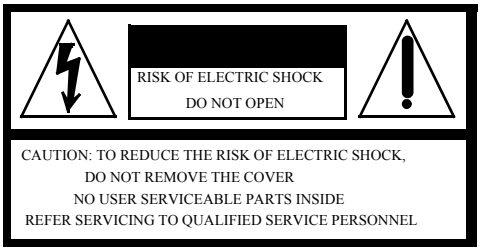
PC3

Musician's Guide v2 Addendum

(includes PC3, PC3X, PC361, and X-Pro)

KURZWEIL®

910532-002 – V2 March 2011



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

   DANGER: Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Do not modify the plug provided with the product - if it will not fit the outlet, have a proper outlet installed by a qualified electrician. Do not use an adaptor which defeats the function of the equipment-grounding conductor. If you are in doubt as to whether the product is properly grounded, check with a qualified serviceman or electrician.
3. **WARNING:** This product is equipped with an AC input voltage selector. The voltage selector has been factory set for the mains supply voltage in the country where this unit was sold. Changing the voltage selector may require the use of a different power supply cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified maintenance personnel.
4. 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.
5. This product should only be used with a stand or cart that is recommended by the manufacturer.
6. 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.
7. The product should be located so that its location or position does not interfere with its proper ventilation.
8. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
9. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
10. 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.
11. 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.
12. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
13. 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.
14. 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.
15. **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 present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

SAVE THESE INSTRUCTIONS

Important Safety Instructions

1) Read these instructions
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any of the ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11) Only use attachments/accessories specified by the manufacturer.
12) Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type (CR2032).
15) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Warning- To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.

To completely disconnect this equipment from the AC Mains, disconnect the power supply cord plug from the AC receptacle.

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www.kurzweil.com

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Chapter 1
Introduction

This addendum contains updated sections for the printed copy of the PC3 Musician's Guide that was included with your PC3. This addendum includes new features which are part of the v2 software update for the PC3 OS, as well as additional information that was not included in your printed copy of the PC3 Musician's Guide. When using the v2 OS, the sections in this addendum should be referenced instead of any similar sections in The PC3 Musician's Guide.

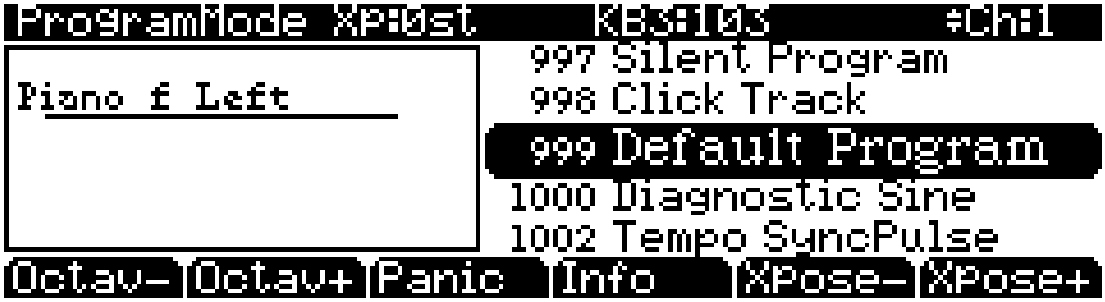
The OS version installed on your PC3 can be viewed on the bottom left of the start-up screen when the PC3 is first turned on. The OS version can also be viewed on the Object screen in Master Mode by pressing the OBJECT soft button (see *OBJECT* on page 7-13 for details.)

You can download the most recent version of the PC3 OS at www.kurzweil.com by going to the Downloads section, then clicking on the PC3 link. For details on installing updates to your PC3, see Appendix B, PC3 Bootloader, in the PC3 Musician's Guide.

You can also download the most recent version of the PC3 Musician's Guide in PDF format at www.kurzweil.com by going to the Downloads section, then clicking on the PC3 link.

Chapter 2
Program Mode

The Program Mode Page



The Soft Buttons in Program Mode

Press the **Info** soft button to see all of the controller assignments of the current program. Scroll down the page using the Alpha Wheel or the **Plus/Minus** buttons. Info text is automatically created when assigning a controller to a parameter within the Program Editor (see *Automatic Info Creation* on page 2-6 for details.)

KB3 Program Structure

There's nothing quite like the sound of the classic Hammond™ B-3 tone wheel organ, especially when played through a Leslie™ rotating speaker system. We've done extensive testing and analysis with several tone wheel organs, and created our own models to emulate the unique tone wheel sound. We even took into account the way that older organs start to sound different (and arguably better) as their capacitors begin to leak—and we included a parameter that lets you vary the amount of grunge (leakage) in your sound.

KB3 programs use oscillators to emulate the tone wheel sound. Each oscillator operates independently, and has its own pitch and amplitude control. You can control how many oscillators are used for a KB3 program. There are two oscillators per voice, for a total of 256. You can use up to 91 of them in a KB3 program (the 92nd is reserved to produce key click). Because the oscillators start running as soon as you select a KB3 program, there are always voices available—unlike VAST programs, which start "stealing" notes when you reach the polyphony limit.

The oscillators—we'll call them tone wheels from here on—are divided into an upper and lower group. The upper tone wheels use the samples in the PC3's keymaps to generate sound, while the lower tone wheels use sine waves. You can change the keymap of a KB3 program's upper tone wheels to produce a large array of sounds. By changing the keymap from sine to a saw wave it is possible to emulate the sound of classic combo organs like the Vox™ and Farfisa™ models.

KB3 programs are also routed through vibrato, rotary speaker, preamp and distortion effects, see below for details.

KB3 Mode

KB3 programs are different enough from VAST programs that we use the term KB3 mode to describe what's going on when you play a KB3 program. Whenever you play a KB3 program, you are in KB3 mode. The blue LED in the KB3 button will light when the current program is a KB3 program.**You can play KB3 programs only on a single channel at a time.**

If you want to create your own KB3 program, start by editing an existing KB3 program.

KB3 Effects And Real-time Controls

You have real-time control over many components of KB3 programs directly from the front panel. The sliders emulate the drawbars that are so essential to the tone wheel sound, while the buttons above them (the Bank Buttons) can control the KB3 effects: Leslie, vibrato, chorus, and percussion. When using a KB3 program in Setup Mode, you must set the *Mutes* parameter to KB3 Control in order to use the Bank buttons for controlling KB3 effects (for details see the *Mutes* parameter in *The COMMON Page* section of the *Setup Mode* chapter in *The PC3 Musician's Guide*.)

Drawbars

One of the standard performance features of many tone wheel organs is the set of drawbars for emulating the stops on a pipe organ. Moving the drawbars controls the amplitude of either the fundamentals or the harmonics of the notes. The PC3's sliders serve as the nine drawbars found on most tone wheel organs. Pushing the sliders up is the equivalent of pushing the drawbars in (removing fundamentals or harmonics).

Subharmonics		Fundamental	Harmonics					
16'	5 1/3'	8'	4'	2 2/3'	2'	1 3/5'	1 1/3'	1'
Slider A	Slider B	Slider C	Slider D	Slider E	Slider F	Slider G	Slider H	Slider I

Table 0-1 Standard Drawbar Settings for the Hammond B3

KB3 Mode Effects Buttons (Bank Buttons)

When using a KB3 program, the Bank buttons (above the sliders) control KB3 effects, instead of choosing program banks as they usually do in program mode. The KB3 function is labeled below each button, their LEDs indicate the status of the various effects for the current KB3 program. This status is saved as part of each program. You can change the effects in real time by pressing the buttons.

The KB3 effects return to their programmed settings the next time you select the program. If, however, you're in the Program Editor when you change the effects, you're actually editing the program. *(Each effect also has a corresponding parameter in the Program Editor, see the table below.)* If you like the changes, you can save the program with the new KB3 effects settings. If you don't like the changes, you can exit without saving, and the program will revert to its previous settings.

In KB3 mode the Bank buttons also respond to and send MIDI Controller messages. See Table 0-3 on page 2-4 for details.

Effect Category	Button Name	LED Color (relative to button name/ state)	Corresponding Page and Parameter	Comments
Rotary	Fast / Slow	red/green	MISC: SpeedCtl	
Vibrato	On / Off	red/off	MISC: VibChorCtl	
	Chorus / Vibrato	red/green	MISC: VibChorSel	Disabled if Button 2 is off
	Depth 1 / 2 / 3	green/orange/red	MISC: VibChorSel	Disabled if Button 2 is off
Percussion	On / Off	red/off	PERC: Percussion	
	Volume Loud / Soft	red/green	PERC: Volume	Disabled if Button 5 is off
	Decay Fast / Slow	red/green	PERC: Decay	Disabled if Button 5 is off
	Pitch High / Low	red/green	PERC: Harmonic	Disabled if Button 5 is off

Table 0-2 KB3 Mode Effects Buttons and Corresponding Parameters

Additional Controller Assignments In KB3 Mode

Other default assignments for factory KB3 programs include:

CC Pedal 1 (volume) controls **preamp volume**, which emulates the volume control of an organ preamp. The PreampResp parameter must be set to On for this to work (the default setting.) For details see the *PreampResp* parameter in *The MISC Page* section of the *Program Mode* chapter in *The PC3 Musician's Guide*.

The **Mod Wheel** controls **Distortion Drive**.

Switch Pedal 1 (sustain) controls the **SpeedCtl** parameter, which toggles the Rotary speed between slow or fast. (For details see the *SpeedCtl* parameter in *The MISC Page* section of the *Program Mode* chapter in *The PC3 Musician's Guide*.) This has the same effect as using Bank Button 1 (labeled Rotary Fast/Slow.)

MIDI Control of KB3 Programs

Controller Numbers

Table 0-3 lists the MIDI Controller numbers that control KB3 features. Send the listed controller number and appropriate controller value to control each KB3 feature via MIDI. The PC3 also sends these Controller numbers to its MIDI Out port when using each of these KB3 features.

KB3 Program Feature	MIDI Controller Number	Values	
Distortion Drive (Mod Wheel)	1	0 = Minimum Distortion Drive. 127 = Maximum Distortion Drive. Values between 0 and 127 scale between minimum and maximum Distortion Drive.	
Preamp Volume (Volume/Expression Pedal)	11	0 = Minimum Preamp volume. 127 = Maximum Preamp volume. Values between 0 and 127 scale between minimum and maximum volume.	
Drawbar1	6	With **Steps** parameter set to **(0-8)** (See *The DRAWBARS page* in the KB3 Editor)	With **Steps** parameter set to **(0-127)** (See *The DRAWBARS page* in the KB3 Editor)
Drawbar2	13		
Drawbar3	22		
Drawbar4	23		
Drawbar5	24		
Drawbar6	25	0-13 = volume 8 14-27 = volume 7 28-41 = volume 6 42-55 = volume 5 56-70 = volume 4 71-84 = volume 3 85-98 = volume 2 99-112 = volume 1 113-127 = volume 0	**127** = minimum volume. **0** = maximum volume. Values between 127 and 0 scale between minimum and maximum volume.
Drawbar7	26		
Drawbar8	27		
Drawbar9	28		
Rotating Speaker Fast/Slow	68	64-127 = Fast, 0-63 = Slow	
Chorus/Vibrato On/Off	95	64-127 = On, 0-63 = Off	
Chorus/Vibrato Selector and Chorus/Vibrato Depth	93	54-71 = select chorus with depth 1 72-89 = select chorus with depth 2 90-127 = select chorus with depth 3 0-17 = select vibrato with depth 1 18-35 = select vibrato with depth 2 36-53 = select vibrato with depth 3	
Percussion On/Off	73	64-127 = On, 0-63 = Off	
Percussion Loud/Soft	71	64-127 = Loud, 0-63 = Soft	
Percussion Decay Fast/Slow	70	64-127 = Fast, 0-63 = Slow	
Percussion Pitch High/Low	72	64-127 = High, 0-63 = Low	
Key Click Level	89	0 = -96 dB. 127 = Maximum Key Click Level set in Editor. Values between 0 and 127 scale between -96 dB and maximum Key Click Level.	
Leakage Level	90	0 = -96 dB. 127 = 0 dB. Values between 0 and 127 scale between -96 dB and 0 dB.	

Table 0-3 KB3 MIDI Controller Assignments

Editing VAST Programs

The COMMON Page

Portamento

This parameter is either on or off. The default value of **Off** means that portamento is disabled for the current program.

Portamento is a glide between pitches. On actual acoustic instruments like violin and bass, it's achieved by sliding a finger along a vibrating string. On most keyboards that offer portamento, it's achieved by holding down a key that triggers the starting note, then striking and releasing other keys. The pitch glides toward the most recently triggered note, and remains at that pitch as long as the note remains on. The PC3 gives you two ways to get portamento. See the Attack Portamento parameter below.

When applying portamento to multi-sampled sounds (Acoustic Guitar, for example), the PC3 will play more than one sample root as the pitch glides from the starting pitch to the ending pitch. This may cause a small click at each sample root transition. You can eliminate clicks by using the Mono Sample XFade parameter (see below.)

Attack Portamento

This parameter toggles between two types of portamento. When set to **On**, the PC3 remembers the starting pitch so you don't have to hold a note on to achieve portamento. The pitch always glides to each new note from the previously triggered note. When set to **Off**, the pitch will glide to the most recently triggered note only when the previous note is still on (in other words, you must use legato fingering).

Mono Sample XFade

When applying portamento to multi-sampled sounds (Acoustic Guitar, for example), the PC3 will play more than one sample root as the pitch glides from the starting pitch to the ending pitch. This may cause a small click at each sample root transition. You can eliminate clicks by setting the Mono Sample XFade parameter to **On**. When the Mono Sample XFade parameter is set to **On**, the PC3 performs a crossfade at each sample root transition to eliminate clicks.

The Program FX (PROGFX) Page

Output

Each **Output** parameter specifies the rear panel analog output to which the bus on the same line (Insert, Aux1, or Aux2) is routed. (The Output setting for Insert determines the output destination of the main program signal, even if no insert effects are used.) Setting the Output to **Main** routes the signal of the selected bus to the main outputs. Setting the Output to **Sec.** routes the signal of the selected bus to the auxiliary outputs.

INFO

Press the INFO soft button to go to the INFO page where you can edit the controller assignment info for the current program. On the INFO page, use the **Chan/Layer** buttons to scroll through the current program's list of controller assignment info. Each assignment info entry has a MIDI controller number and a Text parameter to describe what the assignment controls. One info entry can be made for each MIDI CC number.

To edit the text of a controller assignment, press the **Text** soft button. To create a new controller assignment info entry, press the **New** soft button (you will be prompted for a MIDI controller number.) To create a new controller assignment info entry with the same text as the current info entry, press the **Dup** soft button (you will be prompted for a new MIDI controller number, only one info entry can be made for each MIDI CC number.) To delete the current controller assignment info entry, press the **Delete** soft button (you will be prompted to confirm or cancel.) To return to the program editor press the **Done** soft button or the **Exit** button. See *Export* on page 9-2 for details on exporting program info.

Automatic Info Creation

Note: The following does not apply to controller assignments made for effects within the Chains editor. Info text for Chains must be manually created using the INFO page in the Chains Editor.

When assigning a controller to a parameter on any of the Program Editor pages, an Info text entry is automatically created. Info text allows you to view controller assignments from the Program Mode main page by pressing the **Info** soft button. If the Display parameter is set to Ctls on the Master Mode MAIN page, controllers with info text will show the info on the left side of the Program Mode main page when moved (see *Display* on page 7-3 for details.)

When assigning a controller to a parameter on any of the Program Editor pages, an **i** appears on the top line of the page to indicate that Info text has been created. If you return the controller assignment to **OFF**, the **i** disappears, indicating that the Info text has been removed (unless you have gone to the INFO page, see note below.) The automatically created info will use the parameter name for the Info text. To rename the Info text, press the Edit button while the controller assignment field is still selected. This will bring you to the Info Editor page (see above) and the Info entry for the assigned controller. From the Info Editor page, press the Exit button to return to the page where you made the controller assignment.

Note: After assigning a controller to parameter, if you go to the INFO page, the Info text entries for each controller assignment will remain set unless you remove them with the Delete soft button on the INFO page. If you change the controller assignment for a parameter after going to the INFO page, the parameter's last Info text entry will remain in addition to the newer Info text entry automatically made for the controller assignment. This is done a to ensure that user renamed Info text does not get deleted if a controller assignment was accidentally changed while editing the program. To remove an unused Info text entry, locate the entry on the INFO page and use the Delete soft button.

Editing VAST Programs With KVA Oscillators

Setting KVA Oscillator Type

The PC3 comes with 22 different KVA oscillators. There are 11 high quality anti-aliased oscillators (free of digital artifacts,) and 11 oscillators that exhibit some aliasing (digital artifacts) in the higher octaves. The anti-aliased oscillators use up more DSP resources than the ones with aliasing, but the improvement in sound quality is quite noticeable. We strongly recommend using the anti-aliased oscillators for most applications.

The tables below list KVA oscillators by type and function block size. Before setting an oscillator, you must choose an algorithm which includes a block that matches the block size for the oscillator that you wish to use. See *The Algorithm (ALG) Page* and *Algorithm Basics* in The PC3 Musician's Guide for more on selecting algorithms. Once you have picked an algorithm with the desired block size, highlight the block and use the alpha wheel to scroll through the available functions until you find the desired oscillator.

The **SYNC SQUARE** oscillator is an 8 block oscillator that requires the use of two layers (4 blocks each) and the Alt Input feature of cascade mode. See The PC3 Musician's Guide for details on setting up the Sync Square oscillator.

Note: *If you put more than one oscillator in an algorithm, you will only hear the output of the last oscillator in the algorithm, unless an algorithm is used to route the earlier oscillator around the last oscillator and into a MIX function block, or if the last oscillator processes its audio input.*

Anti-Aliased Oscillators	
Size	**Name/Type**
1 Block	LPNOIZ (noise + low pass filter)
2 Blocks	SINE
	SINE+
	SAW
	RES NOISE (noise + low pass filter with resonance)
	SQUARE
3 Blocks	PWM (Pulse Width Modulation)
4 Blocks	SYNC SAW
	SUPER SAW
	TRIPLE SAW
8 Blocks	SYNC SQUARE (master) >>, >>SYNC SQUARE (slave) *(4 blocks each)*

Aliased Oscillators	
Size	**Name/Type**
1 Block	SINE
	SAW
	TRI
	SQUARE
	NOISE
	SINE+
	SAW+
	NOISE+
	SW+SHP (Sawtooth + Shaper)
2 Blocks	SHAPED SAW
	PWM (Pulse Width Modulation)

Advanced Use Of KVA Oscillators

Oscillator Specific Control And Modulation Parameters:

Several KVA oscillators also have their own modulation parameters that must be accessed to control the oscillator's intended function. Below is a list of these oscillators and their distinctive parameters, grouped by block size. Though the following parameters could be left at one setting, utilizing one of the DSPCTL or DSPMOD techniques described in the above examples will expose a wider range of expression from each oscillator.

1 Block:

SINE+ ***[Aliased (not recommended)]***

Same as 2 block version, but without the **Sine+Am** parameter.

SAW+ ***[Aliased (not recommended)]***

A saw oscillator that can add an input signal to its output.

NOISE+ ***[Aliased (not recommended)]***

A noise oscillator that can add an input signal to its output.

Editing KB3 Programs

The MISC Page

LeakMode

Selects between different leakage models, determining which leakage harmonics are emphasized. **TypeA** provides an overall tone wheel leakage, with all tone wheels leaking a small amount. **TypeR, TypeX**, **TypeY**, and **TypeZ** emulate different degrees of drawbar leakage, where the leakage components correspond to the nine drawbars, instead of all the tone wheels.

The OUTPUT Page

Demo Song

The Demo Song parameter allows you to choose the demo song for the current KB3 program. The demo song is a short, pre-programmed song that gives you a demonstration of the program in a musical context. You can play a program's demo song in any page in the Program mode by pressing the **Play/Pause** button, and stop the song by pressing the **Stop** button (both buttons are located under the **MODE** buttons on the front panel).

When on the Program mode main page, you can hear a demo song in whatever program you want by pressing the **Play/Pause** button with one program selected, and then selecting another program.

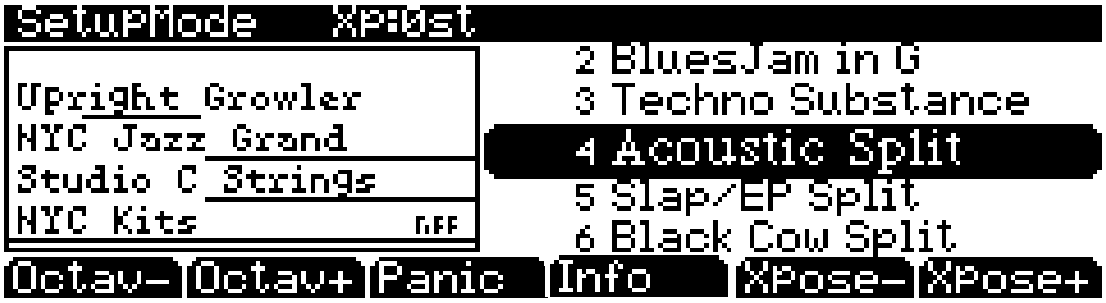
Note: *You can also trigger and stop demo songs with a simultaneous double button press of the up and down cursor buttons.*

Exp Pedal

Use this parameter to set which rear panel CC Pedal input will control volume for the current KB3 program. With a setting of **Expression/Foot**, volume can be controlled by a CC pedal plugged into either the rear panel input labeled *CC Pedal 1 (volume)*, or the rear panel input labeled *CC Pedal 2 (wah)*. With a setting of **Expression**, volume can be controlled by a CC pedal plugged into the rear panel input labeled *CC Pedal 1 (volume).* With a setting of **Foot**, volume can be controlled by a CC pedal plugged into the rear panel input labeled *CC Pedal 2 (wah).* With a setting of **None**, volume control from both CC pedal inputs is disabled.

Chapter 3
Setup Mode

Main Page



Press the **Info** soft button to see a list of all of the controller assignments for all zones of the current setup. On the Info page, use the Alpha Wheel, cursor buttons, or - / + buttons to scroll through the list.

The Setup Editor

The Channel/Program (CH/PROG) Page

Out

Use the **Out** parameter to set the rear panel audio outputs used for each zone of the current Setup. This parameter determines the output settings for the main program signal and insert effects of each zone (for Aux effects output settings, use the Output parameter on the Setup Mode AUX1 or AUX2 pages.)

A setting of **Auto** will make that zone output audio based on the settings for the program used by that zone. Program output settings are set in the Program Editor using the **Output** parameter on the top line of PROG FX page (see *Output* on page 2-5 for details) or the **Output** parameter on the LAYER FX page (see the PC3 Musician's Guide for details.) A setting of **Pri.** (primary) will output track audio to the **MAIN** Balanced Analog Outputs. A setting of **Sec.** (secondary) will output track audio to the **AUX** Balanced Analog Outputs.

Input Channel

In Setup mode, an external MIDI device (such as a keyboard or sequencer) will play notes of a single program by default (if the Local Keyboard Channel parameter is set to off, see page 6-5 for details.) The played program will be on a Zone that has a **Channel** parameter (on the CH/PROG page) which matches the channel on which the external MIDI device is transmitting. *(If no Zone's Channel parameter matches, the external device will play notes of the last program that was using that channel in Program Mode or from a previously loaded Song or Setup.)*

When the Program of a Setup Zone is played from an external MIDI device, Setup MIDI parameters (most noticeably key range and transposition) will not be applied. If you want these parameters applied, set the **Input Channel** parameter to match the channel on which the external MIDI device is transmitting. See the ***Input Channel Settings*** section below for details on setting an Input Channel. *(To play the entire Setup from an external MIDI device, see Local Keyboard Channel (LocalKbdCh)* on page 6-5*.)* When Local Keyboard Channel is set to something other than **Off**, the **Input Channel** parameter has no effect and will appear in parentheses.

Input Channel basically has the same effect as Local Keyboard Channel, except you can choose to play only one or some Setup Zones from an external device, instead of all Zones. To play more than one Zone from an external device, set each desired Zone's **Input Channel** parameter to match the channel on which the external MIDI device is transmitting. It is also possible to use the **Input Channel** parameter to use multiple external devices which each play a specific Zone or Zones. For details on controlling assignments made to the PC3's physical controllers (sliders, switches, mod wheel, etc.) from an external MIDI device when using an Input Channel, see *Continuous Controller Messages From External MIDI Devices* on page 6-6.

Input Channel Settings

When setting a MIDI channel number for the Input Channel parameter, channel 1 for example, you can choose **1 L+M** or **1 M** (scroll past 16 L+M to see all the choices.) A channel number with a setting of **L+M** indicates that the zone will be playable from the PC3 keyboard (L for Local) and from the external MIDI controller (M for MIDI.) A channel number with a setting of **M** indicates that the zone will be playable only from the external MIDI controller, and not from the PC3 keyboard. You can also choose **Any L+M** or **Any M** for the Input Channel setting. **Any L+M** and **Any M** will make the zone receive MIDI on any channel that an external device is transmitting. This is useful if you are using a single external MIDI controller and are not sure which channel it is transmitting on.

Arpeggiator

The **Arpeggiator** parameter determines if the current Zone can be played by an arpeggiator. Normally, the **Arpeggiator** parameter should be set to **On**, and the arpeggiator for each Zone should be turned on or off with the *Active* parameter on the ARPEGGIATOR page for each Zone *(see The ARPEGGIATOR Page* on page 3-6 *for details.)* If the **Arpeggiator** parameter is set to **Off**, the zone will not be arpeggiated even if the *Active* parameter on the ARPEGGIATOR page is set to *On*.

