works.

The Velocity Menu

The parameters in this menu control the PC1's response to the attack velocity of the notes you play--in other words, how hard you strike the keys. The settings for the velocity parameters affect both the PC1's sounds, and the MIDI information the PC1 transmits via its MIDI Out port.

A Bit of Background

When you strike a key, the PC1 generates a Note On message with an attack-velocity value corresponding to how hard you strike the key. Attack-velocity values range from 1 to 127; they never go lower than 1 or higher than 127. A value of 1 is the softest and 127 is the loudest.

The velocity parameters interact extensively with each other, so changing one parameter's value can alter the way that others affect the PC1's velocity response. We'll give you a few examples of this interaction. More to the point, it's quite complicated to describe all the possible ways you can use these parameters in combination with each other. As we describe each parameter, the description assumes that all the other parameters are at their default values. Experimenting with different combinations is the best way to understand how these parameters interact.

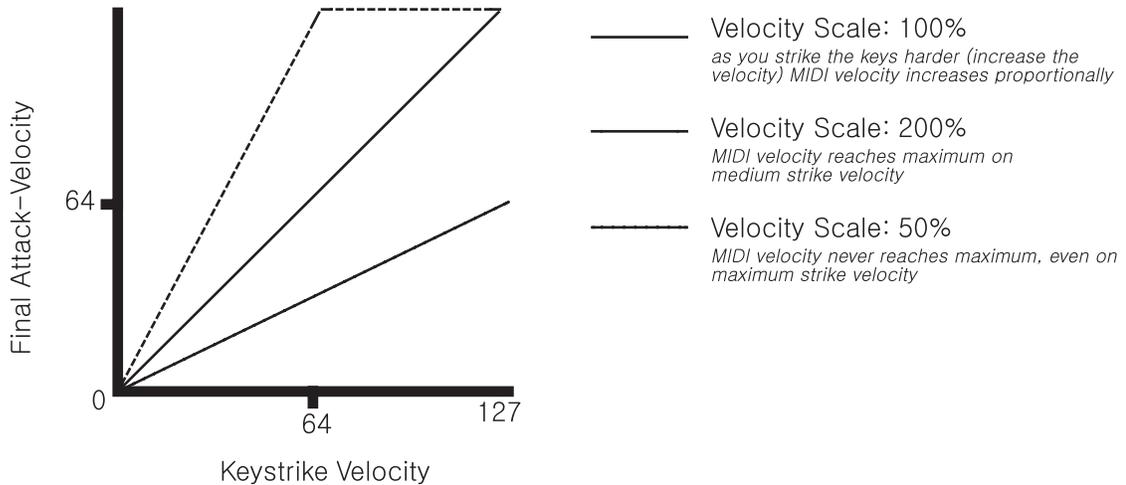
You can use the velocity parameters in several interesting ways: customizing the keyboard for your playing style; compensating for velocity-response differences in instruments receiving MIDI from the PC1; triggering different sounds as you play softer or harder (see *Velocity Switching* on page 4-15 to learn how to trigger different sounds at different velocities).

To illustrate how the velocity parameters work, we've included a number of graphs with the parameter descriptions. In each graph, the horizontal axis (labeled Keystroke Velocity) represents how hard you play. The vertical axis (labeled Final Attack-Velocity Value) is the attack-velocity value that gets sent to the PC1 to and to the MIDI Out port *after* any adjustments resulting from non-default values for the velocity parameters. The lines in the graph are the *velocity curve*--which shows the relationship between every possible keystroke velocity value and the resulting final attack-velocity value.

Velocity Scale (Vel Scale)

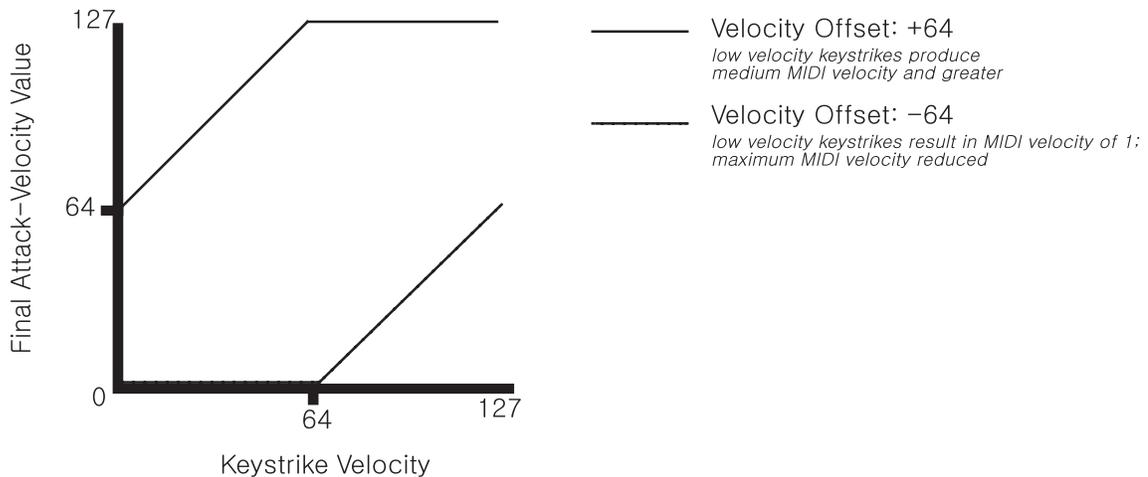
Increases or decreases the PC1's velocity sensitivity. The value for all zones in the default setup is **100%**--think of this as the normal value. Higher values increase the sensitivity; notes get louder faster than normal as you play harder. Lower values decrease the sensitivity; notes get louder slower than normal as you play harder. You'll notice the difference more when you're playing hard than when you're playing softly.

You can set negative values for Vel Scale, but doing so isn't useful unless you also change the value of the Vel Offset parameter (this is one of those interactions we mentioned). See *Vel Offset* for more information.



Velocity Offset (Vel Offset)

Adds a constant value to your keystrike velocity. The value for all zones in the default setup is **0**. A positive value for this parameter causes an upward shift in the entire velocity curve. For example, if you set a value of **64**, every note in that zone has a final attack-velocity value of 64 greater than your keystrike velocity (to a maximum of 127, of course). So if you play a note with a keystrike velocity of 32, the final attack-velocity value is 96. Negative values for Vel Offset shift the velocity curve downward.

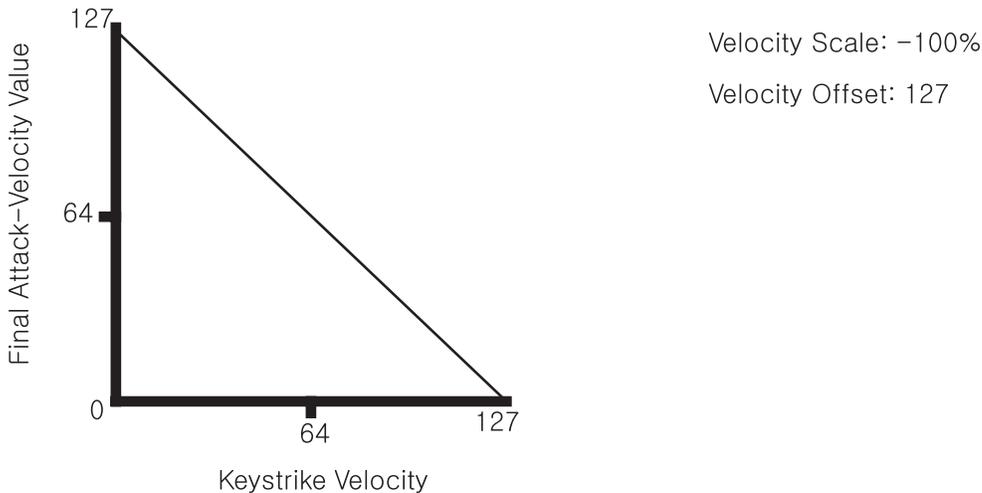


Vel Scale and Vel Offset have a very close relationship; when you change the value of one of them, you'll often want to change the value of the other as well. For example, suppose you set Vel Scale to **250%** in a zone, to make it stand out from the other zones when you're playing hard. You may find that the velocity curve pins at the high end rather quickly--in other words, by the time you're playing *f*, the final attack-velocity value may already be 127, and playing *ff* or *fff* doesn't give you any more dynamics. Setting a negative offset shifts the velocity curve downward, preventing the final attack-velocity value from maxing out before you get to *fff*.

Descriptions of Parameters

Setup Editor Parameters

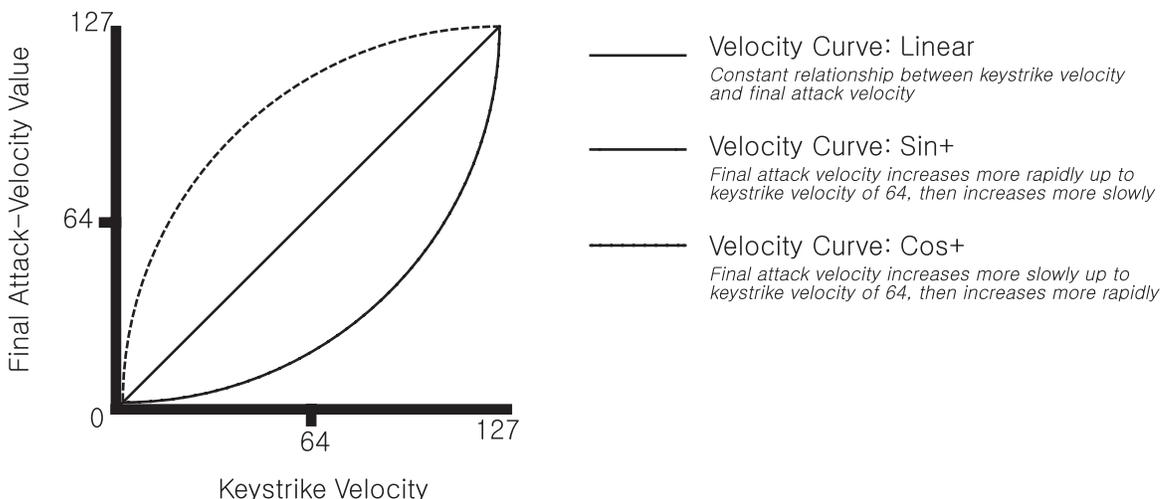
Here's another example: reversing a linear velocity curve so that it plays loud when you strike the keys softly, and vice versa. You might think that all you have to do is set Vel Scale to **-100%**. When you do that, you find that all the final attack-velocity values are at minimum. When you set Vel Offset to 127, the velocity curve gets shifted as high as it will go, enabling the negative scaling to work properly, as shown in the following graph.



Velocity Curve (Vel Curve)

So far we've been describing the velocity parameters in terms of *linear* velocity curves--that is, the final attack-velocity increases at a uniform rate as your keystrike velocity increases so that on the graph, the velocity curve appears as a straight line. You can use the Vel Curve parameter to change the shape of the velocity curve, which provides variations in dynamic response.

The setting for Vel Curve in all zones of the default setup is **Linear**. There are two other values whose effects are the opposite of each other. **Sin+** causes the final attack-velocity value to increase faster than the linear curve until your keystrike velocity is *mf*, then slower than the linear curve as keystrike velocity continues to increase (the velocity curve resembles the first portion of a sine wave, if you're wondering why the value is called **Sin+**). **Cos+** causes the final attack-velocity value to increase *slower* than the linear curve until your keystrike velocity is *mf*, then *faster* than the linear curve as keystrike velocity continues to increase (resembling the first portion of a cosine wave).

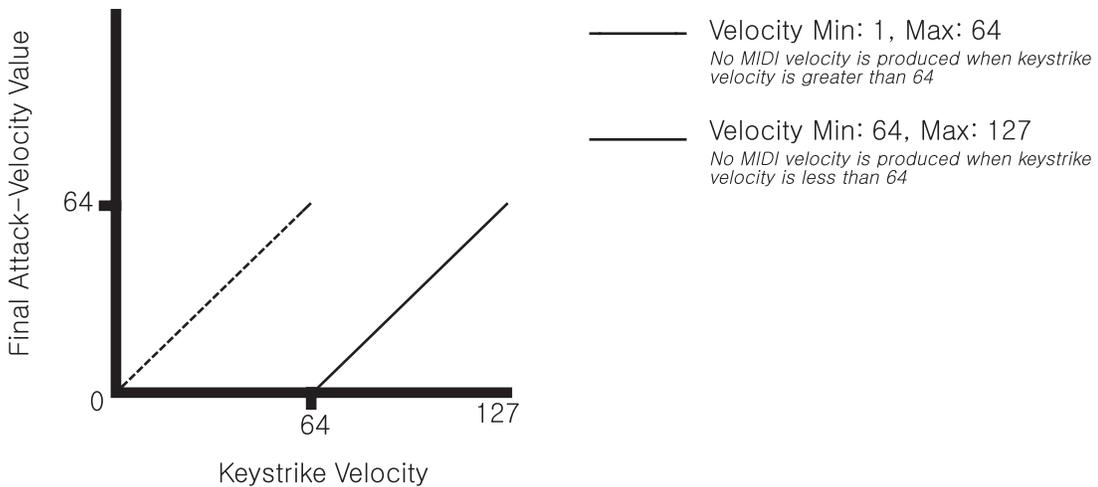


Minimum Velocity (Min) and Maximum Velocity (Max)

These parameters work in tandem to define the velocity range for the zone. If the final attack-velocity value of a note is below the minimum or above the maximum, the note won't sound. Note that it's not your *keystroke* velocity that determines whether the note sounds, but your keystroke velocity plus (or minus) the adjustments applied by the other velocity parameters.

In the default setup, these parameters are set to values of **1** and **127** for all zones. Intuitive entry works nicely for editing: hold down the **Enter** button, and strike any key. Your keystroke velocity sets the value.

You can also set the value of the Min parameter higher than the value of the Max parameter for any zone. In this case, the zone plays outside the velocity range--that is, you'll hear notes when the final attack-velocity value is below the minimum or above the maximum. Final attack-velocity values within the velocity range don't produce notes.



The Controllers Menu

The Controllers menu contains parameters that define the functions of the PC1's physical controllers (wheels, knobs, pedals, buttons, and optional ribbon).

Each zone of every setup has a set of independently-programmable controller parameters. Editing a parameter in one zone of a setup affects *only* that zone; it doesn't affect the other zones in the setup, nor does it affect any other setup.

The internal setup (which defines numerous characteristics for every program in Program mode) also has a separate set of these same parameters. Editing a parameter in the internal setup affects all programs, but doesn't affect any setups.

There are three groups of controllers listed in the Controllers menu:

- Continuous controllers
- Switch controllers
- Ribbon controller (a specialized continuous controller)

Each of these groups has a set of common but independently-programmable parameters. For example, every continuous controller has a parameter called Ctrl Num; it determines which MIDI message the controller sends. Editing the Ctrl Num parameter for one continuous controller doesn't affect the value of Ctrl Num for any of the other continuous controllers.

To save space, we won't list every parameter for every controller. Instead, we identify the controllers that belong to each group, then list the common parameters once for each group.

Entry Volume

Sets the volume level of the zone when you select the setup, by sending a MIDI Controller 7 message with the value you specify. You can set a value of **None** to prevent the message from being sent when you select a setup.

The Controllers Menu: Continuous Controller Parameters

There are twelve controllers in the continuous-controller group:

Wheel 1 Up	Pedal 1
Wheel 1 Down	
Wheel 2	
Mono Pressure (MPressure)	Ribbon 1
Knob A	Ribbon 2
Knob B	Ribbon 3
Knob C	
Knob D	

Each of the controllers in this group has the following three parameters.

MIDI Controller Number (Ctrl Num)

Determines which MIDI Controller message the physical controller sends. For example, Wheel 1 (also called the Pitch Wheel) has two assignments: One for when you move it up, and another for

when you move it down. In the internal setup, the *physical* controller Wheel 1 Up is assigned to send the *MIDI Controller message* Pitch Up (the value of the Wheel 1 Up parameter is **Pitch Up**). If you change the value of the Wheel 1 Up parameter, you change the MIDI Controller message that the Pitch Wheel sends when you move it up.

Entry Value

Enables a controller to send a MIDI Controller message of a specific value as soon as you select a program or setup, regardless of the position of the physical controller that is assigned to send the message. For example, if you want to make sure that the program in Zone 1 of a setup is panned to the left whenever you select the setup, assign a physical controller in Zone 1 of that setup to send MIDI Controller 10, then set an Entry Value of **0** for that controller.

Entry values ignore the current position of the physical controller when you select the program or setup. In fact, if the physical controller is above or below the entry value when you select the program or setup, moving the controller has no effect until you move it past its entry value. In the panning example above, moving the controller won't change the panning until you move it all the way down, then back up at least partially.

Setting Entry Value to **None** is different from setting it to **0**. **None** means that there's no initial controller command when you select the program or setup, but you'll notice the effect as soon as you move the controller.

Exit Value

Enables a controller to send a MIDI Controller message of a specific value as soon as you leave a program or setup, either by selecting another program or setup, or by changing performance modes. This prevents the position of the controller in the current program or setup from affecting the next program or setup you select.

For example, suppose you have Knob A controlling pan position in Zone 1 of a setup. You have Knob A's Exit Value parameter set to **None** for Zone 1. While you're playing that setup, you pan Zone 1 fully left. If you select another setup that doesn't have an entry value for pan in Zone 1, then Zone 1 of the newly-selected setup will also be panned left. The easiest way to prevent this is to set an exit value of 64 for Knob A in Zone 1. This will return the panning to the center.

In general, if you set an entry value for a controller, it's a good idea to set an exit value as well, to remove that controller's effect when you leave the setup.

The Controllers Menu: Ribbon Controller Parameters

There's one ribbon parameter that's unique to ribbon section 1, as described below:

Ribbon Section Configuration (Ribbon Sect)

Determines the configuration of the optional ribbon controller. A value of **Large** creates a single section spanning the entire length of the ribbon. A value of **3 Sect.** divides the ribbon into three sections of equal length.

Each ribbon section has the following three parameters:

Spring Switch

Controls the “memory” of each section of the optional ribbon controller *for all zones*. When the value is **On**, the MIDI Controller message sent by the ribbon section “springs” back (the MIDI Controller message’s value returns to the value specified by the Spring Pos parameter--the way the Pitch Wheel does on most instruments).

If the value is **Off**, the ribbon section remembers the last value it was sending when you released the pressure on it. If you use a value of **Off**, we recommend that you also set the ribbon section’s Exit Value parameter to **0**, so that any lingering values don’t apply to other setups that don’t have entry values for that ribbon section.

Ribbon Mode

Affects the MIDI Controller values sent by the ribbon section *for all zones*. A value of **Absolute** means that the value of the MIDI Controller message that the ribbon section sends is tied directly to a physical location on the ribbon--in other words, touching a particular point on the ribbon always generates the same value for the MIDI Controller message. If Spring Switch is **On**, this means that when you touch the ribbon, the MIDI Controller value changes from the Spring Pos value to whatever value corresponds to the location of your finger on the ribbon. If Spring Switch is **Off**, touching the ribbon changes the MIDI Controller value from wherever it was when you released the ribbon last time.

A value of **Relative** means that the position of your finger on the ribbon doesn’t matter, and when you press it, the MIDI Controller value picks up where you left off (either at the Spring Pos value if Spring Switch is **On**, or whatever the last value was if Spring Switch is **Off**). When Ribbon Mode is **Relative**, touching the ribbon doesn’t change this value until you move your finger.

Setting Ribbon Mode to **Relative** works best when you also set Spring Switch to **Off**. In this case, the ribbon works much like the mouse on a personal computer.

Spring Position (Spring Pos)

When Spring Switch is **On**, Spring Pos sets the “return” value for the ribbon section--that is, the MIDI Controller message value sent by the ribbon section when you lift your finger from the ribbon. This affects *all zones* in the setup. A value of **64** sets the zero point in the center of the section; a value of **127** sets the zero point at the cable end of the section; a value of **0** sets the zero point at the other end of the section.