When a global arpeggiator is being used, the **Arpeggiator** parameter can be set to **Off** to exclude a Zone from being played by the global arpeggiator. See *Arpeggiator Global (ArpGlobal)* on page 3-28 for details on setting a global arpeggiator.

Controllers

Continuous Controller Parameters

Entry (Ent) and Exit Values

Entry value allows you to specify an initial value for a controller in a Setup that will be sent whenever you select that Setup. For example, if you want to make sure that all of the modulation for the Program in a Zone is turned off when you select a Setup, use the Setup Editor to assign a physical controller to a destination of MIDI 01 (MWheel) and set Entry Value to **0**. (The Mod Wheel is usually assigned to destination MIDI 01 MWheel, which is used to control a modulation parameter for most Programs.)

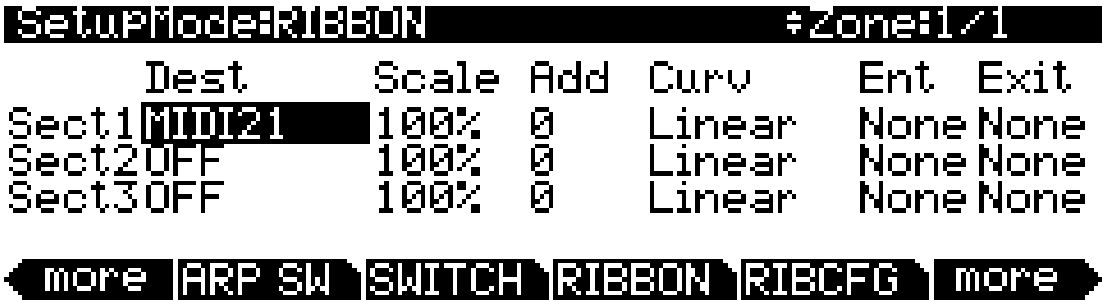
Entry values ignore the current position of the physical controller when the setup is selected. By default, once the Setup is loaded and the entry values have been sent, moving a controller will instantly send new controller values. This can cause a jump in values if the controller happens to be set to a value far from its entry value. To avoid these jumps, change the SetupCtls parameter in Master Mode to **PassEntry** (see *Setup Controllers (SetupCtls)* on page 7-2 for details.) With SetupCtls set to **PassEntry,** moving the controller will have no effect until it moves past its entry value. In this case, continuing the modulation example above, moving the assigned controller won't turn on any modulation until it's pushed all the way *down* (passing entry value 0,) and then up again.

An entry value of **None** is quite different from a value of **0**. **None** means that there will be no initial controller command when the setup is selected, and any subsequent movement of the physical controller will be effective.

Exit Value tells the PC3 to send a value for that controller whenever you leave the setup, either by selecting another setup or by selecting a different mode altogether. It can be very useful when a controller is doing something to the sound, and you don't want that effect to continue after you leave the setup. For example, if you want to make sure a zone's pitch returns to normal whenever you leave a setup, you would set Exit Value to **64** for any controller whose Destination parameter is set to **PitchUp**. Again, **None** means no command is sent.

Note: Programs can also be saved with controller entry values (on the Program Editor CONTROLLERS page.) When a Setup is loaded, entry values for the Programs in the Setup are sent first, followed by the entry values for the Setup. Because of this, if a Setup and a Program used by a Setup have entry values set for the same controller, the entry value for the Setup will be used. If a Program used by a Setup has an entry value set for a controller, but the Setup has an entry value of **None** for the same controller, the entry value from the Program is used.

The RIBBON Page



The RIBBON page lets you define the controller assignment for the PC3's optional ribbon controller. The ribbon controller senses movement when you press on it and move your finger left or right; this creates numerous possibilities for controlling pitch, volume, panning, crossfades between zones, or any other uses you might imagine.

In Program mode the ribbon controls an octave of pitch bend by default. This is because when using the default Control Setup **126 Internal Voices,** the ribbon is set to the destination MIDI21, which controls Aux Bend 1 (for details, see *The Control Setup* and *The BEND Page* in the *Setup Mode* chapter of *The PC3 Musician's Guide*.)

The optional Ribbon controller can be used as a single long controller, or it can be divided into three separate sections, each with its own controller assignments (this is done on the RIBCFG page, see below). The two small arrows above the strip indicate the boundaries of the three sections. The large arrow above the ribbon points to the center of the ribbon, for when the ribbon is configured in one section.

Note that there are three assignable parameter groups on the RIBBON page. When the Ribbon is set to act as a single section controller, the only parameters that affect its behavior are those of Section 1 (Sect1). When the Ribbon is set to act as a three-section controller, each parameter group affects only its respective Ribbon section.

To modify other ribbon parameters, go to the *The Ribbon Configuration (RIBCFG) Page* (for details see *The Ribbon Configuration (RIBCFG) Page* in the *Setup Mode* chapter of *The PC3 Musician's Guide*.)

For details on the The RIBBON page parameters see the *Continuous Controller Parameters* section in the *Setup Mode* chapter of *The PC3 Musician's Guide* .

Note: When used as a one section controller, the ribbon sends two MIDI CC numbers (MSB and LSB in the MIDI spec,) giving the ribbon a resolution of 768 steps, instead of the 128 steps that one MIDI CC provides. This allows the ribbon to have finer control of a parameter compared to other continuous controllers. To take advantage of this, assign the destination for Sect1 to a CC number between 0 and 31, and the ribbon will additionally send to a destination 32 higher than the set destination. For example, MIDI22 would also send to the destination MIDI54. In this case, if you set a Program parameter source field to MIDI22, the parameter will automatically also use MIDI54 as a source, enabling the 768 step resolution when using the one section ribbon. The additional source that is automatically used will not be seen in the Program Editor (this happens behind the scenes,) but both CC numbers will be sent to the MIDI Out and USB port. (Also note, MIDI32 through MIDI63 are not available in the Program parameter source fields, as they are reserved for using CC numbers 0-31 as described above.) When the ribbon is used as a one section controller, if a MIDI CC above 63 is used as the destination for Sect1, only one CC number will be sent and the ribbon will have a resolution of 128 steps. When the ribbon is used as a three section controller, each section will only send one CC number and each section will have a resolution of 128 steps.

The ARPEGGIATOR & ARPEGGIATOR 2 (ARP1, ARP2) Pages

Each zone in a setup has its own Arpeggiator. When activated, each Arpeggiator takes MIDI note input from the PC3 keyboard (or via MIDI) and outputs a rhythmic pattern of MIDI notes. You can control the speed and nature of the pattern in real time. Each Arpeggiator can affect both the PC3 and external MIDI instruments. The notes produced by the Arpeggiator in a given zone go to all of that zone's destinations: local, MIDI, or both. You can also set one zone's arpeggiator to override arpeggiators on other zones using the *Arpeggiator Global (ArpGlobal)* parameter on Setup Mode's COMMON page.

The concept behind the PC3's Arpeggiators is fairly simple, although the options are extensive. You might think of each Arpeggiator 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 the keyboard. You have control over several processing parameters: velocity, order, duration, transposition, orchestration, whether the notes are played simultaneously, 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 when the Arpeggiator is already processing notes.

The arpeggiator also includes step sequencers for note and velocity shifting, allowing you to more precisely control how your MIDI note input is processed. Set the arpeggiator parameters on the ARPEGGIATOR and ARPEGGIATOR2 pages:

The ARPEGGIATOR Page

Note: *In Program Mode, simultaneously press the Arp and SW buttons (above the Wheels) to view the Arpeggiator page for the Contol Setup, which controls arpeggiator settings in Program Mode (for details, see The Control Setup section in the Setup Mode chapter of the PC3 Musician's Guide.)*

Parameter	Range of Values	Default
Active	On/Off	Off
Beats	1/1 (Whole Notes) to 1/384 (96 notes per beat)	1/16 (16th Notes)
Play Order	Played, Upwards, Downwards, UpDown, UpDown Repeat, Random, Shuffle, Walking, Simultaneous	Played
Duration	1% to 100%	100%
Velocity	First, Played, Last, Aftertouch, MIDI 109, Fixed, Pattern *(1-74 factory patterns, user created patterns,)* Human1-4, Chimp1-4, MissNotes1-9	Played
ShiftAmount	± 88 Semitones	0
ShiftLimit	0-60	24
Limit Option	Stop, Reset, Unipolar, Bipolar, Float Res, Float Uni, Float Bip	Unipolar
ShftPattrn (Shift Pattern)	Off, *(1-69 factory patterns, user created patterns)*	Off

Active

The first parameter on the Arpeggiator menu is Active, which specifies whether or not the Arpeggiator is on for the current zone. This parameter can be switched from the ARPEGGIATOR page, or for real-time control, it can be switched on using Controller number 147 (**ArpOn**) and switched off using Controller number 148 (**ArpOff**); these Controllers can, of course, be assigned as the destination of a PC3 physical controller.

Turning Active on affects zones whose ZoneArpeg values are also set to **On**. By setting the ZoneArpeg parameter (on the CH/PRG page) to **Off** or **On** in the individual zones of a setup, you can choose which zones will be controlled by the Arpeggiator when it is on.

Beats

The Beats parameter sets the number of notes per beat. The tempo is based on quarter notes. Therefore, if you set it to **1/4**, you will get one note per beat of the clock. At **1/16**, you will get 4 notes per beat, and so forth. You can go all the way to 96 notes per beat **(1/384)**, but at most tempos, divisions smaller than 1/64 will sound pretty much the same. To find a Beats value, multiply the notes you want per beat by 4. For example, 4 notes per beat (16th notes) would be 4*4=16, a Beats value of 1/16. Three notes per beat (8th note triplets) would be 3*4=12, a Beats value of 1/12. Six notes per beat (16th note triplets) would be 6*4=24, a Beats value of 1/24. Note that when recording arpeggiations to a PC3 MIDI track, you must turn on real-time quantization and set it to the same **Grid** value in order for the selected **Beats** value to sync properly with the tempo grid (see *Quant* and *Grid* on page 12-17 of The PC3 Musician's Guide.)

Play Order

This parameter determines the order in which the PC3 plays arpeggiated notes. **Played** causes them to play back in the chronological order in which you played and latched them. **Upwards** means that notes play in ascending pitch order, regardless of their chronological order. **Downwards** means descending pitch order. **UpDown** causes notes to 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 only play once. **UpDown Repeat** is similar to **UpDown**, except that the notes at the top and bottom play *twice* (repeat) when the Arpeggiator reverses direction.

Random plays the currently latched notes in completely random order. **Shuffle** plays them at random, but keeps track of the notes so that no note repeats until all of the others have played. **Walk** is a "random walk" order: each successive note is either the next or previous note (in chronological order). 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.

Simultaneous makes the Arpeggiator latch each note you play and repeat it in time with the Tempo value, sort of like a digital delay with no decay. If you play a C and hold it while you play an E and a G, the Arpeggiator will play all three notes at the same time and at the same tempo. Simultaneous also works well with Shift and Limit, allowing you to shift multiple notes simultaneously.

Duration

Duration determines how long each arpeggiated note plays. 100% means that a note sustains until the next one sounds—very legato. **50%** means that the note fills half the space between itself and the next note. The lowest value is **1%**—*stacattissimo*. This parameter has no effect on percussion sounds or other sounds whose duration is fixed.

Velocity

Velocity sets the attack velocity of the played notes. With Velocity set to **First**, all notes play at the velocity of the first played note. With Velocity set to **Played**, each note repeats with the same velocity you played it at. With Velocity set to **Last**, all notes play at the velocity of the most recently played note. With Velocity set to **Aftertouch**, the velocities are controlled by keyboard pressure: as you hold and push down on any key, the velocities get higher, and as you ease up they get lower.

With Velocity set to **MIDI 109**, MIDI controller 109 continually sets the arpeggiator velocity. This works well when MIDI controller 109 is set to a knob or expression pedal.

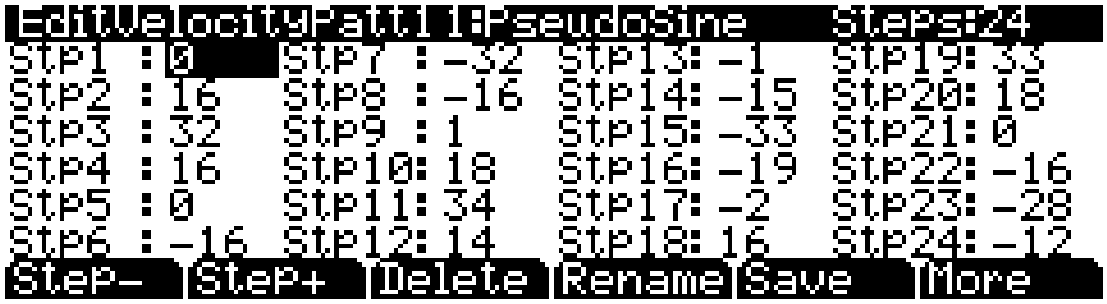
With Velocity set to **Fixed**, all notes play with the same velocity. The default **Fixed** velocity is 100. Like **MIDI 109,** You can control this velocity amount in real-time by assigning a controller to **VelFixed**, controller destination number is 175. Input from any physical controller assigned to send VelFixed (or any entry value for a controller assigned to send VelFixed) overrides the programmed value of the Velocity parameter, disabling it until you select a different setup (or in Program mode, until you select a different control setup on the MIDI-mode TRANSMIT page).

Pattern engages a step sequencer for arpeggiator velocity patterns, which shifts the velocity of each arpeggiated note according to a sequenced pattern. There are 74 pre programed velocity patterns that you can choose from the **VelPatt** field, some of which create rhythms by using velocity values of -127 or "none" to leave rests in the arpeggiation. The sequencer uses the velocity received from the first note played as the center position to shift velocities up or down from. If no other keys are playing, patterns will start over each time a key is pressed *(there are some exceptions to this when using ARPEGGIATOR **Latch** parameters other than "Keys," though a newly triggered pattern will always start at step 1.)* When triggering velocity patterns from more than one key at a time, each consecutive step of the pattern shifts the velocity from a different inputted key, the order of which is decided by the **order** parameter on the ARPEGGIATOR page.

***Note:** For patterns with negative velocity values, if the velocity of the first played note is low enough that a pattern step could result in a velocity of zero, some notes may have a velocity of zero and therefore produce no sound.*

You can edit the included patterns by pressing "Edit" with a pattern highlighted in the **VelPatt** field *(see edit screen below.)* The top line of the "EditVelocityPatt" page displays the pattern's name and total number of steps. This page also shows the full name for a pattern whose name does not fit on the ARPEGGIATOR page. Each pattern can have up to 48 steps, and each step can shift velocities by ± 127 steps. You can insert a step with a value of "none" by entering -127 and then shifting down one more step. A step with the value "none" causes the arpeggiator to play nothing for that step, allowing you to create rhythmic patterns by using "none" to leave spaces. Pressing **Step-** removes the last step in the list, pressing **Step+** inserts a new velocity step at the end of the list (the pattern editor remembers the values of removed steps until you save or exit.) Use the cursor to move between pattern steps, use the alpha wheel, alphanumeric pad, or plus/minus buttons to enter the velocity shift amount for each step. Press **More** to see a second page for patterns with more than 24 steps.

Press **Delete** to delete the pattern from memory. Press **Rename** to rename the pattern and save. Pressing **Save** gives you the option to save the pattern or rename and save. To create a new VelPatt, edit an existing pattern and choose Rename when saving. Press Exit to return to the ARPEGGIATOR page. When exiting the editor, it will automatically give you the option to save the pattern if changes have been made. For more detailed instructions on these functions, see *Saving and Naming* on page 5-2 of The PC3 Musician's Guide.



The **Human1** through **Human4** settings randomly change played note velocity within a range in order to make arpeggiation sound more human like, with each note varying slightly in velocity. The Human settings use the velocity received from the first note played as the center of the randomization range. Each note of the arpeggiator will randomly choose a velocity within the given range. *(See the table below for velocity ranges.)*

The **Chimp1** through **Chimp4** settings function in a similar fashion to the Human settings *(see above.)* Like the Human settings, the Chimp settings randomly change played note velocity within a range, but the Chimp settings have larger randomization ranges. The Chimp settings use the velocity received from the first note played as the center of the randomization range. Each note of the arpeggiator will randomly choose a velocity within the given range. *(See the table below for velocity ranges.)*

Note: *For Human and Chimp modes, if the velocity of the first played note is low enough that the selected randomization range could result in a velocity of zero, some notes may have a velocity of zero and therefore produce no sound.*

Velocity Setting	Velocity Randomization Range
Human1	± 3
Human2	± 6
Human3	± 10
Human4	± 15
Chimp1	± 25
Chimp2	± 35
Chimp3	± 50
Chimp4	± 64

MissNotes1 through **MissNotes9** makes the PC3 randomly miss playing a percentage of inputted notes. See the table below for percentages and their equivalent settings. Each of these settings also randomly changes some of the inputted velocities in a range of ± 5, with the purpose of simulating a more human played sound.

Note: *Missed Notes are actually output as notes with a velocity of zero.*

Velocity Setting	Approximate % of Notes Missed
MissNotes1	% 10
MissNotes2	% 20
MissNotes3	% 30
MissNotes4	% 40
MissNotes5	% 50
MissNotes6	% 60
MissNotes7	% 70
MissNotes8	% 80
MissNotes9	% 90

Shift Amount

You can tell the Arpeggiator to transpose all of the currently latched notes each time it plays through them. Shift determines how much transposition will occur for each cycle of notes. For example, if you have latched C4 and F4, and you assign a Note Shift of 2, the Arpeggiator will play C4, F4, D4, G4, E4, A4, and so on until it reaches the Limit value. The Shift values can range from **-88** to **88**, with **0** (the default) being no transposition.

Shift Limit

Limit determines how far up or down the Arpeggiator shifts from the original note. The minimum value is **0**, and the maximum is **60**. When the Arpeggiator reaches the limit, the Arpeggiator responds according to the setting for the Limit Option parameter.

Limit Option

This parameter determines what the Arpeggiator does when it has shifted the currently latched notes up (or down) to the shift limit. **Stop** causes the Arpeggiator to stop 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 **60**, and play C6), 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 means that after playing up 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 than the last note before the shift limit. The same thing happens in reverse when the arpeggiated notes get back down 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.

Float Res adds a bit of apparent randomness to the process. "Float" 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 C4, Note Shift is **4** (a third), and Shift Limit is **7** (so notes won't get shifted above G4). The Arpeggiator plays C4, then E4. The next note should be $G^{\#}4$, but that's above the shift limit—so the PC3 calculates the difference between that $G^{\#}4$ and the shift limit (G4): one semitone. It adds that difference to the original starting note (C4) and plays that note next—$C^{\#}4$. The next note (F4) is within the shift limit, but the next note (A4) isn't, so it gets translated into D4—and so on.

Float Uni uses the same concept 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. **Float Bip** is similar to **Float Uni**, but the downward shift limit isn't the original pitch, it's the negative of the Shift Limit value.

The Arpeggiator can be a lot of fun, even if you don't always understand exactly what it's doing. Keep in mind that the stranger the algorithm you set up, the more unlikely the notes will stay close to one key, so if you want to create something that's going to sound at all diatonic, keep it simple.

Shift Pattern (ShiftPatt)

ShiftPatt engages a step sequencer for arpeggiator note patterns. The inputted note number of each played key is shifted according to a sequenced pattern, thus "Shift Pattern." The PC3 has pre programed shift patterns including many useful chords, intervals, and rhythms. You can also create your own custom shift patterns (see below for details.) Each pattern can have up to 48 steps, and each step can shift notes by ± 127 half-steps or play nothing. Steps are played back at the rate set for **Beats** on the ARPEGGIATOR page. Keep in mind that Shift Patterns are effected by every parameter on the ARPEGGIATOR page, which can be the cause of unexpected variation, or a way to add interesting variation to a pattern.

Shift Patterns are most easily used and understood when triggered by only one key at a time. One way to prevent triggering from multiple keys is to use one of the Latch types 1NoteAuto, 1NoteAutoLow, or 1NoteAutoHi when using a shift pattern (see *Latch* on page 3-13, below.) Triggering shift patterns from one key allows the pre programed patterns to sound like what you would expect from their names. If no other keys are playing, patterns will start over each time a key is pressed *(there are some exceptions to this when using ARPEGGIATOR **Latch** parameters other than "Keys," though a newly triggered pattern will always start at step 1.)* When triggering Shift Patterns from more than one key at a time, each consecutive step of the pattern shifts the note from a different inputted key, the order of which is decided by the **order** parameter on the ARPEGGIATOR page. This means that each key will not be shifted by every step of the pattern, causing you to only hear part of the pattern from each key, often making the pattern unrecognizable. Though triggering a Shift pattern from multiple keys can be used creatively, it can also make it hard to predict what the output will be.

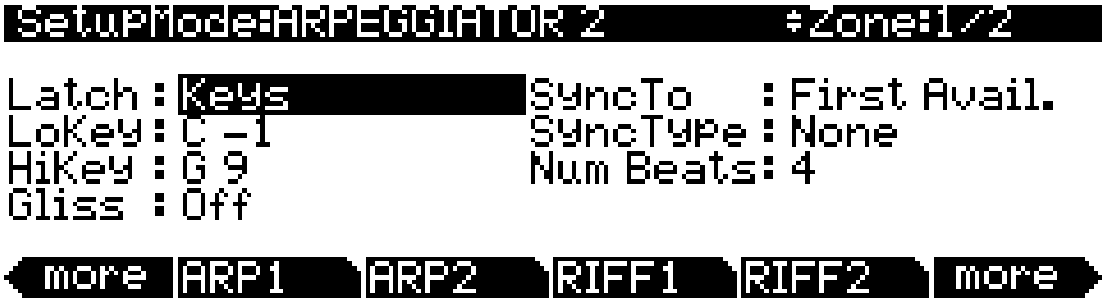
You can edit the included patterns by pressing "Edit" with a pattern highlighted in the **ShiftPatt** field *(see edit screen below.)* The top line of the "EditShiftPatt" page shows the full name for a pattern whose name does not fit on the ARPEGGIATOR page. This page also displays the pattern's total number of steps, as well as pattern direction. Pressing **Step-** removes the last step in the list, pressing **Step+** inserts a new note step at the end of the list (the pattern editor remembers the values of removed steps until you save or exit.) Use the cursor to move between pattern steps, use the alpha wheel, alphanumeric pad, or plus/minus buttons to enter the note shift amount for each step. Press **More** to see a second page for patterns with more than 24 steps. You can insert a step with a value of "none" by entering -127 and then shifting down one more

step. A step with the value “none” causes the arpeggiator to play nothing for that step, allowing you to create rhythmic patterns by using “none” to leave spaces. When the arpeggiator determines the range of pattern notes played with the **Limit** parameter (see below,) steps with a value of “none” will be calculated as a step value of 0.

Use the **chan up/down** buttons to change the direction in which pattern steps are played (indicated by **Up**, **Down**, or **Flat** on the right of the top line.) With pattern direction set to **Up**, the pattern plays as expected, starting at step one and moving up through each step towards step 48. With pattern direction set to **Down**, the pattern starts at step one, but then moves to the last step and continues to move backwards through the steps down towards step 1. Additionally, patterns set to **Down** base all notes after step one in the octave below the first note played. These settings are most useful for arpeggiating chord patterns upwards or downwards from the root note. Patterns set to **Flat** will not repeat in other octaves like those set to **Up** or **Down** (depending on the **Limit** parameter.) Patterns set to **Flat** play without transposition, the **Limit** parameter will not transpose the pattern but it can still restrict note range.

Press **Delete** to delete the pattern from memory. Press **Rename** to rename the pattern and save. Pressing **Save** gives you the option to save the pattern or rename and save. To create a new ShiftPatt, edit an existing pattern and choose Rename when saving. Press Exit to return to the ARPEGGIATOR page. When exiting the editor, it will automatically give you the option to save the pattern if changes have been made. For more detailed instructions on these functions, see *Saving and Naming* on page 5-2 of The PC3 Musician’s Guide.

The ARPEGGIATOR 2 Page



Parameter	Range of Values	Default
Latch	Keys, Overplay, Arpeg, Add, Auto, Pedals, Autohold, 1NoteAuto	Keys
Low Key	C -1 to G9	C -1
High Key	C -1 to G9	G9
Glissando	Off, On	Off
SyncTo	First Avail., Riff1-16, Main Seq., Arp1-16, FirstRiff.Av., FirstArp.Av.,	First Avail.
SyncType	None, DownBeat, AnyBeat, DownBeatWait, AnyBeatWait	None
Num Beats	1-32	4

Latch

Latch determines how the Arpeggiator responds to notes when they are triggered.

Keys means that the Arpeggiator plays only while you are holding one or more keys down (or 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 will be 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 157 (Latch) 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 157.

In **Overplay** mode, the Arpeggiator latches any notes that are being held when Latch turns on, and continues playing them, even after you let them go, until Latch turns off. Any notes that you play after Latch is already on do not get arpeggiated, even if they're in the arpeggiation range.

Arpeg is similar: any notes held when Latch goes on are latched and arpeggiated, and keep going until Latch goes off. Any notes you play outside the arpeggiation range play normally. Notes that you play inside the arpeggiation range do not play normally; rather, if you hold them on, they become part of the arpeggiation. They drop out of the arpeggiation as soon as you release them.

Like Overplay and Arpeggiation, **Add** means that all notes being held when Latch goes on get latched, and keep playing until Latch goes off (even if you've released the notes). Any notes you play after Latch is already on also get latched.

Auto is independent of Latch; every note you play 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 range gets latched.

Pedals is sort of a combination of Keys, Add, and Overplay modes. It relies on both Latch (MIDI 157) and Latch2 (MIDI 158). If neither latch controller is on, notes will arpeggiate only while you are holding down keys (similar to Keys mode). If you activate Controller 158, the keys currently held down will latch, and any additional keys played while Controller 158 is on will also latch (similar to Add mode). When Controller 158 is off, any keys that are not currently held down will be removed from the arpeggiation. If you activate Controller 157, keys currently held down will latch, and any additional keys played while Controller 157 is on will play normally (similar to Overplay mode). This mode is called Pedals mode because you might want to assign Footswitch 1 to **Latch** (Controller 157) and Footswitch 2 to **Latch2** (Controller 158) to make the pedals function similarly to sustain and sostenuto pedals. Additionally, you could assign one Footswitch to **SusLatch** (Controller 160)—doing this makes the Footswitch act as a sustain pedal when Arp is off, and as a Latch pedal when Arp is on.

Autohold is similar to Auto. Holding at least one arpeggiated note on and playing other notes latches those notes. Unlike in Auto mode, if you stop holding at least one arpeggiated note on, the arpeggiation continues playing (although you can't latch any more notes). In this case, if you strike another key within the setup's arpeggiation range, you start a new arpeggiation sequence. **Autohold** is useful for arpeggiating chords: when you play a chord, it gets latched, and continues arpeggiating after you release the chord. When you play another chord, the previous chord gets unlatched, and the new one gets latched. You can use the **Panic** soft button to stop arpeggiation at any time.

1NoteAuto is similar to Autohold, except only the last note played is latched (even if previously played notes are still being held.) 1NoteAuto is specifically designed for use with Shift Patterns (see above,) because Shift Patterns are designed to be played from one note at a time (though you can use 1NoteAuto without a Shift Pattern as well.) Using 1NoteAuto for zones that use a Shift Pattern ensures that Shift Patterns will sound correct by only allowing one note at a time to trigger the pattern. You can use the **Panic** soft button to stop arpeggiation at any time. **1NoteAutoLow** and **1NoteAutoHi** are also designed for use with Shift Patterns. They work similarly to 1NoteAuto, except **1NoteAutoLow** always latches the lowest note when holding multiple notes, and **1NoteAutoHi** always latches the highest note when holding multiple notes. You can also use these latch types without a Shift Pattern if desired.

Low Key (LoKey) and High Key (HiKey)

The Arpeggiator processes notes within the range of these parameters. Notes outside the specified range play normally, and do not become part of the arpeggiation sequence. Set the LoKey and HiKey parameters using the data entry wheel or buttons.

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.

SyncTo

The SyncTo parameter determines what an arpeggiator will sync to. An arpeggiator can sync to another arpeggiator, a riff, or a song playing from Song mode. You can choose a specific arpeggiator or riff to sync to by setting SyncTo to **Arp 1–16** or **Riff 1-16**, and the current arpeggiator will always sync to that arpeggiator or riff. For example, if you have an arpeggiator on a bass sound in zone 1 and an arpeggiator on a lead sound in zone 2, you may always want the lead arpeggiation in zone 2 to sync to the bass arpeggiation in zone 1. In this case you would set the SyncTo parameter in zone 2 to **Arp 1**.

You may want to have a little more freedom and not be tied to the bass arpeggiation in zone 1 as the main "timekeeper." Maybe you want to start with the lead arpeggiation in zone 2 and have the bass arpeggiation in zone 1 start later. In this case you would set the SyncTo parameter for zone 2 to **FirstArp.Av.** With this setting, the arpeggiator will look for the first available arpeggiator to sync to. So if both the bass arpeggiation and the lead arpeggiation have this parameter set to **FirstArp.Av.**, the arpeggiation that is started first will be the main "timekeeper." If the lead arpeggiator starts first, the bass arpeggiator will see that as the first available arpeggiator to sync to and will do so. If the bass arpeggiator is started first, the lead arpeggiator will see that as the first available arpeggiator to sync to and will do so. This can be very handy if you are using multiple arpeggiators and want to do some live improvisation; you can start and stop different arpeggiators and as long is there is one arpeggiator playing, any arpeggiator with SyncTo set to **FirstArp.Av.** will sync back up when triggered again.

You can also choose **FirstRiff.Av.**, which behaves the same way as **FirstArp.Av.**, but makes your arpeggiator look for the first available riff to sync to. A setting of **Main Seq.** will sync the arpeggiator to the song currently loaded in Song mode. You can select a song in Song mode, then play it from setup mode with the front panel **Play/Pause** button. *(Doing this temporarily replaces the programs in your setup's zones with the program used for each channel in the song, so it's best to make a setup that uses the same programs as your song on the same MIDI channels. If you plan on syncing riffs with a song, it may be easier to start by creating a setup, then recording the setup into a song. See* Recording A Setup To Song Mode *in the* Setup Mode *chapter of* The PC3 Musician's Guide *for details.)* A setting of **First Avail.** will sync the arpeggiator to the first available arpeggiator, riff, or song from Song mode.

***Note:** If you have multiple arpeggiators or riffs already playing when using **FirstArp.Av.**, **FirstRiff.Av.**, or **First Avail.** for the current arpeggiator, the current arpeggiator will sync to the arpeggiator or riff of the lowest numbered zone that has an arpeggiator or riff playing.*

SyncType

The SyncType parameter allows you to choose how your arpeggiator will sync to other arpeggiators, riffs, or a song playing from Song mode.

With SyncType set to **None**, your arpeggiator will start playing as soon as it is triggered. It will not sync to anything. With SyncType set to **DownBeat**, if there is already something playing to sync to, the current arpeggiator will wait for the downbeat of the next measure before starting; so, you can trigger the arpeggiator to start ahead of time, and have it start in sync at the downbeat of the next measure. *If Syncing to an arpeggiator, see Num Beats* on page 3-16 *for details on changing when an arpeggiator's downbeat will occur.* With SyncType set to **AnyBeat**, if there is already something playing to sync to, the arpeggiator will wait only until the next beat. Depending on when you trigger the arpeggiator, it will sync up, but it may be on an upbeat or a downbeat.

With SyncType set to **DownBeatWait**, if there is something playing to sync to, the arpeggiator will wait for the downbeat of the next measure to start. The difference from DownBeat is that if there is nothing to sync to, the arpeggiator will not start. This can be useful if you want to start multiple arpeggiators synced to something else. For example, you could have a bass arpeggiator

set to **DownBeatWait**, for instance, and trigger the arpeggiator while no other arpeggiators are running. As soon as you start something else to sync to, the bass arpeggiator will start playing as well (provided that it is set to sync to something else or the first available.) If something to sync to is already running, **DownBeatWait** behaves just like **DownBeat**.

With SyncType set to **AnyBeatWait**, if there is something playing to sync to, the arpeggiator will wait for the next beat to start. The difference from AnyBeat is that if there is nothing to sync to, this arpeggiator will not start. This can be useful if you want to start multiple arpeggiators synced to something else. You could have a bass arpeggiator set to AnyBeatWait, for instance, and trigger the arpeggiator while no other arpeggiators are running. As soon as you start something to sync to, the bass arpeggiator will start playing as well (provided that it is set to sync to something else or the first available). If another arpeggiator is already running, AnyBeatWait behaves just like AnyBeat.

With SyncType set to **Loop**, if there is already a riff or song playing to sync to, the current arpeggiator will wait for the playing riff or song to restart its loop (if it is looped) before starting (see *Loop* on page 3-23 for looping riffs, and *Loop* on page 12-11 of The PC3 Musician's Guide for looping songs.) This way you can trigger the arpeggiator to start ahead of time, and have it start in sync at the start of the playing riff or song's loop (provided that it is set to sync to a riff, song, or the first available).

With SyncType set to **Stop**, if there is already something playing to sync to, the current arpeggiator will wait for what is playing to stop before starting. This way you can trigger the arpeggiator to start ahead of time, and have it start in sync at the release (stopping) of the riff, arpeggiator, or song that you are syncing to.

With SyncType set to **StartWait**, if there is nothing playing to sync to, the current arpeggiator will wait for something it can sync to to begin playing first before starting. This is similar to DownBeatWait, but it will only trigger the arpeggiator the first time that whatever it is syncing to starts. This way you can trigger the arpeggiator to start ahead of time, and have it start in sync at the start of the riff, arpeggiator, or song that you are syncing to. If you stop the arpeggiator and try to start it again while the thing you are syncing to is already playing, **StartWait** will not start the arpeggiator.

With SyncType set to **LoopWait**, if there is already a riff or song playing to sync to, the current arpeggiator will wait for the playing riff or song to restart its loop (if it is looped) before starting (see *Loop* on page 3-23 for looping riffs, and *Loop* on page 12-11 of The PC3 Musician's Guide for looping songs.) This way you can trigger the arpeggiator to start ahead of time, and have it start in sync at the start of the playing riff or song's loop. The difference from Loop is that if there is nothing playing to sync to, the arpeggiator will not start. If the riff or song that you are syncing to is already running, **LoopWait** behaves just like **Loop**.

With SyncType set to **StopWait**, if there is already something playing to sync to, the current arpeggiator will wait for what is playing to stop before starting. This way you can trigger the arpeggiator to start ahead of time, and have it start in sync at the release (stopping) of the riff, arpeggiator, or song that you are syncing to. The difference from **Stop** is that if there is nothing playing to sync to, the arpeggiator will not start. This can be useful if you want to get your arpeggiator ready to sync before you start whatever you are syncing it to. If the riff or song that you are syncing to is already running, **StopWait** behaves just like **Stop**.

Num Beats

This affects the syncing of other arpeggiator or riff zones to the current zone, only if those other zones have a SyncType setting of Downbeat or DownbeatWait. For zones being synced to the current zone's arpeggiator, this determines how many notes must be played by the current zone's arpeggiator before a downbeat occurs. By decreasing or increasing the value of the Num Beats parameter, you can make zones with a SyncType setting of Downbeat or DownbeatWait behave as if downbeats are occurring less or more frequently.

Real-time Control of Arpeggiator Parameters

You can have real-time control over several arpeggiator parameters, by assigning physical controllers to special arpeggiator Controller Destinations. Any input (or entry value) from a physical controller assigned to an arpeggiator Controller Destination overrides the programmed values for the parameters of the arpeggiator on that controller's zone. The override remains in effect until you select a different setup (or a different program in Program mode.) Remember, each of the following Controller Destinations affects only the arpeggiator for the zone which your controller is assigned to.

Controller Number	Corresponding ARPEGGIATOR Parameter	Operation
147	ArpOn	Any controller value turns the Arpeggiator On.
148	ArpOff	Any controller value turns the Arpeggiator Off.
150	ArpOrder	Arpeggiator Order, each range of values selects one of nine options in order of the parameters list: 0-14 (Played,) 15-28 (Upwards, etc.,) 29-42, 43-56, 57-70, 71-84, 85-98, 99-112, 113-127 (Simultaneous.)
151	ArpBeats	Arpeggiator Beats, each range of values selects one of seven options in order of the parameters list: 0-18 (Quarter notes,) 19-36 (8th notes, etc.,) 37-54, 55-72, 73-90, 91-108, 109-127(32nd triplets.)
152	ArpShift	The 88 Arpeggiator Shift steps are scaled over the 128 MIDI controller values, so that 0 = 0 steps and 127 = 88 steps.
153	ArpLimit	The 60 Arpeggiator Shift Limit steps are scaled over the 128 MIDI controller values, so that 0 = 0 steps and 127 = 60 steps.
154	ArpLmtOp	Arpeggiator Shift Limit Option, each range of values selects one of seven options in order on parameters list: 0-18 (Stop,) 19-36 (Reset, etc.,) 37-54, 55-72, 73-90, 91-108, 109-127 (FloatBip.)
155	ArpVel	Arpeggiator Velocity, each range of values selects one of twenty-three options in order on parameters list: 0-5 First,) 6-10 (Played, etc.,) 11-15...101-105, 106-110, 111-127 (MissNotes9.)
156	ArpDur	The Arpeggiator Duration % values are scaled over the 128 MIDI controller values, so that 0 = 1% and 127 = 100%.
157	Latch	For Arpeggiator Latch Pedals mode, 0-63 = off, 64-127 = on.
158	Latch2	For Arpeggiator Latch Pedals mode, 0-63 = off, 64-127 = on.
159	ArpGliss	Arpeggiator Gliss, 0-63 = off, 64-127 = on.
160	SusLatch	For Arpeggiator Latch Pedals mode, 0-63 = off, 64-127 = on.
170	-Arp Shift	Sets ARPEGGIATOR values for Shift to negative. 0-63 = off, 64-127 = on.
171	ShiftPatt	Selects one of the 128 patterns in the ShiftPatt Bank for the ARPEGGIATOR page of a controller's zone.

Controller Number	Corresponding ARPEGGIATOR Parameter	Operation
172	ShiftPBank	A controller value selects the corresponding ShiftPatt Bank for the ARPEGGIATOR page of a controller's zone. For example, controller value 2 selects bank 2, controller value 7 selects bank 7.
173	VelPatt	Selects one of the 128 patterns in the VelPatt Bank for the ARPEGGIATOR page of a controller's zone.
174	VelPBank	A controller value selects the corresponding VelPatt Bank for the ARPEGGIATOR page of a controller's zone. For example, controller value 2 selects bank 2, controller value 7 selects bank 7.
175	VelFixed	Set's arpeggiator velocity when velocity is set to Fixed for the ARPEGGIATOR page of a controller's zone.

Riffs

Riffs are full songs or individual tracks of a song created in the PC3's Song mode that you can trigger in setup mode. Standard MIDI files may also be imported to Song mode and then used as riffs in setups. Every zone in a setup can have it's own riff—a completely independent sequence. You can use a setup with many riffs to trigger and stop looped sequences of different instrument parts. Alternatively, a single riff can play multiple instrument parts. Each riff could be used as a different song section of a backing track.

To use a riff, first go to Song mode and note the ID# of the song, section of song and track that you will use for your riff. Next go to Setup mode and create a setup. On the CH/PRG page of the Setup Editor, choose the program that you want to use for the riff on the current zone. Program changes that are recorded in song mode will be ignored when using the song as a riff in a setup. You can also set up the playback event filter in Song mode to ignore other types of events as well. Once you have selected your program, press the **more** soft button until you get to the RIFF1 and RIFF2 pages. The following sections describe the contents of these pages.

Note: By default, setting a zone to trigger a riff will disable the ability to play notes of that zone's program from the keyboard. To re-enable this ability, see *Local* on page 3-23.

The RIFF1 Page

The first Riff page appears as shown below, and has the following parameters:

Parameter		Range of Values	Default
Riff		Off, On	Off
Song		Song List	0 None
Start	*(Bar)*	*(dependent on sequence)*	1
	(Beat)	1 to *(dependent on time signature)*	1
	(Tick)	0 to 959	0
Stop	*(Bar)*	*(dependent on sequence)*	2
	(Beat)	1 to *(dependent on time signature)*	*1*
	(Tick)	0 to 959	0
Transpose		Off, On	Off
Root Note		C -1 to G9	C4
SrcTrack (Source Track)		ALL, 1 to 128	ALL
Re Channel		Off, On	Off

Riff

Setting the Riff parameter to On will enable the riff feature for the current zone in setup mode. Setting this parameter to Off will disable the riff for this zone.

Song

Select the song you wish to use in the Song parameter by using the Alpha Wheel, **-/+** buttons, or the alphanumeric pad.

Start

Use the Start parameter to specify the riff start point. The time format is *Bar : Beat : Tick*. *Bar* can be set to any bar in the sequence, and *Beat* can be set to any beat in that bar (beat range is dependent on time signature.) *Tick* can be set from **0** to **959**. Since there are 960 possible start points within a beat, you can specify your riff to start on any common beat subdivision moments (and a few uncommon ones). The following *Tick* values correspond to the following beat subdivision moments:

Beat Subdivision	Beat Subdivision Moment	Tick Value
Quarter note	1st	0
8th note	1st	0
	2nd	480
8th note triplet	1st	0
	2nd	320
	3rd	640
16th note	1st	0
	2nd	240
	3rd	480
	4th	720
16th note quintuplet	1st	0
	2nd	192
	3rd	384
	4th	576
	5th	768
16th note triplet (sextuplets)	1st	0
	2nd	160
	3rd	320
	4th	480
	5th	640
	6th	800

Table 0-4 *Subdivision* Values

Stop

Use the Stop parameter to specify the riff stop point. Like the Start parameter, the time format for Stop is *Bar : Beat : Tick*. *Bar* can be set to any bar in the sequence, and *Beat* can be set to any beat in that bar (beat range is dependent on time signature.) *Tick* can be set from **0** to **959**. Refer to Table 0-4 for *Tick* values.

The PC3 restricts the selectable values for the Stop parameter such that the current riff is at least one beat long.

Transpose/Root Note

With the Transpose parameter set to **On**, the riff will transpose to the value set in the Root Note parameter. So, if you have a riff whose root note is C4, you can set a new root note in the setup so that the riff will play in the correct range. In this scenario, if you want to trigger your riff from C1 but it was recorded at C4, you would set Transpose to **On** and Root Note to **C1**. Your riff will now play in the desired range when triggered from the C1 key, which now corresponds to the note C4.

SrcTrack (Source Track)

The SrcTrack parameter determines the source track of the riff (from the riff's original sequence in Song mode.) Along with the Start and Stop parameters, SrcTrack allows you to use a single sequence as a riff for many zones, and to select a different source track and Start/Stop parameter setting for each zone to avoid having to create a special sequence for each riff.

To create a setup with multiple riffs each playing a single instrument part, set a single track for the SrcTrack parameter, and that track of the sequence will play with the program on the current zone. Repeat the process on other zones using the same song for the riff, but using a different SrcTrack for each zone.

To create a setup with a single riff that plays multiple instrument parts, set SrcTrack to ALL. Each track of the sequence will play its track through the zones which have corresponding MIDI channels (MIDI channels are set for each zone on *The Channel/Program (CH/PROG) Page* of the Setup Editor, see page 3-1.)

Re Channel

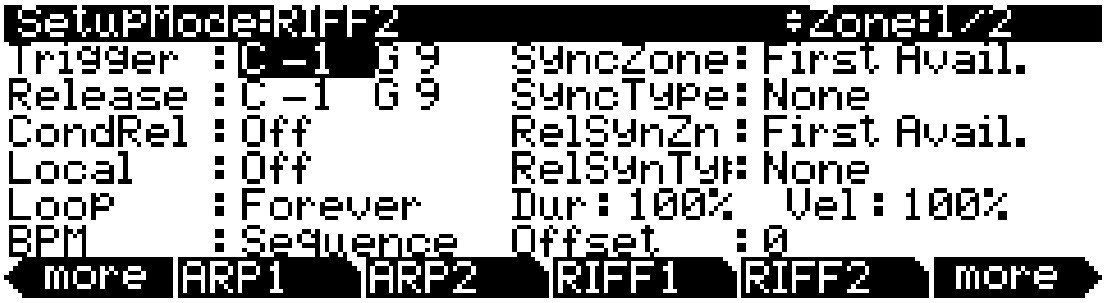
Use the Re Channel parameter when the current zone's MIDI channel and the channel that the riff was recorded on are not the same. When Re Channel is set to On, the track selected for the SrcTrack parameter will play through the MIDI channel of the current zone. For example, if you want to use a riff on zone 2/MIDI channel 2 and the riff was recorded on track 4/MIDI channel 4, you will need to turn Re Channel on. If you were to do this and keep Re Channel set to Off, the riff would play using the program from zone 4 instead of zone 2.

When Re Channel is set to On and ALL is selected for SrcTrack, *all* of the tracks of the sequence will play through the MIDI channel of the current zone.

Note: Track numbers don't have to match MIDI channel numbers in Song mode (though they do by default.) A song that uses non default MIDI channels for its tracks can cause some confusion when using it as a riff. For example, using a riff on zone 1, you could set the riff's SrcTrack parameter to 1, and expect the riff to play on zone 1 (if it is set to MIDI channel 1.) But in Song mode, if the song you are using for the riff has track 1 set to a MIDI channel other than 1, the riff will play on the zone that has that track's matching MIDI channel. In this case, set Re Channel to On in order for the riff to play through the program of the riff's zone.

The RIFF2 Page

The second Riff page appears as shown below, and has the following parameters:



Parameter		Range of Values	Default
Trigger	*(HiKey)*	C -1 to G9	C -1
	(LoKey)	C -1 to G9	G9
Release	*(HiKey)*	C -1 to G9	C -1
	(LoKey)	C -1 to G9	G9
CondRel		Off, On	Off
Local		Off, On	Off
Loop		Once, Forever	Forever
BPM		Sequence, Setup, External, 20 to 400	Sequence
Sync Zone		First Avail., Riff 1-16, Main Seq, Arp 1-16, FirstRiff.Av., First Arp.Av	First Avail.
Sync Type		None, DownBeat, AnyBeat, DownBeatWait, AnyBeatWait, Loop, Stop, StartWait, LoopWait, StopWait	None
Release Sync Zone (RelSynZn)		First Avail., Riff 1-16, Main Seq, Arp 1-16, FirstRiff.Av., First Arp.Av	First Avail.
Release Sync Type (RelSynTyp)		None, DownBeat, AnyBeat, DownBeatWait, AnyBeatWait, Loop, Stop, StartWait, LoopWait, StopWait	None
Duration		1 to 1000%	100%
Velocity		0 to 255%	100%
Offset		-32768 to 32767	0

Trigger

There are a few ways to trigger riffs in setup mode. On the Riff2 page you can use the Trigger field to set a keyboard key to trigger the Riff. Also, any physical controller can be assigned to controller destination 163 **RiffOn**.

To set the key range to trigger your riff, use the cursor buttons to select the left value in the Trigger field (this will be the low end of the trigger key range.) Now you can select the key number by scrolling the Alpha Wheel, or you can use intuitive entry by pressing and *holding* the **Enter** button on the alphanumeric pad and pressing the desired key on your keyboard. You will see this value change as you press a key.

Next, move your cursor to the right to highlight the second value of the Trigger field (this will be the high end of the trigger key range.) Use one of the methods described above to select a key value for this trigger field. If you want to have only one key start a riff, set the Trigger key range from **A#0** to **A#0** for example, and your riff will be triggered to start only by pressing the A#0 key. If you want your trigger key range to be larger, set your Trigger key range to be, for instance, **A#0** to **A#1**. Now any key that is pressed within this range will trigger your riff to start.

Note: *the LoKey and HiKey values on the KEYVEL page do affect the riff. If your riff's trigger and release notes are not within the LoKey and HiKey range on the KEYVEL page, your riff will not be able to be triggered from the keyboard.*

Release

The way you release riffs is analogous to the way you trigger them. You can assign a physical controller to destination 164 **RiffOff**, or you can select a key or key range with the Release parameter. You set this the same way that you set the trigger range. Move your cursor so that the left field of the Release parameter is highlighted (this will be the low end of the trigger key range.) Now select a key value by using the Alpha Wheel, -/+ buttons or intuitive entry. Move your cursor to the right field and repeat the process (this will be the high end of the trigger key range.) If you set both of the Release values to A0, the Riff will stop when you *release* A0.

So, if you use the settings described above and in the *Trigger* section above, your setup's riff will start when you press A#0, and it will stop when you press *and release* A0.

Note: *the LoKey and HiKey values on the KEYVEL page do affect the riff. If your riff's trigger and release notes are not within the LoKey and HiKey range on the KEYVEL page, your riff will not be able to be triggered from the keyboard.*

Conditional Release (CondRel)

The CondRel parameter allows you to have a riff play only while a key is pressed and held, and nothing will stop or restart that riff until the key is released. To use conditional release, set the same range for the Trigger and Release ranges on the RIFF2 page. Any key that is pressed and held within this range will play the selected riff. Release the key and the riff will stop. Playing any other key in this zone while triggering a riff with CondRel–even if they are within the Trigger and Release ranges–will not retrigger or stop the zone's riff.

Local

If you want to trigger your riff without playing the current zone's program, set Local to **Off**. Local is set to Off by default since most users wont want to play the program in the zone they are using for a riff, but only wish hear that zone's program as a backing track. With Local set to **On**, you will play the current zones program any time a key is pressed. This could create undesired "grace notes" if you trigger a riff that has a downbeat at the same time you are playing a note.

Loop

If you want your riff to loop indefinitely, set this parameter to **Forever**. If you want to have it play once and then stop until you retrigger it, set this parameter to **Once**.

BPM

There are four choices here that will determine what controls the tempo of your riff. With BPM set to **Sequence**, the original tempo in which the riff was recorded will be used. With BPM set to **Setup**, the tempo set on the COMMON or TEMPO pages will be used. When syncing multiple riffs it is convenient to set each riffs' BPM parameter to **Setup**. Doing this, you can change the tempo of all riffs at once on the TEMPO page (see *TEMPO* on page 7-11.) A value of **Setup** is also useful for syncing riffs to a zone's arpeggiator. With Tempo BPM set to **External**, the riff will

sync to external MIDI clock. You can also manually choose a tempo by selecting a value from **20** to **400** for BPM. Use the Alpha Wheel or - /+ buttons to choose between the options or set a tempo. You can also use the alphanumeric pad followed by pressing the **Enter** button to enter a tempo.

SyncZone

The SyncZone parameter determines which zone a riff will sync to. You can choose to sync to a riff or arpeggio in a specific zone by setting SyncZone to **Riff 1–16** or **Arp1-16**, and the current riff will always sync to the riff or arpeggio in the set zone. For example, if you have a drum riff in zone 1 and a bass riff in zone 2, you may always want the bass riff in zone 2 to sync to the drum riff in zone 1. In this case you would set the bass riff SyncZone to **Riff 1**.