The ribbon controller is a continuous controller, so each ribbon section also has the three continuous-controller parameters (see page 5-12).

The Controllers Menu: Switch Controller Parameters

There are six controllers in the switch-controller group:

Button SW1	Switch Pdl 1
Button SW2	Switch Pdl 2
Button SW3	
Button SW4	

Each of these controllers has an independent set of parameters for each setup zone, as described below.

Switch Type (SwType)

Determines how the switch controller works. If the value of SwType is **Momentary**, the controller sends a MIDI Controller message with a programmable value (typically 127 or On) when you press the switch. The controller sends another programmable value (typically 0 or Off) as soon as you release it. In other words, a momentary switch is on only as long as you hold it down. When **SW1-SW4**, are programmed to be momentary switches, their LEDs light while you're holding the buttons, then go out when you release them.

If the value of SwType is **Toggle**, the controller sends a MIDI Controller message with a programmable value (typically 127 or On) when you depress the controller (turning it on); depressing the controller again sends another programmable value (typically 0 or Off). When Buttons **SW1-SW4** are programmed to be toggle switches, the LEDs light when you turn them on, and go out when you turn them off.

On Controller (On Ctrl)

Determines the MIDI Controller message that the controller sends when you turn it on. When you set a value for this parameter, the PC1 automatically assigns the same value to Off Ctrl.

On Value

Sets the value of the MIDI Controller message sent by the controller when you turn it on. The value for all zones in the default setup is 127 or On. You can set any value from 0 to 127, but in most cases, 127 is the most useful. You can also set a value of **None**, in which case the controller sends no message. This is useful when you want the controller to do something in one zone but not in another (although it probably makes more sense to set a value of **None** for On Ctrl).

Off Controller (Off Ctrl)

Determines the MIDI Controller message that the controller sends when you turn it off.

Off Value

Sets the value of the MIDI Controller message sent by the controller when you turn it off. The value for all zones in the default setup is 0 or Off. You can set any value from 0 to 127, but in most cases, 0 is the most useful. You can also set a value of **None**, in which case the controller sends no message. This is useful when you want the controller to do something in one zone but not in another (although it probably makes more sense to set a value of **None** for On Ctrl).

Entry State

Determines what MIDI Controller message, if any, the controller sends when you select the setup. If the value is **None**, the controller sends no message. If the value is **On**, the controller sends a message according to its settings for On Ctrl and On Value. If the value is **Off**, the controller sends a message according to its settings for Off Ctrl and Off Value.

Exit State

Determines what MIDI Controller message, if any, the controller sends when you leave the setup, by selecting either a different setup or a different performance mode. If the value is **None**, the controller sends no message. If the value is **On**, the controller sends a message according to its settings for On Ctrl and On Value. If the value is **Off**, the controller sends a message according to its settings for Off Ctrl and Off Value.

Switch-Button Priority

When you're in Setup mode--that is, performing and not editing--the switch buttons (**SW1-SW4**) function according to the zone you see in the display. This prevents the conflicts that otherwise would almost certainly occur. For example, suppose you've programmed **SW1** to be a momentary switch in Zone 1 of a setup, and to be a toggle switch in Zone 2. When you're playing that setup, **SW1** can't be both types of switch at the same time, so it makes sense to have it function according to the assignments of the current zone (you might be soloing that zone, for example).

The Arpeggiator Menu

Arpeggiator Activation (Arp Active)

Enables or disables the arpeggiator for the setup. If this parameter's value is Off, then you won't hear arpeggiation for any notes in any zone of the setup, regardless of the settings for any of the other arpeggiator parameters. In most setups, you can press **SW3** to activate the arpeggiator (in these setups, **SW3** sends MIDI 116, ArpOn.) You can program any physical controller (typically a switch controller) to activate the arpeggiator by setting its On Ctrl parameter to **116**, and its On Value parameter to any value from **64** to **127**.

Arpeggiator Region, Lower Limit (Low) and Upper Limit (Hi)

Determines, in part, which notes you can arpeggiate. All notes, in all setup zones, that are between the notes specified by Low and Hi (including the notes specified by Low and Hi) get arpeggiated when *both* of the following conditions are met:

- The value of the ArpActive parameter is **On**
- The value of the Zone Enable parameter for that zone is **On**

Zone Enable

Determines whether the current zone can be arpeggiated under any circumstances. If the value is **Off** for a zone, *none* of the notes within that zone's key range get played by the arpeggiator. If the value is **On** (and the arpeggiator is active), notes within that zone's key range get played by the arpeggiator if *either* of the following conditions is met:

- The note is within the arpeggiator region (as defined by the Low and Hi parameters); in this case it becomes one of the latched notes
- The note isn't within the arpeggiator region, but *is* within the range of the arpeggiator's transposition (as defined by the Shift Limit parameter); in this case it doesn't get latched, but still gets played

Take a look at Figure 4-1 on page 4-22. The Zone Enable parameter determines whether arpeggiated notes get sent to a particular zone. Then the zone's parameters process the notes, and if they're within the zone's key range, the notes get played.

Latch Mode

Determines the manner in which notes get latched. There are six possible values:

Keys

The arpeggiator plays only while you are holding one or more keys down (or holding note triggers on). As you play different notes, they get added to the arpeggiator, and as you release

notes, they get taken out. If you play notes faster than the arpeggiator's current tempo, each subsequent note gets added to the arpeggiation at the next division of a beat. This can cause a lag between the time you play the note and the time you hear it in the arpeggiation.

In the next three modes, the arpeggiator latches notes only when MIDI Controller 119 (ArpLatch) sends a value of On (64 or higher). An easy way to experiment with these modes is to assign the Mod Wheel to send MIDI 119.

Overplay

The arpeggiator latches any notes in the arpeggiator that are being held when ArpLatch goes on, and continues playing them, even after you let them go, until ArpLatch off. Any notes that you play after ArpLatch is already on do not get arpeggiated, even if they're in the arpeggiation region.

Arpeg

Similar to **Overplay**: any notes in the arpeggiator region that are held when ArpLatch goes on are latched and arpeggiated, and keep going until ArpLatch goes off. Any notes you play outside the arpeggiation region play normally. Notes that you play inside the arpeggiation region do *not* play unless you hold them on, in which case they become part of the arpeggiation.

They drop out of the arpeggiation as soon as you release them.

Add

As with **Overplay** and **Arpeg**, all notes in the arpeggiator region being held when ArpLatch goes on get latched, and keep playing until ArpLatch goes off (even if you've released the notes). Any notes you play in the arpeggiator region after ArpLatch is already on also get latched.

Auto

This value is independent of ArpLatch. Every note you play in the arpeggiator region is automatically latched, and the arpeggiator runs as long as you hold at least one arpeggiated note. As long as you keep holding on at least one note (it doesn't have to be the same note the whole time), every note you play in the arpeggiation region gets latched.

Pedals

A combination of **Keys**, **Add**, and **Overplay**. It relies on both ArpLatch (MIDI 119) and Latch2 (MIDI 118). If neither latch controller is on, notes in the arpeggiator region get arpeggiated only while you are holding down keys (similar to **Keys**).

If you activate Controller 119, notes in the arpeggiator region that are currently held on get latched, and any additional notes in the arpeggiator region played while Controller 119 is on also get latched (similar to **Add**). When Controller 119 is off, any notes in the arpeggiator region that are not currently held on get removed from the arpeggiation.

If you activate Controller 118, notes in the arpeggiator region that are currently held on get latched, and any additional notes in the arpeggiator region played while Controller 118 is on play normally (similar to **Overplay**). This mode is called Pedals mode because you might want to assign Switch Pedal 1 to **Controller 119** (Latch 1) and Switch Pedal 2 to **Controller 118** (Latch 2) to make the pedals function similarly to sustain and sostenuto pedals.

Play Order

Determines the order in which the arpeggiator plays latched notes. There are eight possible values:

Played

Latched notes get played in the chronological order in which you latched them.

Up

Latched notes play in ascending pitch order, regardless of their chronological order.

Down

Latched notes play in descending pitch order, regardless of their chronological order.

Up/Down

Latched notes play from lowest pitch to highest, then from highest pitch to lowest, repeating the cycle until you stop the arpeggiation. The notes at the very top and very bottom play only once.

Up/Dwn Rp

Similar to **Up/Down**, except that the notes at the top and bottom play twice (repeat) when the arpeggiator reverses direction.

Random

Latched notes play in completely random order.

Shuffle

Latched notes play at random, but no note repeats until all other latched notes have played.

Walk

A “random walk” order: each successive note is either the next or previous note (in chronological order of latching). For example, suppose you’ve latched four notes--G 4, B 4, D 5, and F 5--in that order. The first note the arpeggiator plays is the G 4. The second note will be either B 4 (the next note chronologically), or F 5 (the “previous” note chronologically--that is, the last latched note). If the second note is B 4, the third note will be either D 5 or G 4. If the second note is F 5, the third note will be either G 4 or D 5. And so on.

Beats

Sets the number of repetitions for each count of the internal clock. This parameter provides an easy way to change arpeggio tempo in regular intervals. There are seven possible values:

4th notes	One note per clock beat
8th notes	Two notes per beat
8th trips	Three notes per beat
16th notes	Four notes per beat
16th trips	Six notes per beat
32nd notes	Eight notes per beat
32nd trips	Twelve notes per beat

Initial Tempo

The starting tempo of the arpeggiation, and the basis for the divisions created via the value of the Beats parameter. Any physical controller assigned to send MIDI Tempo message can control the arpeggiator tempo in real time.

The value for this parameter is relevant only if the value for the Clock parameter in the Global menu has a value of **Internal**. If the value of Clock is **External**, the arpeggiator follows the tempo of MIDI Clock signals (if any) received at the PC1's MIDI In port. If no external Clock signal is received, notes in the arpeggiator region do not play at all.

Duration

How long each arpeggiated note lasts. **100%** is legato--no breaks between notes. The lower the value, the more staccato the arpeggiation.

Velocity Mode (Vel Mode)

Determines how the attack velocity of latched notes affects the volume of arpeggiated notes. There are Five possible values:

Fixed

All arpeggiated notes play at the same attack-velocity level, determined by the Fixed Vel parameter.

Played

Each arpeggiated note plays at the attack-velocity level of its original latched note.

Last

All arpeggiated notes play at the attack-velocity level of the most recently-latched note.

Pressure

All arpeggiated notes play with attack velocities matching the current value of mono pressure (aftertouch).

Ctrl 117

All arpeggiated notes play with attack velocities matching the current value of MIDI 117, either from a physical controller on the PC1 or received at the MIDI In port.

Fixed Velocity (Fixed Vel)

When the value of Vel Mode is **Fixed**, sets the attack-velocity level for all arpeggiated notes.

Note Shift

The value of this parameter determines how much transposition, if any, gets applied to latched notes each time the cycle of latched notes repeats. The transposition is cumulative, and continues until it reaches the amount specified by the value for the Shift Limit parameter.

Descriptions of Parameters

Setup Editor Parameters

Shift Limit

Sets the maximum number of semitones that arpeggiated notes can be transposed up or down.

This parameter is relevant only when Note Shift has a non-zero value. When the transposition reaches the shift limit, it changes direction according to the value for the Limit Opt parameter.

Limit Option (Limit Opt)

Determines what the arpeggiator does when it has shifted the currently latched notes up (or down) to the shift limit. there are seven possible values:

Stop

Causes the Arpeggiator to stop the arpeggiation when it reaches the shift limit.

Reset

Causes the Arpeggiator to return to its original pitch and repeat the latched cycle of notes, transposing each cycle according to the settings for Note Shift and Shift Limit. If the limit allows the notes to go out of MIDI range (for example, if you set Shift to **12**, set the limit to **80**, and play C4), then those “ghost” notes don’t sound, but they take up rhythmic space: the arpeggiator waits for the cycle to play itself out before starting over.

Unipolar

After transposing to the shift limit, the arpeggiator begins shifting notes in the opposite direction, until it reaches the original pitch, where it reverses again. To determine the next note when it reaches the shift limit, the arpeggiator calculates the interval between the shift limit and what the next note would be if the shift limit weren’t there. It then plays the note that is the calculated interval lower (if reversing from upward transposition) than the last note before the shift limit. The same thing happens in reverse when the arpeggiated notes get back to the original pitch. The following table makes this easier to visualize by showing the result of arpeggiating one note (C4) in Unipolar mode, with Note Shift set to **3 ST** and various values for Shift Limit.

Shift Limit	Resulting Arpeggiation (When LimitOption is Unipolar)			Comment
	Up	Down	Up	
6 ST (F#4)	C4, D#4, F#4,	D#4, C4,	D#4, ...	Same notes play in both directions when Shift Limit is a multiple of Note Shift
7 ST (G4)	C4, D#4, F#4,	E4, C#4,	D#4, ...	Last upward note before shift limit is F#4, next upward note would be A4, which is 2 ST from shift limit (G4); therefore first downward note is E4 (2 ST below last upward note)
8 ST (G#4)	C4, D#4, F#4,	F4, D4,	D#4, ...	A4 is 1 ST from shift limit, therefore first downward note is F4 (1 ST lower than last upward note)
9 ST (A4)	C4, D#4, F#4,	A4 F#4, D#4, C4,	D#4, ...	All symmetrical again; now A4 is within shift limit
10 ST (A#4)	C4, D#4, F#4, A4,	G4, E4, C#4,	D#4, ...	Next upward note would be C5, which is 2 ST from shift limit
11 ST (B4)	C4, D#4, F#4, A4,	G#4, F4, D4,	D#4, ...	C5 is 1 ST from shift limit
12 ST (C5)	C4, D#4, F#4, A4, C5,	A4, F#4, D#4, C4,	D#4, ...	Symmetrical again, including C5

Bipolar

Starts out the same way as **Unipolar**, but during downward note shifting, it continues past the original pitch until it hits the shift limit in the *opposite* direction, where it reverses again.

Flt Reset

Adds a bit of apparent randomness to the process. **Flt** stands for “Float,” and it means that when the arpeggiator reaches the shift limit, it resets--but not to its original pitch as with plain **Reset**. Like **Unipolar** and **Bipolar**, it looks at the first note that would exceed the shift limit, and calculates the interval between that note and the shift limit. It then restarts the cycle of latched notes, transposing the entire cycle by the interval it just calculated, then shifting each subsequent cycle by the value of Note Shift, until it reaches the shift limit again.

Here’s a very simple example. Suppose that the only note in the arpeggiator cycle is C 4, Note Shift is 4 (a third), and Shift Limit is 7 (so notes won’t get shifted above G 4). The arpeggiator plays C 4, then E 4. The next note should be G# 4, but that’s above the shift limit--so the PC1 calculates the difference between that G# 4 and the shift limit (G 4): one semitone. It adds that difference to the original starting note (C 4) and plays that note next--C# 4. The next note (F 4) is within the shift limit, but the next note (A 4) isn’t, so it gets translated into D 4--and so on.

Flt Unip

Uses the same concept as **Flt Reset** and applies it to Unipolar mode: when the arpeggiator reaches the shift limit, it calculates the difference between the next note and the limit, and transposes the next cycle of notes down by that interval, then shifts each subsequent cycle down until it reaches the original pitch.

Flt Bipl

Similar to **Flt Uni**, but the downward shift limit isn’t the original pitch, it’s the negative of the Shift Limit value.

Glissando

When the Glissando parameter is **On**, the arpeggiator chromatically fills between latched notes. When Glissando is on, the Arpeggiator ignores the Note Shift, Shift Limit, and Limit Option parameters.

You must latch at least two notes to get a result. When Glissando is on, all notes played in the arpeggiation range get latched, although you won’t necessarily get meaningful results from all latched notes. In general, try to get each subsequent note you latch to be a change in direction.

For example, try latching the following sequence of notes: C4, C5, G4, G5, C5, C6, G4, G5. The “glissando” changes direction around each change in direction of the latched notes.

Effects Edit Parameters

Effects edit mode is a special subset of the PC1's editors. When you press the **Effect** button, you go to the FX Routing parameter in the editor corresponding to the performance mode you were in:

The Effects-mode parameters are the same parameters you see when entering the Effect menu after going into an editor by pressing **Edit**.

In addition to the parameters described below, there are three effects-related parameters in the Global menu. See page 5-24.

The FX Routing Parameter

The FX Routing parameter determines whether the sound of a program or setup gets sent to one or both of the effects blocks. Think of the FX Routing parameter as an effect send, routing the audio signal from the sound engine to the effects processor. When you enter this parameter, you see **FX Routing**, along with the performance mode (Program, or Setups) from which you entered Effects edit mode.

The bottom line shows values of this parameter. There are four possible values for this parameter.

- **None** – No Effect Routing (All effects Off). The **Effect** button LED turns off.
- **FXA** – Routes the audio signal to the FX-A block. The **Effect** button LED lights green.
- **FXB** – Routes the audio signal to the FX-B block. The **Effect** button LED lights red.
- **Both** – Routes the audio signal to both the FX-A and the FX-B blocks. The **Effect** button LED lights amber.

The FXA Select Parameter

Select the effect preset for the FX-A block. The effect ID and name appear, enabling you to select an effect for FX-A.

The FXB Select Parameter

Select the effect preset for the FX-B block. The effect ID and name appear, enabling you to select an effect for FX-B.

Parameters for Current Effects - Variable

View/edit the four FX-A or B parameters by pressing the **Left** and **Right** cursor buttons at the same time. You should press the two cursor buttons again to go back to FX-A or B Select parameter. (Please refer to Appendix B-8 for a list of effects and their parameters.)



Note: There are two cases in which you'll see `view` in the top line of the display, instead of `select`. The first occurs when you're in MIDI Receive mode, and the FX Chg Mode parameter (in the Global menu) has a value of **Auto** (which is the default). In this case, if you go into the FXA Select or FXB Select parameter, you'll find that you can't change the current effect. That's because MIDI Receive mode isn't really an editor—that is, you can't make permanent changes to programs or setups, including the effects they use.

The other case occurs when the current MIDI channel isn't the same as the effects channel (which is determined by the FX Channel parameter in the Global menu). In this case, if you go into the FXA Select or FXB Select menu from Program mode you'll be able to view the current effect, but not to change it.

FX Wet/Dry Parameter

You can adjust the amount of effect using this parameter. There are three Wet/Dry parameters:

- A Controls how much of FX-A's effect gets applied to the dry signal coming from the sound engine
- B Controls how much of FX-B's effect gets applied to the dry signal coming from the sound engine.
- Global A>B Controls how much of the processed signal coming from FX-A goes to FX-B and gets FX-B's effect applied to it.

FX Bypass Parameter

Suppose you want to silence the PC1's effects and/or reverb temporarily (without making permanent changes to the programs or setups you're playing during recording). You can quickly bypass either or both of the effects blocks globally, by setting the FXA Bypass and FXB Bypass parameters to **On**.

Bypassing FX-A or FX-B in any program or zone bypasses the corresponding effect block in *all* programs or zones. When you no longer need to bypass effects, go to the FXA Bypass or FXB Bypass parameter in *any* program or zone, and set its value to **Off**. This removes the bypass in *all* programs and zones.

The MIDI Recv Menu

The MIDI Recv menu is designed to make it easy to configure your PC1 as a MIDI slave, with a set of parameters for defining how it responds to incoming MIDI information. Each channel has an independently-programmable set of the parameters described below. The settings for these parameters affect the PC1's performance modes, as well as how the PC1 transmits MIDI information.

You can easily select MIDI channels by holding the **MIDI Recv** button and pressing the Program/Setup select buttons. Use the "Category Select" buttons (top row) to select channels 1-8, and use "Program Select" buttons (bottom row) to select channels 9-16.

Channel Activation (No parameter name shown)

Activates/deactivates current channel.