You may want to have a little more freedom and not be tied to the drum riff as the main "timekeeper." Maybe you want to start with the bass riff and have the drum riff start later. In this case you would set SyncZone to **FirstRiff.Av.** With this setting, the riff will look for the first available riff to sync to. So if both the drum riff and the bass riff have this parameter set to **FirstRiff.Av.**, the riff that is started first will be the master. If the bass riff starts first, the drum riff will see that as the first available riff to sync to and will do so. If the drum riff is started first, the bass riff will see that as the first available riff to sync to and will do so. This can be very handy if you have multiple riffs and want to do some live remixing; you could have the drums drop out, and—as long is there is a riff playing—they will sync back up when triggered again.

You can also choose **FirstArp.Av.**, which behaves the same way as **FirstRiff.Av.**, but makes your riff look for the first available arpeggiator to sync to. A setting of **Main Seq.** will sync the riff to the song currently loaded in Song mode. You can select a song in Song mode, then play it from setup mode with the front panel **Play/Pause** button. *(Doing this temporarily replaces the programs in your setup's zones with the program used for each channel in the song, so it's best to make a setup that uses the same programs as your song on the same MIDI channels. If you plan on syncing riffs with a song, it may be easier to start by creating a setup, then recording the setup into a song. See* Recording A Setup To Song Mode *in the* Setup Mode *chapter of* The PC3 Musician's Guide *for details.)* A setting of **First Avail.** will sync the riff to the first available riff, arpeggiator, or song from Song mode.

***Note:** If you have multiple riffs or arpeggiators already playing when using **FirstRiff.Av.**, **FirstArp.Av.**, or **First Avail.** for the current riff, the current riff will sync to the riff or arpeggiator of the lowest numbered zone that has a riff or arpeggiator playing.*

SyncType

The SyncType parameter allows you to choose how your riff will sync to other riffs, arpeggiators, and Songs (depending on your settings made for the SyncZone parameter.) With SyncType set to **None**, your riff will start playing as soon as it is triggered. It will not sync to anything. With SyncType set to **DownBeat**, if there is already something playing to sync to, the current riff will wait for the downbeat of the next measure before starting; so, you can trigger the riff to start ahead of time, and have it start in sync at the downbeat of the next measure. *If Syncing to an arpeggiator, see Num Beats* on page 3-16 *for details on changing when an arpeggiator's downbeat will occur.* With SyncType set to **AnyBeat**, if there is already a something playing to sync to, the riff will wait only until the next beat. Depending on when you trigger the riff, it will sync up, but it may be on an upbeat or a downbeat.

With SyncType set to **DownBeatWait**, the riff will wait for the downbeat of the next measure to start. The difference from DownBeat is that if there is nothing playing to sync to, the riff will not start. This can be useful if you want to start multiple riffs synced to one riff. You could have a bass riff set to **DownBeatWait**, for instance, and trigger the riff while no other riffs are running. As soon as you start another riff, the bass riff will start playing as well (provided that it is set to sync to another riff or to the first available riff.) If another riff is already running, **DownBeatWait** behaves just like **DownBeat**.

With SyncType set to **AnyBeatWait**, the riff will wait for the next beat to start. The difference from AnyBeat is that if there is nothing playing to sync to, this riff will not start. This can be useful if you want to start multiple riffs synced to one riff. You could have a bass riff set to AnyBeatWait, for instance, and trigger the riff while no other riffs are running. As soon as you start another riff, the bass riff will start playing as well (provided that it is set to sync to another riff or the first available). If something is already playing to sync to, AnyBeatWait behaves just like AnyBeat.

With SyncType set to **Loop**, if there is already a riff or song playing to sync to, the current riff will wait for the playing riff or song to restart its loop (if it is looped) before starting (see *Loop* on page 3-23 for looping riffs, and *Loop* on page 12-11 The PC3 Musician's Guide for looping songs.) This way you can trigger the riff to start ahead of time, and have it start in sync at the start of the playing riff or song's loop.

With SyncType set to **Stop**, if there is already something playing to sync to, the current riff will wait for what is playing to stop before starting. This way you can trigger the riff to start ahead of time, and have it start in sync at the release (stopping) of the riff, arpeggiator, or song that you are syncing to.

With SyncType set to **StartWait**, if there is nothing playing to sync to, the current riff will wait for something it can sync to to begin playing first before starting. This is similar to DownBeatWait, but it will only trigger the riff the first time that whatever it is syncing to starts. This way you can trigger the riff to start ahead of time, and have it start in sync at the start of the riff, arpeggiator, or song that you are syncing to. If you stop the riff and try to start it again while the thing you are syncing to is already playing, **StartWait** will not start the riff.

With SyncType set to **LoopWait**, if there is already a riff or song playing to sync to, the current riff will wait for the playing riff or song to restart its loop (if it is looped) before starting (see *Loop* on page 3-23 for looping riffs, and *Loop* on page 12-11 of The PC3 Musician's Guide for looping songs.) This way you can trigger the riff to start ahead of time, and have it start in sync at the start of the playing riff or song's loop. The difference from Loop is that if there is nothing playing to sync to, the riff will not start. If the riff or song that you are syncing to is already running, **LoopWait** behaves just like **Loop**.

With SyncType set to **StopWait**, if there is already something playing to sync to, the current riff will wait for what is playing to stop before starting. This way you can trigger the riff to start ahead of time, and have it start in sync at the release (stopping) of the riff, arpeggiator, or song that you are syncing to. The difference from **Stop** is that if there is nothing playing to sync to, the riff will not start. This can be useful if you want to get your riff ready to sync before you start whatever you are syncing it to. If the riff or song that you are syncing to is already running, **StopWait** behaves just like **Stop**.

RelSynZn (Release Sync Zone)

RelSynZn has the same settings available as SyncZone (see *SyncZone*, above,) but RelSynZn determines what the releasing (stopping) of the current riff will be synced to when a parameter other than **None** is selected for RelSynTyp (see below.)

RelSynTyp (Release Sync Type)

RelSynTyp has the same settings available as SyncType (see *SyncType*, above,) but RelSynTyp determines how the releasing (stopping) of the current riff will be synced to other riffs, arpeggiators, and Songs (depending on your settings made for the RelSynZn parameter.) With RelSynTyp set to **None**, your riff will stop playing as soon as it is released. It will not sync to anything. With RelSynTyp set to **DownBeat**, if there is already something playing to sync to, the current riff will wait for the downbeat of the next measure before stopping when released; so, you can trigger the riff to stop ahead of time, and have it stop in sync at the downbeat of the next measure. *If Syncing to an arpeggiator, see Num Beats* on page 3-16 *for details on changing when an*

arpeggiator's downbeat will occur. With RelSynTyp set to **AnyBeat**, if there is already a something playing to sync to, the riff will wait only until the next beat before stopping when released. Depending on when you release the riff it will stop in sync with a beat, but it may be on an upbeat or a downbeat.

With RelSynTyp set to **DownBeatWait**, the riff will wait for the downbeat of the next measure to stop when released. The difference from DownBeat is that if there is nothing playing to sync to, the riff wont stop when released. If another riff is already running, **DownBeatWait** behaves just like **DownBeat**.

With RelSynTyp set to **AnyBeatWait**, if there is already a something playing to sync to, the riff will wait for the next beat before releasing. The difference from AnyBeat is that if there is nothing playing to sync to, this riff will not stop when released. This can be useful if you want to stop a riff in sync only when another riff is playing. If something is already playing to sync to, AnyBeatWait behaves just like AnyBeat.

With RelSynTyp set to **Loop**, if there is already a riff or song playing to sync to, the current riff will wait for the playing riff or song to restart its loop (if it is looped) before stopping when released (see *Loop* on page 3-23 for looping riffs, and *Loop* on page 12-11 of The PC3 Musician's Guide for looping songs.) This way you can release the riff to stop ahead of time, and have it stop in sync at the start of the playing riff or song's loop.

With RelSynTyp set to **Stop**, if there is already something playing to sync to, the current riff will wait for what is playing to stop before releasing. This way you can trigger the current riff to release ahead of time, and have it stop in sync at the release (stopping) of the riff, arpeggiator, or song that you are syncing to.

With RelSynTyp set to **StartWait**, if there is nothing playing to sync to, the current riff will wait for something it can sync to to begin playing first before releasing. This is similar to DownBeatWait, but it will only release the riff the first time that whatever it is syncing to starts. This way you can trigger the riff to stop ahead of time, and have it stop in sync at the start of the riff, arpeggiator, or song that you are syncing to. If you restart the riff and try to release it again while the thing you are syncing to is already playing, **StartWait** will not stop the riff.

With RelSynTyp set to **LoopWait**, if there is already a riff or song playing to sync to, the current riff will wait for the playing riff or song to restart its loop (if it is looped) before stopping (see *Loop* on page 3-23 for looping riffs, and *Loop* on page 12-11 of The PC3 Musician's Guide for looping songs.) This way you can trigger the riff to stop ahead of time, and have it stop in sync at the start of the playing riff or song's loop. The difference from Loop is that if there is nothing playing to sync to, the riff will not stop when released. If the riff or song that you are syncing to is already running, **LoopWait** behaves just like **Loop**.

With RelSynTyp set to **StopWait**, if there is already something playing to sync to, the current riff will wait for what is playing to stop before releasing. This way you can trigger the riff to stop ahead of time, and have it start in sync at the release (stopping) of the riff, arpeggiator, or song that you are syncing to. The difference from **Stop** is that if there is nothing playing to sync to, the riff will not stop when released. If the riff or song that you are syncing to is already running, **StopWait** behaves just like **Stop**.

Note: For all **RelSynTyp** settings except **Stop, StartWait** and **StopWait**, a riff can sync its release with its self. For example, you could use riff 1 and sync it to its self by setting **Riff 1** for the **RelSynZn** parameter. Then, if you set **DownBeat** for the **RelSynTyp** parameter, when released the riff would always wait until its next downbeat to stop.

Duration (Dur)

Duration changes the duration of each MIDI note. The original durations of the notes in the sequence are multiplied by the selected percentage. 100% will cause no change, values smaller than 100% will result in shorter durations, values larger than 100% will result in longer durations.

Velocity

Velocity changes the velocity of each MIDI note. The original velocities of the notes in the sequence are multiplied by the selected percentage. 100% will cause no change, values smaller than 100% will result in lower velocities, values larger than 100% will result in higher velocities.

Offset

You can fine tune the start time of your riff in ticks by using the Offset parameter. A positive value will delay the start time, while a negative value will speed up the start time.

Real-time Control of Riff Parameters

You can have real-time control over several Riff parameters, by assigning physical controllers to special Riff Controller Destinations. Any input (or entry value) from a physical controller assigned to a Riff Controller Destination overrides the programmed values for the parameters of the riff on that controller's zone. The override remains in effect until you select a different setup. Remember, each of the following Controller Destinations affects only the riff for the zone which your controller is assigned to.

Controller Number	Corresponding Riff Parameter	Operation
163	RiffOn	Riff On. Any value triggers the zone's Riff if **Riff** is set to **On** on RIFF1 page.
164	RiffOff	Riff Off. Any value stops playback of zone's Riff.
165	RiffDur	Riff Duration, sets the Duration parameter (see above.) The Duration value is calculated by multiplying the received controller value by 1000, and dividing the answer by 128 (any decimal points are taken off the final value.) Here are some example values: 7 = 54%, 13 = 101%,19 = 148%, 32 = 250%, 64 = 500%, 127 = 992%
166	RiffVel	Riff Velocity, sets the Velocity parameter (see above.) The Velocity value is calculated by multiplying the received controller value by 2. For Example, 25 = 50%, 50 = 100%, 100 = 200%, 127 = 254%.
167	RiffDly	Riff Delay, Controls Offset parameter (see above.) Controller value 64 = 0 offset ticks. Each value away from 64 = 512 offset ticks. For example, 63 = -512 offset ticks, 65 = +512 offset ticks, 0 = -32768 offset ticks, 127 = +32256 offset ticks.

The COMMON Page

Arpeggiator Global (ArpGlobal)

With the ArpGlobal parameter, you can set the Arpeggiator of a single Zone to play notes on all Zones in the Setup. For example, if ArpGlobal is set to **Arp 3**, all zones will be played by the arpeggiator in in Zone 3 (if the arpeggiator in Zone 3 is active.) In addition to **OFF**, there are as many ArpGlobal settings as there are Zones in the current setup. For example, in a seven-zone setup, you can select a value of **OFF**, or **Arp 1–7** for ArpGlobal.

To exclude a Zone from being played by the global arpeggiator, set the *Arpeggiator* parameter to *Off* on the CH/PROG page for that Zone (see *Arpeggiator* on page 3-2 for details.)

For details on the arpeggiator for each Zone, see *The ARPEGGIATOR & ARPEGGIATOR 2 (ARP1, ARP2) Pages* on page 3-5.

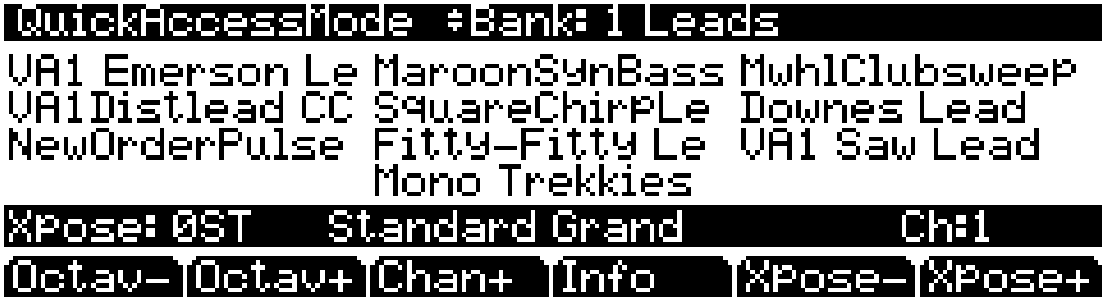
TRIGGER KEYS (KEYTRG)

The TRIGGER KEYS page (see below) allows you to set a controller destination to be triggered by playing a specific key.

In addition to generating a standard MIDI note on message, each key of the PC3 can be set to trigger a controller destination. TRIGGER KEYS can be set independently per Zone. By using Zones with overlapping key ranges, a single key can trigger multiple controller destinations. On the TRIGGER KEYS page, select the **Key** field and choose a note by holding the **Enter** button and playing the desired key (you can also use the Alpha Wheel, -/+ buttons or alphanumeric pad to choose a note.) With the desired note selected, use the **Dest** field to select a controller destination (see *The Controller Destination List* in The PC3 Musician's Guide for details.) Set a value to send to the controller destination with the **Value** field. Once a destination and value are set, the playing the key will send the value to the controller destination on the Zone's MIDI Channel (see the *Channel* parameter in the *Channel/Program (CH/PROG) Page* section of the *Setup Mode* chapter in *The PC3 Musician's Guide* for details on setting each Zone's MIDI channel.) This may also send a continuous controller message to the MIDI or USB out ports, depending on the Zone's **Destination** parameter (see the *Destination* parameter in the *Channel/Program (CH/PROG) Page* section of the *Setup Mode* chapter in *The PC3 Musician's Guide* for details.)

Chapter 4
Quick Access Mode

In Quick Access mode, you can select programs or setups with a single press of an alphanumeric button (or with other data entry methods). The PC3 offers a number of ways to quickly make selections while performing, but only Quick Access mode lets you store programs and setups together for instant access. On the PC3, we included several factory preset QA banks that are organized into useful groupings of sounds that we think you'll find convenient. Below is the QA page:



The top line of the page displays the current mode and the current QA bank.

Using Quick Access mode involves selecting Quick Access (QA) banks from the list of factory preset or user-programmed banks. Use the **Chan/Zone** buttons to scroll through the QA banks. You can also use the bank selection shortcut: press the **+/–** or **Clear** button on the alphanumeric pad, and you'll be prompted to enter a bank number. Type the desired number on the alphanumeric pad, then press **Enter**. The bank is selected, and you return to the Quick Access mode page.

Each bank contains ten memory slots, or entries, where you can store programs or setups in any combination. Any program or setup in the currently selected bank can be selected with the numeric buttons **0** through **9**.

If the highlighted entry contains a *program*, the bottom right-hand field of the page displays the channel on which the program entries are transmitted (this channel is the current channel in Program mode). If the highlighted entry contains a *setup*, the bottom right-hand field of the page displays the word "Setup."

The MIDI Program Change commands that the PC3 receives when in Quick Access mode can differ from those in Program or Setup mode. This depends on the setting you have for the PrgChgMode parameter on MIDI Receive page in Master mode. If PrgChgMode is set to **Extended** or **K2600**, the PC3 responds to Program Change commands as it would in Program or Setup mode. If PrgChgMode is set to **QAccess**, the PC3 responds to Program Change commands by calling up the corresponding entry in the current QA bank, not the actual program number of the entry.

Soft Buttons In Quick Access Mode

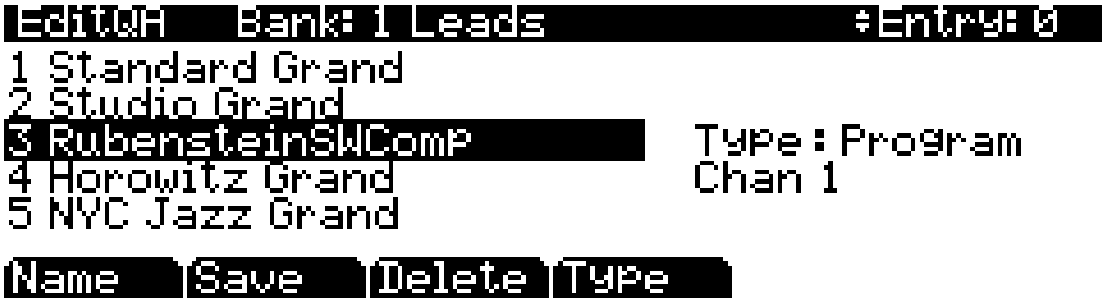
Use the **Octav–** and **Octav+** soft buttons to transpose up or down by a full octave. Pressing both **Octav** buttons simultaneously returns the transposition to its original setting.

Press the **Info** soft button to see all of the controller assignments of the current program. Scroll down the page using the Alpha Wheel, cursor or the **-/+** buttons.

The **Xpose-/Xpose+** buttons are a shortcut for quick transposition in semitone (half step) increments. You can use them to transpose the entire PC3 as much as three octaves up or down. The bottom line of the display shows the current amount of transposition (Xpose). Pressing both **Xpose** buttons simultaneously returns the transposition to zero. The **Xpose** buttons transpose the PC3, as well as any MIDI devices connected to the PC3's MIDI Out port. Changing the transposition with the soft buttons also changes the Transpose setting on the Master mode MIDI Transmit page.

The QA Editor

Use the QA Editor to customize existing QA banks. Enter the QA editor from QA mode by pressing the **Edit** button.



The top line gives you the usual mode reminder, the current QA bank, and the current entry (corresponding numeric button for the highlighted object.) The cursor highlights the object (program or setup) that's stored in the current entry.

Selecting A Quick Access Entry To Edit

Pressing the **Chan/Zone** buttons scrolls through the ten entries—the number of the current entry is displayed in the top-right corner. As the entry number changes, the highlighted objects at the center of the page change as well, showing you what's stored in each entry. On the page above, for example, entry 0 is the current entry.

Selecting A Program For A Quick Access Entry

Above, the Type field tells you that the object stored at entry 0 is a program. The cursor highlights the program's ID and name. Use the Alpha Wheel or **-/+** buttons to scroll through the list of programs. Press one of the Category buttons to see a list of programs in that category, or press the **All** Category button to see a list of all programs.

Selecting A Setup For A Quick Access Entry

If you want to store a setup in the current entry instead of a program, press the **Type** soft button—when you do this, notice that the Type field change from **Program** to **Setup** (also notice that the channel indicator disappears, since setups can transmit over several channels). The list of objects changes from the program list to the setup list. Just as with programs, the cursor highlights the setup's ID and name. Use the Alpha Wheel or **-/+** buttons to scroll through the setups. You can also use the alphanumeric pad followed by the **Enter** button to choose a Setup by ID#.

Keep in mind that you can have both setups and programs in the same QA bank.

Naming And Saving A Quick Access Bank

When you've filled each entry with the object you want, press the **Name** soft button if you want to rename the bank, or press the **Save** soft button to begin the save procedure. Or, press the **Exit** button to exit the QA editor, and the "Save Changes?" dialog comes up.

Chapter 5
Effects

INFOEDIT page (INFO)

Press the INFO soft button to go to the INFOEDIT page where you can edit the controller assignment info for the current Chain. On the INFOEDIT page, use the **Chan/Layer** buttons to scroll through the current Chain's list of controller assignment info. Each assignment info entry has a MIDI controller number and a Text parameter to describe what the assignment controls.

To edit the text of a controller assignment, press the **Text** soft button. To create a new controller assignment info entry, press the **New** soft button (you will be prompted for a MIDI controller number.) To create a new controller assignment info entry with the same text as the current info entry, press the **Dup** soft button (you will be prompted for a MIDI controller number.) To delete the current controller assignment info entry, press the **Delete** soft button (you will be prompted to confirm or cancel.) To return to the Chain editor press the **Done** soft button or the **Exit** button. See *Export* on page 9-2 for details on exporting Chain info.

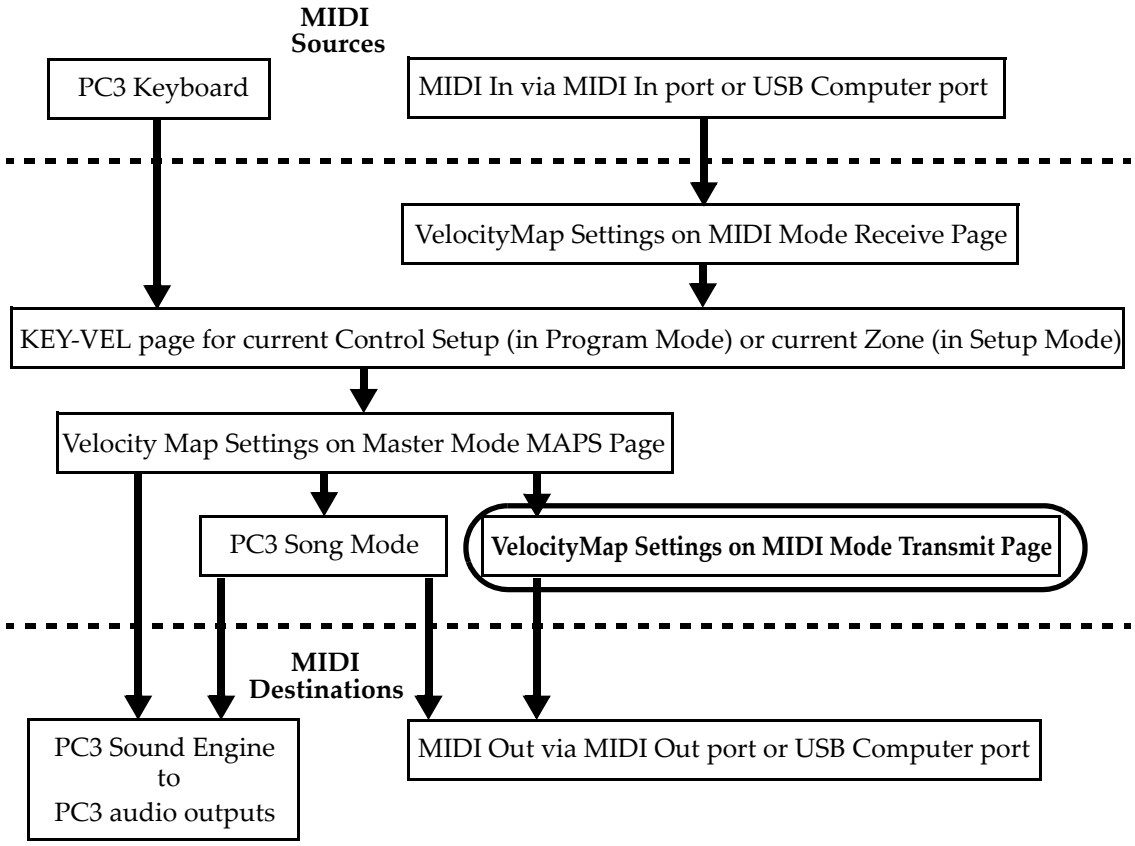
INFOEDIT page (INFO)

Chapter 6
MIDI Mode

The TRANSMIT Page

Velocity Map (Transmit)

Change the MIDI Transmit Velocity Map setting if you are triggering external MIDI gear which is producing notes that are too loud or too quiet based on your playing style (how light or heavy that you play the keys.) The default map provides the widest range of velocity expression, but you may want to choose a different map if the default does not suit your playing style.

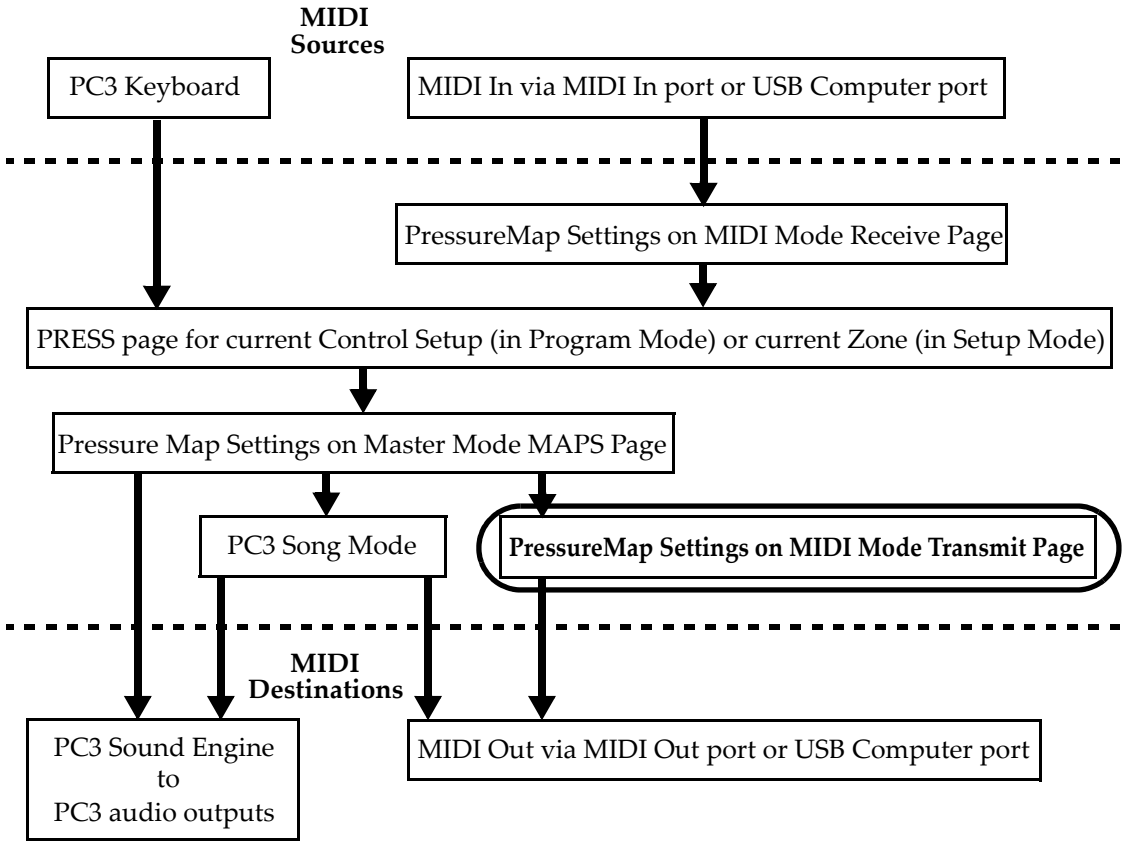


The transmit Velocity Map affects the way the PC3 sends MIDI velocity values to its USB or MIDI Out port (see the circled box above for its location in the MIDI signal flow.) Different maps output different MIDI velocity values for the same received MIDI attack velocity. Each map applies a different curve to received MIDI attack velocities and remaps them to new velocities before transmitting them to the USB or MIDI Out port (this parameter has no effect on MIDI data sent from Song mode or to the PC3's sound engine.) The default map provides the widest range of velocity expression, but you may want to choose a different map if the default does not suit your playing style. See the diagram above for the other pages that affect the MIDI attack velocity before reaching the transmit Velmap.

The default map, **Linear,** allows MIDI velocities to pass unchanged. Maps **Light 1-3** make it increasingly easier to produce high MIDI velocity values for the same key strike velocity (with Light 3 being the easiest,) so these maps may work better for users who play with a lighter touch. **Hard 1-3** make it increasingly harder to produce high MIDI velocity values for the same key strike velocity (with Hard 3 being the hardest,) so these maps may work better for users who play with a harder touch. **Piano Touch** simulates the general velocity response of an acoustic piano, and is best suited for playing acoustic piano sounds. **Easy Touch** is similar to the Light settings, making high velocities easier to play, but it allows more sensitive control over playing high velocities by not boosting the MIDI velocity for fast strike velocities as much as it does for medium strike velocities. **GM Receive** mimics the velocity map commonly used by keyboards that use the General MIDI (GM) sound set. The GM Receive map makes medium strike velocities produce higher MIDI velocities compared to the Linear map.

Pressure Map (Transmit)

Change the Transmit Pressure Map setting if you are triggering external MIDI gear which is producing MIDI pressure (aftertouch) values that are too high or too low based on your playing style (how soft or hard that you press the keys.) The default map provides the widest range of pressure expression, but you may want to choose a different map if the default does not suit your playing style.



The transmit Pressure Map affects the way the PC3 sends MIDI pressure (aftertouch) values to its USB or MIDI Out port (see the circled box above for its location in the MIDI signal flow.) Different maps output different MIDI pressure (aftertouch) values for the same received MIDI pressure (aftertouch) value. Each map applies a different curve to received MIDI pressure (aftertouch) values and remaps them to new values before transmitting them to the USB or MIDI Out port (this parameter has no effect on MIDI data sent from Song mode or to the PC3's sound

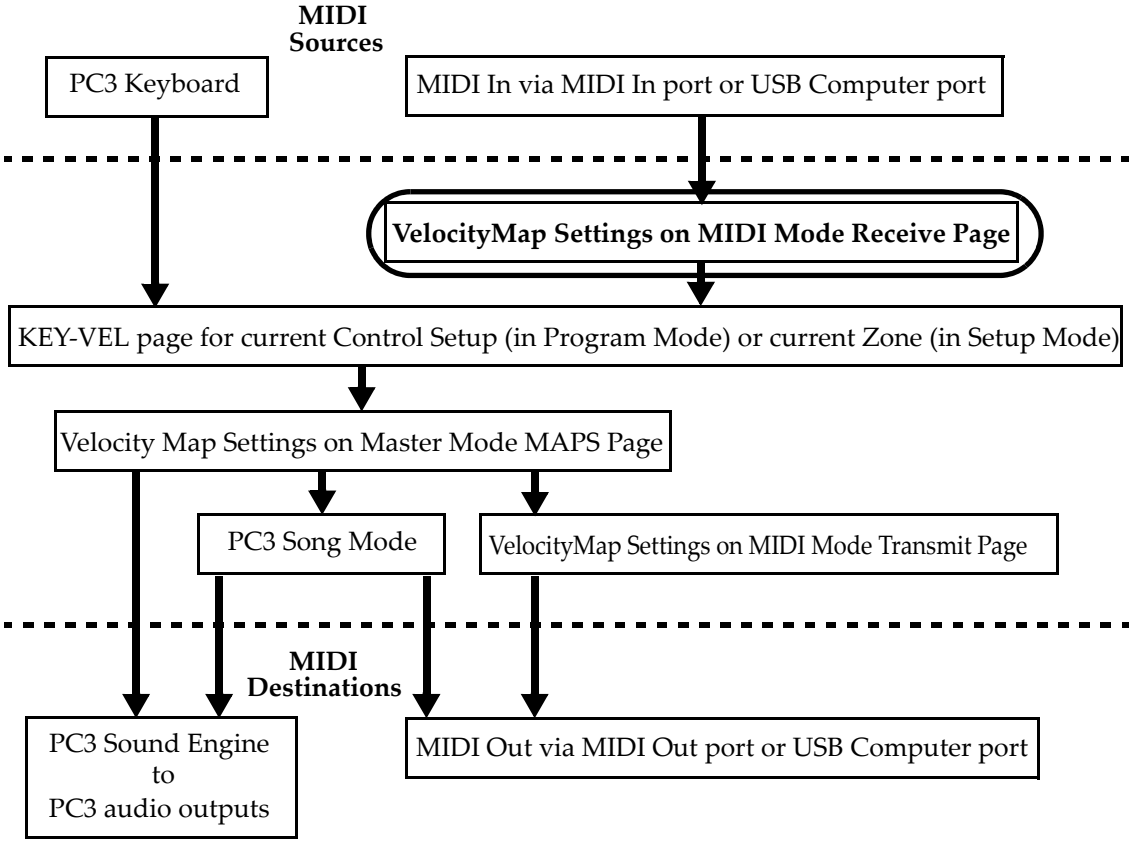
engine.) The default map provides the widest range of pressure (aftertouch) expression, but you may want to choose a different map if the default does not suit your playing style. See the diagram above for the other pages that affect MIDI pressure (aftertouch) values before reaching the transmit Pressure Map.

The default map, **Linear**, allows MIDI pressure (aftertouch) values to pass unchanged. Maps 2-4 make it increasingly easier to produce MIDI pressure values for the same physical pressure applied to a key (with 4 "Easiest" being the easiest.) Maps 4-7 make it increasingly harder to produce MIDI pressure values for the same physical pressure applied to a key (with 7 "Hardest" being the hardest.)

The RECEIVE Page

Velocity Map (Receive)

Change the receive Velocity Map setting if you are triggering the PC3 with external MIDI gear which is producing notes that are too loud or too quiet. The default map provides the widest range of velocity expression, but you may want to choose a different map if the default does not suit your playing style.

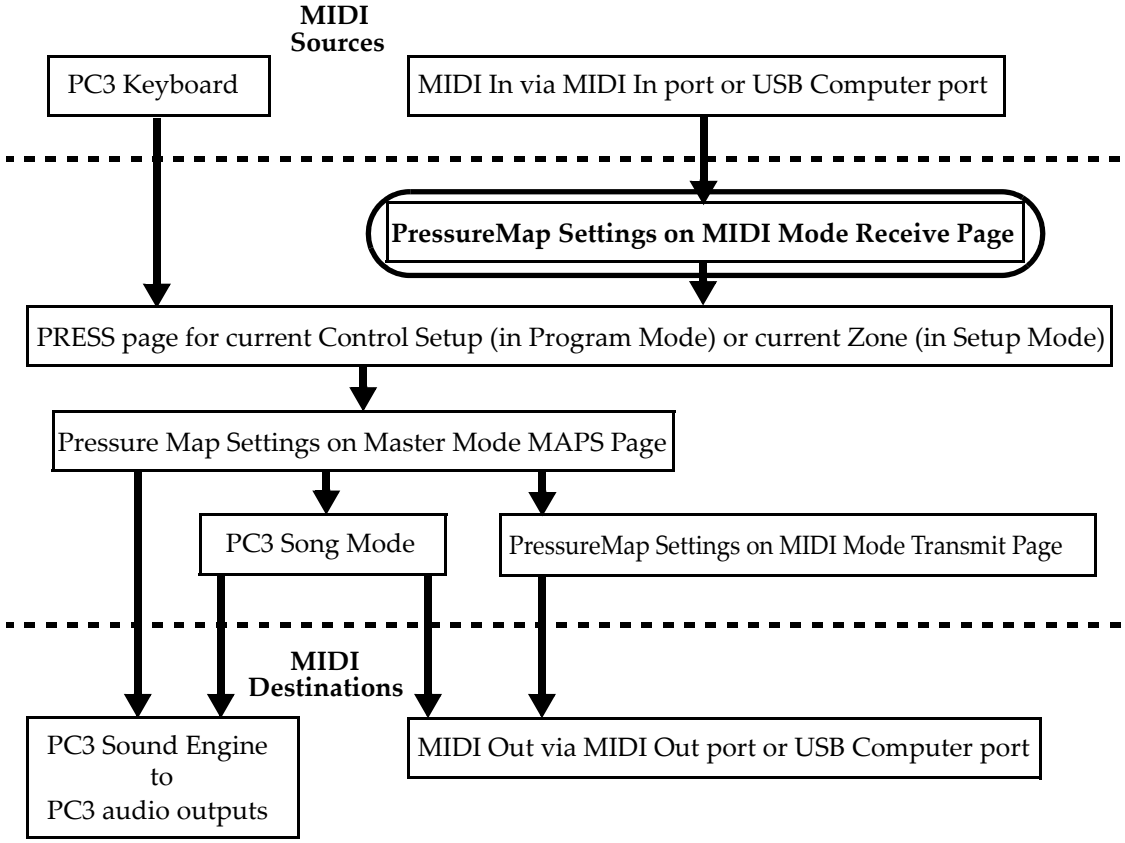


The receive Velocity Map affects the way the PC3 receives MIDI velocity values from its USB or MIDI In port (see the circled box above for its location in the MIDI signal flow.) Different maps output different MIDI velocity values for the same received MIDI attack velocity. Each map applies a different curve to received MIDI attack velocities and remaps them to new velocities before letting them pass (this parameter has no effect on MIDI data sent from the PC3's keyboard.) The default map provides the widest range of velocity expression, but you may want to choose a different map if the default does not suit your playing style. See the diagram above for the other pages that affect the MIDI attack velocity before reaching the receive Velocity Map.

The default map, **Linear,** allows MIDI velocities to pass unchanged. Maps **Light 1-3** make it increasingly easier to produce high MIDI velocity values for the same key strike velocity (with Light 3 being the easiest,) so these maps may work better for users who play with a lighter touch. **Hard 1-3** make it increasingly harder to produce high MIDI velocity values for the same key strike velocity (with Hard 3 being the hardest,) so these maps may work better for users who play with a harder touch. **Piano Touch** simulates the general velocity response of an acoustic piano, and is best suited for playing acoustic piano sounds. **Easy Touch** is similar to the Light settings, making high velocities easier to play, but it allows more sensitive control over playing high velocities by not boosting the MIDI velocity for fast strike velocities as much as it does for medium strike velocities. **GM Receive** mimics the velocity map commonly used by keyboards that use the General MIDI (GM) sound set. The GM Receive map makes medium strike velocities produce higher MIDI velocities compared to the Linear map.

Pressure Map (Receive)

Change the receive Pressure Map setting if you are triggering the PC3 with external MIDI gear which is producing MIDI pressure (aftertouch) values that are too high or too low based on your playing style (how soft or hard that you press the keys.) The default map provides the widest range of pressure (aftertouch) expression, but you may want to choose a different map if the default does not suit your playing style.



The receive Pressure Map affects the way the PC3 receives MIDI pressure (aftertouch) values from its USB or MIDI In port (see the circled box above for its location in the MIDI signal flow.) Different maps output different MIDI pressure (aftertouch) values for the same received MIDI pressure (aftertouch) value. Each map applies a different curve to received MIDI pressure (aftertouch) values and remaps them to new values before letting them pass (this parameter has

no effect on MIDI data sent from the PC3's keyboard.) The default map provides the widest range of pressure (aftertouch) expression, but you may want to choose a different map if the default does not suit your playing style. See the diagram above for the other pages that affect MIDI pressure (aftertouch) values before reaching the receive Pressure Map.

The default map, Linear, allows MIDI pressure (aftertouch) values to pass unchanged. Maps 2-4 make it increasingly easier to produce MIDI pressure values for the same physical pressure applied to a key (with 4 "Easiest" being the easiest.) Maps 4-7 make it increasingly harder to produce MIDI pressure values for the same physical pressure applied to a key (with 7 "Hardest" being the hardest.)

Local Keyboard Channel (LocalKbdCh)

The Local Keyboard Channel enables an external MIDI device to function as if it is the PC3's keyboard and physical controllers. This allows one MIDI channel of an external MIDI device to control multiple MIDI channels of the PC3, even if the external MIDI device only transmits on one channel.

In **Setup Mode**, when the **LocalKbdCh** parameter is set to match the channel on which the external MIDI device is transmitting, the setup will play on the external MIDI device as it does on the PC3's keyboard. See the *Continuous Controller Messages From External MIDI Devices* on page 6-6 section below for details on receiving continuous controller messages from an external MIDI device when a Local Keyboard Channel is set. Also, in Setup Mode, when the LocalKbdCh parameter is set to match the channel on which the external MIDI device is transmitting, external MIDI received by a Zone is sent to the destination set with each Zones' CH/PROG page **Destination** parameter (see the PC3 Musician's Guide for details on the CH/PROG page Destination parameter.) In this case, if a Zone is sending the external MIDI to the USB or MIDI Out ports, the MIDI messages will be remapped to the channel of the Zone, and any note transposition set for the Zone will be applied.

In **Setup Mode**, when the **LocalKbdCh** parameter is set to **None**, an external MIDI device will play a single Program. The played program will be on a Zone of the current Setup that has a **Channel** parameter (on the Setup Editor CH/PROG page) which matches the channel on which the external MIDI device is transmitting. *(If no Zone's Channel parameter matches, the external device will play the program that was last used by that channel in Program or Setup Mode.)* When the Program of a Setup Zone is played from an external MIDI controller with the **LocalKbdCh** parameter set to **None**, Setup MIDI parameters (most noticeably key range and transposition) will not be applied. (See *Input Channel* on page 3-2 for details on applying these parameters when playing a single zone from an external MIDI device.) Also, in Setup Mode, when Local Keyboard Channel is set to None, external MIDI sent to any channel is output from the MIDI Thru port, but not from the MIDI Out port or USB port.

The Local Keyboard Channel parameter also affects how external MIDI devices interact with **Program Mode**. In Program Mode, when the **LocalKbdCh** parameter is set to match the channel on which the external MIDI device is transmitting, the external MIDI device will play the Program on the channel currently selected on the Program Mode main page. *(The Program Mode main page shows the current channel on the right of the top line.)* Also, in this case, external MIDI received by a Program mode is sent to the destination set on the **Destination** parameter on the MIDI Mode Transmit page (see the PC3 Musician's Guide for details on the MIDI Mode Transmit page Destination parameter.)

In **Program Mode**, when the **LocalKbdCh** parameter is set to **None**, an external MIDI device will trigger the program on the channel that it is transmitting, no matter which channel is currently selected on the Program Mode main page. In this case, external MIDI sent to any channel is output from the MIDI Thru port, but not from the MIDI Out port or USB port.

Continuous Controller Messages From External MIDI Devices

When using an external MIDI device with the PC3, you can control many of the PC3's program parameters by sending MIDI Continuous Controller messages (CCs) from the external MIDI device. Each parameter that you wish to control must have a CC number assigned in the Program Editor (see the section below: *Assigning An External CC Number As A Control Source For A Program Parameter*.) See the sections below for details on using external CCs with the available settings in Program and Setup Mode.

For details on controllable parameters of VAST programs, see the following sections in The PC3 Musician's Guide: *The DSP Modulation (DSPMOD) Page* on page 6-29, *The LFO Page* on page 6-37, *The ASR Page* on page 6-39, *The Function (FUN) Page* on page 6-40, *The Envelope Control (ENVCTL) Page* on page 6-44, *The MOD Pages* on page 9-9, and *FXLFO, FXASR, and FXFUN pages* on page 9-10. For KB3 programs, see the following sections in The PC3 Musician's Guide: *The PITCH Page* on page 6-63, *The AMP Page* on page 6-62, *The LFO, ASR, and FUN Pages* on page 6-70, *The MOD Pages* on page 9-9, and *FXLFO, FXASR, and FXFUN pages* on page 9-10.

Assigning An External CC Number As A Control Source For A Program Parameter

For each program, the Program Editor can be used to assign an external MIDI controller CC number for each controllable parameter in that parameter's source field. Source fields are named differently depending on their page: Src1, Src2, RateCt, Trigger, Input a, Input b, and Source. To assign a CC number to a source field, enter the number with the alphanumeric pad, then press **Enter**. With the source field selected, you can also assign a CC number by holding the **Enter** button and sending a CC value from the external MIDI controller. When assigning a CC number to a source field, the number may be displayed in the source field as the name of that CC's default use.

Using External CCs In Program Mode, Local Keyboard Channel=None

To control a program parameter via external MIDI CC in Program Mode, the parameter must first have a source assigned within the Program Editor, as described in the *Assigning An External CC Number As A Control Source For A Program Parameter* section above. To control an assigned program parameter with **Local Keyboard Channel** set to **None**, send the assigned CC number to the channel which contains the program.

Using External CCs In Program Mode, Local Keyboard Channel Enabled

To control a program parameter via external MIDI CC in Program Mode, the parameter must first have a source assigned within the Program Editor, as described in the *Assigning An External CC Number As A Control Source For A Program Parameter* section above. When using Local Keyboard Channel in Program Mode, it is best to assign parameters to be controlled by the default CCs for physical controllers, because these match the default destinations (see the *External MIDI CC Remapping For Local Keyboard Channel and Input Channel* table below for default CCs).

The Local Keyboard Channel makes an external MIDI controller's continuous controllers behave as if they were the PC3's physical controllers. In Program Mode, when an external MIDI controller is sending a CC on the channel set for **Local Keyboard Channel**, external CCs can control the destinations set for each of the PC3's physical controllers. Send the default CC for a physical controller to control its destination (see the *External MIDI CC Remapping For Local Keyboard Channel and Input Channel* table below for defaults.) In Program Mode, these destinations are set in the Control Setup *(see Control Setup on page 7-2 of the PC3 Musician's Guide for details.)* By default, the destinations for the PC3's physical controllers are the same as their default CC numbers. To control an assigned parameter, send the assigned default physical controller CC to the channel set for **Local Keyboard Channel.**

If a **Local Keyboard Channel** is set but you are sending CCs to a different channel, these CCs will be received normally by the Program in that channel.

Using External CCs In Setup Mode, Local Keyboard Channel=None, Input Channel=None

To control a program parameter via external MIDI CC in Setup Mode, the parameter must first have a source assigned within the Program Editor, as described in the *Assigning An External CC Number As A Control Source For A Program Parameter* section above. To control an assigned parameter, send the assigned CC number to the channel for the Setup Zone which contains the program.

Using External CCs In Setup Mode, Local Keyboard Channel Enabled, Input Channel=None

To control a program parameter via external MIDI CC in Setup Mode, the parameter must first have a source assigned within the Program Editor, as described in the *Assigning An External CC Number As A Control Source For A Program Parameter* section above.

The Local Keyboard Channel makes an external MIDI controller's continuous controllers behave as if they were the PC3's physical controllers. In Setup Mode, when an external MIDI controller is sending a CC on the channel set for **Local Keyboard Channel**, external CCs can control the destinations set for each of the PC3's physical controllers. Send the default CC for a physical controller to control its destination (see the *External MIDI CC Remapping For Local Keyboard Channel and Input Channel* table below for defaults.) The CC is received in Setup Mode and sent to a Program based on the destination set in Setup Mode. In the Setup Editor, use the alphanumeric pad to set each PC3 physical controller **Dest**, **OnControl** or **OffControl** field to the CCs you assigned in Program Mode. When setting a CC destination, the number may turn into the name of the PC3 physical controller which uses that CC by default. If you create a Setup using Setup **126 Internal Voices** as a template, the default CC numbers will already be set for each physical controller destination. *(Don't save a Setup at ID 126, setup 126 Internal Voices is the PC3's default Control Setup, see Control Setup on page 7-2 of the PC3 Musician's Guide for details.)*

Note: In Setup Mode, when an external MIDI controller is sending a CC on the channel set for **Local Keyboard Channel**, any CC sent that is not in the *External MIDI CC Remapping For Local Keyboard Channel and Input Channel* table (see below) gets sent to Programs on all Zones of the Setup.

If a **Local Keyboard Channel** is set but you are sending CCs to a different channel, these CCs will be received normally by the Program in the Setup Zone for that channel.

Using External CCs In Setup Mode, Local Keyboard Channel=None, Input Channel Enabled

To control a program parameter via external MIDI CC in Setup Mode, the parameter must first have a source assigned within the Program Editor, as described in the *Assigning An External CC Number As A Control Source For A Program Parameter* section above.

To use an **InputChannel** (see page 3-2,) **Local Keyboard Channel** must be set to **None**. The **InputChannel** makes an external MIDI controller's continuous controllers behave as if they were the PC3's physical controllers. When an external MIDI controller is sending a CC on the channel set for **InputChannel**, external CCs can control the destinations set for each of the PC3's physical controllers. Send the default CC for a physical controller to control its destination (see the *External MIDI CC Remapping For Local Keyboard Channel and Input Channel* table below for defaults.) The CC is received in Setup Mode and sent to a Program based on the destination set in Setup Mode. In the Setup Editor, use the alphanumeric pad to set each PC3 physical controller **Dest**, **OnControl** or **OffControl** field to the CCs you assigned in Program Mode. When setting a CC destination, the number may turn into the name of the PC3 physical controller which uses that CC by default. If you create a Setup using Setup **126 Internal Voices** as a template, the default CC numbers will already be set for each physical controller destination. *(Don't save a Setup at ID 126, setup 126 Internal Voices is the PC3's default Control Setup, see Control Setup on page 7-2 of the PC3 Musician's Guide for details.)*

Note: In Setup Mode, when an external MIDI controller is sending a CC on the channel set for **Input Channel**, any CC sent that is not in the *External MIDI CC Remapping For Local Keyboard Channel and Input Channel* table (see below) also gets sent to the Program on that channel.

If an **InputChannel** is set but you are sending CCs to a different channel, these CCs will be received normally by the program in the Setup Zone for that channel.

External MIDI CC Remapping For Local Keyboard Channel and Input Channel

PC3 Physical Controller	Default MIDI CC# Which Controls The Destination Assigned To Each PC3 Physical Controller In The Setup Editor
Pitch Wheel	NA, responds to MIDI pitch bend messages
Mod Wheel	1
Arp Button	69
SW Button	29, 70
Continuous Pedal 1	11
Continuous Pedal 2	4
Breath	2
Pressure (key pressure)	Not controllable by MIDI CC
Foot Switch 1	64
Foot Switch 2	66
Foot Switch 3	67
Ribbon Section 1	18, 21
Ribbon Section 2	19
Ribbon Section 3	20
Slider A (Data)	6
Slider B	13
Sliders C-I	22-28
Programmable Switches 1-8	Not controllable by MIDI CC
Bank Buttons (KB3 control buttons, Setup Zone Mute buttons)	Not controllable by MIDI CC

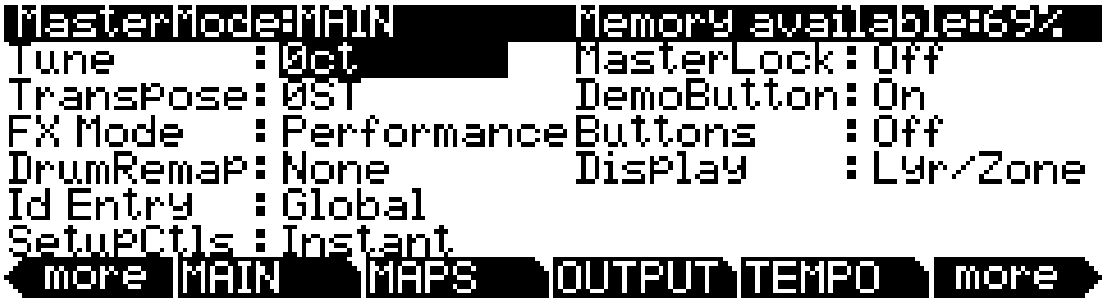
Chapter 7
Master Mode

Press the **Master** mode button to enter Master mode, which contains parameters affecting the PC3's overall performance and system setup. You can set the system Clock so that the PC3 will time-stamp your files correctly. You can use the Object tool to rename or delete selections of objects. You can also enter the Boot Loader to access a number of system and file utilities, or use Reset to delete all user objects and restore the PC3's memory to its original factory settings.