Program ID and Name (No parameter name shown)

Specifies a program for the current channel. Transmits the program change both to the PC1 and to the MIDI Out port.

Volume (Vol)

Sets the volume level for the current channel.

Pan

Specifies the pan setting for the current channel. A value of 0 is full left; 64 is center; 127 is full right.

FX Routing

Determines whether the program of the current channel is sent to one or both of the effects blocks.

A-to-B Wet/Dry Mix (Global A>B)

For the current program on the current channel, specifies how much of the processed signal coming from FX-A goes to FX-B and gets FX-B's effect applied to it. Also transmits values to the MIDI Out port.

FX-A Wet/Dry Mix (A)

For the current program on the current channel, specifies how much of FX-A's effect gets applied to the dry signal coming from the PC1's sound engine. Also transmits values to the MIDI Out port.

FX-B Wet/Dry Mix (B)

For the current program on the current channel, specifies how much of FX-B's effect gets applied to the dry signal coming from the sound engine. Also transmits values to the MIDI Out port.

The Global Menu

Local Control

Controls the connection between the PC1's sound engine and its MIDI-generating components (keyboard and physical controllers). Set Local Control to **On** (the default) when you want to be able to play the PC1 from its own keyboard (as well as to control MIDI slaves). Set Local Control to **Off** when the PC1 is receiving MIDI from an external source. This is particularly important when you're using a sequencer, since you'll most likely have MIDI cables going into the sequencer from the PC1, and into the PC1 from the sequencer. This can cause notes to get doubled if the Soft Thru or Play Thru feature of the sequencer is active.

Xmit ProgChg

Determines whether send program change messages to MIDI Out or not.

Clock

Set Clock to **Internal** (the default) to use the PC1's internal MIDI clock for arpeggiation, and to control synchronization with external MIDI equipment. Set Clock to **External** when you want the PC1 (including the arpeggiator) to synchronize with a MIDI Clock signal from an external source.

Transmit Clock

This parameter determines whether the PC1 sends its internal MIDI clock signal to its MIDI Out port. This parameter is irrelevant if the Clock parameter has a value of **External**. There are three possible values. They are:

- Off** The PC1 doesn't transmit its internal clock signal.
- On** The PC1 always transmits its internal clock signal to its MIDI Out port.
- Seq** Default value. The PC1 transmits its internal clock signal to its MIDI Out port only when you're playing one of the demo sequences or using the arpeggiator.

Touch

Sets the keyboard sensitivity for the entire PC1, somewhat like the Vel Scale parameter for individual programs and setups (like Vel Scale, the value for the Touch parameter also affects notes that get sent via MIDI).

A value of **Linear** (the default) is the standard, unaltered level of keyboard sensitivity. Values of **Light1-Light3** are for players who have a light touch--that is, you can play more lightly and still get the same attack-velocity values. **Light1** is more sensitive than **Linear**, and **Light3** is the most sensitive.

Values of **Hard1-Hard3** are for players who have a heavier touch--that is, you can play harder and still get the same attack-velocity values. **Hard1** is less sensitive than **Linear**, and **Hard3** is the least sensitive.

Setup Change Channel (Setup Chg Chan)

Enables the PC1 to change *setups* when it receives a *program-change message* from an external MIDI source. This is useful when the PC1 is controlled by another instrument or a sequencer. The possible values are **None** (the default, which disables this feature), and **1-16**.

Set the value of this parameter to match the channel on which you want to send program-change messages from the external source. Make sure that none of your external MIDI sources uses that channel for any other purpose; if the PC1 receives a program-change message on that channel from *any* MIDI source, it will change setups, which may not be what you want.

When you've set this parameter's value to a specific MIDI channel, bank-select messages with values of 0-3 received on that channel select setup banks 1-4.

MIDI In

Determines how the PC1 handles MIDI information received at its MIDI In port. There are four possible values:

Normal

The PC1 leaves the MIDI information unaltered. If the Thru/Out switch on the rear panel is set to Thru, the PC1 passes the MIDI information to the MIDI Thru port.

Remap

Processes incoming MIDI information from the MIDI Remap Channel as if it had been generated by the PC1 itself: notes get rechanneled into four different zones, and sent to the MIDI Out port on the MIDI channels corresponding to all the active zones. Any notes that lie in overlapping zones get sent on all the corresponding channels. Channel numbers on incoming notes are ignored. Non-note information (controllers, pitchbend, etc.) get sent on all active channels: for example, if the four zones of a Setup are transmitting on channels 2, 5, 9, and 12, any Pitch Bend information coming into the PC1 (on any channel) get sent on channels 2, 5, 9, and 12 simultaneously.

You won't need to use this value often, since the remapping occurs by default in all three performance modes (that is, the default value of **Auto** causes the remapping to occur automatically in all performance modes). Still, you might want to use a value of **Remap** on occasion—for example, in MIDI Receive mode, incoming MIDI information doesn't get remapped when the value of MIDI In is **Auto**. If you set MIDI In to **Remap**, incoming MIDI information gets remapped to whatever channel is showing in the PC1's display. This is a convenient way to audition a single channel.

Merge

Mixes incoming MIDI data with the data generated by the PC1 and sends the combined data stream to the MIDI Out port. Channel numbers of incoming commands remain intact. Both note and non-note messages get passed normally, but System Exclusive messages get filtered out. A value of Merge doesn't affect the behavior of the MIDI Thru port, if you're using the MIDI Thru/Out port.

Auto

The default. At this setting, the PC1 remaps incoming MIDI information when you're in any mode except MIDI Receive mode.

MIDI Remap Chan

If the MIDI In parameter is set to Remap, this parameter determines which channel will be remapped. To respond on any MIDI channel, set the value to **All**. To respond to only 1 MIDI channel, select a channel **1-16**.

General MIDI

Use this parameter to turn GM mode on and off. Set the value to **On** to activate GM mode; set the value to **Off** to return to normal operation. When you turn your PC1 off, it remembers whether GM mode was on, and starts up in the same state the next time you turn the PC1 on.

You can also activate/deactivate GM mode with a System Exclusive (SysEx) message to the PC1.

To turn GM mode on via SysEx, send this message:

```
F0 7E <device ID> 09 01 F7
```

The value you use for <device ID> must match the value of the Device ID parameter in the Global menu. By default it's 0, so unless you've changed it, your SysEx message should include 00 for <device ID>. You can also use 7F as the Device ID to broadcast to all receiving instruments.

To turn GM mode off via SysEx, send this message:

```
F0 7E <device ID> 09 02 F7
```

What Happens When You Turn GM Mode On

When General MIDI is On, the PC1 locks all MIDI channels (except Channel 10, the Drum channel) to play programs in the bank where the GM programs are stored (Bank 4). Channel 10 plays programs in Bank 7; these are drum programs, with program change numbers reconfigured to match the GM specification.

To ensure the proper dynamic response to GM files, the PC1 adjusts the receive velocities using a specialized touch map. Because GM handles effects levels differently, the PC1 scales down the levels of FX A and FX B. You can adjust the amount of scaling manually, using the GM FX Scale parameter.

What Happens When You Turn GM Mode Off

When General MIDI is Off, all MIDI channels are unlocked from GM Banks. The programs in Bank 7 return to their normal configuration; the value of the Touch parameter returns to its former value (which the PC1 remembers if you turn the power off); the effect levels return to their former state.

GM FX Scale

With this parameter you can control how much the effect levels are reduced when you're in GM mode (which is done to make the effect levels consistent with GM instruments). By default, the value is 25%, which means that the values of Controllers 93 FXAWet and 91 FXBWet are multiplied by .25, and the effects are 75% drier. Increase the value of GM FX Scale to make the effects wetter; reduce it to make them drier.

Exit Save

Affects what happens when you exit an editor without saving. If the value is **Never** (the default), the PC1 won't prompt you to save your edits when you leave an editor. If the value is **Ask**, leaving an editor without saving causes the PC1 to ask you if you want to save your edits. You can press **Yes** or **No** as desired, or you can press a mode-selection button to cancel your edits and return to a performance mode.

Drum Remap

Determines the layout of the timbres in drum programs. There are three possible values:

- Normal** Default value. No remapping of drum timbres.
- PC1ReMap** Assigns many timbres to different note numbers.
- GMReMap** Remaps drum timbres according to the General MIDI layout.

Effects Change Mode (FX Chg Mode)

Determines how the PC1 selects effects when you select a program or setup. There are two possible values:

Auto

The PC1 selects the effect associated with whatever programs you select while in Program mode; it selects the effect associated with whatever setup you select while in Setup mode.

Panel

The PC1 ignores the effects associated with whatever program or setup you select. This effect gets applied to every program or setup you select, regardless of performance mode.

Effects Channel (FX Channel)

Affects how the PC1 handles effects when you change programs. This parameter is closely related to the FX Chg Mode parameter.

FX Chg Mode is Auto; FX Channel is Current

These are the default settings for both parameters, and provides the most useful model for managing effects. In this case, program changes on the channel used by the program in the display (or program changes on the channel used by Zone 1 of the setup in the display) also change the current effect. This is true for internal program changes as well as those received via MIDI. Programs on all other channels use the current effect, but retain their own settings for Wet/Dry mix.

FX Chg Mode is Auto; FX Channel is 1–16

Program changes on the channel designated as the FX channel (or program changes in the setup zone that uses the FX channel) change the current effect. This is true for internal program changes as well as those received via MIDI. All other programs use the current effect, but retain their own settings for Wet/Dry mix.

FX Chg Mod is Panel

In this case, the value of FX Channel is irrelevant. Program changes--either from the PC1 or via an external MIDI source--never change the current effect (you must change the current effect from the PC1's front panel). The channel used by the program in the display adopts the Wet/Dry mix of the current effect as soon as you change the effect via the front panel. The other channels don't adopt the Wet/Dry mix of the current effect until you make a program change.

MIDI Receive Mode

When you're in MIDI Recv mode (that is, when you're in the MIDI Recv menu), program changes received via an external MIDI source change the current effect (or not) according to the same rules describe above. The only difference is that when the PC1 receives a program change via MIDI, the Wet/Dry mix settings for each channel are determined by the Wet/Dry parameters in the MIDI Recv menu.

Stored Effects (Stored FX)

The value of this parameter is relevant only for those factory programs and setups to which you've stored effects settings. For these programs and setups, you can quickly revert to using the factory effect settings without erasing your user-defined settings (which is what happens when you use one of the Restore Factory Effects functions in any save dialog). This parameter has two possible values:

Factory

When you select a program or setup, the PC1 applies the original factory settings to the corresponding effect, even if you have stored your own effect settings with the program or setup

User

When you select a program or setup, the PC1 applies your user-defined settings (if any) to the corresponding effect.

If you change the value of this parameter, you'll need to reselect the current program to notice the change in effect. This parameter works only when the value of FX Chg Mode is **Auto**. When FX Chg Mode is **Panel**, the PC1 uses the factory settings for whatever effect you select from the front panel.

Tuning

You can tune the PC1 up or down one semitone, in one-cent increments. This can be useful if you are playing along with a recording, or playing with other acoustic instruments that can't be easily returned. The default value is **0 cents**.

Receive Transposition (Recv Trans)

This allows you to transpose the instrument globally, for all MIDI channels. (Using the Transpose function in the zone parameters affects only individual zones in a setup, or if changed in Program mode, affects any program you play on the keyboard, but not any information coming in the MIDI In port.) The default value is **0 ST**.

Bank-Select Controller (Bank Sel Ctl)

Determines how the PC1 responds to bank-select messages received at the MIDI In port. There are four possible values:

- 0** Uses *only* MIDI Controller 0 as a bank-select command.
- 32** Uses *only* MIDI Controller 32 as a bank-select command.
- 0/32** Default value. Uses MIDI Controller 0 and 32 as a single combined bank-select command, enabling selection of banks numbered from 0 to 16,383.
- 0or32** Responds to either MIDI Controller 0 *or* 32 as separate bank-select commands.

AllNotesOff

If you set this to **Ignore**, the PC1 will ignore the MIDI All Notes Off message. Some instruments and sequencers (notably older Roland instruments) will send this message when no notes are being held, even if the sustain pedal is still held. If you are hooked to a Roland sequencer and find that the PC1 doesn't seem to sustain, set this parameter to **Ignore** and the problem will go away.

The default value is **Respond**, which causes the PC1 to respond to All Notes Off messages.

Device ID

Sets the ID used by the PC1 for MIDI SysEx messages--which the PC1 uses for dumping objects. The default value is **0**.

If you always dump objects--programs, setups, or effects--to the same device and reload them from that device, you won't have to worry about this parameter; just leave its value at **0** and your dumps will work just fine. If you plan to dump objects to different instruments in a MIDI chain, however--or if you want to reload different dumps to different instruments in a MIDI chain--you'll need to change the device ID for at least one instrument. See *More About SysEx Dumps* on page 4-7.

Output Mode

Configures the PC1 for monaural (mono) or stereo audio output. The default is **Stereo**. You might want to use mono mode if you have a mono sound system, or have only one channel available on your mixer.

Available RAM (Mem Avail)

Not editable. Displays the amount of memory (RAM) available for storing user-defined objects. Approximately 231 kilobytes for units with no user-defined objects.

OS Version

Not editable. Indicates the version of the currently installed operating system software.

Keyboard Version (Ver)

Not editable. Identifies the installed version of the keyboard.

Expansion Block

Not editable. Indicates whether the Expansion Sound Card is properly installed (indicates a problem if you've installed the card and the value is **No**).

Internal Sound Version (Ver)

Not editable. Indicates the version of the currently installed internal sounds.

Expansion Sound Version (Ver)

Not editable. Indicates the version of the expansion sounds.

Reset PC1?

Not a parameter but a prompt to execute a hard reset. Press **Yes**, and you'll see a prompt asking you if you're sure. The prompt prevents you from executing a hard reset inadvertently. A hard reset erases all RAM, and restores all programs, setups, effects, and global parameters to their original factory settings.

Dump all objects?

Not a parameter but a prompt to initiate a SysEx dump of all programs, setups, and effects.

MIDIScope?

Not a parameter but a prompt to run MIDI Scope, a MIDI-analysis application. Monitors any event from the PC1's keyboard or controllers, as well as MIDI information (including SysEx messages received at the MIDI In port. Press any non-controller button to exit.

Appendix A

Maintenance and Upgrades

Replacing the Battery

Changes that you make to your PC1 settings are stored using a Lithium battery when the PC1 is powered off. When it is time to replace your battery, the PC1 will display the message: **Battery voltage is low** for a few seconds after being powered up. If this happens, you should replace the battery as soon as possible.

Before you Begin

You'll need the following items:

- One CR2032 battery which is a 3 volt Lithium coin cell that can be purchased from Radio Shack and large drug stores.
- A #2 Phillips screwdriver
- A large table with a padded surface to prevent damage: foam or soft cloth
- A pen cap or plastic knife

Replacing the battery may erase the programs and setups that you have created, so back them up using a MIDI SysEx dump as described on page 4-7. When you are finished, turn off the power and remove all cables from your PC1 including the power adapter.

Opening your PC1

1. Place your PC1 with the keyboard and front panel down on the padding with the rear panel jacks facing you.
2. You will see a flat panel about 15 inches long (7 inches long in the PC161) and 4 inches wide in the bottom of the PC1. Use the screwdriver to remove the 7 screws that fasten the option panel.
3. Remove the panel by sliding the panel a couple of inches away from you and lifting it out of the opening.

Installing the Battery

1. Insert your fingernail, a plastic knife, or a pen cap in one of the slots on the top of the battery's retaining clip and gently pry the battery loose from the retaining clip, as shown in Figure A-1. (In the PC161, the battery is very close to the rear panel and may be hidden behind a cable.)

Maintenance and Upgrads

Replacing the Battery



Figure A-1 Freeing battery from retaining clip

2. Insert your fingernail, the plastic knife, or the pen cap behind and under the battery, and lift the battery out, as shown in Figure A-2.



Figure A-2 Removing battery

3. With the positive (+) side of the new battery facing away from you, slide the battery into the retaining clip, pushing down on the battery until it snaps into place.

Replacing the Option Panel

1. Replace the option panel sliding it in such that the unpainted edge is underneath the rear part of the opening.
2. Line up the holes in the panel with the holes in the bottom and install and tighten the screws.

Powering up

When you have finished, turn the PC1 over, plug in the power adapter, 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.

Boot Block

Although the PC1 comes from the factory with an operating system (OS, also called engine software) and factory setups already installed, you may decide to upgrade the software and/or hardware at a later time to add more features or sounds. The PC1 boot block lets you install new software and factory setups 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 setups that you have created. To save them, back them up using a MIDI Sysex dump as described on page 4-7.

Starting the Boot Block

When you power up the PC1, it displays **Waiting for scanner**, then displays **Please wait** after a couple of seconds. When you see **Please wait**, press and release the **Panic** button.

After the boot block message banner and version number are displayed, the first of several menu items appears on the screen. Pressing the buttons underneath the display scrolls through the menu items. Pressing the **Enter** button (**Yes** is printed underneath) invokes the menu item in the screen.

About Software Upgrades

You can get software upgrades for your PC1 from Kurzweil's FTP website (www.youngchang.com/kurzweil/html/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 PC1 using MIDI Sysex. A list of compatible software sequencers will accompany your software upgrade kit. If you don't have a computer, your PC1 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 **PC1XVVV.MID**, where **X** is the block being updated (**b** for boot block, **e** for operation system, and **s** for setups), and **VVV** is the version number (**V.VV**). 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 PC1.
2. Launch the sequencer application.
3. Open the first **.MID** file using the sequencer program.
4. Start the boot block on the PC1 using the directions above.

Installing an Operating System or Setups

This procedure is for installing OS and setup files. See *Installing a New Boot Block* on the previous page if you want to install a new boot block.

1. Select **Install Flash ROM via MIDI** by pressing the **Enter** button.
2. Start playing the MIDI file from the sequencer. While loading, the bottom line of the PC1's display will show a message **segment X of Y** where X starts at 1 and increments with each segment up to Y segments. If the display continues to show **Waiting for MIDI** after starting the sequencer, stop and restart the sequence.
3. Depending on the size of the file, it may take up to 18 minutes to completely 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.
4. After you have completed loading all of the MIDI files (except a boot block file), press the **Cancel** button twice to get back to the main boot block menu, scroll to the **Hard RESET** menu item, and select it by pressing **Enter**. Before doing a hard reset, please read *Resetting the PC1* below, so you can avoid losing any of your PC1 programs or setups.
5. Press **Yes** to execute a hard reset; the PC1 will restart with the new operating system and/or setups.

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-4, then continue:

1. Scroll to **Update boot block via MIDI** and select by pressing **Enter**.
2. Start playing the MIDI file from the sequencer. While loading, the bottom line of the PC1'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.
3. After about a minute, the PC1 will reset and start running normally.

Resetting the PC1

If you select **Hard RESET** by scrolling and pressing **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 PC1'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 work, or it has been saved using a MIDI Sysex dump (see page 4-7), then press the button beneath the **Yes** on the display. The PC1 will execute a hard reset and start running normally.

Running the Diagnostics

The **Run diag**s option executes the diagnostics that are loaded with the operating system. Some diagnostic tests will erase the PC1's memory, which will cause a hard reset when the PC1 is powered on again. Power off and power on your PC1 to leave diagnostics and return to normal operation.

Appendix B

Reference

Specifications

Specifications are subject to change without notice.