When you exit Master Mode (or MIDI Mode) the PC3 saves a Master Table (unless MasterTableLock is **On** — more on this below.) The Master Table remembers the settings of the Master pages, as well as the state of the PC3, such as which programs are assigned to each channel, settings for MIDI Mode Transmit and Receive pages, and Master FX settings. Explicit saving of the Master Table is also possible.

MAIN

On the Master Mode MAIN page you'll find parameters for setting the overall tuning and transposition of the PC3, overall FX settings, drum program remapping, clock source options, ID entry options, demo song options, as well as options for saving master mode settings and remote triggering of PC3 functions.



Parameter	Range of Values	Default
Tune	± 100 cents	0
Transpose	-128 to 127 semitones	0
FX Mode	Performance, Multitrack	Performance
Drum Remap	None, GM	None
ID Entry	Global, Bank	Global
Setup Controllers (SetupCtls)	Instant, Pass Entry	Instant
Master Lock	On, Off	Off
Demo Button	On, Off	On
Buttons Mode	Off, On	Off
Display	Lyr/Zone, Ctls	Off

Tune

Adjusting the value of this parameter tunes every program in the PC3 by the amount you specify. Tuning can be adjusted up or down 100 cents (one semitone) in one-cent increments. This parameter is useful for getting in tune with recordings and acoustic instruments. Adjusting the tuning in Master mode does not change the settings on the PITCH page of individual programs, but will be added to any adjustments you make there. Master mode tuning adjustments affect only the audio output of PC3 program notes, and *not notes sent via MIDI*.

Transpose

Like the Tune parameter above, Transpose affects every PC3 program, but not those notes sent to the MIDI Out port. You can adjust the MIDI transposition sent to the MIDI Out port on the TRANSMIT page in MIDI mode.

FX Mode

With FX Mode set to **Performance**, the PC3 minimizes disruption of existing effects when changing programs, and entry values will not disrupt sustained notes when changing programs in Program or Quick Access modes. When controlling the PC3 from an external sequencer in Program Mode, you will want to set FX Mode to **Multitrack** to minimize effect disruption. FX Mode is set to Performance as a default, with some exceptions. In Song mode, Multitrack mode is always used, despite how this parameter is set in Master Mode. Also, the FX Mode parameter does not affect Setup Mode because it uses its own FX mode.

Drum Remap

This parameter will remap all Drum programs to conform to the General MIDI (GM) drum map, a standard drum map used in many keyboards and synthesizers. The GM drum map isn't optimally intuitive in terms of playability, so by default the PC3 uses a unique keymap that is more intuitive and lends better to performance. However, the GM drum map is so commonplace that many players feel more comfortable playing drum programs with the GM drum map. Because of this, the PC3 is designed such that you can remap drum programs to the GM drum map.

When the Master Page Drum Remap is set to **None**, no remapping takes place in Program mode. When the Master Page Drum Remap is set to **GM**, the PC3 remaps Drum programs to the GM drum map.

ID Entry

Global means that any entry you make from the alphanumeric keypad will select the object indicated, regardless of the bank it is in. For example, in program mode type "36" of the alphanumeric keypad to select program 36.

If Numeric Entry is set to **Bank**, your selection will be limited to the currently selected bank. For instance, in Program mode, if you are in **Orchestra** bank and you enter "65", then the current program becomes program 65 of the Orchestra bank, viz. **449 HornSect Layer**.

Setup Controllers (SetupCtls)

The Setup Controllers parameter affects how the PC3's physical controllers relate to Entry Values in Setup Mode (see *Entry (Ent) and Exit Values* on page 3-3.) With the Setup Controllers parameter set to **Instant**, moving a physical controller assigned within a Setup will instantly send a new MIDI value to that assignment. With the Setup Controllers parameter set to **PassEntry**, moving a physical controller assigned within a Setup will not send a new MIDI value to that assignment until the physical controller passes the value set for its Entry Value. **Instant** is set by default, but **PassEntry** can be useful so that Setup controller assignments don't jump far from their entry values when first moving a physical controller.

Master Table Lock (Master Lock)

With Master Lock set to **Off**, the PC3 will save the current Master mode configuration when you exit Master mode (or MIDI mode). This information is stored in a Master Table object (see *Save* on page 7-18 below for more details on what is saved with a Master Table.)

If you have a particular Master configuration that you would like to safeguard against the auto-saving feature, set Master Lock to **On**. With the Master Lock on, the PC3 does not save any changes unless you press the **Save** soft button. Note that if you would like Master Lock to stay on next time you turn on the PC3, you must press the Save soft button to store the state of Master Lock to the Master Table.

Demo Button

The Demo Button parameter determines what pressing the **Play/Pause** button does in program mode. With the Demo button parameter set to **On,** the **Play/Pause** button plays a demo song for the current program. (To play a demo song, the *Demo Song* parameter must be set in the program editor for the current program, see *The COMMON Page* section in the *Program Mode* chapter of The PC3 Musician's Guide for details.) With the Demo button parameter set to **Off,** the **Play/Pause** button plays the last song that was selected in Song Mode. If a demo song is set for the current program, it can always be played from program mode by simultaneously pressing the up and down cursor buttons.

Buttons Mode (Buttons)

If you set the Buttons parameter to **On**, pressing any buttons on the PC3 will generate System Exclusive (SysEx) messages that are sent to the MIDI Out port. This enables you to do two things: control a remote PC3, and/or record sequences of programming button presses to a sequencer or SysEx software package.

If you have the MIDI In port of another PC3 connected to the first one's MIDI Out port, the second instrument will respond to every button press on the first instrument, just as if you were pressing the buttons of the second one. Keep in mind that both devices must be in exactly the same state (the same page in the same mode, with identical lists of RAM objects) when you start. Otherwise the button presses you make on the first instrument may execute other functions on the second instrument.

Again, it's important to keep in mind that the state of your PC3 must be identical to its state when you recorded the sequence of button presses. If you've added or deleted any objects stored in RAM, for example, the sequence of button presses will select different objects when you play back the button press sequence.

NOTE: *Make sure this parameter is set to* ***Off*** *before you initiate a SysEx dump of any kind. If this parameter is on when you start a dump, the buttons you press to begin the dump will also generate SysEx messages.*

Display

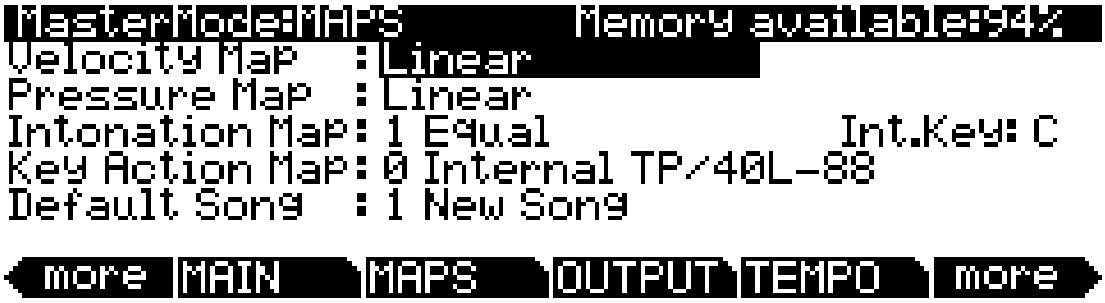
The **Display** parameter determines what will be displayed in the info box on the left side of the Program Mode and Setup Mode main pages. When **Display** is set to **Lyr/Zone**, the info box will display an overview of the keymap names and ranges for each layer in the current Program (while in Program Mode,) or an overview of the Program names and ranges for each zone in the current Setup (while in Setup Mode.) The line beneath the name of the keymap/program indicates the keyboard range of that layer/zone. For example, a line extending all the way across the info box represents a layer/zone that extends from C -1 to G 9—the full 128 note range of the PC3. The representation of these layer/zone ranges is approximate; they're intended to let you know if you have a layered keyboard (lines overlapping) or a split keyboard (lines not overlapping). In Program Mode, stereo keymap layers are indicated in the info box with a double circle symbol. In Setup Mode, zones that have the **Riff** parameter set to **On** (On the

Setup Editor RIFF1 page) are indicated in the info box with a riFF symbol. The info box can display up to four layers/zones at a time. If the current Program/Setup has more than four layers/zones, you can view their keymaps/programs by pressing and holding down the **Enter** button and scrolling with the **Chan/Layer** buttons.

When **Display** is set to **Ctls**, Program Mode and Setup Mode use the info box to display the controller assignment info and MIDI CC value for the last moved controller. The info box clears a few moments after displaying the controller info.

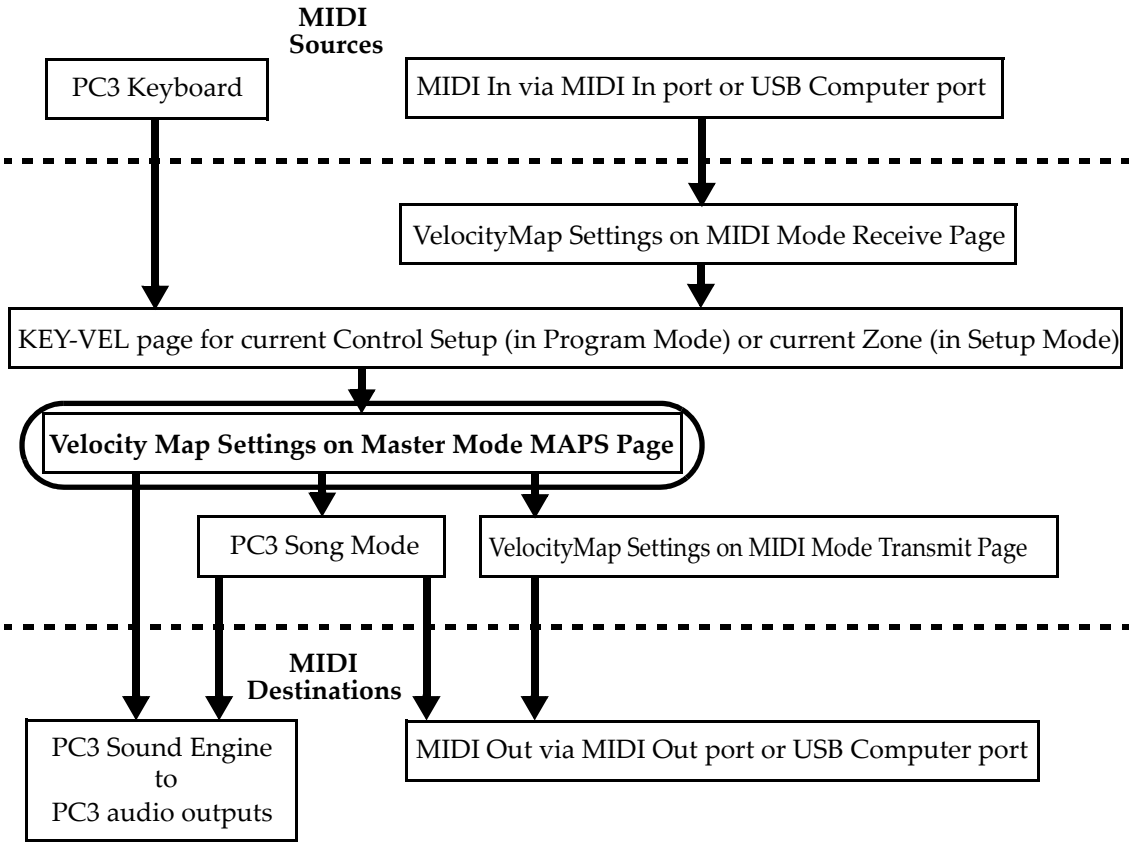
MAPS

On the MAPS page you'll find parameters for setting keyboard behavior for velocity, pressure, intonation, and key action maps. You can also set the default sequence for Song mode.



Velocity Map (Master)

Change the Master Velocity Map setting if you find that the PC3 is not producing the desired velocities (too loud or too quiet) based on your playing style (how light or heavy that you play the keys.) The default map provides the widest range of velocity expression, but you may want to choose a different map if the default does not suit your playing style.



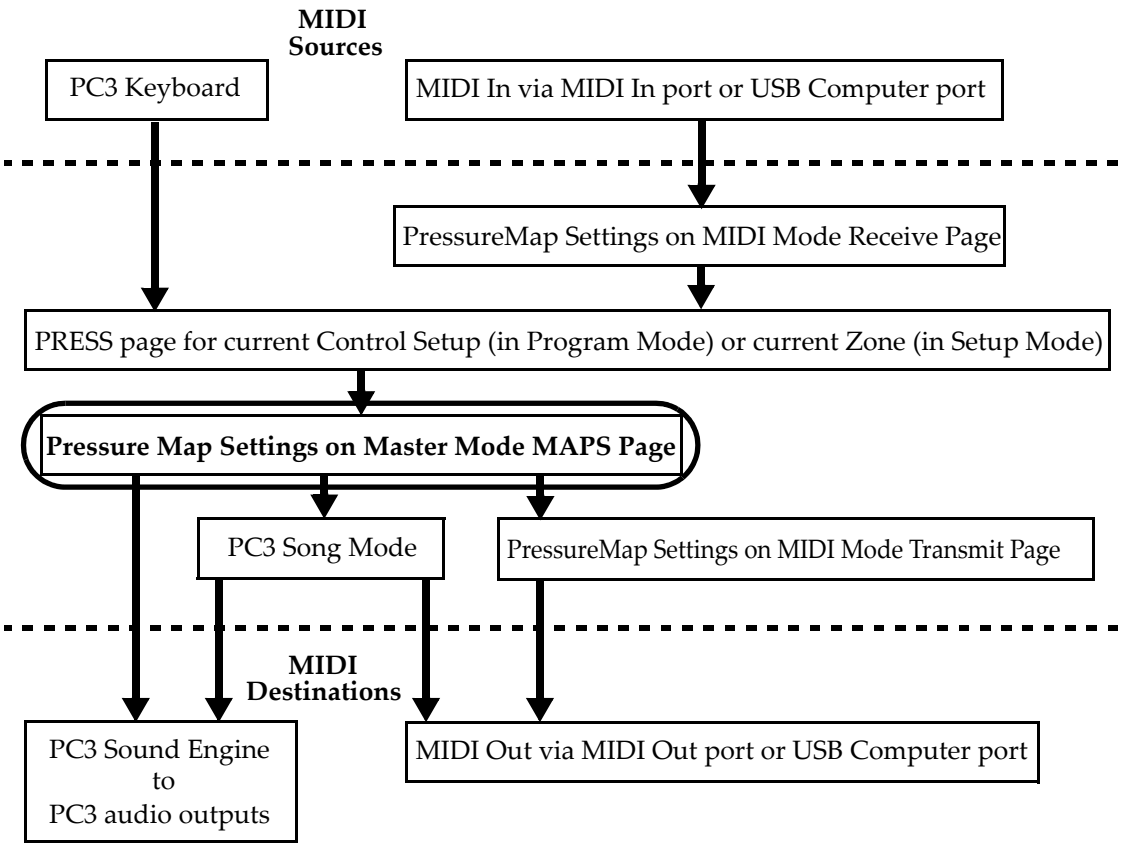
The Master Velocity Map is an overall control for MIDI velocities used in the PC3. MIDI velocities are values created for each note depending on how hard you strike a key. The Master Velocity Map affects MIDI velocity values for all MIDI sources and destinations used in the PC3 (see the circled box above for its location in the MIDI signal flow.) Different maps used for the Master Velocity Map generate different MIDI velocity values for the same physical key strike

velocity. Each map applies a different curve to received MIDI attack velocities and remaps them to new velocities before letting them pass. The default map provides the widest range of velocity expression, but you may want to choose a different map if the default does not suit your playing style. See the diagram above for the other pages that affect the MIDI attack velocity before and after reaching the Master Velocity Map.

The default map, **Linear**, allows MIDI velocities to pass unchanged. **Light 1-3** make it increasingly easier to produce high MIDI velocity values for the same key strike velocity (with Light 3 being the easiest,) so these maps may work better for users who play with a lighter touch. **Hard 1-3** make it increasingly harder to produce high MIDI velocity values for the same key strike velocity (with Hard 3 being the hardest,) so these maps may work better for users who play with a harder touch. **Piano Touch** simulates the general velocity response of an acoustic piano, and is best suited for playing acoustic piano programs. **Easy Touch** is similar to the Light settings, making high velocities easier to play, but it allows more sensitive control over playing high velocities by not boosting the MIDI velocity for fast strike velocities as much as it does for medium strike velocities. **GM Receive** mimics the velocity map commonly used by keyboards that use the General MIDI (GM) sound set. The GM Receive map makes medium strike velocities produce higher MIDI velocities compared to the Linear map. GM Receive effects notes from the PC3's keyboard as well as the MIDI in port. This map is automatically used when the PC3 is in GM mode (see *General MIDI Mode (GM On, GM Off)* below,) though users may want to use the GM Receive map when generating MIDI outside of GM mode which will later be played back by a GM system.

Pressure Map (Master)

Change the Master Press Map setting if you find that the PC3 is not producing the desired MIDI pressure (aftertouch) values (too high or too low) based on your playing style (how soft or hard that you press the keys.) The default map provides the widest range of pressure expression, but you may want to choose a different map if the default does not suit your playing style.



The Master Press Map is an overall control for MIDI pressure (aftertouch) values used in the PC3. MIDI pressure (aftertouch) values are created for each note depending on how hard you press on a key that is being held down. The Master Press Map affects MIDI pressure (aftertouch) values for all MIDI sources and destinations used in the PC3 (see the circled box above for its location in the MIDI signal flow.) Different maps used for the Master Press Map generate different MIDI pressure (aftertouch) values for the same physical key press value. Each map applies a different curve to received MIDI pressure (aftertouch) values and remaps them to new values before letting them pass. The default map provides the widest range of pressure (aftertouch) expression, but you may want to choose a different map if the default does not suit your playing style. See the diagram above for the other pages that affect MIDI pressure (aftertouch) values before and after reaching the Master Press Map.

The default map, Linear, allows MIDI pressure (aftertouch) values to pass unchanged. Maps 2-4 make it increasingly easier to produce MIDI pressure values for the same physical pressure applied to a key (with 4 “Easiest” being the easiest.) Maps 4-7 make it increasingly harder to produce MIDI pressure values for the same physical pressure applied to a key (with 7 “Hardest” being the hardest.)

Intonation

Most modern western music uses what is known as equal temperament. This means that the interval between each semitone of the 12-tone octave is precisely the same as every other semitone. However, many different intonation intervals have evolved over the centuries and across cultures and instruments, so equal temperament will not sound appropriate for certain styles of music. The PC3 supplies you with 17 different factory intonation maps which are useful for a range of different styles. By changing the value for this parameter, you select from among the intonation maps stored in the PC3's memory. You can further customize each map or create your own by editing a map (see *Editing Intonation Maps* below.) Each of these maps defines different intervals between each of the semitones in a single octave (used for all octaves) by setting pitch offsets for each note in cents.

Scroll through the list of Intonation maps, and listen for the differences between semitones. Some of the intervals between semitones may be quite different from equal temperament, but you'll notice that all notes are precisely tuned with notes that are an octave apart. This is because the intonation maps set the intervals within a single octave, and apply those intervals to each octave.

Like many instruments before the adaptation of equal temperament, most of these intonation maps were designed to sound best in one specific key. Though some may have historically been in a different key, all of the PC3s factory intonation maps are set to root note C by default. You can change the root key of the current intonation map by using the Int.Key parameter (see the *Intonation Key (Int.Key)* section below.)

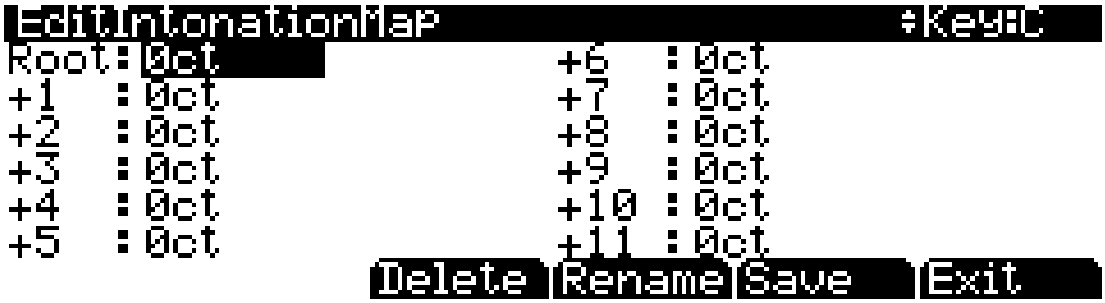
List and Description of Intonation Maps

0	None	No intonation map is used, intonation is equal but cannot be edited.
1	Equal	No detuning of any intervals. The standard for modern western music.
2	Classic Just	Tunings are defined based on the ratios of the frequencies between intervals. The original tuning of Classical European music.
3	Just Flat 7th	Similar to classic Just, but with the Dominant 7th flatted an additional 15 cents.
4	Harmonic	The perfect 4th, Tritone, and Dominant 7th are heavily flatted.
5	Just Harmonic	Approximation of a historical intonation.
6	Werkmeister	Named for its inventor, Andreas Werkmeister. It's fairly close to equal temperament, and was developed to enable transposition with less dissonance.
7	1/5th Comma	Approximation of a historical intonation based on the comma system.
8	1/4th Comma	Approximation of a historical intonation based on the comma system.
9	Indian Raga	Based on the tunings for traditional Indian music.
10	Arabic	Oriented toward the tunings of Mid-Eastern music.
11	BaliJava1	Based on the pentatonic scale of Balinese and Javanese music.
12	BaliJava2	A variation on 1Bali/Java, slightly more subtle overall.
13	BaliJava3	A more extreme variation.
14	Tibetan	Based on the Chinese pentatonic scale.
15	CarlosAlpha	Developed by Wendy Carlos, an innovator in microtonal tunings, this intonation map flats each interval increasingly, resulting in an octave with quarter-tone intervals.
16	Pyth/aug4	This is a Pythagorean tuning, based on the Greek pentatonic scale. The tritone is 12 cents sharp.
17	Pyth/dim5	This is a Pythagorean tuning, based on the Greek pentatonic scale. The tritone is 12 cents flat.

In general, you should select a nonstandard intonation map when you're playing simple melodies (as opposed to chords) in a particular musical style. When you use intonation maps based on pentatonic scales, you'll normally play pentatonic scales to most accurately reproduce those styles.

Editing Intonation Maps

To edit an intonation map or create a new map, select an existing map and press the Edit button to bring up the EditIntonationMap screen *(see below.)* Intonation maps are based around a root key, shown on the right of the top line of the screen. Use the **chan up/down** buttons to change the root key (this is the same as changing the Int.Key parameter (see *Intonation Key (Int.Key)* below.) Intonation Key is not saved with the intonation map.) Use the cursor to move between note steps, each of which is labeled by its difference in keyboard steps from the root. Each step can be shifted by ± 200 cents (100 cents=1 half-step.) Use the alpha wheel, alphanumeric pad, or plus/minus buttons to enter the desired cent shift amount for each step.



Press **Delete** to delete the map from memory. Press **Rename** to rename the map and save. Pressing **Save** gives you the option to save the map or rename and save. To create a new map, edit an existing map and choose Rename when saving. Press **Exit** to return to Master page 2. When exiting the editor, it will automatically give you the option to save the map if changes have been made. For more detailed instructions on these functions, see *Saving and Naming* on page 5-2 of The PC3 Musician's Guide.

Key Action Map

The Key Action Map determines the default way the PC3 responds to key action for specific keyboard component models. Generally speaking, you will not want to alter the Key Action Map. This parameter is included for the rare occasion when a PC3 has been setup at the factory for a different keyboard component model than the one installed. A user may discover that they need to change the Key Action Map when they have tried all of the Velocity Map settings and still do not feel comfortable with the key response of their PC3. Different maps result in different responses from the PC3 for the same physical key action, and each map corresponds to a different keyboard component model. If you have changed this parameter and want to change it back to the default map for your PC3, simply enter a value of **0** in the Key Action Map parameter field.

Intonation Key (Int.Key)

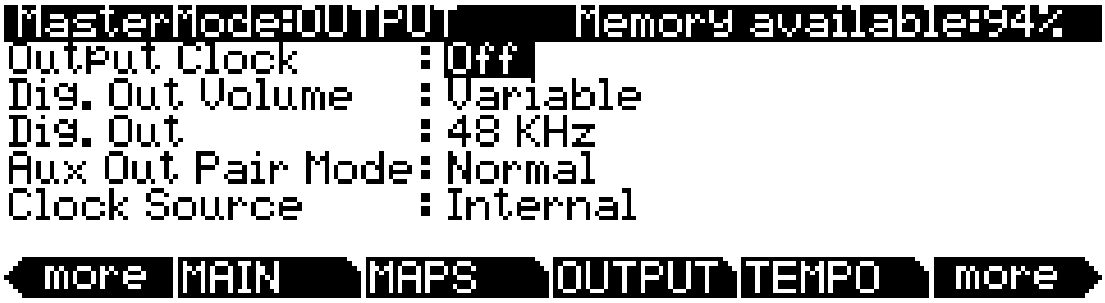
This sets the tonic, or base note from which the currently selected intonation map calculates its intervals. If you select **G** as the intonation key, for example, and the intonation map you select tunes the minor 2nd down by 50 cents, then $G^{\#}$ will be a quartertone flat relative to equal intonation. If you change the intonation key to **D**, then $D^{\#}$ will be a quartertone flat. If you use nonstandard intonations, you'll want to set Int.Key to the key you're playing in. If the Intonation parameter is set to **Equal**, changing Int.Key has no effect.

Default Sequence

The Default Sequence parameter specifies the song that is used as a template for new and clear songs in Song mode.

OUTPUT

The OUTPUT page has options for digital audio output volume and sample rate. You can also set the analog Aux outputs to mirror the primary analog outputs. You can also control the MIDI clock source and MIDI clock output.



Parameter	Range of Values	Default
Output Clock	Off, On	Off
Digital Output Volume (Dig. out volume)	Variable, Fixed	Variable
Digital Output (Dig.Out)	Digital Output List	48 KHz
Aux Out Pair Mode	Normal, Mirror Primary Outputs	Normal
Clock Source	Internal, External	Internal

Output Clock

To send a MIDI clock pulse to the MIDI Out port, set this parameter to **On**. Otherwise, set it to **Off**.

Digital Output Volume (Dig. out volume)

The Digital Output Volume parameter specifies the behavior of the PC3's Digital Output. Setting this parameter to **Variable** makes the Digital Output respond to changes made on the volume slider. Setting this parameter to **Fixed** makes the Digital Output output a signal with a fixed volume.

Digital Output (Dig. Out)

This Digital Output parameter specifies the PC3's digital output sample rate. Internally clocked sample rates go from 44.1K up to 192K.

Externally synced sample rates cover 20-220KHz in 3 ranges. Be sure the external clock frequency is within the range you select.

Aux Out Pair Mode

The Aux Out Pair Mode parameter specifies the behavior of the Secondary Audio Outputs (located on the back panel underneath the "Balanced Analog Outputs - AUX" label. Setting this parameter to **Normal** makes the Aux Outputs behave as such. Setting this parameter to **Mirror Primary Outputs** makes the Aux Outputs output the same audio signal as the Primary output.

Clock Source

With the Clock Source parameter, you can set the PC3 to generate its own tempo by setting Clock Source to **Internal**, or you can set the PC3 to sync up with the tempo from another device—assuming the device is sending MIDI clock data to the PC3 via MIDI or USB—by setting Clock Source to **External**. See *Important Note About External Sequencers:* on page 12-8 of The PC3 Musician's Guide for related information.

TEMPO

Press the TEMPO soft button to go to the TEMPO page (see below.) When the Clock Source parameter is set to **Internal** (see *Clock Source* on page 7-11,) the Tempo parameter on the TEMPO page sets the PC3's system tempo. The system tempo sets the tempo for all modes except Setup Mode, which has its own tempo settings. Also, in Song mode, changing to a new song will override the system tempo. The Tempo parameter values are in units of BPM (beats per minute).

You can also call up the TEMPO page from any other page by pressing the left and right cursor buttons simultaneously.

Set the Tempo parameter with the -/+ buttons, the Alpha Wheel, or the alphanumeric pad. You can also set the system tempo by tapping the **Tap** soft button at the desired speed. You need to tap at least twice for a tempo to be calculated, though tapping several times (like on each beat of one or more measures) works best. The newly tapped tempo is displayed in the tempo field, and along the bottom four Program Category Select buttons a lit LED moves from left to right at this tempo.

Alternatively, a temporary controller can be set for use in the Temporary TAP controller field, instead of using the **Tap** soft button. The Temporary TAP controller field lists groups of PC3 controllers in order of their usefulness for tapping. Listed first are the foot switches and switch buttons (though it would be easier to use the Tap soft button than set a temporary switch button.) After these is Note On, which lets you tap the tempo with any keyboard key. Last are the MIDI controller numbers, which includes all of the continuous controllers, though continuous controllers (such as a slider) are not easy or recommended for tapping the tempo. The Temporary TAP controller works only while on the TEMPO page and will remain selected when accessing the TEMPO page from other modes, but the selection will return to OFF the next time the PC3 is turned on.

You can also assign a controller to controller destination 168, Tap Tempo, to be used as a tap tempo button when not viewing the TEMPO page. For those who frequently use tap tempo, this is a time saving addition to any setup or control setup (see Chapter 3, *Setup Mode* for more on controllers and destinations.) Any MIDI values received by destination 168 send a tap signal to the tap tempo function. This would be best used with a programmable switch (or footswitch.) Configure the selected switch so that it is Toggled, has it's On and Off Controls set to destination 168 (Tap Tempo,) and set the On and Off Values to any value other than None. Entry and Exit State should be set to None.

General MIDI Mode (GM On, GM Off)

This soft button enables or disables General MIDI (GM) mode. When GM mode is off (the default,) the buttons is labeled GM On. Press the GM On soft button to enter GM mode. The PC3 will prompt you to confirm or cancel. When GM mode is on the buttons is labeled GM Off. Press the GM Off soft button to exit GM mode. The PC3 will prompt you to confirm or cancel. You can not access Setup Mode or Quick Access Mode while in GM mode. Aside from what is noted in this section, all other PC3 functions operate normally while in GM mode. In GM mode, the PC3 complies specifically with the General MIDI (GM1) specification.

An Overview of General MIDI

General MIDI is a specification created by the MIDI Manufacturers Association which defines specific features that a MIDI instrument must have (see the MMA website at www.midi.org for more information.) Among other things, the GM specification sets a standard bank of program names and numbers, as well as a standard drum mapping layout, so that sequences created on any GM instrument will playback with the correct instrumentation on any other GM instrument, no matter the manufacturer. GM has many uses, for example it makes it easy for musicians who use MIDI files to share ideas and collaborate while using different sets of equipment. Also many instrumental versions of public domain songs can be found for free on the internet as GM compatible MIDI files. These, like all MIDI files, offer certain advantages over audio such as small file size, the ability to edit, orchestrate, or change tempo to easily learn from the sequences, or even convert note information to standard notation with a third party application.

Overview of General MIDI Mode

Once enabled, Program mode will display the set of 128 standard GM program names on the right side of the screen *(see below.)* Aside from the different layout and program choice, Program mode operates normally *(see below for info on the left side of the screen.)* A default GM sequence will be loaded which sets FX sends for reverb and chorus, which are part of the GM specification. Drum programs will also be remapped to the GM drum map. The standard PC3 programs will not be visible until GM mode is turned off.

Replacing Default General MIDI Programs

The PC3's GM sounds consist of PC3 programs tailored to work well in all GM sequences, but you can also edit or exchange these programs to suit your taste. The PC3 provides you with a GM sound set editor which allows you to replace the PC3's default GM programs with any other PC3 factory or user created program. For example, you could choose a different factory or user created piano program to replace the default GM program 1, Ac Grand Piano. This way, any GM sequence that uses GM program 1 would now use the new piano program that you selected. Alternatively, you could even choose a different instrument to replace the default GM program

1, such as PC3 program 47 Harpsichord. This way, any GM sequence that uses GM program 1 would now use the new harpsichord program that you selected. Using a PC3 program that does not resemble the instrument named in the current GM program would technically make the PC3 incompatible with GM, but some users may want to do this as a way to "remix" GM sequences.

It is easy to replace default GM programs in order to make a custom GM sound set. Once in GM mode, the right side of Program Mode screen displays a list of the GM programs with their standard GM names. The left side of the screen shows you what PC3 program is being used for the selected GM program. Pressing left on the cursor moves you to this field. Use the cursor's up/down buttons, the alphanumeric pad, the plus/minus buttons, or the alpha wheel if you wish to select a different PC3 program for the current GM program. Don't use the program or category buttons because these will change the currently selected GM program. The newly selected PC3 program will be used by the current GM program, though the name of the GM program will not change. To save these settings you must save the master table (see **Save** below.) Saved settings can be recalled after powering off or leaving GM mode. To restore GM mode's factory selected programs, press the **Reset** soft button (see below.)

OBJECT

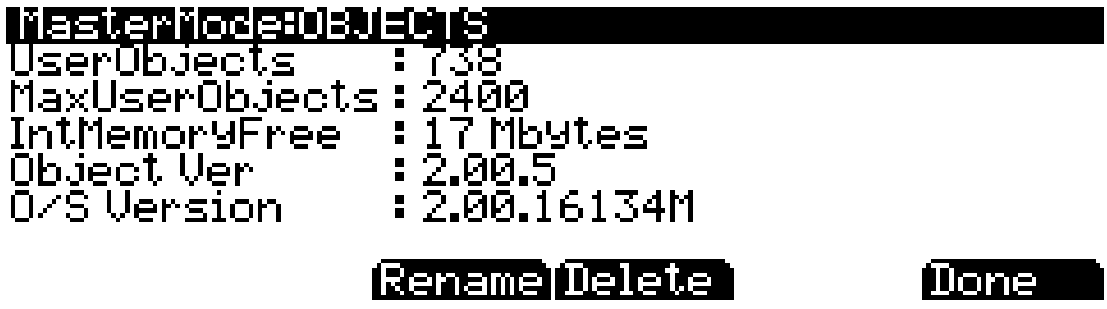
Pressing the **OBJECT** soft button calls up the OBJECTS page *(see below.)* From here you can choose one of two utility functions for renaming or deleting selections of user created (or edited) objects. Press the **Rename** or **Delete** soft button to access each function (see below for details.)

The OBJECTS page also displays the number of user objects saved to internal memory (in the **UserObjects** field,) the maximum number of user objects that can be saved to internal memory (in the **MaxUserObjects** field,) and the amount of free internal memory (in the **IntMemoryFree** field.) *(The **MaxUserObjects** field shows the maximum amount of user objects that can be loaded/saved to internal memory **for all object types combined**. Keep in mind each object type only has 2560 ID#s available to save/load objects to, many of which are used by factory ROM objects.)*

***Note:** The number given for the **MaxUserObjects** field is based on loading/saving the smallest user objects to internal memory. When loading/saving larger user objects (such as Programs with many layers and Setups with many zones), the PC3 may run out of internal memory before the maximum number of user objects has been loaded/saved.*

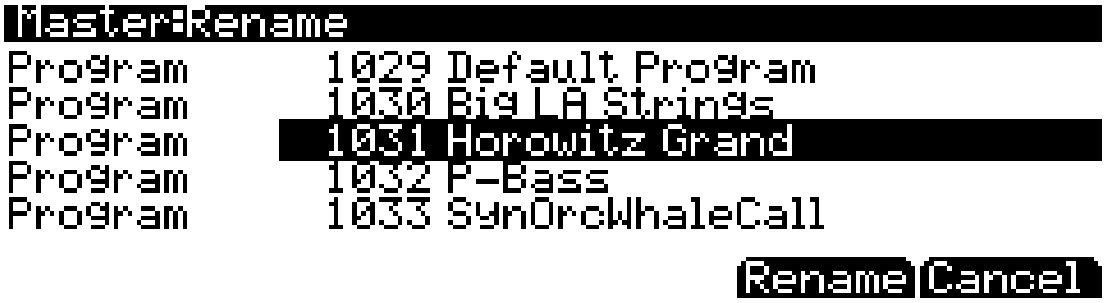
The information on the OBJECTS page is helpful when organizing user objects. For example, when loading many user objects from an external source, you should first determine if there is enough internal memory available for the objects being loaded. If there is not enough internal memory available, use the **Delete** soft button to delete user objects. *(To save user objects before deletion, see The STORE Page on page 13-5 of The PC3 Musician's Guide.)*

The OBJECTS page also displays the current installed objects version (factory objects,) and the current installed OS version. This information is useful when installing updates.



Rename

The Rename utility allows you to rename an object without entering the object's editor. The Rename page shows a list of all user created objects, grouped by object type *(see below.)* Use the alpha wheel or plus/minus buttons to select an object from the list. Press **Rename** to bring up the object Rename screen and enter a new name by following the standard renaming procedure. For more information, see *Saving and Naming* on page 5-2 of The PC3 Musician's Guide.



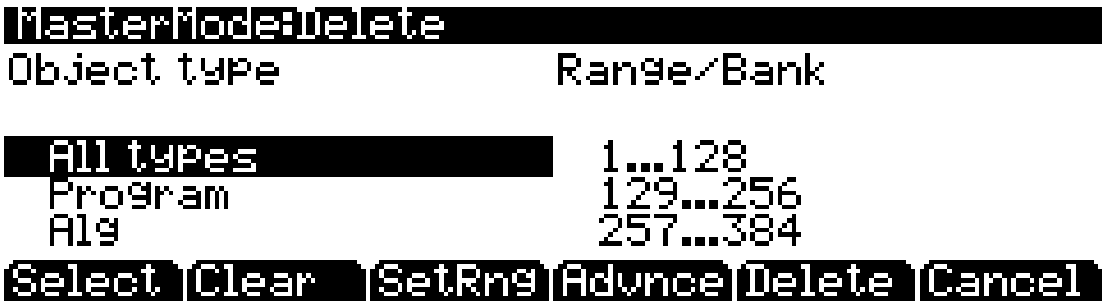
As in all naming dialogs on the PC3, you can do a double-press of the **Left/Right** cursor buttons to put the naming cursor on the last character of the string. This is helpful when putting unique characters at the ends of names.

Left/Right *cursor button double-press -> Move cursor to the end of the name in any naming dialogue.*

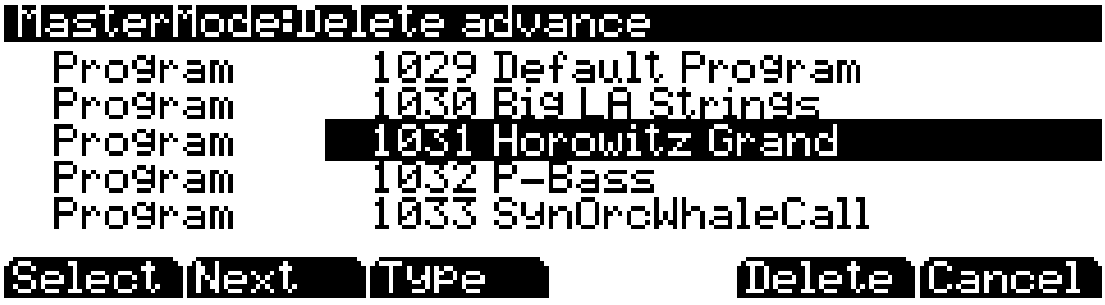
Delete

The object Delete utility is useful for deleting unwanted user created objects in order to increase free RAM space in your PC3. On the main Delete page, for each object type you can select a bank of objects to delete, a range of objects to delete, or delete all objects. On the Delete advanced page, you can select a single object or multiple objects to delete.

To delete a group or range of objects, use the main Delete page *(see below.)* Use the cursor to select the left column, then use the cursor, alpha wheel or plus/minus buttons to select one or more object types from the list. Use the **Select** soft button to make your selection(s), which will be marked with a star. Select "All Types" if you want to delete all user objects (this will select all object types and numbers automatically.) Next, use the cursor to select the right column, then use the cursor, alpha wheel or plus/minus buttons to select one or more ranges of object numbers from the list. You can select object numbers by bank grouping (groups of 128), by number range (select "1...100 Range" use the **SetRng** soft button and choose any range of 2048 objects) or select "Everything" to delete all objects of the selected type. Again, use the **Select** soft button to make your selection(s), which will be marked with a star. The **Clear** soft button will clear your selection(s) from the currently selected list. Press the **Delete** soft button to delete your selection, you will be given the choice to **Delete** or **Cancel**. The **Cancel** soft button on the main delete page will return you to the OBJECTS page.



To delete single or multiple objects, go to the Delete advanced page by pressing the **Advnce** soft button on the main Delete page *(see below.)* The right column shows you a list of all user created objects. The left column tells you what type each object is, and objects are grouped by type. Use the alpha wheel or plus/minus buttons to select one or more objects from the list. Use the **Select** soft button to make your selection(s), which will be marked with a star. Use the **Type** soft button to jump to the lowest numbered object of the next group of object types. You can use the alphanumeric pad to jump to an object of the selected type by number, or enter 0 to jump to the lowest saved object number of the currently selected type. To review which objects you have selected, press the **Next** soft button to move to the next selected object in the list. Press the **Delete** soft button to delete your selection, you will be given the choice to **Delete** or **Cancel**. The **Cancel** soft button on the Delete advanced page will return you to the main Delete page.

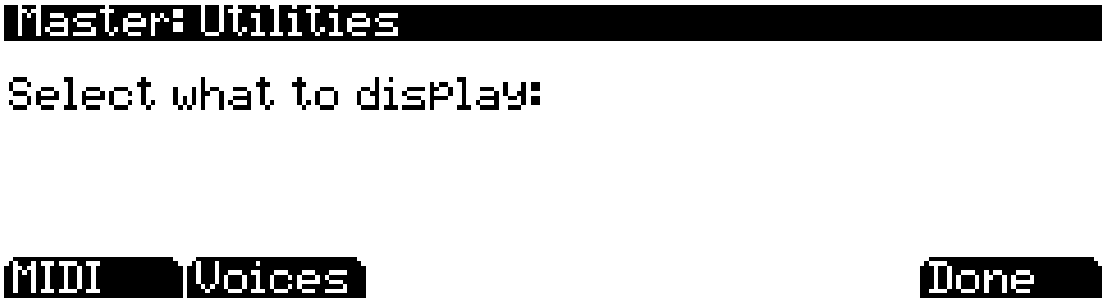


For Delete and Delete advance, if any of the selected objects have dependents that were not selected, you will see the question: Delete dependent objects?

If you answer **Yes** to this question, all dependent objects of the selected objects are deleted, unless they are being used as dependents of other objects that are to remain in memory. Answering **No** will delete only those objects that were selected and not their dependents.

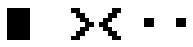
UTILS (UTILITIES)

Pressing the **UTILS** soft button calls up the UTILITIES page, which gives you access to two analytic and diagnostic tool. Additionally, pressing the two right-most soft buttons will call up the UTILITIES page from any mode or editor. The UTILITIES page appears as shown below:



Pressing the **MIDI** soft button launches MIDIScope™, a useful subprogram that lets you monitor the MIDI messages from the PC3 and those received via MIDI. This is a good way to make sure you're receiving MIDI from MIDI masters. It's also good for making sure your controls are assigned as you want them, checking your attack velocities, checking your controller values, etc.

Pressing the **Voices** soft button calls up the Voice Status page, which shows the PC3's active voice channels as you play. The Voice Status pages displays each active voice as a solid rectangular block—for mono voices—or displays stereo pairs of voices as a > for the left channel voice and a < for the right channel voice. Whatever symbol the page displays, when the key of a voice is released, that voice's symbol on the Voices Status page turns into a dot during the release portion of that voice's envelope. When the voice decays to silence, it is no longer active, and the dot disappears. The Voice Status symbols appears as shown below:



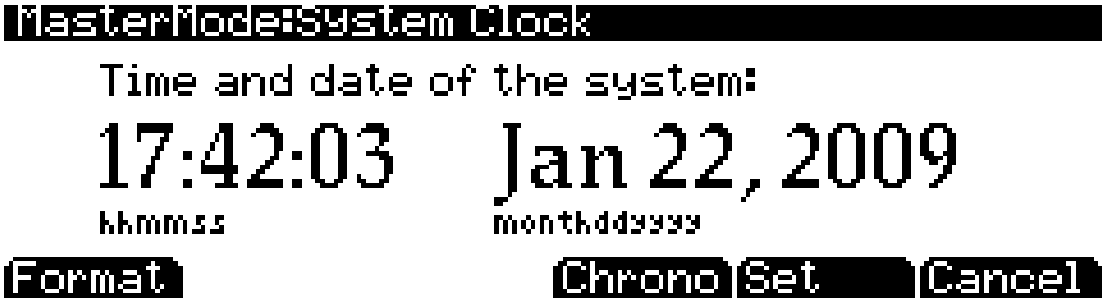
The Voice Status page gives you an indication of the envelope level of each voice, though not necessarily the volume level. Nonetheless, this can give you a valuable indication of how your voices are being used. For example, if all or most of the voices are active, then there's a good chance that when voice stealing takes place an audible voice will be reallocated.

The Voices utility works a bit differently for KB3 programs. The PC3 uses one voice of polyphony for every two tone wheels in a KB3 program. In the Voices utility, the voices used by the tone wheels appear as solid rectangular block, meaning that the voices are used for the KB3 program. They don't get reallocated at any time, since they're always on, even if you're not playing any notes. Any voices not dedicated to a KB3 program behave normally. So if you have a setup that contains a KB3 program in one zone, and VAST programs in one or more other zones, you can monitor the voice allocation of the non-KB3 voices in the section of the display that isn't constantly filled with solid rectangular blocks.

CPU usage is displayed in percent on the bottom of the page, which reflects how much of the PC3's total available CPU power is being used from moment to moment. Generally, having more voices, complex Programs and effects in use at once will result in higher CPU usage.

CLOCK

Pressing the **CLOCK** soft button allows you to view the PC3's System Clock (see below.) When objects are saved, they are time stamped with the date and time of this clock. This time stamp can be seen in the file properties when viewing the files with a computer.



The **Format** soft button changes the view format of the date on this page. The **Set** soft button brings you to the Set clock page where you can set the system clock and date. Use the cursor to move between fields, use the alpha wheel or plus/minus buttons to change each field. On the Set page, press the **Set** soft button to save changes and return to the System Clock page, or the **Cancel** soft button to return to the System Clock page without saving changes.

The **Chrono** soft button brings up the PC3's Chronometer (stop-watch) page (see below.) This can be useful for timing the length of songs or performances. Press the **Start** soft button to begin timing. The Chronometer will continue running even if you exit to other screens or modes. Press the **Stop** soft button to stop timing, the **Reset** soft button to reset the Chronometer, or the **Cancel** soft button to return to the System Clock page.

Reset

Press the **Reset** soft button if you want to return your PC3's memory to the state it was in when you bought it.

CAUTION: *Resetting the PC3 system causes ALL parameters to be restored to default values and ALL user objects to be erased. The PC3 will ask you if you want to delete everything (meaning all RAM objects), and a pair of* ***Yes/No*** *soft buttons will appear. Press* ***No*** *if you want to keep any objects you have saved. Press* ***Yes****, and everything stored in RAM will be erased. After a few seconds, the PC3 will return to the Program mode page.*

Loader

Pressing the **Loader** soft button calls up the Boot Loader. For details on the Boot Loader, see Appendix B in The PC3 Musician's Guide.

About

Pressing the **About** soft button calls up the general info page for the PC3. On this page is the version of the installed OS and factory object. Press any key to leave this page.

Save

Pressing the **Save** soft button saves the Master Table object, which saves many important PC3 settings as defaults. Since the Master Table is always saved when exiting Master Mode (or MIDI mode,) the Save soft button is only needed in order to save when Master Table Lock is on (see *Master Table Lock (Master Lock)* on page 7-3, above.)

The Master Table saves the current configuration of the Master Pages (both 1 and 2.) The Master Table also saves default settings for which program is selected on each of the 16 channels in Program mode (note that these channel settings are often altered by loading a song in Song mode.) The current channel and program selected in Program mode when the Master Table is saved will be loaded by default the next time the PC3 is powered on. The Master Table saves settings from MIDI mode for the Transmit, Receive, and Channels pages. The Master Table also saves settings for "favorite" programs (see the User Interface Basics chapter, page 3-4.) Lastly, the Master Table saves settings for the Master Effects page in Effect mode.

Only one Master Table object can be saved in the PC3's internal memory, and this should be sufficient for most users. For users who wish to save alternate Master tables for quicker access to different system configurations, the object must be saved to an external device (see the Storage Mode chapter.)

Preview Sample (PRVIEW)

Press the **PRVIEW** button to go to the PREVIEW page. The PREVIEW page can be used to automatically make a new keymap and program using any sample or group of sample roots. Programs created with the preview function are saved in Program Mode. This allows you to quickly hear what a sample or group of sample roots will sound like in a program. The preview function is also a quick way to begin making a new program which can be edited further if desired.

If a single sample is selected a single keyrange keymap will be created. If a group of sample roots is selected, the preview function will try to create a keymap with multiple keyranges based on each sample's root key. If the sample or group of sample roots are stereo, the created program will be stereo.

To use the preview function, go to the PREVIEW page, select a sample or group of sample roots in the **Sample** field using the Alpha Wheel, -/+ buttons, or the alphanumeric pad, then press the **OK** soft button. Next you will be shown a list of banks by ID# range (bank 1 = 1...128, bank 2 = 129...256, etc.) Use the Alpha Wheel or -/+ buttons to choose a bank from this list. The preview function will save the created program and keymap using the lowest unused ID numbers available in that bank or higher. The preview function will never overwrite existing programs or keymaps. Saving to the User bank (**1025...1152** and above) will make it easiest to find the new program or keymaps in the Programs list or Keymaps list. Press the **Ok** soft button to choose the selected bank and create the new program and keymap. The new program will be selected in the currently selected channel in Program Mode.

Chapter 8
Song Mode and the Song Editor

Song Mode: The MAIN Page

Soft Buttons on the MAIN Page

The Delete Soft Button

Press the **Delete** soft button to delete the current song. The PC3 will present a prompt, at which point you may cancel, or confirm to delete the song.