Physical Specifications

Dimension	PC1X		PC161	
Height	4 5/16 in	10.95 cm	3 1/4 in	8.3 cm
Depth	14 in	35.60 cm	12 in	30.5 cm
Length	54 5/16 in	137.95 cm	37 1/8 in	94.4 cm
Weight	50 lb	23 kg	23 lb	10.5 kg

Electrical Specifications

Voltage and Frequency Ranges

	120 VAC Adapter Model PM0023A	230 VAC Adapter Model PM0024A
Safe voltage range	100–125 Volts RMS	200–250 Volts RMS
Safe frequency range	58–65 Hz	48–65 Hz

Power Consumption

Voltage Level	Power consumption
120 VAC	0.35 Amps
230 VAC	0.13 Amps

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

Line-Level Left and Right Analog Audio Outputs

Connectors	Balanced outputs using two 1/4-inch stereo (tip-ring-sleeve) phone plugs and shielded twisted pair cable or unbalanced using two 1/4-inch mono (tip-ring) phone plugs and coaxial cable
Impedance	400 Ω , balanced, nominal
	200 Ω , unbalanced, nominal
Maximum output level	20.8 dBu (8.5 Volts RMS) balanced, high-impedance load
	14.7 dBu (4.2 Volts RMS) unbalanced, high-impedance load
Frequency response	20Hz–20kHz +/- 0.6 dB
Idle channel noise	Less than -115 dBA, balanced, relative to full-scale signal
Dynamic range	Greater than 112 dBA, balanced, using -60 dBFS signal
Stereo channel separation	96 dB

Headphone Output

Output impedance	47 Ω , nominal
Maximum output level	-4 dBu (0.5 Volts RMS) with 32 Ω load

Parameter Reference

ParameterGroup	Subgroup (if any)	Parameter	Range of Values	Default
MIDI Xmit(transmit)		MIDI Channel	Off, 1–16	Zones 1–4 default to channels 1–4
		Dest	Local, MIDI, Local+MIDI	Local+MIDI
		Bnd Rng (semitones)	0–127	2
		Bnd Rng (cents)	0–127	0
		AuxBend1 Up	0–60 semitones	12
	AuxBend1 Down	0–60 semitones	12	
Program		Bank	0–13,683	Programs
		Program	0–127	
		Entry Transmit	Off, On	On
		Bank Mode	None, Ctl 0, Ctl 32, Ctl 0/32, K2000, K1000	Ctl 0/32
		PNumDisp	0–127, 1–128, 11–88, A1–P8	0–127
	PNameDisp	Off, Internal, Gen MIDI	Internal	
Key Range		Lo	C-1–G 9	D 0
		Hi	C-1–G 9	G 9
		Note Map	Off, Linear, 1 of 2, 2 of 2, 1 of 3, 2 of 3, 3 of 3, 1 of 4, 2 of 4, 3 of 4, 4 of 4, Invs, Const	Linear
		AutoSplit	Off, On	On
Transposition		Transpose	-127 to 127	0
Velocity		Vel Scale	-300 to 300%	100%
		Vel Offset	-127 to 127	0
		Vel Curve Linear, Sin+, Cos+	Linear	
		Vel Min	1–127	1
		Vel Max	1–127	127
Continuous controllers	Wheel 1 Up	Ctrl Num Entry Value	Any control source or destination (Next column for defaults) None, 0–127 (default None)	Wheel 1 Up Ctrl Num: Pitch Up
These controllers all have the same three parameters, called the Basic Parameter Group. Default values are usually the same, with the exception of Ctrl Num; its value varies for each controller	Wheel 1 Down	Exit Value	None, 0–127 (default None)	Wheel 1 Down Ctrl Num: Pitch Down
	Wheel 2			Wheel 2 Ctrl Num: Mod Whl
	MPressure			MPressure Ctrl Num: Pressure
	Knob A			
	Knob B			
	Knob C			
	Pedal 1			

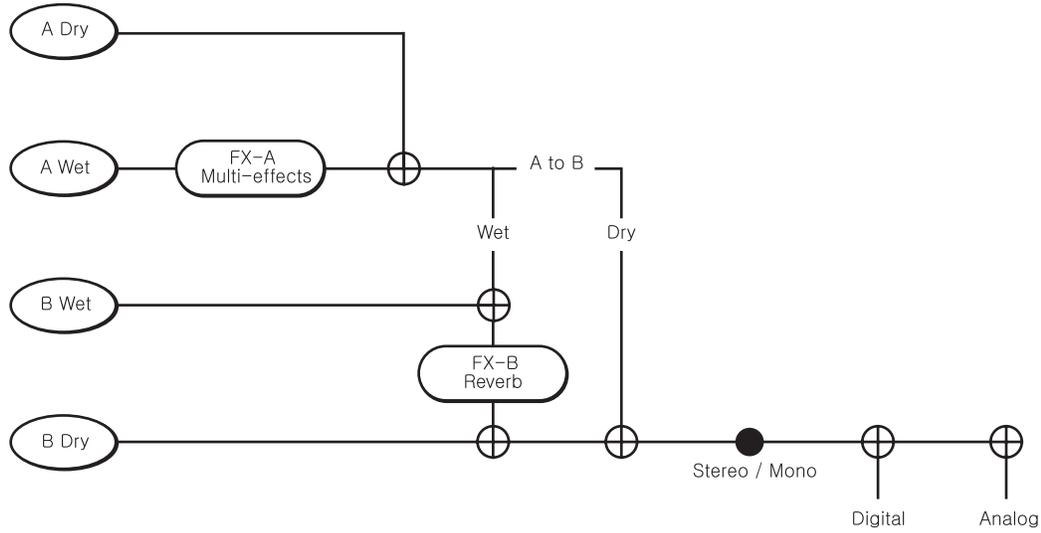
General Reference

Parameter Reference

Parameter Group	Subgroup (if any)	Parameter	Range of Values	Default
Continuous controllers: Ribbons Ribbons have three common parameters, called the Spring Parameter Subgroup The ribbon controllers also have the six basic parameters.		Ribbon Sect	Large, 3 Sect.	Large
	Spring Parameters	Spring Switch	Off, On	On
		Ribbon Mode	Absolute, Relative	Relative
		Spring Pos	0–127	64
	Ribbon 1 basic parameters	As indicated in Basic Parameter Group		
	Ribbon 2 spring parameters	As indicated in Spring Parameter Subgroup		
	Ribbon 2 basic parameters	As indicated in Basic Parameter Group		
Ribbon 3 spring parameters	As indicated in Spring Parameter Subgroup			
Switch controllers All switch controllers have the same seven parameters, called the Switch Control Parameter Group	Button SW1	SwType On Ctrl On Value Off Ctrl Off Value Entry State Exit State	Momentary, Toggle (default Momentary) Any control source or destination (default None) None; 0–127 (default None) Any control source or destination (default None) None; 0–127 (default None) None, Off, On (default None) None, Off, On (default None)	
	Button SW2			
	Button SW3			
	Button SW4			
	SwitchPdl 1			
	SwitchPdl 2			
Arpeggiator		Beats	4th Notes, 8th Notes, 8th Trips, 16th Notes, 16th Trips, 32 nd Notes, 32nd Trips	4th Notes
	Key range	Low	C-1 to G9	G 9
		Hi	C-1 to G9	C-1
		Latch Mode	Keys, OverPlay, Arpeg, Add, Auto, Pedals	
		Play Order	Played, Up, Down, Up & Down, Up & Down Rpt, Random, Shuffle, Walk	Played
		Beats	4th Notes, 8th Notes, 8th Trips, 16th Notes, 16th Trips, 32 nd Notes, 32nd Trips	4th Notes
		Initial Tempo	20–300 BPM	120 BPM
		Duration	1–100%	100%
		Vel Mode	Fixed, Played, Last, Pressure, Ctrl 117	Played
		Fixed Vel	1–127	100
		Note Shift	-12 to 12	0
		Shift Limit	0–88	24
		Limit Opt	Stop, Reset, UniPolar, BiPolar, Flt Reset, Flt Unipolar, Flt Bipolar	UniPolar
		Glissando	Off, On	Off

Parameter Group	Subgroup (if any)	Parameter	Range of Values	Default
Program: Timbre		Mod Wheel	None, 0–127	0
		Knob C	None, 0–127	0
		Knob D	None, 0–127	0
		SW 2	None, 0–127	0
		SW 4	None, 0–127	0
Global		Local Control	Off, On	On
		Xmit ProgChg	Off, On	On
		Clock	Internal, External	Internal
		Transmit Clock	Off, On, Seq	Seq
		Touch	1 Linear, 2 Light1, 3 Light2, 4 Light3, 5 Hard1, 6 Hard2, 7 Hard3	1 Linear
		Setup Chg Chan	None, 1–16	None
		MIDI In	Normal, Remap, Merge, Auto	Auto
		MIDI Remap Chan	1-16, All	All
		General MIDI	Off, On	Off
		GM FX Scale	0-100%	25%
		Exit Save	Never, Ask	Never
		Drum Remap	Normal, PC1ReMap, GMReMap	Normal
		FX Chg Mode	Auto, Panel	Auto
		FX Channel	Current, 1-16	Current
		Tuning	-100 ct to 100 ct	0 ct
		Recv Trans	-64 to 63	0
		Bank Sel Ctl	0, 32, 0/32, 0 or 32	0/32
		All Notes Off	Respond, Ignore	Respond
		Device ID	0–127	0
		Output Mode	Stereo, Mono	Stereo
		Mem Avail	Not editable	214K
		OS Version	N/A	N/A
		Keyboard	Not editable	88 Ver. 2
		Expansion	Not editable	No
		Int Sound Ver	Not editable	v3.01
	Exp ver	Not editable	Orch v3.01	
	Reset PC1?	N/A	N/A	
	Dump all objects?	N/A	N/A	
	MIDIScope?	N/A	N/A	
MIDI Recv (for each channel)		(Channel status)	Off, On	On
		Bank:Program	0:000–16,384:127	0:000
		Volume	0–127	127
		Pan	0–127	64
	Wet/Dry Mix	Global A>B	0%–100%	Varies
	A:	0%–100%	Varies	
	B:	0%–100%	Varies	
Effects Routing (in all editors)		Routing	None, FXA, FXB, Both	Varies
		FXA Bypass	Off, On	Varies
		FXB Bypass	Off, On	Varies

PC1 Audio Signal Routing



MIDI Controllers

0	Bank MSB	32	Bank LSB	64	Sustain	96	DataInc
1	Mod Wheel	33		65	Port Switch	97	DataDec
2	Breath	34		66	Sosten	98	NRg LSB
3		35		67	Soft	99	NRg MSB
4	Foot Control	36		68	Legato	100	Rg LSB
5	Port Time	37		69	Hold2	101	Rg MSB
6	Data MSB	38	Data LSB	70	SndCtl1	102	
7	Volume	39		71	SndCtl2	103	
8	Balance	40		72	SndCtl3	104	
9		41		73	SndCtl4	105	
10	Pan	42		74	SndCtl5	106	
11	Expression	43		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		85		117	ArpVel
22		54		86		118	Latch2
23		55		87		119	Latch1
24		56		88		120	SndOff
25		57		89		121	RstCtl
26		58		90		122	LclCtl
27		59		91	FXBWet	123	NtsOff
28		60		92	FXABWet	124	OmniOf
29		61		93	FXAWet	125	OmniOn
30		62		94	FXRoute	126	MonoOn
31		63		95	Ef5 Dpt	127	PolyOn

Special Controllers

The controllers in the following table are not MIDI Controllers. The numerals indicate the button pad entries that select the corresponding controllers.

128	Pitch Bend	133	Tempo	138	Goto Prog	143	Seq Stop
129	Rev Bnd	134	Key Number	139	Setup Inc	144	Seq Cont
130	Pitch Up	135	Key Veloc	140	Setup Dec	145	Trans Up
131	Pitch Down	136	Prog Inc	141	Goto Setup	146	Trans Down
132	Pressure	137	Prog Dec	142	Seq Start		

PC1 Effects and Effects Parameters

Reverb

ID	Effect	Param1	Param2	Param3	Param4
1	NiceLittleBooth	Rvr Time	HF Damping	Size Scale	Density
2	Viewing Booth	Rvr Time	HF Damping	Size Scale	Density
3	Drum Booth	Rvr Time	HF Damping	Size Scale	Density
4	Add Ambience	Rvr Time	HF Damping	Size Scale	Density
5	BrightSmallRoom	Rvr Time	HF Damping	Size Scale	Density
6	Tight Perc Room	Rvr Time	HF Damping	Size Scale	Density
7	SmallDarkRoom	Rvr Time	HF Damping	Size Scale	Density
8	Bassy Room	Rvr Time	HF Damping	Size Scale	Density
9	Percussive Room	Rvr Time	HF Damping	Size Scale	Density
10	Bathroom	Rvr Time	HF Damping	Size Scale	Density
11	Real Room	Rvr Time	HF Damping	Size Scale	Density
12	Drum Room	Rvr Time	HF Damping	Size Scale	Density
13	Drum Room B	Rvr Time	HF Damping	Size Scale	Density
14	Large Room	Rvr Time	HF Damping	Size Scale	Density
15	Small Chamber	Rvr Time	HF Damping	Size Scale	Density
16	SmallDrumChamber	Rvr Time	HF Damping	Size Scale	Density
17	Brass Chamber	Rvr Time	HF Damping	Size Scale	Density
18	Sax Chamber	Rvr Time	HF Damping	Size Scale	Density
19	Plebe Chamber	Rvr Time	HF Damping	Size Scale	Density
20	Live Chamber	Rvr Time	HF Damping	Size Scale	Density
21	Grandiose Hall	Rvr Time	HF Damping	Size Scale	Density
22	Elegant Hall	Rvr Time	HF Damping	Size Scale	Density
23	Bright Hall	Rvr Time	HF Damping	Size Scale	Density
24	Ballroom	Rvr Time	HF Damping	Size Scale	Density
25	Medium Hall	Rvr Time	HF Damping	Size Scale	Density
26	Medium Hall Too	Rvr Time	HF Damping	Size Scale	Density
27	Ball Hall	Rvr Time	HF Damping	Size Scale	Density
28	Sweet Hall	Rvr Time	HF Damping	Size Scale	Density
29	Small Hall	Rvr Time	HF Damping	Size Scale	Density
30	Large Hall	Rvr Time	HF Damping	Size Scale	Density
40	Small Wood Booth	Room Type	Size Scale	Treb Freq	Treb Gain
41	With A Mic	Room Type	Size Scale	L PreDelay	R PreDelay
42	PrettySmallPlac	Room Type	Size Scale	HF Damping	DiffAmtScl
43	Natural Room Room	Room Type	Size Scale	L PreDelay	R PreDelay
44	SmallStudioRoom	Absorption	HF Damping	EarRef Lvl	Late Lvl
45	The Real Room	Rvr Time	HF Damping	Treb Freq	Treb Gain
46	Sizzly Drum Room	Rvr Time	HF Damping	L PreDelay	R PreDelay
47	ClassRoom	Rvr Time	HF Damping	Treb Freq	Treb Gain
48	AnotherRealRoom	Rvr Time	HF Damping	L PreDelay	R PreDelay
49	Big Studio Room	Absorption	LF Split	EarRef Lvl	Late Lvl
50	Real Big Room	Rvr Time	HF Damping	LF Split	LF TimeScl

ID	Effect	Param1	Param2	Param3	Param4
51	My Garage	Absorption	Late Lvl	Treb Freq	Treb Gain
52	Half Bath	Rvrb Time	HF Damping	E DfDlyScI	E DiffAmt
53	School Stairwell	Absorption	HF Damping	L PreDelay	R PreDelay
54	Small Hall	Rvrb Time	EarRef Lvl	L PreDelay	R PreDelay
55	Classic Chapel	Rvrb Time	HF Damping	L PreDelay	R PreDelay
56	Semisweet Hall	Rvrb Time	HF Damping	EarRef Lvl	Late Lvl
57	Reflective Hall	Rvrb Time	EarRef Lvl	Treb Freq	Treb Gain
58	Smooth Hall	Rvrb Time	HF Damping	L PreDelay	R PreDelay
59	Sweet Hall	Rvrb Time	EarRef Lvl	L PreDelay	R PreDelay
60	Spacious Hall	EarRef Lvl	HF Damping	L PreDelay	R PreDelay
61	Opera House	Rvrb Time	HF Damping	EarRef Lvl	Late Lvl
62	Real Niceverb	Rvrb Time	HF Damping	Treb Freq	Treb Gain
63	Splendid Palace	Rvrb Time	Late Lvl	EarRef Lvl	EarRefDiff
80	Weighty Platey	Rvrb Time	HF Damping	EarRef Lvl	LF TimeScI
81	Classic Plate	Rvrb Time	HF Damping	EarRef Lvl	Late Lvl
90	Gated Reverb	Rvrb Time	Gate Time	GateThresh	GateReleas
91	Gate Plate	Rvrb Time	Gate Time	GateThresh	GateReleas

Delay

ID	Effect	Param1	Param2	Param3	Param4
120	Stereo Chorus1	LFO Rate	LFO Depth	Fdbk Level	L/R Phase
121	Stereo Chorus2	LFO Rate	Chor Shape	Fdbk Level	L/R Phase
122	Basic Chorus	L LFO Rate	R LFO Rate	L LFODepth	R LFODepth
123	Chorus Comeback	L LFODepth	R LFODepth	L TapDelay	R TapDelay
124	Chorusier	L LFO Rate	R LFO Rate	LFdbk Lv	R Fdbk Lvl
125	SlowSpinChorus	L LFO Rate	R LFO Rate	L Fdbk Lvl	R Fdbk Lvl
126	Everyday Chorus	L LFO Rate	R LFO Rate	L LFODepth	R LFODepth
127	Soft Chorus	L LFO Rate	R LFO Rate	L TapLevel	R TapLevel
128	Thick Chorus	L LFO1Dpth	R LFO1Dpth	L LFO2Dpth	R LFO2Dpth
129	Rock Chorus	L LFO Rate	R LFO Rate	L TapLevel	R TapLevel

Chorus

ID	Effect	Param1	Param2	Param3	Param4
100	Complex Echo	L Fbk1 Dly	R Fbk1 Dily	L Fbk2 Dly	R Fbk2 Dly
101	Stereo Echoes	L Fbk1 Dly	R Fbk1 Dly	L Fbk2 Dly	R Fbk2 Dly
102	4-Tap Delay	Dly Tempo	Fdbk Level	Tap2 Level	Tap4 Level
103	8-Tap Delay	Dly Tempo	Fdbk Level	HF Damping	LoopLength
104	Spectral 4-Tap	Dly Tempo	Tap2 Pitch	Tap3 Pitch	Tap4 Pitch
105	Astral Taps	Dly Tempo	Tap2 Pitch	Tap3 Pitch	Tap4 Pitch

Program Information

PC1 Effects and Effects Parameters

Flange

ID	Effect	Param1	Param2	Param3	Param4
150	Big Slow Flange	LFO Period	LFO Tempo	Fdbk Level	L/R Phase
151	Sweet Flange	LFO Period	LFO Tempo	Fdbk Level	L/R Phase
152	Throaty Flange	LFO Period	LFO Tempo	Fdbk Level	HF Damping
153	Squeeze Flange	LFO Period	LFO Tempo	Fdbk Level	L/R Phase
154	Simply Flange	LFO Period	LFO Tempo	Fdbk Level	L/R Phase
155	Wetlip Flange	LFO Period	Fdbk Level	StatDlyLvl	StatDlyTim

Phase

ID	Effect	Param1	Param2	Param3	Param4
180	Slow Deep Phaser	LFO Rate	LFO Depth	CenterFreq	L/R Phase
181	Saucepan Phaser	LFO Rate	LFO Depth	CenterFreq	Fdbk Level
182	Circles	LFO Rate	LFO Depth	NotchLFORt	NotchDepth

Chorus + Delay

200~233 can be combined to create Chorus/Delay/Reverb multi-effects

ID	Effect	Param1	Param2	Param3	Param4
200	BasicChorusDelay	Mix Chorus	Ch FdbkMix	Delay	Dly Tempo
201	Doubler & Echo	Ch Depth L	Ch Depth R	Mix Delay	Dly Tempo
202	FastChorusDouble	Mix Chorus	Ch Rate L	Ch Rate R	Mix Delay
203	Chorus Slapbacks	Mix Chorus	Mix Delay	Dly Tempo	Dly LFDamp
204	Chorus PanDelay	Mix Chorus	Ch Fdbk	Mix Delay	Dly Tempo
205	Chorused Taps	4 Tap Tempo	4Tap Fdbk	Tap1 Delay	Tap3 Delay
206	MultiEchoChorus	Ch Rate L	Ch Rate R	Dly Time L	Dly Time R

Chorus + Reverb

ID	Effect	Param1	Param2	Param3	Param4
210	Chorus Air	Ch Rate L	Ch Rate R	Ch Depth L	Ch Depth R
211	ChorusSmallRoom	Ch Rate L	Ch Rate R	L Mix Rvrb	R Mix Rvrb
212	ClassicEP ChorRm	Ch Rate L	Ch Rate R	L Mix Rvrb	R Mix Rvrb
213	Chorus HiCeiling	Ch Delay L	Ch Delay R	Rvrb Time	Mix Reverb
214	Chorus MiniHall	Ch Fdbk L	Ch Fdbk R	Rvrb Type	Rvrb Time
215	Chorus PercHall	Ch Rate L	Ch Rate R	Rvrb Type	Rvrb Time
216	ChorusMedChamber	Ch Depth L	Ch Depth R	Rvrb Time	Rvb HFDamp
217	VanillaChorRvb Mix	Chorus	Rvrb Time	Rvb HFDamp	Mix Reverb
218	SoftChorus Hall	Ch Rate L	Ch Rate R	Rvrb Time	Mix Reverb
219	Chorus SlowHall	Mix Chorus	Ch Delay L	Ch Delay R	Rvrb Time
220	ChorBigBrnPlate	Ch Rate L	Ch Rate R	Rvb HFDamp	Mix Reverb

Chorus + Delay + Reverb

ID	Effect	Param1	Param2	Param3	Param4
230	ChorusDelayHall	Dly Tempo	Rvrb Type	Rvrb Time	Rvb HFDamp
231	ChorDlyRvb Lead	Dly Time L	Dly Time R	Rvrb Type	Rvrb Time
232	Fluid ChorDlyRvb	Dly Fdbk L	Dly Fdbk R	Rvrb Time	Rvb HFDamp
233	DeepChorDlyHall	Ch Rate L	Ch Rate R	Dly Tempo	Rvrb Time

Flange + Delay

250~283 can be combined to create Flange/Delay/Reverb and other multi-effects

ID	Effect	Param1	Param2	Param3	Param4
250	Flange Delay	FI Rate	Mix Delay	Dly Time L	Dly Time R
251	ThroatyFlangeDly	FI Rate	Mix Delay	Dly Time L	Dly Time R
252	Slapback Flange	FI Rate	FI Fdbk L	FI Fdbk R	Mix Delay

Flange + Reverb

ID	Effect	Param1	Param2	Param3	Param4
260	Flange Booth	FI Rate L	FI Rate R	Rvrb Type	Rvrb Time
261	Flange Room	FI Tempo	FI Fdbk L	FI Fdbk R	Mix Reverb
262	SlowFlangeVerb	FI Tempo	FI Fdbk L	FI Fdbk R	Mix Reverb
263	Flange Theatre	Mix Flange	Rvrb Time	Rvb HFDamp	Mix Reverb
264	Flange Hall	FI Tempo	Mix Flange	Rvrb Time	Rvb HFDamp

Flange + Delay + Reverb

ID	Effect	Param1	Param2	Param3	Param4
270	FlangeDelayRoom	FI Tempo	FI Phase R	Dly Tempo	Rvb HFDamp
271	SloFlangeDlyRoom	Dly Tempo	Dly Fdbk L	Dly Fdbk R	Rvb HFDamp
272	FlangeDelayHall	Dly Tempo	Rvrb Time	L Mix Rvrb	R Mix Rvrb
273	FlangeDlyBigHall	FI Rate	Dly Tempo	Rvrb Time	Rvb HFDamp

Flange and Other

ID	Effect	Param1	Param2	Param3	Param4
280	Flange->LaserDly	FI Rate	FI Fdbk	Mix Delay	Dly Tempo
281	FlangeTap Synth	FI Rate	Mix 4Tap	4Tap Tempo	4T LoopLen
282	Lazertag Flange	FI Tempo	Dly Tempo	LsrCntourL	LsrCntourR
283	Shaper->Flange	Shp Amount	Out Gain	FI Rate	FI Fdbk

Program Information

PC1 Effects and Effects Parameters

Filters

ID	Effect	Param1	Param2	Param3	Param4
300	Bass Env Filter	Min Freq	Freq Sweep	Resonance	Threshold
301	EPno Env Filter	Freq Sweep	FilterType	Resonance	Threshold
302	Phunk Env Filter	Min Freq	Freq Sweep	Resonance	Threshold
303	Trip Filter	LFO Period	FilterType	Min Freq	Max Freq
304	LFO Sweep Filter	LFO Period	FilterType	Min Freq	Max Freq
305	LFO Sweep Filt2	LFO Period	R Phase	Resonance	Max Freq
306	DoubleRiseFilter	LFO Period	FilterType	LFO Shape	Max Freq
307	Circle Bandsweep	LFO Period	Resonance	Min Freq	Max Freq

Laserverb

ID	Effect	Param1	Param2	Param3	Param4
320	Cheap LaserVerb	Fdbk Lvl	Delay	Contour	Spacing
321	Spry Young Boy	Fdbk Lvl	Delay	Contour	Spacing
322	LaserDelay->Rvb	Dly Tempo	srCntourL	LsrCntourR	Mix Reverb
323	LazerfazerEchoes	Fdbk Lvl	Delay	Contour	Spacing
324	Drum Neurezonate	Fdbk Lvl	Delay	Contour	Spacing

Distortion

ID	Effect	Param1	Param2	Param3	Param4
330	SuperShaper	Shp Amount	Out Gain	None	None
331	SubtleDrumShape	Low Amount	Mid Amount	Hi Amount	Out Gain
332	2 Band Shaper	CrossOver	Low Amount	Hi Amount	Out Gain
333	Shaper->Reverb	Shp Amount	Shp Lopass	Rvr Time	Rvb HFDamp
334	SubtleDistortion	Dist Drive	Warmth	Highpass	Out Gain
335	Synth Distortion	Dist Drive	Mid1 Gain	Treb Gain	Out Gain
336	Dist Cab EPiano	Dist Drive	Warmth	Cab Preset	Out Gain
337	Distortion+EQ	Dist Drive	Warmth	Mid2 Gain	Out Gain
338	Quantize+Flange	QuantizLvl	Mix Flange	Fl Period	Fl Fdbk

Enhancer

ID	Effect	Param1	Param2	Param3	Param4
350	3 Band Enhancer	Hi Drive	Mid Drive	Low Drive	Out Gain
351	Extrem Enhancer	Hi/Md Xovr	Hi Drive	Mid Drive	Low Drive

Compressor

<i>ID</i>	<i>Effect</i>	<i>Param1</i>	<i>Param2</i>	<i>Param3</i>	<i>Param4</i>
360	HKCompressor 3:1	Ratio	Threshold	MakeUpGain	Attk Time
361	DrumKompres 5:1	Ratio	Threshold	MakeUpGain	Attk Time
362	SKFdbkComprs 6:1	Ratio	Threshold	MakeUpGain	Attk Time
363	SKCompressr 12:1	Ratio	Threshold	MakeUpGain	Attk Time

Simple Motion

<i>ID</i>	<i>Effect</i>	<i>Param1</i>	<i>Param2</i>	<i>Param3</i>	<i>Param4</i>
370	Tremolo	Trem Rate	Trem Depth	Trem ShapeL/R	Phase
371	Simple Panner	LFO Rate	LFO Shape	PanWidth	ImageWidth
372	Dual Panner	L LFO Rate	R LFO Rate	L PanWidth	R PanWidth

Spatial

<i>ID</i>	<i>Effect</i>	<i>Param1</i>	<i>Param2</i>	<i>Param3</i>	<i>Param4</i>
381	Mono->Stereo	CenterGain	Pan High	Pan Mid	Pan Low
382	Widespread	CenterGain	Diff Gain	DfBassFreq	DfBassGain
383	Wide Space	Rvrb Type	Rvb Diffus	Ch Delay L	Ch Delay R

MIDI Implementation Chart

Model: Kurzweil PC1

Manufacturer:
Kurzweil
Digital Synthesizers

Date: 7/21/03
Version 1.0

Function	Transmitted	Recognized	Remarks
Basic Channel	Default	1	1
	Changed	1 - 16	1 - 16
Mode	Default	Multi*	Multi*
	Messages	Any	Modes 1 & 3
Note Number	Altered	X	
	0-127	0-127	key range
Velocity	True Voice	1-128	1-128
	Note ON	O	O
After Touch	Note OFF	O	O
	Keys	X	X
Pitch Bender	Channels	O	O
		O	O
Control Change**	0, 32	O	O
	1	O	O
	2	O	O
	4	O	O
	6, 38	O	O
	7	O	O
	10	O	O
	11	O	O
	15, 47	O	O
	21, 53	O	O
	64	O	O
	66	O	O
	67	O	O
	91	O	O
	92	O	O
	93	O	O
	94	O	O
	96	O	O
	97	O	O
	98, 99	O	O
100, 101	O	O	
116	O	O	
117	O	O	
118	O	O	
119	O	O	
120	O	O	
121	O	O	
Program Change	O	0-127	O
	True #	0-127	0-127
System Exclusive		O	O*
System Common	Song Pos.	X	X
	Song Sel.	X	X
	Tune	X	X
System Real Time	Clock	O	O
	Messages	O	O
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; programmable 0-127		*Use Multi to assign different programs to each MIDI channel **The PC1 can send any control change

Mode 1: Omni On, Poly
Mode 3: Omni Off, Poly

Mode 2: Omni On, Mono
Mode 4: Omni Off, Mono

O = yes
X = no

Appendix C

PC1 Programs and Controller Assignments

The tables in this section list the physical controller assignments for all programs in PC1

Factory Controller Assignments

Knob A	MIDI91 FX-A Depth
Knob B	MIDI93 FX-B Depth
Knob C	MIDI06
Knob D	MIDI13
SW1	Octave Shift
SW2	MIDI09
SW3	Arp On/Off
SW4	MIDI29
MW	MIDI01
Mpress	MIDI33
Ribbon	MIDI21/53 Pitchbend
CCPed	MIDI11 Expression
FtSw1	MIDI64 Sustain
FtSw2	MIDI66 Sost

Programs and Controllers

Primary (Bank 0)

000 Stereo Grand

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

001 Classic Grand

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

002 Dynamic Grand

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

003 Warm Grand

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

004 Solo Grand Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

Program Information
Controller Assignments

005 Concert Grand

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

006 Mono Grand Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

007 Piano for layers

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

008 Hard Rock Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

009 Rock Grand

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

010 Grand Piano 440

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

011 Mono Stage Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

012 Dyn Stage Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

013 Ragtime Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

014 Tack Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Tack Level
Knob D	Vibrato Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Vibrato
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

015 Piano & Strings

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	Strings Level
SW1	Octave Shift
SW2	Enable Vibrato
SW3	Arp On/Off
SW4	Lyr Disable (Strings)
MW	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

016 Classic E Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Sample Start
SW3	Arp On/Off
SW4	Impact
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

017 Serious Classic

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Tremolo Rate
SW1	Octave Shift
SW3	Arp On/Off
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

018 That 70's E Pno

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Enable Thump
SW3	Arp On/Off
SW4	Impact
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

Program Information

Controller Assignments

019 Hard E Pno

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Enable Thump
SW3	Arp On/Off
SW4	Impact
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

020 Lounge E Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Disable release
SW3	Arp On/Off
SW4	Disable Layer
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

021 Dyno My E Pno

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Hi Freq Cut
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Fast Decay
SW3	Arp On/Off
SW4	Impact
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

022 Soft E Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq Cut
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Layer Enable (Pad)
SW3	Arp On/Off
SW4	Disable Chorus Layer
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

023 Hybrid E Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Disable Thump
SW3	Arp On/Off
SW4	Impact
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

024 My Best Wurly

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Disable Thump
SW3	Arp On/Off
SW4	Impact/Thump Lvl
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

025 Big Red Wurly

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Sample Start
SW3	Arp On/Off
SW4	Enable Detuned Layer
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

026 Brkfst In Korea

Knob C	Timbre
Knob D	Tremolo Rate
SW2	Sample Start
SW4	Impact
MW	Tremolo Depth

027 Soft Wurly

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Sample Start
SW3	Arp On/Off
SW4	Impact
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

028 Wurly Road

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Sample Start
SW3	Arp On/Off
SW4	Impact
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

029 Pearly Keys

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Envelope Ctl
SW3	Arp On/Off
SW4	Impact
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

030 Digital E Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Sample Start
SW3	Arp On/Off
SW4	Disable Layer
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Soft Pedal

031 Ballad E Piano

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Envelope Ctl
SW3	Arp On/Off
SW4	Disable Layer
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

Program Information
Controller Assignments

032 C3PO

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Sample Start
SW3	Arp On/Off
SW4	Enable Layer
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

035 FantAsmAtron

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Attack Control
SW3	Arp On/Off
SW4	Disable Layer
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

033 Digital E Grand

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Attack Control
SW3	Arp On/Off
SW4	Disable Layer
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

036 AtmAz

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Attack Ctrl
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Switch Layers
MW	Vibrato Rate
Mpress	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

034 Rock E Grand

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Attack Control
SW3	Arp On/Off
SW4	Disable Layer
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

037 Celestial Comet

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Treble Cut
Knob D	Trem/Vib Rate
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Switch Layers
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

038 Comp Time

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	Resonance
SW1	Octave Shift
SW2	Octave Drop
SW3	Arp On/Off
SW4	Impact
MW	"Vibrato Rate, Depth"
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

039 Ruth Buzzy

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq Cut
Knob D	Tremolo+Rate
SW1	Octave Shift
SW2	Resonance Boost
SW3	Arp On/Off
SW4	Decay Control
MW	Vibrato
Mpress	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

040 Clav Classic

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Bass Level
Knob D	HiPass LFO Rate
SW1	Octave Shift
SW2	Disable Release
SW3	Arp On/Off
SW4	Layer Switch
MW	HiPass LFO Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

041 Touch Clav

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Impact
SW1	Octave Shift
SW3	Arp On/Off
SW4	Layer Switch
MW	BandPass LFO Rate
Mpress	Timbre
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

042 Dual Wah Clav

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Bandpass Width
Knob D	LFO2 Rate
SW1	Octave Shift
SW3	Arp On/Off
SW4	LFO => MW
MW	Bandpass Freq(SW4)
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

043 Harpsichord

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Sample Start
SW1	Octave Shift
SW2	Disable Release
SW3	Arp On/Off
SW4	Octave Switch
MW	Decay Control
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

Program Information
Controller Assignments

044 Modrn Harpsi

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Decay Control
SW1	Octave Shift
SW3	Arp On/Off
SW4	Enable Release
MW	"LoPass Freq, Layer Detune"
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

045 CrystalClavchd

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Treble Cut
Knob D	Sample Start
SW1	Octave Shift
SW2	Decay Control
SW3	Arp On/Off
SW4	Layer Switch
MW	Layer 1 Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

046 Accordion

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremelo Rate
SW1	Octave Shift
SW2	Disable Layer
SW3	Arp On/Off
SW4	Attack Control
MW	Swell
Mpress	Swell
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

047 Celesta

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremelo Rate
SW2	Decay Control
SW3	Arp On/Off
SW4	Impact
MW	LoPass Freq
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

048 The Reverend's

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	Layer XFade
SW1	Octave Shift
SW2	FX Vib/Chr On/Off
SW3	Arp On/Off
SW4	VAST Rotary On/Off
MW	FX/VAST Rotary Ramp Speed Ctl
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

049 Ballad Of 3 Bars

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Perc XFade
Knob D	Bass Cut
SW1	Octave Shift
SW2	FX Vib/Chr On/Off
SW3	Arp On/Off
SW4	VAST Rotary On/Off
MW	FX/VAST Rotary Ramp Speed Ctl
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

050 Prog Rocker's B

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Perc XFade
SW1	Octave Shift
SW2	FX Vib/Chr On/Off
SW3	Arp On/Off
SW4	VAST Rotary On/Off
MW	FX/VAST Rotary Ramp Speed Ctl
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

051 All Out Full On

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
SW1	Octave Shift
SW2	FX Vib/Chr On/Off
SW3	Arp On/Off
SW4	VAST Rotary On/Off
MW	FX/VAST Rotary Ramp Speed Ctl
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

052 Grungy Overdrive

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
SW1	Octave Shift
SW2	FX Vib/Chr On/Off
SW3	Arp On/Off
SW4	VAST Rotary On/Off
MW	FX/VAST Rotary Ramp Speed Ctl
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

053 Uptown Gospel

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Para EQ Freq
Knob D	Para EQ Cut
SW1	Octave Shift
SW2	FX Vib/Chr On/Off
SW3	Arp On/Off
SW4	VAST Rotary On/Off
MW	FX/VAST Rotary Ramp Speed Ctl
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

054 Retro Roto

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Xtra Hi Freq
SW1	Octave Shift
SW2	FX Vib/Chr On/Off
SW3	Arp On/Off
SW4	VAST Rotary On/Off
MW	FX/VAST Rotary Ramp Speed Ctl
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

055 Pipe Organ

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Layer XFade
Knob D	Layer XFade
SW1	Octave Shift
SW3	Arp On/Off
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

056 Big Brass

Knob C	LoPass Freq
Knob D	Attack Control
SW2	Layer Switch
SW4	Layer Switch
MW	Vibrato Depth
Mpress	Swell Env & Pitch

Program Information
Controller Assignments

057 Saxes/Trumpets

Knob C	LoPass Freq
Knob D	Attack Control
SW2	Layer Switch
SW4	Layer Switch
MW	Vibrato Depth
Mpress	Swell Env & Pitch

058 Split Section

Knob C	LoPass Freq
Knob D	Attack Control
SW2	Layer Switch
SW4	Layer Switch
MW	Vibrato Depth
Mpress	Swell Env & Pitch

059 Broadway Brass

Knob C	LoPass Freq
Knob D	Attack Control
SW4	Layer Switch
MW	Vibrato Depth
Mpress	Swell Env & Pitch

060 Trombones

Knob C	Timbre
Knob D	Attack Control
SW4	Layer Switch
MW	Vibrato Depth
Mpress	Swell Env & Pitch

061 Bari/Tenor Sect

Knob C	LoPass Freq
Knob D	Attack Control
SW2	Layer Switch
SW4	Layer Switch
MW	Vibrato Depth
Mpress	Swell Env & Pitch

062 Solo Tenor Sax

Knob C	LoPass Freq
Knob D	Attack Control
MW	Vibrato Depth
Mpress	Vibrato Depth

063 Williams Brass

Knob C	LoPass Envelope
SW2	Layer Switch
SW4	Layer Switch
MW	Vibrato Depth
Mpress	Swell Envelope

064 Lyrical Strings

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Brightness
SW1	Octave Shift
SW3	Arp On/Off
SW4	Envelope
MW	Attack Switch
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

065 Slow Strings

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Brightness (Cut)
Knob D	Attack Control
SW1	Octave Shift
SW3	Arp On/Off
SW4	Layer Switch
MW	Slow Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

066 Marcato String

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Brightness (Cut)
Knob D	Envelope Control
SW1	Octave Shift
SW2	Attack Control
SW3	Arp On/Off
SW4	Envelope Control
MW	Envelope Switch
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

067 Layer Strings

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Brightness
Knob D	Release Control
SW1	Octave Shift
SW2	Layer Switch(w/SW4)
SW4	Mono => Stereo
MW	Attack Control
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

068 Fast Strings

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Release Control
SW1	Octave Shift
SW3	Arp On/Off
MW	Layer Switch
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

069 Touch Strings

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Envelope Control
SW1	Octave Shift
SW3	Arp On/Off
SW4	Layer Switch
MW	Tremelo
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

070 Velocity Strings

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
SW1	Octave Shift
SW3	Arp On/Off
MW	Layer Switch
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

071 Phantom Strings

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Attack Control
SW1	Octave Shift
SW2	Layer Switch
SW3	Arp On/Off
SW4	Layer Switch
MW	Envelope Control
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

072 Ooh><Aah

Knob C	Timbre
Knob D	Layer XFade
SW4	Layer Switch
MW	Vibrato
Mpress	Layer XFade

073 Doo><Daa

Knob C	Timbre
Knob D	Layer XFade
SW4	Layer Switch
MW	Vibrato
Mpress	Layer XFade

Program Information
Controller Assignments

074 Baa stacc. Bop

Knob D	Envelope Control
SW4	Layer Switch
MW	Vibrato
Mpress	Swell

075 Doo stacc. Doop

Knob D	Envelope Control
SW4	Layer Switch
MW	Vibrato
Mpress	Swell

076 Daa stacc. Dot

Knob D	Envelope Control
SW4	Layer Switch
MW	Vibrato
Mpress	Swell

077 Scatman

SW4	Envelope Control
MW	Vibrato
Mpress	Swell

078 The Croons

Knob C	Timbre
SW4	Layer Switch
MW	Vibrato

079 Cathedral Vox

Knob C	Brightness (Cut)
Knob D	Envelope Control
SW4	Layer Enable
MW	Brightness (Cut)

080 Solar Lead

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	LoPass Resonance
SW1	Octave Shift
SW3	Arp On/Off
SW4	Layer Switch
MW	"Vibrato Rate, Depth"
Mpress	"Vibrato Rate, Depth"
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

081 Vox Lead

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	LoPass Resonance
SW1	Octave Shift
SW2	Rel. Layer off
SW3	Arp On/Off
SW4	Layer Enable
MW	"Vibrato Rate, Depth"
Mpress	"Vibrato Rate, Depth"
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

082 Alazawi

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Envelope
Knob D	LoPass Resonance
SW1	Octave Shift
SW3	Arp On/Off
SW4	Layer Transpose (5ths)
MW	"Vibrato Rate, Depth"
Mpress	"Vibrato Rate, Depth"
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

083 Slo Wood Flute

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Breath Noise
Knob D	Chiff Noise
SW1	Octave Shift
SW3	Arp On/Off
SW4	"Layer Enable (""ooh"")"
MW	Tremelo Depth (Cut)
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

084 Groove Bass

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LowPass Freq
Knob D	LoPass Resonance
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Octave Layer Enable
MW	Vibrato Depth
Mpress	Vibrato Rate
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

085 1/3 Pulse Bass

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LowPass Freq
Knob D	LoPass Resonance
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Octave Layer Enable
MW	"Vibrato Rate, Depth"
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

086 Sweeper Bass

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LowPass Freq
Knob D	LoPass Resonance
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Stereo Layer Enable
MW	Vibrato Depth
Mpress	Vibrato Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

087 Lowdown Bass

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LowPass Freq
Knob D	LoPass Resonance
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Octave Divide
MW	"Vibrato Rate, Depth"
Mpress	"Vibrato Rate, Depth"
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

088 Rez Aah Pad

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	LoPass LFO Rate
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Timbre (Envelope)
MW	Vibrato
Mpress	Swell (Layer 3)
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

Program Information
Controller Assignments

089 Crypt

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Timbre
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Vibrato Rate Env
MW	"Vibr, Pan/Filtr LFO"
Mpress	"Vibr, Pan/Filtr LFO"
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

092 Neptune

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	""Chiff"" Level"
Knob D	Env Control
SW1	Octave Shift
SW3	Arp On/Off
SW4	Layer Disable
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

090 Meteor Strings

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	LoPass Resonance
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Vibrato Rate Env
MW	"Vibrato, Trem Depth"
Mpress	Brightness
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

093 Analogy

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	LP Res & Release
SW2	Attack Control
SW3	Arp On/Off
SW4	Layer Enable
MW	"Vibrato Rate, Depth"
Mpress	Swell
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

091 Orch Pad

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Filter Freq
Knob D	Filter LFO Rate
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Attack Control
MW	Vibrato
Mpress	Horn Layer Swell
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

094 Dream Catcher

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	LoPass Resonance
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Attack Control
MW	Filter LFO Depth
Mpress	Swell
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

095 U Say Tomita

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	LoPass Resonance
SW1	Octave Shift
SW2	Release Control
SW3	Arp On/Off
SW4	Attack Control
MW	Vibrato/Trem
Mpress	Vibrato/Trem
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

098 Rich 6 String

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Vibrato Rate
SW1	Octave Shift
SW2	Envelope Control
SW3	Arp On/Off
SW4	Stereo Image
MW	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

096 Acoustic Guitar

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	EQ Ctr Freq
Knob D	EQ Cut/Boost
SW1	Octave Shift
SW2	Envelope Control
SW3	Arp On/Off
SW4	Sample Start
MW	Vibrato
Mpress	Vibrato Rate
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

099 12 String Guitar

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	EQ Ctr Freq
Knob D	EQ Cut/Boost
SW1	Octave Shift
SW2	Envelope Control
SW3	Arp On/Off
SW4	Layer Detune
MW	Vibrato
Mpress	Vibrato Rate
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

097 Strummer 12 Str

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Brightness
Knob D	Vibrato Rate
SW1	Octave Shift
SW2	Envelope Control
SW3	Arp On/Off
SW4	Layer Detune
MW	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

100 Chorus Elec Gtr

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Tremolo Rate
SW1	Octave Shift
SW2	Envelope Control
SW3	Arp On/Off
SW4	Disable Layer Detune
MW	Tremolo Depth
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

Program Information

Controller Assignments

101 Elec 12 String

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Envelope Control
SW1	Octave Shift
SW2	FX Vib/Chor On/Off
SW3	Arp On/Off
SW4	Enable Leslie
MW	Leslie Rate Switch
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

102 Jazzy Frets

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Attack Control
Knob D	Decay Control
SW1	Octave Shift
SW2	Filter Env Control
SW3	Arp On/Off
SW4	Enable Slide Layer
MW	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw2	Sostenuto

103 Lead Rock Gtr

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre (Dist)
Knob D	Timbre (Tone)
SW1	Octave Shift
SW2	Disable FB Layer
SW3	Arp On/Off
SW4	Feedback in 5ths
MW	Vibrato
Mpress	Feedback Amount
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

104 Round and Wound

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq (Cut)
Knob D	Attack Control
SW1	Octave Shift
SW2	Impact
SW3	Arp On/Off
SW4	Layer Enable(Ride)
MW	Ride Cymbal Volume
Mpress	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

105 Punch Bass

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq
Knob D	Attack Control
SW1	Octave Shift
SW2	Layer Disable
SW3	Arp On/Off
SW4	"LoPass Res, Freq"
MW	Vibrato
Mpress	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

106 Two Finger Bass

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	LoPass Freq (Cut)
SW1	Octave Shift
SW2	Impact
SW3	Arp On/Off
SW4	Layer Enable (Ride)
MW	Ride Cymbal Volume
Mpress	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

107 Dual-Tri Bass

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
SW1	Octave Shift
SW2	Layer Enable
SW3	Arp On/Off
SW4	Layer Enable(Ride)
MW	Vibrato
Mpress	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

108 Clav o' Bass

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
SW1	Octave Shift
SW2	Layer Disable
SW3	Arp On/Off
MW	Vibrato
Mpress	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

109 Fret Not Bass

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
SW1	Octave Shift
SW2	Layer Disable
SW3	Arp On/Off
SW4	Timbre
MW	Vibrato
Mpress	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

110 Upright Bass 1

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Timbre (Cymbal)
SW1	Octave Shift
SW3	Arp On/Off
SW4	Layer Enable(Ride)
MW	Ride Cymbal Volume
Mpress	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

111 Upright Bass 2

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Timbre (Cymbal)
SW1	Octave Shift
SW2	Layer Disable
SW3	Arp On/Off
SW4	Layer Enable(Ride)
MW	Ride Cymbal Volume
Mpress	Vibrato
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

112 Studio Drums 1+2

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Pitch Control
SW1	Octave Shift
SW2	Decay Control
SW3	Arp On/Off
SW4	Sample Start
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

113 Studio Drums 3+4

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Pitch Control
SW1	Octave Shift
SW2	Decay Control
SW3	Arp On/Off
SW4	Sample Start
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

116 Resonant Traps

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Pitch Control
SW1	Octave Shift
SW2	Envelope Control
SW3	Arp On/Off
SW4	Sample Start
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

114 Ambient Rock Kit

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Pitch Control
SW1	Octave Shift
SW2	Decay Control
SW3	Arp On/Off
SW4	Sample Start
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

117 Tripkit/Trashkit

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Pitch Control
SW1	Octave Shift
SW2	Envelope Control
SW3	Arp On/Off
SW4	Sample Start
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

115 Coliseum Kit

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Pitch Control
SW1	Octave Shift
SW2	Decay Control
SW3	Arp On/Off
SW4	Sample Start
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

118 Beat Box

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Pitch Control
SW1	Octave Shift
SW2	Decay Control
SW3	Arp On/Off
SW4	Sample Start
MW	"Env/Lyr, Ptch LFO"
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

119 Electro Kit

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Timbre
Knob D	Pitch Control
SW1	Octave Shift
SW2	Decay Control
SW3	Arp On/Off
SW4	Attack Control
MW	Layer Enable
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

120 Virtuoso Perc

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Pitch Control
Knob D	Shaker Rate (f1-c2)
SW1	Octave Shift
SW3	Arp On/Off
MW	Muting
Mpress	Moose Pitch/Mute
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

121 Rhythm Maker

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Pitch Control
Knob D	PitchCtrl Via MPrs
SW1	Octave Shift
SW2	Layer Disables
SW4	Layer Disable
MW	Sample Start
Mpress	PtchCtl (Sw2/SosPed)
CCPed	Expression
FtSw1	Off
FtSw2	Off

122 Woody Marimba

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Sample Start
SW1	Octave Shift
SW2	Layer Switch
SW3	Arp On/Off
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Layr Sw to Round Marimba
FtSw2	Off

123 African Marimba

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	Lyr Enable (Shaker)
SW1	Octave Shift
SW3	Arp On/Off
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

124 Vibes

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Tremolo Rate
Knob D	Layer Switch
SW1	Octave Shift
SW2	Envelope Control
SW3	Arp On/Off
SW4	Layer Enable (Sine)
MW	Tremelo
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

Program Information

Controller Assignments

125 New Fluid Vibes

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob C	Tremolo Rate
SW1	Octave Shift
SW2	Stereo Spread
SW3	Arp On/Off
SW4	Sample Start
MW	Tremelo
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

126 Aborigine Jam

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
SW1	Octave Shift
SW3	Arp On/Off
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

127 Drums 'n Bells

Knob A	FX-A Wet/Dry
Knob B	FX-B Wet/Dry
Knob D	PitchCtrl via MPrs
SW1	Octave Shift
SW3	Arp On/Off
SW4	Sample Start
Mpress	PtchCtl (Sw2/SosPed)
Ribbon	Pitch Bend
CCPed	Expression
FtSw1	Sustain
FtSw2	Sostenuto

Secondary (Bank 6)

000 Sweet Ivories

MW	Vibrato (when SW4 is on)
Knob D	Vibrato rate
SW4	Activates MW Vibrato

001 Nice Touch Grand

MW	Vibrato (when SW4 is on)
Knob D	Vibrato rate
SW4	Activates MW Vibrato

002 Piano Solitude

MW	Vibrato (when SW4 is on)
Knob D	Vibrato rate
SW4	Activates MW Vibrato

003 Piano Recital

MW	Vibrato (when SW4 is on)
Knob D	Vibrato rate
SW4	Activates MW Vibrato

004 Full Bloom Piano

MW	Vibrato (when SW4 is on)
Knob D	Vibrato rate
SW4	Activates MW Vibrato

005 Pianetta

MW	Vibrato (when SW4 is on)
Knob D	Vibrato rate
SW4	Activates MW Vibrato
FtSw1	Enable ringy layer

006 Suite Piano

MW	Vibrato (when SW4 is on)
Knob D	Vibrato rate
SW4	Activates MW Vibrato

007 Dreamy Piano

MW	Vibrato (when SW4 is on)
Knob D	Vibrato rate
SW4	Activates MW Vibrato

008 Basement Upright

MW	Vibrato (when SW4 is on)
Knob D	Vibrato rate
SW4	Activates MW Vibrato

009 Chiano

MW	Vibrato (when SW4 is on)
Knob C	Tone control: Notch
Knob D	Vibrato rate
SW4	Activates MW Vibrato

010 Way Back Piano

MW	Vibrato (when SW4 is on)
Knob C	Envelope: decay rate
Knob D	Vibrato rate
SW4	Activates MW Vibrato

011 Dance Piano

MW	Vibrato (when SW4 is on)
Knob C	Highpass filter
SW2	More treble boost
Knob D	Envelope: decay rate
SW4	Activates MW Vibrato

Program Information

Controller Assignments

012 Cloud Ride Piano

MW	Vibrato (when SW4 is on)
Knob C	Pad layer decay
Knob D	Vibrato rate
SW4	Activates MW vibrato

013 Organic Piano

Knob C	Duller Vox
SW2	Enables unis on Vox
SW4	Disables octave Vox layer

014 Piano & Wash

MW	Increases volume of pad layer
Knob C	Cutoff, pad layer
SW2	Slower attack, pad layer
Knob D	Resonance, pad layer
SW4	Different pad layer

015 Piano & Vox Pad

MW	Fade volume of Vox layer
Knob C	Cutoff, Vox layer
Knob D	Attack Time: Vox layer
SW4	Duller piano

016 Mello E Piano

MW	Tremolo depth
Knob C	Timbre: cutoff
SW2	Alternative attack
Knob D	Tremolo rate
SW4	Impact

017 Tines Square

MW	Tremolo depth
Knob C	Timbre
SW2	Alternative attack
Knob D	Tremolo rate
SW4	Impact

018 Brunch In Seoul

MW	Tremolo depth
Knob C	Timbre: cutoff
SW2	Alternative attack
Knob D	Tremolo rate
SW4	Impact

019 Classy Roadz

MW	Tremolo depth
Knob C	Cutoff & Resonance
SW2	Alternative attack
Knob D	Tremolo rate
SW4	Impact

020 Barking Tines

MW	Tremolo depth
Knob C	Cutoff & Resonance
SW2	Alternative attack
Knob D	Tremolo rate
SW4	Impact

021 Clean and Soft

MW	Treble control: : duller
Knob C	Cutoff
SW2	Envelope: decay
Knob D	Vibrato rate
SW4	Impact

022 Ballad Keys

MW	Tremolo depth
Knob C	Tremolo rate
SW2	Alternative attack
Knob D	Envelope control
SW4	Disables E Piano layer

023 Lotus Keys

MW	Tremolo depth
Knob C	Tremolo rate
SW2	Alternative attack
Knob D	Envelope control
SW4	Disables E Piano layer

024 Soft Ballad

MW	Tremolo depth
Knob C	Tremolo rate
SW2	Alternative attack
Knob D	Envelope control
SW4	Disables E Piano layer

025 '70s FM Tines

MW	Tremolo depth
Knob C	Cutoff & Resonance
SW2	Alternative attack
Knob D	Tremolo rate; envelope: release
SW4	Impact

026 '90s FM Ballad

MW	vibrato depth
Knob C	Para EQ freq
SW2	Alternative attack
Knob D	Para EQ amp
SW4	Timbre & envelope control

027 Chorus Rock Pno

MW	vibrato (when SW4 is on)
Knob D	Vibrato rate
SW4	Activates MW vibrato

028 Bright Pianotone

MW	Tremolo depth
Knob C	Timbre: duller
SW2	Decay rate
Knob D	Tremolo rate
SW4	Impact

029 Family Portrait

MW	Tremolo depth
Knob C	Volume swell
SW2	Slow Vibrato off/on
Knob D	Tremolo rate
SW4	Impact

030 Harpsi-Piano

MW	vibrato/tremolo depth
Knob C	Timbre control
SW2	Alternative attack
Knob D	Vibrato/tremolo rate
SW4	Detune

031 Fantasy Keys

MW	vibrato depth
Knob C	Timbre/Amp control
SW2	Envelope control
Knob D	Paramid Boost
SW4	Alternative attack

032 Janet's Comp

MW	vibrato depth
Knob C	Timbre/Amp control
SW2	Envelope control
Knob D	Paramid boost
SW4	Disables layer

033 Mild Sheen

MW	vibrato/tremolo depth
Knob C	Timbre control
SW2	Envelope control
Knob D	Vibrato/tremolo rate
SW4	Impact/alternative start

034 Scrape Glass

MW	vibrato depth
Knob C	Cutoff
SW2	Transposes one voice - 12ST
Knob D	Resonance
SW4	Layer swap

035 Air Society

MW	vibrato/tremolo depth
Knob C	Timbre control
SW2	Envelope control
Knob D	Vibrato/tremolo rate

036 Push Air

MW	Filter LFO depth/rate
Knob C	Timbre control
SW2	Envelope control
Knob D	Tremolo control
SW4	Timbre control

037 Dronin'

MW	Bandpass width
Knob C	Bandpass frequency
Knob D	LFO rate
SW4	Adds Vox pad layer

038 Alien Salt Mine

MW	vibrato depth
Knob C	Notch frequency
SW2	Envelope control: attack
Knob D	Notch width
SW4	Switch to Cymbal Layer

039 Imperfect Storm

MW	Resonance
Knob C	Cutoff frequency Layer 1
SW2	Mutes Layer 2
Knob D	LFO rate Layer 2
SW4	Pitch shift: up

040 Mod Clavier

MW	Timbre: fade bright layer
Knob C	Timbre: Para EQ amp
SW2	Alternative attack
Knob D	Envelope: decay rate
SW4	Enable release layer

041 Belly Celeste

MW	Tremolo depth
Knob C	Tremolo rate
SW2	Alternative attack
Knob D	Envelope control
SW4	Disables Celesta layer

042 Harpsichordion

MW	vibrato depth
Knob C	Timbre: Para EQ frequency
SW2	Timbre & envelope control
Knob D	Timbre: Para EQ amp
SW4	Alternative attack

043 Circus Keys

MW	vibrato/tremolo depth
Knob C	LFO rate control
Knob D	Envelope control

044 Cosmic Calliope

MW	Tremolo/vibrato
Knob C	LFO rate
SW2	Resets tuning
Knob D	Envelope: attack rate

045 Calliope Keys

MW	Tremolo; vibrato
Knob C	LFO rate
SW2	reset tuning
Knob D	Envelope: attack rate

046 Chiff Attack

MW	vibrato depth
Knob C	Timbre: Para EQ frequency
SW2	Alternative attack
Knob D	Timbre: Para EQ Amp
SW4	Timbre & envelope control

047 Spaced Harmonix

MW	vibrato depth
Knob C	Timbre: Amp control
SW2	Envelope control
Knob D	Paramid boost
SW4	Alternative control

048 BackgroundOrgan

MW	vibrato/tremolo depth
Knob C	LFO rate control
SW2	Alternative attack
Knob D	Envelope control

049 Mello Tone Wheel

MW	vibrato/tremolo depth
Knob C	LFO rate control
SW2	Alternative attack
Knob D	Envelope control

050 Piped Organ

MW	vibrato depth
Mpressure (32)	Pitch bend
Knob C	Vibrato rate
SW2	Disables layer
Knob D	Envelope: attack rate
SW4	Disables Chiff layer

051 Playful Piper

MW	Delayed vibrato
Mpressure (32)	Pitch bend
Knob C	More breath
SW2	Envelope: release rate
Knob D	Chiffier attack
SW4	Disables Chiff layer

052 Peter's Pan

MW	vibrato depth
Knob C	Timbre (air)
SW2	Enables chorused layer
Knob D	Envelope: attack control; vibrato rate
SW4	Impact

053 Imaginary Flute

MW	Delayed vibrato
Mpressure (32)	Pitch bend
Knob D	Chiffier attack

054 Bright Koreana

MW	vibrato depth
Knob C	Timbre
SW2	Enables chorused layer
Knob D	Envelope: attack control; vibrato rate
SW4	Alternative control

055 Bouncin'BassBall

MW	vibrato/tremolo depth
Knob C	LFO rate control
SW2	Alternative attack
Knob D	Envelope: decay rate
SW4	Disables layer

056 Goosed Riff Sect

Mpressure (32)	Pitch bend
SW4	Disables Tsax octave layer

057 Fatso Sax

MW	Delayed vibrato
Mpressure (32)	Pitch bend
Knob C	Layer 3 Amplitude
SW4	Disables Waveform layer

058 Big&Beefy Saxes

MW	vibrato depth
Knob C	Envelope: decay rate
Knob D	Envelope: attack rate
SW4	Enables layer

059 Goosed Unison

Mpressure (32)	Pitch bend
----------------	------------

060 Anabrass

MW	vibrato depth
Knob C	Timbre control
SW2	Disables layer
Knob D	Amp/envelope control
SW4	Impact

Program Information

Controller Assignments

061 Honk'n Dyn Sax

MW	vibrato depth
SW4	Switches programs

062 Saxy Lush

MW	vibrato depth
Mpressure (32)	Vibrato
SW4	Disables Strings layer

063 Classical Brass

MW	vibrato depth
Mpressure (32)	Envelope control
Knob C	Envelope control
Knob D	Envelope: release rate

064 Fast Vtrig Rosin

Knob C	Timbre: duller
Knob D	Envelope: attack rate

065 Emotional String

MW	Switches layers
Knob C	Timbre: duller

066 Octave Strings

MW	Disables lower-pitched layer
Knob C	Timbre: duller

067 Emphatic Strings

MW	Switches layers
Knob C	Timbre: duller

068 Rosin Section

MW	Switches layers
Knob C	Timbre: duller

069 Resolute Section

MW	Switches layers
----	-----------------

070 Tender Strings

MW	Switches layers
Knob C	Timbre: duller

071 Flute & Strings

MW	Modulation sweep
Knob C	Resonance, brightness
SW2	Disables Flute layer
Knob D	Envelope control: Strings
SW4	Disables Chiffy layer

072 Bright Voices

MW	vibrato depth
Knob C	Timbre
SW2	Enables chorused layer
Knob D	Envelope: attack control; vibrato rate

073 Crystal Voices

MW	vibrato/tremolo depth
Knob C	LFO rate control

074 Vox & Organ

Knob D	Envelope: release rate
SW4	Disables octave layer

075 BIG Ooh Voices

MW	vibrato depth
Knob D	Vibrato rate
SW4	Disables octave layer

076 BIG Voices

MW	vibrato depth
Knob D	Vibrato rate
SW4	Disables octave layer

077 Bright Syn Vox

MW	vibrato depth
Knob C	Timbre
SW2	Enables chorused layer
Knob D	Envelope: attack control; vibrato rate
SW4	Transposes up an octave

078 Vox Orgel

MW	vibrato depth
Knob C	Timbre control
SW2	Envelope control: adds decay
Knob D	EQ gain
SW4	Alternative attack

079 Vox & Strings

MW	vibrato depth
Knob C	Vibrato rate
Knob D	Envelope: attack rate
SW4	Disables Strings layer

080 Subdivide

MW	vibrato depth
Knob C	Filter cutoff
SW2	Detunes
Knob D	LFO rate, tremolo depth, envelope control
SW4	Disables resonance

081 Rezy Bass/Poly

MW	vibrato depth
Knob C	Filter cutoff
SW2	Transposes one layer down an octave
Knob D	Resonance
SW4	Impact

082 Technicolor

MW	vibrato depth
Knob C	Filter cutoff
SW2	ASR trigger: resonance
Knob D	Transposes one layer down five octaves
SW4	Swaps layers

083 Elan Lead

MW	vibrato depth
Mpressure (32)	Vibrato
Knob C	Filter cutoff
SW2	Transposes one layer down an octave Envelope: release rate
Knob D	Resonance
SW4	Swaps layers

084 Sun Spot Lead

MW	vibrato depth
Mpressure (32)	Vibrato
Knob C	Filter cutoff
SW2	Transposes one layer down an octave Envelope: release rate
Knob D	Resonance

085 Dinosaur's Lead

MW	vibrato depth
Mpressure (32)	Vibrato
Knob C	Filter cutoff/resonance Envelope: release rate
Knob D	Crossfade
SW4	Disables layers

086 Sawyer's Bomb

MW	Vox pitch bend
Knob C	Filter sweep range
SW2	Transposes one layer down an octave Envelope: release rate
Knob D	Bandpass width
SW4	Disables Vox layer

087 Reverse Feedback

MW	vibrato depth
Knob C	Filter cutoff
SW2	Transposes one layer down an octave Envelope: release rate
Knob D	Resonance
SW4	Tremolo

Program Information

Controller Assignments

088 Poseidon

MW	Tremolo depth
Mpressure (32)	vibrato
Knob C	Filter cutoff, treble boost
SW2	With SW4, octave transpose
Knob D	Envelope control
SW4	Enables layer

089 Analogica

MW	vibrato depth
Mpressure (32)	Filter cutoff
Knob C	Filter cutoff
SW2	Envelope: attack rate Envelope: release rate
Knob D	Resonance

090 Anti Rez

MW	vibrato depth/rate
Knob C	Filter cutoff
SW2	Envelope: attack rate Envelope: release rate
Knob D	Resonance
SW4	Adds 4th layer, detunes

091 Spider's Web

MW	Filter sweep
Mpressure (32)	Volume
Knob C	Filter cutoff
SW2	Envelope: release rate
Knob D	Resonance
SW4	Envelope: attack rate

092 Ethereal Strings

MW	Bandpass width & frequency
Knob C	Filter cutoff in Layer 2
Knob D	Envelope control
SW4	Switches To Meteor Str 2

093 FreeResAhh Notch

MW	Crossfade, layer detune
Mpressure (32)	Treble boost
Knob C	Filter cutoff
SW2	Envelope control: release
Knob D	Envelope control, LFO rate
SW4	Enables layer

094 Ooh><Ahh Pad

MW	vibrato depth
Mpressure (32)	Filter cutoff, layer crossfade
Knob C	Resonance
SW2	Envelope: attack rate Envelope: release rate
Knob D	Filter cutoff, layer crossfade
SW4	Filter cutoff, layer crossfade

095 Vocalicious

MW	Different envelope
Knob C	Timbre: duller
Knob D	Different envelope
SW4	Disables layer

096 Titanium Guitar

MW	Muted Guitar
Knob C	More body
SW2	Finger snap
Knob D	Fret snap
SW4	Chorus effect

097 Latin Lover

MW	Muted Guitar
SW2	Alternative attack
SW4	Disables Knock layer

098 Roto 12 String

MW	Rotary Fast/Slow
Knob C	Filter cutoff
SW2	Vibrato chorus
Knob D	Envelope control
SW4	Rotary in/out

099 Electric 12

Knob C	Filter cutoff
Knob D	Envelope: decay
SW4	Impact off

100 Twangy Guitar

MW	vibrato depth
Knob C	Filter cutoff
SW2	Envelope: decay
Knob D	EQ gain
SW4	Alternative attack

101 Chr Elec & Mute

MW	vibrato depth
Knob C	Filter cutoff
SW2	Envelope: decay Alternative attack; disables thump layer
Knob D	Impact
SW4	Adds Mute layers

102 Comp Chr E Gtr

MW	vibrato depth
Knob C	Filter cutoff
SW2	Muted Guitar (envelope: decay)
Knob D	Impact

103 Trashed Tubes

MW	vibrato depth
Mpressure (32)	Fade-in feedback
Knob C	Distortion amount
Knob D	Filter cutoff

104 Gimme The Finger

MW	vibrato depth and ride cymbal vol
Mpressure (32)	Vibrato depth
Knob C	Filter cutoff
SW2	Impact
Knob D	Envelope: attack rate
SW4	Adds Ride Cymbal

105 Bright E Bass

MW	vibrato depth
Mpressure (32)	Pitch bend
Knob C	Timbre: more low end
SW2	Alternative attack
Knob D	Vibrato rate

106 Bright A Bass

MW	vibrato depth
Mpressure (32)	Pitch bend
Knob C	Less Body, more tacky
Knob D	Vibrato rate
SW4	Enable Vtrig Percussion layer

107 Triangle Bass

MW	vibrato depth
Mpressure (32)	Vibrato
Knob C	Cutoff frequency: deeper
SW2	Envelope: release rate
Knob D	Vibrato rate

108 Yow Bass

MW	vibrato depth
Mpressure (32)	Vibrato depth/rate
Knob C	Filter cutoff
SW2	Envelope: release rate
Knob D	Resonance
SW4	Adds octave layer

109 Mono Synth Bass

MW	vibrato depth
Mpressure (32)	Vibrato depth/rate
Knob C	Filter cutoff
SW2	Envelope: release rate
Knob D	Resonance
SW4	Adds octave layer

110 400 HP Bass

MW	vibrato depth
Mpressure (32)	Vibrato depth
Knob C	Filter cutoff
SW2	Transpose one layer down an octave
Knob D	Resonance
SW4	Mutes layer

111 Base in Face

MW	vibrato depth
Mpressure (32)	Vibrato depth
Knob C	Filter cutoff
SW2	Layer 1 in 5ths
Knob D	Resonance
SW4	Transpose Layer 3 down an octave

112 Radio Kings/Rods

Knob C	Timbre
SW2	Envelope control
Knob D	Pitch control
SW4	Alternative attack

113 Ripper Kit/Vinyl

Knob C	Shaper; timbre
SW2	Envelope control
Knob D	Pitch control
SW4	Alternative attack

114 LA Drums/Brk Bt.

Knob C	Timbre
SW2	Envelope control
Knob D	Pitch control
SW4	Alternative attack

115 Compact/Raw Kit

Knob C	Shaper; timbre
SW2	Envelope control
Knob D	Pitch control
SW4	Alternative attack

116 TubeTraps/lb.der

Knob C	Shaper; timbre
SW2	Envelope control
Knob D	Pitch control
SW4	Alternative attack

117 Acoustic/HIPKit

Knob C	Shaper; timbre
SW2	Envelope control
Knob D	Pitch control
SW4	Alternative attack

118 Dirt/Triphop Kit

Knob C	Timbre
SW2	Envelope control
Knob D	Pitch control
SW4	Alternative attack

119 SumPumpKit MWsus

MW	Drone layer
Mpressure (32)	Drone layer
Knob C	Timbre
SW2	Envelope control
Knob D	Pitch control
SW4	Alternative attack

120 Marimba

MW	Alternative attack
Knob C	Timbre: duller
Knob D	Vol Adjust for attack layer
SW4	Enables attack layer

121 Milky Way Vibes

MW	Tremolo depth
Knob C	Tremolo rate
SW2	Switches layers
SW4	Alternative attack

122 Percussionist

MW	Alternative attack
Knob C	Timbre
SW2	Disables layer
SW4	Damps, disables layer

123 Carnival

MW	Alternative attack
Knob C	Timbre
SW2	Octave transpose: 2 Layers
Knob D	Muted, faster decay
SW4	Disables layer

124 Primitive Perc

MW	Alternative attack
Knob C	Different attack for some instruments
SW2	Disables layer
SW4	Disables layer

125 Bunch of Perc

MW	Alternative attack
Mpressure (32)	Pitch bend with Sostenuto or Knob D
Knob C	Pitch change
SW2	Disables layer
Knob D	Enables MPressure pitch bend
SW4	Damps, disables layer
FtSW2	Enables MPressure pitch bend

126 Perc Party

MW	Alternative attack
Mpressure (32)	Pitch bend with Knob D
Knob C	Transpose 2 Layers; timbre
SW2	Disables layer
Knob D	Enables MPressure pitch bend
SW4	Decreases Volume on 1 layer
FtSW2	Enables MPressure pitch bend

127 Perc Circle

MW	Alternative attack
Mpressure (32)	Pitch bend with Sostenuto or Knob D
Knob C	Pitch Change in 1 layer
SW2	Disables layer CID
Knob D	Enables MPressure pitch bend
SW4	Disables layer
FtSW2	Enables MPressure pitch bend

Program Information

Controller Assignments

Orchestra (Bank 2)

000 Fast Violin prs

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

001 Med Violin vib

This program has no specific controller assignments.

002 Slow Violin pv

MW	Increases vibrato rate and depth
Mpress	Increases vibrato rate and depth

003 Fast Viola prs

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

004 Med Viola prs

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

005 Slow Viola pv

MW	Increases vibrato rate and depth
Mpress	Increases vibrato rate and depth

006 Fast Cello prs

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

007 Med Cello p/v

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

008 Slow Cello vib

FtSw 2	Increases release time
--------	------------------------

009 Studio Cello

SW2	Slightly darker timbre
MW	Vibrato

010 Studio Bass

MW	Vibrato
Mpress	Vibrato

011 Recital Bass

Knob D	Timbre control: slightly brighter
SW4	Enables Layer 2 (body resonance)
MW	Vibrato
Mpress	Vibrato

012 Slow Bass prs

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

013 Slow Bass vib

FtSw 2	Increases release time
--------	------------------------

014 Slow String Orch

MW	Controls expression
Mpress	Controls expression

015 Studio Strings

MW	Controls expression
Mpress	Controls expression

016 Chamber Strings

Knob D	Controls volume of Layer 3 (string section)
MW	Controls expression
Mpress	Controls expression

017 Baroque Strings

Knob C	Controls filter
Knob D	Controls volume of Layer 3 (string section)

018 Intense Strings

Knob C	Amplitude control for Tremolo layer
Knob D	Increases tremolo sustain
MW	Amplitude control for Layer 2 (sustaining strings)

019 Staccato Strings

Knob C	Controls attack envelope when MIDI 12 or Soft pedal is ON
Knob D	Controls decay rate of velocity-triggered tremolo layer
MW	Amplitude control for Layer 1 (tremolo)
VTrig	Triggers tremolo at forte when MIDI 13 is ON

020 Fast Tremolando

SW4	Selects a Sfpzpp version of the program
MW	Controls swell

021 Med Tremolando

MW	Controls swell
Mpress	Controls swell

022 Slow Tremolando

SW4	Selects a lighter version of the program
MW	Controls expression
Mpress	Controls expression

023 VTrig Tremolando

MW	Controls expression
Mpress	Controls expression
VTrig	Changes strings to sfz tremolando at fortissimo

024 Full Pizzicato

Knob D	Shortens decay time
SW4	Enables octave doubled layer

025 Medium Pizzicato

Knob D	Shortens decay time
SW4	Enables octave doubled layer

026 Dry Pizzicato

Knob D	Shortens decay time
SW4	Enables octave doubled layer

027 Solo Flute prs

Knob C	Adds brightness
Knob D	Shortens attack time
MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

028 Solo Flute vib

Knob C	Adds brightness
Knob D	Shortens attack time

029 sfz Ens Flute

MW	Vibrato swell
Mpress	Vibrato swell
Attack Velocity	Controls articulation

030 Solo Oboe

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

031 Slow Oboe

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

Program Information

Controller Assignments

032 Ensemble Oboe

MW	Swell
Mpress	Swell

033 Solo Eng Hrn prs

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

034 English Horn vib

This program has no specific controller assignments.

035 Slow EngHorn prs

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

036 Solo Clarinet

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

037 Slow Clarinet

MW	Vibrato rate and depth; swell
Mpress	Vibrato rate and depth; swell

038 Ens Clarinet

MW	Vibrato swell
Mpress	Vibrato swell

039 Solo Bassoon

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

040 Solo Bassoon vib

MW	Swell
Mpress	Swell

041 Ens BassoonOboe

MW	Vibrato swell
Mpress	Vibrato swell

042 Solo Dbl Reeds

Mpress	Vibrato rate and depth
Knob C	Fades and
Knob D	Slows attack

043 Soft Trumpet

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

044 Slow Soft Trp

MW	Vibrato rate and depth; swell
Mpress	Vibrato rate and depth; swell

045 Hard Trumpet

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

046 Slo Hard Trumpet

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

047 Slow Horn & Trp

Mpress	Vibrato rate and depth
--------	------------------------

048 Solo Fr Horn

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

049 Ensemble Fr Horn

MW	Vibrato swell
Mpress	Vibrato swell

050 Fr Horn Sect 1

MW	Swell
Mpress	Swell

051 Fr Horn Sect 2

MW	Slight swell
Mpress	Slight swell

052 Horn Section

MW	Slight swell
----	--------------

053 Solo Trombone

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

054 Ensemble Bone

MW	Vibrato swell
Mpress	Vibrato swell

055 Solo Tuba

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

056 sfz Orch Tuba

MW	Swell
Mpress	Swell

057 Jazz Harmon Trp

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

058 Ballad Harmon Trp

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

059 sfz SoftTrp Sect

MW	Putting Mod Wheel partway t changes articulation
Mpress	Controls expression

060 St Jazz Brass sw

SW4	Selects a Sfz/pp version of the program
MW	Controls expression
Mpress	Controls expression

061 sfz Jazz Brass

MW	Brightens
Mpress	Brightens

062 Stereo Brass sw

SW4	Selects a Sfzpp version of the program
MW	Controls expression
Mpress	Controls expression

063 Solo Sax

MW	Vibrato rate and depth
Mpress	Vibrato rate and depth

064 Stolen Moments

MW	Controls expression
Mpress	Controls expression

065 Harmon Band

SW4	Disables harmon trumpet at sax sections
MW	Controls expression
Mpress	Controls expression

066 Slow Dyn Orch

MW	Controls expression
Mpress	Controls expression

067 Fast Dyn Orch

MW	Controls expression
Mpress	Controls expression
VTrig	Triggers timpani, C 2–G 3

068 Total Orch 1

Knob C	Volume of strings layer
Knob D	Shortens decay/release time for strings (envelope control)
SW2	Disables reeds in Layer 1 and brass
MW	Vibrato control to 0 for reeds layer
VTrig	Enables Brass
Entry Values	MIDI 6 = 127; MIDI 13 = 40
Mpress	Slight swell of reeds

Program Information

Controller Assignments

069 Total Orch 2

Knob C	Volume of strings layer
Knob D	Envelope swell for strings (envelope control)
SW2	Disables clarinet (Layer1); disables flute (Layer 1); disables timpani and percussion
MW	Vibrato control to 0 for winds
Entry Values	MIDI 6 = 127; MIDI 13 = 40
VTrig	Enables timpani and percussion, A 0–G 3

070 sfz Orch prs

MW	Controls swell
Mpress	Controls swell
FtSw 2	Disables brass
VTrig	Triggers timpani at mezzoforte, cymbals at fortissimo, B 1–G 3

071 Winds & ChmbStr

MW	Controls expression
Mpress	Controls expression

072 Winds & Strings

MW	Controls expression
Mpress	Controls expression

073 Horns & Strings

This program has no specific controller assignments.

074 Woodwind Section

MW	Controls swell
Mpress	Controls swell

075 Reeds & Bells

MW	Controls swell
Mpress	Controls swell

076 Pizz & Timp

VTrig	Triggers timpani at mezzoforte
-------	--------------------------------

077 Cathedral Choir

Knob C	Lowers filter
Knob D	Lengthens attack significantly

078 Aah Choir prs

MW	Controls swell
Mpress	Controls swell

079 Mixed Choir

MW	Changes timbre
Knob D	Envelope control: slows attack
Mpress	Controls filter and amplitude Disables layers 1 and 2 (full choir)

080 Choir from Above

This program has no specific controller assignments.

081 DivineInterventn

SW4	Disables chimes
MW	Controls expression
Mpress	Controls expression

082 Chapel Organ

SW4	Adds a bank of reeds
-----	----------------------

083 Cathedral Organ

SW4	Solos a set of flute pipes
-----	----------------------------

084 Pipes 16'8',reed

SW4	Adds a bank of reeds
-----	----------------------

085 Full Pipes

SW4	Solos a set of flute pipes
-----	----------------------------

086 Orch Harp

SW4	Selects between Upward gliss and arpeggio samples in lowest octave
-----	--

087 Stereo Solo Harp

SW4	Adds delay
-----	------------

088 Harp Oasis

Knob C	Pitchslide down an octave in delayed harp layer
Knob D	Timbre control: slightly darker
SW2	Alt start
SW4	Enables delayed harp layer
MW	Controls delay rate of second harp layer when MIDI 29 is ON
Entry Values	MIDI 29 = 127; MW

089 Under Harp

Knob C	Moves filter cutoff
MW	Adds filter modulation

090 Classical Guitar

Release velocity	Controls finger artifact on note release
------------------	--

091 Silky Nylons

SW2	Alt start
MW	Slightly softer

092 Romantic Nylon

Knob C	Pitchslide up an octave in layer 3 (nylon string gtr)
Knob D	Pitchslide up an octave in Layer 2 (delayed harp)
SW2	Alt attack of Layer 3 (nylon string gtr)
SW4	Enables delayed harp
MW	Controls delay rate of harp layer when MIDI 29 is ON
Entry Values	MIDI 13 = 127; MIDI 29 = 127; MW= 8

093 Mando-Lute

SW2	disables Layer 1 (Nylon String Gtr)
-----	-------------------------------------

094 Orch Chimes

Knob D	Shortens decay time
--------	---------------------

095 Stereo Chimes

Knob D	Shortens decay time
--------	---------------------

096 Chime Bell

Knob C	Pitchslide up an octave in Layer 1
Knob D	Envelope control: faster decay
SW2	Alt start
SW4	Disables Layers 2 and 3
MW	LFO rate control to 0

097 ChimesGlock

Knob D	Envelope control: shortens decay
--------	----------------------------------

098 Glockenspiel

Knob C	Timbre control: duller
Knob D	Envelope control: quicker decay and release
SW2	Alt start
SW4	Enables Layer 3, sine layer for more body.
MW	Pitchslide down two octaves
FtSw1 (Sustain, 64)	Enables reverse trigger rolling when MIDI 12 is ON
Entry Values	MIDI 12 = 127

099 Orch Celeste

Knob C	Brightens
Knob D	Shortens decay time
MW	Adds tremolo

100 Xylophone

Knob C	Timbre control: duller
Knob D	Envelope control: quicker decay and release
SW2	Alt attack
SW4	Enables Marimba layer
MW	Slight delay for Marimba layer when MIDI 29 is ON
FtSw1 (Sustain, 64)	Enables reverse trigger rolling when MIDI 12 is ON
Entry Values	MIDI 12 = 127

Program Information

Controller Assignments

101 Orch Percussion

Knob C	Pitchslide up 850ct
Knob D	Pitchslide down 850ct
SW2	Alt start
SW4	Brighter soft attack of sustained cymbal
MW	Amplitude control
FtSw1 (Sustain, 64)	Opens up VTrig Crash envelope for an Open Crash sound.
Entry Values	MIDI 12 = 127; MIDI 29 = 127

102 Orch Timpani

Knob C	Brightens
--------	-----------

103 Solo Timpani

Knob C	Envelope control: shorter release
Knob D	Envelope control: longer release
SW2	Alt start
SW4	Enables pitchbend for Mpress
Entry Values	MIDI 12 = 127

104 Dynamic Timpani

Knob C	Envelope control: shorter release
Knob D	Envelope control: longer release
SW2	Alt start

105 Temple Blocks

This program has no specific controller assignments.

106 Stereo Tam-tam

Knob C	Moves filter cutoff
MW	Adds filter modulation

107 Trap Set

Knob C	Controls filter
Knob D	Pitch control
SW2	Controls decay
SW4	Alt Start
Mpress	Controls amplitude of long brush stir G 3) and C# 4

108 Modern Blockage

Knob C	Pitchslide up two octaves in Layer 3
Knob D	Pitchslide down 600ct in Layer 1
SW2	Alt start

109 Beaty Drum

Knob D	Pitch control (not all layers)
SW2	Controls decay

110 Cage's Ensemble

This program has no specific controller assignments.

111 New Touch Perc

This program has no specific controller assignments.

112 Perc & Blocks

This program has no specific controller assignments.

113 Puppet Show Perc

Knob C	Pitchslide up an octave in Layer 3
Knob D	Pitchslide up an octave in Layer 4
SW2	Alt start
SW4	Enables Layer 2
Entry Values	MIDI 29 = 127

114 Pop Can Perc

Knob C	Pitchslide up an octave in Layer 1
Knob D	Envelope control: drier
SW2	Alt start
SW4	Disables Layer 1
Entry Values	MIDI 12 = 127

115 Onklungy Perc

Knob C	Pitchslide up an octave in Layer 3
Knob D	Envelope control: drier
SW2	Enables Layer 4 filtersnap
SW4	Disables Layer 1
MW	Disables Temple Block layer
Entry Values	MIDI 13 = 25

116 Skullophones

Knob C	Pitchslide up an octave in Layer 2
Knob D	Pitchslide up 1600ct in Layer 3
SW2	Disables Layer 2
SW4	Enables Layer3; disables Layer 4
MW	Alt attack
Entry Values	MIDI 29 = 127

117 Exotic Mallets

SW4	Solos bell
-----	------------

118 Acoustic Mbira

Knob D	Shortens decay time
--------	---------------------

119 St Elec Mbira

Knob D	Shortens decay time
--------	---------------------

120 Perc Harp

This program has no specific controller assignments.

121 Pluck & Block

This program has no specific controller assignments.

122 Hybrid Pluck

SW4	Adds delayed attack
-----	---------------------

123 BellsMark Tree

Knob C	Pitchslide up an octave in Layers 2 and 3
Knob D	Pitchslide up an octave in Layers 1 and 4
SW2	Envelope control: slow attack
SW4	Disables Layer 2
MW	LFO rate control to 0

124 Circus Glitter

Knob C	Pitchslide up two octaves in sine layer
Knob D	Envelope control: quicker decayrelease
SW2	Alt attack
SW4	Enables triangle layer
MW	Pitchslide up an octave in glockenspiel layer
Entry Values	MIDI 29 = 127

125 Swing'n Chimes

Knob C	Pitchslide up two octaves in Layer 1, up an octave in Layer 2
Knob D	Pitchslide up two octaves in Layer 3
SW2	Envelope control: slow attack
SW4	Disables chimes layer
MW	LFO rate control to 0

126 Crystal Lagoon

Knob C	Pitchslide up 700ct in Glockenspiel layer
Knob D	Envelope control: quicker decay release
SW2	Transposes Layers 1 and 2 down two octaves
SW4	Disables glockenspiel layer
MW	Detunes
Entry Values	MIDI 13 = 40; MIDI 9 = 127

127 Clang Clang

Knob C	Brightens
--------	-----------

Controllers for GM Programs (Bank 4)

Category	ID	Sound Name	Mod Wheel (MIDI 1)	Other Controllers
Piano	000	Grand Piano		
	001	Bright Grand		
	002	Electric Grand	Tremolo	
	003	Honky Tonk Piano		
	004	Elec Piano 1	Tremolo	
	005	Elec Piano 2		
	006	GM Harpsichord		
Chromatic	007	Clavinet	Tremolo	
	008	GM Celesta		
	009	Glockenspiel		
	010	Music Box	Vibrato	
	011	Vibraphone	Tremolo	
	012	Marimba		
	013	Xylophone		
	014	Tubular Bells		
Organ	015	Dulcimer		
	016	Drawbar Organ	Rotary Speed	
	017	Percussion Organ	Rotary Speed	
	018	Rock Organ	Rotary Speed	
	019	Church Organ	Vibrato	
	020	Reed Organ	Tremolo	
	021	GM Accordion	Vibrato	
	022	Harmonica	Vibrato	
Guitar	023	Bandoneon	Tremolo	
	024	Nylon Guitar	Vibrato	
	025	Steel String Gtr	Vibrato	
	026	Jazz Guitar	Vibrato	
	027	Clean Elec Guitar	Vibrato	
	028	Muted Guitar	Vibrato	
	029	Overdrive Guitar	Vibrato	
	030	Distortion Guitar	Vibrato	
	031	Guitar Harmonics	Vibrato	

Category	ID	Sound Name	Mod Wheel (MIDI 1)	Other Controllers
Bass	032	Acoustic Bass	Vibrato	
	033	Finger Bass	Vibrato	
	034	Picked Bass	Vibrato	
	035	Fretless Bass	Vibrato	
	036	Slap Bass 1	Vibrato	
	037	Slap Bass 2	Vibrato	
	038	Synth Bass 1	Vibrato	
	039	Synth Bass 2	Vibrato	
Strings	040	Violin	Vibrato	
	041	Viola	Vibrato	
	042	Cello	Vibrato	
	043	Contrabass	Vibrato	
	044	Tremolo Strings		
	045	Pizzicato Strings		
	046	Harp	Vibrato	
	047	Timpani		
Ensembles	048	Ensemble Strings	Vibrato	
	049	GM Slow Strings	Vibrato	
	050	Synth Strings 1	Vibrato	
	051	Synth Strings 2	Vibrato	
	052	Choir Aahs	Vibrato	
	053	Voice Oohs	Vibrato	
	054	Synth Vox	Vibrato	
	055	Orchestra Hit		
Brass	056	Trumpet	Vibrato	
	057	Trombone	Vibrato	
	058	Tuba	Vibrato	
	059	Muted Trumpet	Vibrato	
	060	French Horn	Vibrato	
	061	Brass Section	Vibrato	
	062	Synth Brass 1	Vibrato	
	063	Synth Brass 2	Vibrato	
Reed	064	Soprano Sax	Vibrato	
	065	Alto Sax	Vibrato	
	066	Tenor Sax	Vibrato	
	067	Baritone Sax	Vibrato	
	068	Oboe	Vibrato	
	069	English Horn	Vibrato	
	070	Bassoon	Vibrato	
	071	Clarinet	Vibrato	

Program Information

Controller Assignments

Category	ID	Sound Name	Mod Wheel (MIDI 1)	Other Controllers
Pipe	072	Piccolo	Vibrato	
	073	Flute	Vibrato	
	074	Recorder	Vibrato	
	075	Pan Flute	Vibrato	
	076	Bottle Blow	Vibrato	
	077	Shakuhachi	Vibrato	
	078	Whistle	Vibrato	
	079	Ocarina	Vibrato	
Synth Lead	080	Square Wave	Vibrato	
	081	Sawtooth Wave	Vibrato	
	082	Synth Calliope	Vibrato	
	083	Chiffer Lead	Vibrato	
	084	Charang	Vibrato	
	085	Solo Vox	Vibrato	
	086	5th Saw Wave	Vibrato	
	087	Bass & Lead	Vibrato	
Synth Pad	088	Fantasia	Vibrato	
	089	Warm Pad	Vibrato	
	090	Polysynth	Vibrato	
	091	Space Voice	Vibrato	
	092	Bowed Glass	Vibrato	
	093	Metal Pad	Vibrato	
	094	Halo Pad	Vibrato	
	095	Sweep Pad	Vibrato	
Synth FX	096	Ice Rain	Vibrato	
	097	Soundtrack	Vibrato	
	098	Crystal	Vibrato	
	099	Atmosphere	Vibrato	
	100	Brightness	Vibrato	
	101	Goblins	Vibrato	
	102	Echo Drops	Vibrato	
	103	Star Theme	Vibrato	
Ethnic	104	Sitar	Vibrato	
	105	Banjo	Vibrato	
	106	Shamisen	Vibrato	
	107	Koto	Vibrato	
	108	Kalimba	Vibrato	
	109	Bagpipe	Vibrato	
	110	Fiddle	Vibrato	
	111	Shanai	Vibrato	

Category	ID	Sound Name	Mod Wheel (MIDI 1)	Other Controllers
Percussion	112	Tinkle Bell	Vibrato	
	113	Agogo	Vibrato	Knob C: Random Pitches
	114	Steel Drums	Vibrato	
	115	Wood Block	Vibrato	Knob C: Random Pitches
	116	Taiko	Vibrato	
	117	Melodic Tom	Vibrato	
	118	Synth Drum	Vibrato	
	119	Reverse Cymbal	Vibrato	
Sound FX	120	Guitar Fret Noise	Vibrato	
	121	Breath Noise	Vibrato	
	122	Seashore	Vibrato	
	123	Bird	Vibrato	
	124	Telephone	Vibrato	Knob C: Switch Phones
	125	Helicopter	Vibrato	
	126	Applause	Vibrato	Knob C: Bravo!
	127	Gunshot	Vibrato	

GM Drum Kits

The eight GM drum kits are stored in Bank 7. Also in Bank 7 is a program called **008 Sine**, which the PC1 uses for some of its internal diagnostic testing.

ID	Name
000	GM Standard Kit
001	GM Room Kit
002	GM Power Kit
003	GM Elec Kit
004	GM Synth Kit
005	GM Jazz Kit
006	GM Brush Kit
007	GM Orch Kit

Index

A

AllNotesOff, 5-31
Alpha wheel, 3-11
Alpha Wheel, 3-10
Applying Effects Globally, 4-17
Assignable Switch Button, 3-5
Assigning Entry Values, 4-14
A-to-B Wet/Dry Mix (Global A>B), 5-25
Audio, 2-3
AutoSplit, 3-16
AutoSplit Key, 3-18
Auxiliary Bend 1, Down (AuxBend1 Dwn), 5-3
Auxiliary Bend 1, Up (AuxBend1 Up), 5-3
Auxiliary Bend 2 Range (AuxBend2 Rng), 5-4
Auxiliary Bend Transmit (AuxBend Xmit), 5-4

B

Bank in Program Menu, 5-4
Bank Mode, 5-5
Bend Range, Cents (BndRng ct), 5-3
Bend Range, Semitones (BndRng ST), 5-3
Boot Block, 3
Bypassing Effects, 3-15

C

Category Select Buttons, 3-9
Clear Setup, 4-10
coaxial plug, 2-2
Controller Value, 5-1

D

Default Setup, 4-10
Deleting Objects, 4-4
Destination (Dest), 5-3
Display, 3-7
Drum Remap, 5-28
Dumping Objects, 4-4
Dumping the Entire Memory, 4-7

E

Edit, 3-8
Edit Region, 3-8
Effect, 3-8, 4-9
Effects, 3-3, 3-13
Effects Change Mode (FX Chg Mode), 5-29
Effects Channel (FX Channel), 5-29
Effects Edit Parameters, 5-22
Effects Routing, 3-14

Entry Transmit, 5-4
Entry Value, 5-13
Entry Volume, 5-12
EQ, 3-3, 3-13
Exit Value, 5-13
External Sequencer, 4-28

F

Finding a Parameter and Changing its Value, 4-2
Front Panel, 3-4
FX Bypass Parameter, 5-24
FX Routing, 5-25
FX Wet/Dry Parameter, 5-24
FX-A Wet/Dry Mix (A), 5-25
FX-B Wet/Dry Mix (B), 5-25

G

General MIDI, 5-27
Glissando, 5-21
GM FX Scale, 5-28

H

headphone jack, 2-3

I

Installing the Battery, 1
Internal Setup, 4-10
Intuitive Entry, 4-6

K

Key Range Menu
 Low and Hi, 5-6
Knobs A - D, 3-4

L

Layer, 3-6
Local Control, 5-25
Local Control Off, 4-28

M

Main Button, 3-6
Master Volume Slider, 3-9
Menu, 3-8
Methods For Naming Objects And Special Characters., 4-3
MIDI, 2-3

Index

- MIDI Master, 2-3
- MIDI Out/Thru, 2-4
- MIDI Slave, 2-3
- MIDI Channel, 5-3
- MIDI Controller Number (Ctrl Num), 5-12
- MIDI Remap Chan, 5-27
- MIDIScope, 5-32
- Minimum Velocity (Min) and Maximum Velocity (Max), 5-11
- Mode Region, 3-8
- Modes, 3-1
- momentary, 3-3
- Music Rack, 1-2, 2-1
- Muting, 3-19

N

- Naming and Storing, 4-2
- Note Map
 - AutoSplit, 5-7
 - AutoSplit Key, 5-7
- Note Map
 - Low and Hi, 5-7

O

- Objects, 3-2
- Options, 1-2
- Output Mode, 5-31
- overlays, 1-2

P

- Panic, 3-8
- Parameter Reference, 3
- Parameters for Current Effects - Variable, 5-22
- Pedals, 1-2, 2-4
- Performance Modes, 3-1
- Performance Region, 3-4
- Physical Controllers, 3-3
- Plus/Minus buttons, 3-10, 3-11
- Power, 2-2
- Preventing Program Changes on Slaves, 4-27
- Program and Setup Organization, 3-11
- Program ID and Name, 5-4
- Program ID Display Format (PNumDisp), 5-5
- Program Mode, 3-1
- Program Name Display Format (PNameDisp), 5-6
- Program Select Buttons, 3-9

Q

- Quick Layers and Splits, 3-16

R

- Recording to a Sequencer While in Setup Mode, 4-29
- Replacing the Battery, 1

- Reset PC1, 5-32
- Resetting the PC1, 5
- Restoring Factory Effects, 4-4
- Ribbon, 2-4
- Ribbon Controller, 1-2
- Ribbon Mode, 5-14
- Ribbon Section Configuration (Ribbon Sect), 5-13
- rubber feet, 2-1
- Running the Diagnostics, 5

S

- Select Program, 3-10
- Select Setup, 3-10
- Selecting Effects, 3-14
- Sending Program Changes Only, 4-26
- Setup Mode, 3-1
- Setup Structure, 4-10
- Short Cuts, 4-6
- Software Upgrades, 3
- Solo, 3-6
- Soloing, 3-19
- Sound ROM Cards, 1-2
- Special Setups, 4-10
- Specifications, 1
- Split, 3-7
- Split Layer, 3-7
- Spring Position (Spring Pos), 5-14
- Spring Switch, 5-14
- SW1, 3-5
- SW2, 3-5
- SW3, 3-5
- SW4, 3-5
- Switch Type (SwType), 5-15
- Switch-Button Priority, 5-16
- Switching Setups with a Pedal, 4-16
- SysEx Dumps, 4-7
- SysEx IDs, 4-7

T

- the Arpeggiator, 4-22
- The Arpeggiator Menu, 5-16
- The Controllers Menu, 5-12
- The Controllers Menu: Continuous Controller Parameters, 5-12
- the Cursor buttons, 3-9
- the Enter/Cancel button, 3-10
- The FX Routing Parameter, 5-22
- The FXA Select Parameter, 5-22
- The FXB Select Parameter, 5-22
- the Global button, 3-9
- The Global Menu, 5-25
- The Internal Setup, 3-2
- the MIDI Recv button, 3-8
- The MIDI Recv Menu, 5-24
- the Program button, 3-8
- the Setup button, 3-8

the summary of controller assignment, 3-6
The Transpose Menu, 5-8
The Velocity Menu, 5-8
the Yes/No button, 3-10
Timbre, 4-8
toggle, 3-3
Touch, 5-26
TransDown, 4-17
Transmit Clock, 5-26
Tuning, 5-30

U

Using Mono Audio Output, 4-21
Using Pressure (Aftertouch) as an Arpeggiator Controller, 4-23
Using the Arpeggiator with a Sequencer or External Controller,
4-24

V

Velocity Curve (Vel Curve), 5-10
Velocity Layering, 4-15
Velocity Mode (Vel Mode), 5-19
Velocity Offset (Vel Offset), 5-9
Velocity Scale (Vel Scale), 5-8
Velocity Switching, 4-15

W

Wet/Dry Mix, 3-15

Z

Zone Enable, 5-16
Zone Region, 3-6