Song Mode: The BIG Page

Parameter	Range of Values	Default
RecMode	Linear, PunchIn, UnLoop	Linear
Metron	Off, Rec, Always, CountOff	Rec

RecMode

With the RecMode parameter set to **Linear**, the sequencer will record normally, from where ever you start, to where ever you stop, or until the Song End point is reached. With the RecMode parameter set to **PunchIn**, the sequencer will record events only between the points set for Time In and Time Out parameters on the BIG page.

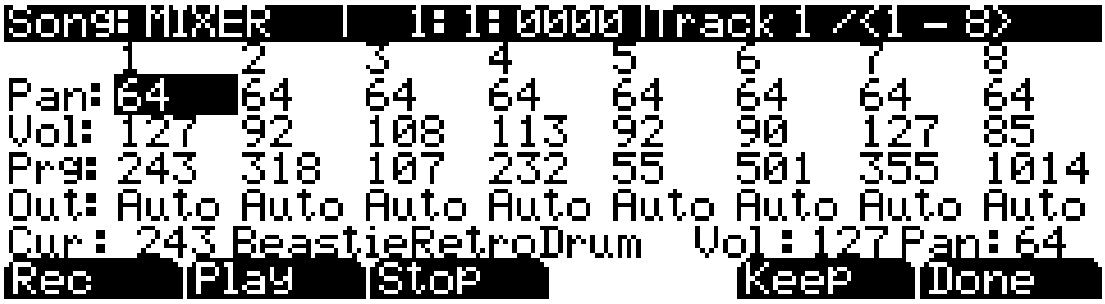
To use the **UnLoop** setting, the **Loop** parameter must be set to **Loop**, and a loop length must be set with the Time In and Time Out parameters on the BIG page. With the RecMode parameter set to **Unloop**, any existing tracks will be played back as if they were looping from the Time In to the Time Out point, but they are actually being re-recorded linearly over absolute Bars and Beats until you press Stop. UnLoop allows you to record a linear track over a short looping section without first having to copy the section over and over again to achieve a new desired Song length. The End point of the Song is extended to the downbeat of the (empty) Bar immediately following the last Bar you were recording when Stop was pressed.

For example, let's say you have a recorded a four bar drum loop and now want to record an eight bar bass line. This would be a situation where UnLoop would come in handy. While the drum track keeps looping, the bass track will record in linear fashion, and the end point will be moved to the point at which you press Stop. Actually, the drum track will also change. It will play through its loop twice, but while the information is repeating in the loop, it will be recorded to the track. So now if you look at the drum track, you will see information in bars 5-8 (a duplicate of the information in bars 1-4).

Metron

The Metron parameter determines the recording modes in which the metronome will play. With Metro set to **Off**, the metronome doesn't play at all. With Metron set to **Rec**, the metronome only plays while recording is in progress. With Metron set to **Always**, the metronome plays during playback and recording. With Metronome set to **CountOff**, the metronome plays only during count off (if the CountOff parameter on the METRONOME page is set to something other than **Off**.)

Song Mode: The MIXER Page



Out

Use the **Out** parameter to set the rear panel audio outputs used for each track of the current song. This parameter determines the output settings for the main program signal and insert effects of each track (for Aux effects output settings, use the Output parameter on the Song Mode AUX1 or AUX2 pages.)

A setting of **Auto** will make that track output audio based on the settings for the program used by that track. Program output settings are set in the Program Editor using the **Output** parameter on the top line of PROG FX page (see *Output* on page 2-5 for details) or the **Output** parameter on the top line of LAYER FX page (see the PC3 Musician's Guide for details.) A setting of **Pri.** (primary) will output track audio to the **MAIN** Balanced Analog Outputs. A setting of **Sec.** (secondary) will output track audio to the **AUX** Balanced Analog Outputs.

Song Mode: The METRONOME Page

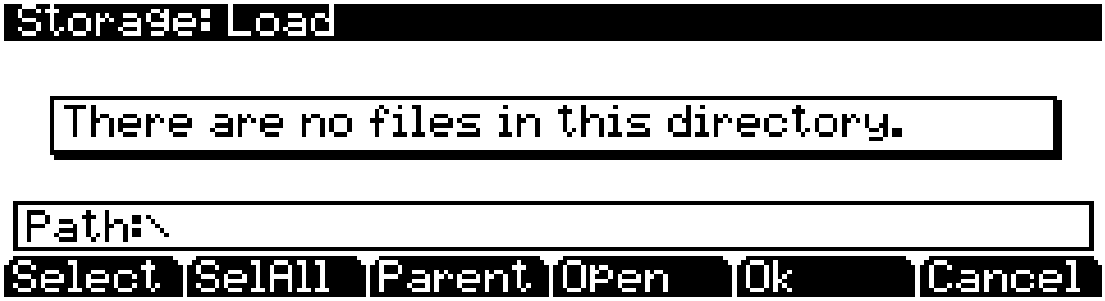
Metronome

This parameter determines the recording modes in which the metronome plays. With Metronome set to **Off**, the metronome never plays. With Metronome set to **Rec**, the metronome only plays during recording. With Metronome set to **Always**, the metronome plays during playback and recording. With Metronome set to **CountOff**, the metronome plays only during count off (if the CountOff parameter is set to something other than **Off**.)

Chapter 9
Storage Mode

The LOAD Page

Pressing the **LOAD** soft button calls up the LOAD page (see below,) where you can load **.PC3, .P3K, .K26, .K25,** or **.KRZ** files, or individual objects from within those files. Along the bottom of the Load page, there are four soft buttons. Below are descriptions of their functions:



Select Select the highlighted file. An asterix (*) appears to the left of selected files. To deselect a file, highlight the file and press the Select soft button again. Multiple files can only be selected if they are in the same directory. Entering a new directory will deselect all files.

SelAll Press the SelAll soft button to select all files in the current directory (directories within the current directory will not be selected.) Press the SelAll soft button again to deselect all files in the current directory. Entering a new directory will deselect all files.

Parent Moves you up one level in the directory hierarchy. If the display is already at the root directory, this button has no effect. Entering a new directory will deselect all files.

Open Open selected directory or view objects within a **.PC3** file or other compatible Kurzweil file type for loading individual objects. See *Loading Individual Objects* in the Storage Mode chapter of The PC3 Musician's Guide for instructions on opening **.PC3** and other Kurzweil file types to view and load individual objects (see Appendix A for compatibility details.) Entering a new directory will deselect all files. Viewing objects within a .PC3 file or other Kurzweil file will deselect any other files that had been selected.

OK Load the selected **.PC3** file or other compatible Kurzweil file type. See *Loading Individual Objects* in the Storage Mode chapter of The PC3 Musician's Guide for instructions on using the Load dialogue when loading a **.PC3** file or other compatible Kurzweil file type (see Appendix A for compatibility details.)

Cancel Exits the Load page and returns you to the Storage mode page.

Export

Press the EXPORT soft button to go to the Export page. The Export page allows you to export MIDI files created in Song mode, lists of controller assignment info that are automatically created for each Program and each Chain, or a list of all objects in text format. Developers can also export an object in XML format, or export a KPN.

To export a MIDI file created in Song mode, the song must be currently loaded in Song mode. Go to Song mode and load the desired song, then return to the Storage mode EXPORT page and press the **Song** soft button. You will be prompted first to choose a directory to save the file into, and then you will be prompted to name the MIDI file. When you name the file, you can use the **Type** field to choose to export either a Standard MIDI File type 1 (saves with multiple channels,) or Standard MIDI File type 0 (saves all channels as 1 channel.)

To export a list of controller assignment info for all Programs or for all Chains, press the **PrInfo** soft button or the **FXInfo** soft button. You will be prompted to choose a directory to save into, and then you will be prompted to name the info file. A comma separated value file will be exported.

To export a list of all objects in text format, press the **ObjLst** soft button. You will be prompted to choose a directory to save into, and then you will be prompted to name the file. A comma separated value text file will be exported, listing each object type with ID number, object name, and whether the object is internal or user.

To export an object in XML format, press the **ObjFmt** soft button. Choose an object from the list using the Alpha Wheel, -/+ buttons, or the alphanumeric pad, then press the Ok soft button. You will be prompted to choose a directory to save into, and then you will be prompted to name the file.

To export a KPN, press the **KPN** soft button. Choose a Domain and Channel, then press the Ok soft button. You will be prompted to choose a directory to save into, and then you will be prompted to name the file.

Chapter 10
Keymap and Sample Editing

The Keymap Editor

The Keymap Editor lets you customize the PC3's factory preset keymaps and save them to RAM. You can also build your own keymaps from scratch (see *Building a Keymap* on page 10-7.)

Keymaps are an integral part of every layer of a program. Each keymap contains a set of parameters determining which sample(s) the PC3 will play when you trigger a note. Each layer has at least one keymap, but it can have two keymaps when you're working with stereo samples. Each of these stereo keymaps uses two of the 128 available voices.

Each keymap consists of a set of key (note) ranges—C 4 to G 4, for example. The entire span of each keymap is from C 0 to G 10. Each range has a sample root assigned within the range. Each sample root is a distinct ROM sample. Within each key range, the sample root is transposed up and down to play on each of the range's notes. You can view each range by changing the value of the Key Range parameter on the Keymap-editor page. You can mix samples of different timbres within a single keymap, and even tune individual keys to any pitch by defining key ranges to single notes and assigning samples to each of those notes.

When you trigger a note, the PC3 identifies the key range where the Note On event occurred. It also checks the attack velocity value of the note. It then addresses its memory, and retrieves the sample root that's assigned to that key range and attack velocity value. If the note that's triggered is not the note where the sample root is assigned, the sample is transposed to play at the correct pitch. The PC3 then generates the digital signal that represents the sound of the note. At this point the keymap's job is done, and the signal proceeds through the layer's algorithm and on to the audio outputs.

You can assign as many key ranges to a keymap as you like, even creating a separate range for each note. This would allow you to tune each key independently, to create microtonal tunings. For keymaps that use a single timbre, like the Grand Piano, there's a key range for each sample root stored in memory. For acoustic instrumental sounds, the more key ranges you have for a keymap, the more realistic the sound will be, since there will be less pitch shifting of the sample root within the key range.

Of course, you can assign sample roots with different timbres within the same keymap. Many of the drum kit keymaps in ROM, for example, have about 20 key ranges, with several different timbres assigned as the sample roots. You can also create a keymap with a single key range that spans from C 0 to G 10, if you want to stretch a single sample root from C 0 to G 10. Keep in mind, however, that samples can only be transposed upward by an octave from the sample's original pitch. Samples can be transposed downward without limit.

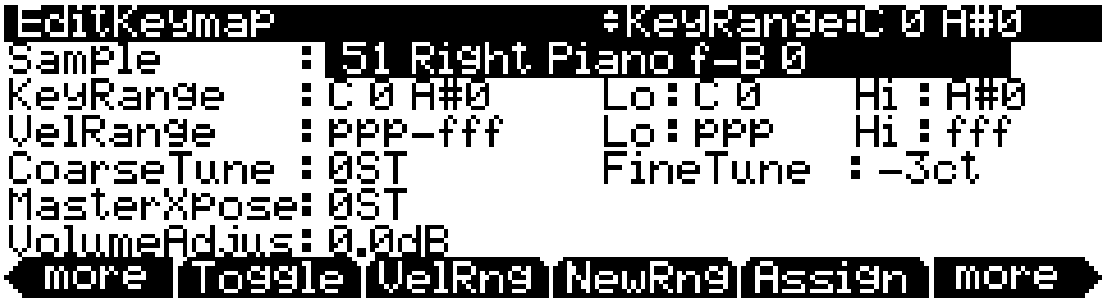
Think of a keymap as if it were a single piece of string, divided into different sections that adjoin one another. Sections cannot overlap. If you have one range that goes from C4 to F4 and another that goes from F#4 to C5, then if you change the first range to be C4 to G4, the second one will change to be G#4 to C5.

Also, you can't have "nothing" assigned to a key range. Even if it is Silence (#999), there will always be a sample assigned to every range in the keymap. This is something to watch out for when creating drum programs. For example, let's say you are creating a program with 20 layers. Each layer has its own keymap, which has just one sample assigned to part of the keyboard with the rest of the key range assigned to Silence. Make sure that you limit the note range of each

layer using the LoKey and HiKey parameters on the LAYER page in the Program Editor. If each layer covers the entire range, then each note you played would trigger 20 voices (one for each layer). You would only hear one drum per note because all the other layers are triggering "Silence." Because of the voice-stealing algorithms in the PC3, the voices would almost immediately become available again, since they have no amplitude. But for one brief instant, the voice would be triggered, which could cause other voices to be cut off.

You can also create multi-velocity keymaps—that is, keymaps that will play different timbres depending on the attack velocities of your Note On events. Program **6 Pop Power Piano**, for example, uses a keymap with three velocity ranges. Each key range in a multi-velocity keymap contains two or more distinct sample roots that the PC3 chooses between, according to the attack velocity of the note. See *Velocity Ranges (VelRng)* on page 10-5 for details.

The Keymap Editor is nested within the Program Editor. The first step in using the Keymap Editor is to select the keymap you want to edit. This is done on the KEYMAP page in the Program Editor, using the Keymap parameter. Once you've done this, just press the **Edit** button, and you'll enter the Keymap Editor. If you want to edit a different keymap, press the **Exit** button to return to the KEYMAP page in the Program Editor and select the desired keymap. If you want to build a keymap from scratch, start with the keymap **999 Silence** (see *Building a Keymap* on page 10-7). This keymap template contains one key range from C 0 to G 10, and is a convenient starting point for adding key ranges and assigning sample roots. The Keymap-editor page looks like this:



Parameter	Range of Values
Sample	Sample Root list
Key Range	Variable from C0-G10
Low Key	C 0 to G 10
High Key	C 0 to G 10
Velocity Range (VelRange)	Variable from ppp-fff
Low Velocity (Lo)	ppp-fff
High Velocity (Hi)	ppp-fff
Coarse Tune	–128 to 127 semitones
Fine Tune	-49 to 50 cents
Master Transpose	-126 ST to127 semitones
Volume Adjust	± 24 dB

Keymap Editor Parameters

Sample

This is where you assign a sample root to the current key range. Depending on the nature of the sample root—an individual sample or a block of sample roots—the sample's name looks a bit different in the display. Each sample's name consists of three parts: a numeral, a name, and a note number—for example, **999 Silence-C4**. Additionally, the name of stereo samples will end with an **S**. (To use a stereo sample, the *Stereo* parameter must be set to **On** in the Program Editor, and two keymaps must be selected, see *The KEYMAP Page* in the *Program Mode* chapter of *The PC3 Musician's Guide* for details.)

The numeral is the sample block ID. If the sample object is an individual sample, the sample block ID is the same as the sample's object ID. If the sample object is a group of sample roots, the object ID of the first root in the group determines the sample block ID. The remaining roots in the block have the same ID, and differ only in their note numbers.

Next comes the name of the sample, which typically describes the sample's timbre. The final part of the sample's name refers to the pitch at which it was originally sampled. For many timbres, multiple samples are made at various pitches. As you scroll through the Sample list, you'll see only the pitch of the sample change until you reach the next sample block. The sample's original pitch is set in the Sample Editor (see *Root Key* on page 10-10.) This determines which key will play the sample at its original pitch when a sample is used in a key range (see *Key Range* below.)

Key Range

A keyrange is a range of keyboard keys that plays one sample (per velocity range, see *Velocity Range (VelRange)* below for details.) Each sample in a key range (per velocity range) is transposed based on each sample's RootKey parameter so that it plays at the correct pitch on the keyboard relative to its root key (see *Editing Samples* on page 10-9 for details on the RootKey parameter.) Other keys within the key range transpose the sample chromatically relative to the root key. Sample pitch relative to the root key can also be offset using the *Coarse Tune* and *Fine Tune* parameters, see below.)

The **KeyRange** parameter shows you which key range you're currently viewing or editing (key ranges are named by their lowest and highest notes.) Changing the value of the **KeyRange** parameter selects from the available key ranges, and allows you to view or edit the sample assignment and other parameters of the selected key range. When the Key Range parameter is selected, you can also scroll through available key ranges using the Alpha Wheel or the -/+ buttons. Multiple key ranges are only shown if the current Keymap uses more than one key range. If the top line of the EditKeymap page displays KeyRange, you can scroll through the available key ranges with any parameter on the page selected using the **Chan/Layer** buttons. (Press the **Toggle** soft button to toggle the top line between displaying KeyRange and VelRange.)

With the Keyrange parameter selected, keyranges can also be selected by holding the **Enter** button and playing a key. The keyrange assigned to that key will be selected.

Low Key (Lo), High Key (Hi)

With these parameters you can use any of the data entry methods to change the low and high notes of the current key range. You can extend a key range to the full capacity of the PC3 (C 0 to G 10). If you extend the current key range into another, the boundaries of the other key range will become shortened to accommodate the key range you are extending. If the keyrange you are extending covers another keyrange, the other key range will be deleted.

The setting for the low key cannot be higher than the setting for the high key. Similarly, the setting for the high key cannot be lower than the setting for the low key.

Velocity Range (VelRange)

This parameter shows the keyboard velocity range (in dynamic levels) that will trigger a sample for the current KeyRange. In a key range with more than one velocity range, each velocity range can use a different sample, as well as different CoarseTune, FineTune, and VolumeAdjust settings. Velocity ranges are intended for use with instrument samples recorded at different velocities. This helps to make playing sampled instruments sound more realistic. Sample volumes are also scaled based on keyboard velocity within each velocity range. Velocity ranges for the current Keymap are set using the **VelRng** soft button (see *Velocity Ranges (VelRng)* on page 10-5) or the *Low Velocity (Lo), High Velocity (Hi)* parameters (see below.) All keyranges in a Keymap share the same set of velocity ranges. Up to eight velocity ranges can be used.

When the VelRange parameter is selected, you can scroll through available velocity ranges using the Alpha Wheel or the -/+ buttons. Multiple velocity ranges are only shown if the current Keymap uses more than one velocity range. If the top line of the EditKeymap page displays VelRange, you can scroll through the available velocity ranges with any parameter on the page selected using the **Chan/Layer** buttons. (Press the **Toggle** soft button to toggle the top line between displaying VelRange and KeyRange.)

Low Velocity (Lo), High Velocity (Hi)

Use these parameters to set the velocity range of the current key range. If you extend the current velocity range into another, the boundaries of the other velocity range will become shortened to accommodate the velocity range you are extending. If the velocity range you are extending covers another velocity range, the other velocity range will be deleted.

Coarse Tune

Coarse Tune allows you to transpose a sample for a given range. This is extremely useful when you have set the Root key of the sample for one note but want to assign the sample to a different part of the keyboard and still be able to play it without transposition (see *Root Key* on page 10-10 for details.) For example, if you originally set the Root key at C4 but want the sample assigned to C3, you would set Coarse Tune to 12ST, transposing it up one octave. Now the original pitch will play at C3, one octave down. If you examine the drum and percussion kit keymaps in ROM, you will see that we have done this. Most of our ROM drum samples have the Root key set at C4.

There's a short cut for adjusting the Coarse Tune automatically so that the sample plays with minimal transposition in the assigned key range. See *Special Double Button Presses in the Keymap Editor* on page 10-6.

Fine Tune

This gives you further pitch control. Once the sample's pitch is close to the desired note, use the Fine tune to sharpen or flatten it as much as a half-semitone.

Master Transpose (MasterXpose)

This parameter does not really pertain to the keymap itself. Instead it is identical to the Transpose parameter found on the MIDI-mode TRANSMIT page. If you change the value here, the same value will be reflected on the MIDI-mode TRANSMIT page, and vice versa. It transposes the entire instrument globally. The reason it is placed on this page is that it will allow you to assign samples across the entire keyboard easily, when you are using a keyboard that has fewer than 88 notes.

Volume Adjust

Here you can adjust the volume of the notes in the current key range. This enables you to make each key range play at the same volume even if the samples in the various ranges were recorded at different volumes.

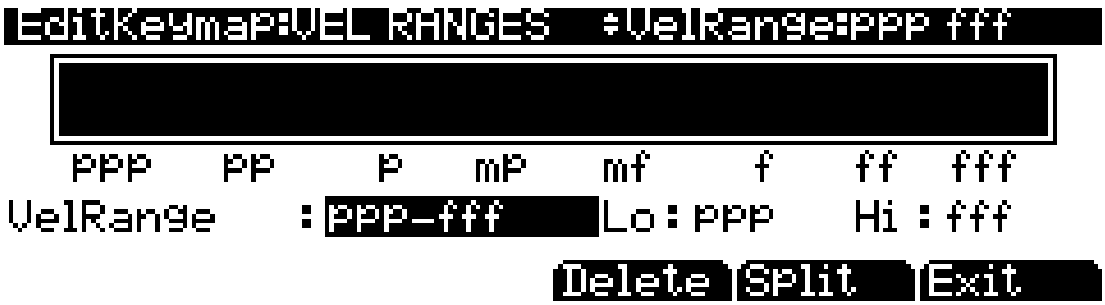
The Soft Buttons in the Keymap Editor

Toggle

Pressing the Toggle soft button switches the function that the **Chan/Layer** buttons perform while on the EditKeymap page. Press the **Toggle** soft button to toggle the top line between displaying **KeyRange** or **VelRange**. If the top line of the page displays **KeyRange**, then the **Chan/Layer** buttons will scroll between the available key ranges in the key map (if the current key map has more than one key range.) The note range for each key range will also be displayed on the top line. If the top line of the page displays **VelRange**, then the **Chan/Layer** buttons will scroll between the available velocity ranges in the key map (if the current key map has more than one velocity range.) The dynamic range for each velocity range will also be displayed on the top line.

Velocity Ranges (VelRng)

Press the **VelRng** soft button to view the VEL RANGES page (see below.) Use the VEL RANGES page to add, edit or delete velocity ranges for the current keymap. The VEL RANGES page shows a chart of a keymap's entire available dynamic range, from most quiet (ppp) to most loud (fff.) Velocity ranges can also be adjusted from the EditKeymap page, but the VEL RANGES page provides a chart as a visual aid. Each keymap can be split into a maximum of eight velocity ranges. Each key range in a keymap can use its own sample for each velocity range. All key ranges in a keymap share the same velocity ranges.



Press the **Split** soft button to split the currently selected velocity range into two ranges (until the maximum of eight velocity ranges have been created.) Press the **Delete** soft button to delete the currently selected velocity range. Press the **Exit** soft button to return to the EditKeymap page.

On the VEL RANGES page, the currently selected velocity range is highlighted in the chart, and its name is displayed in the VelRange field. With the VelRange field selected, you can use the Alpha Wheel or -/+ buttons to move between the available velocity ranges (if there is more than one velocity range available.) You can also use the **Chan/Layer** buttons at any time to move between the available velocity ranges. If there is more than one velocity range available, you can adjust the dynamic range of each using Lo and Hi parameters. These Hi and Lo parameters are the same as the Low Velocity (Lo) and High Velocity (Hi) parameters on the EditKeymap page (see *Low Velocity (Lo), High Velocity (Hi)* on page 10-4 for details.) Changes made with either set of parameters are shown on both pages.

New Range (NewRng)

The **NewRng** button lets you define a new keyrange to edit, whether it's to assign a different sample, or to adjust the pitch or volume. Just press **NewRng**, then play the note you want as the low note, then the high note. The PC3 will prompt you for each note. When you trigger the high note, you'll return to the Keymap-editor page, and the new keyrange you defined will be selected. The next change you make will affect only that edit range.

If you set a new keyrange that's completely within an existing key range, the existing key range will be split into two keyranges, with the new keyrange between the two. At this point, you must change at least one parameter of the new keyrange before editing a different keyrange, otherwise the new keyrange will be merged with the adjacent keyranges. If you set a new keyrange that overlaps part or all of another key range, the sample assigned to the lower key range will be applied to the new keyrange. Again, at this point you must change at least one parameter of the new keyrange before editing a different keyrange, otherwise the new keyrange will be merged with the lower keyrange that it overlapped.

Assign

The **Assign** soft button lets you select a sample, then specify the key range to which it's assigned. This enables you to insert a new key range within the current keymap. When you press the **Assign** soft button, a dialog appears that prompts you to select a sample from the Samples list. Scroll through the list, then press the **OK** soft button. You'll then be prompted to define the new key range by playing the notes you want to be the lowest and highest notes of the range. (Press the **Cancel** soft button if you change your mind.) When you trigger the low and high notes, the new key range is inserted. If the new key range partially overlaps an adjacent key range, the existing key range will be adjusted to accommodate the new range. If the new key range completely overlaps an existing key range, the original key range will be replaced.

Rename

Call up the page that enables you to change the name of the current keymap.

Save

Start the process of saving the current keymap.

Delete

Delete the current keymap from memory. Factory ROM keymaps cannot be deleted.

Special Double Button Presses in the Keymap Editor

Suppose you have a sample whose root key is C 4, and you want to assign it to A 0, because you don't expect to play it often. If you want it to play back without transposition, you'll have to adjust the Coarse Tune parameter. Calculating the right value for Coarse Tune can get tedious if you're assigning a large number of samples. Fortunately, there's a short cut.

1. Assign a sample root to a key range, either using the Lo, Hi, and Sample parameters or using the **Assign** soft button.
2. Highlight the value of the Coarse Tune parameter.
3. Press the **Plus/Minus** buttons at the same time. The value of Coarse Tune changes automatically. If the sample is assigned to one note, the PC3 sets Coarse Tune so that the note plays the sample without transposition. If the sample is assigned to a range of notes, the PC3 sets Coarse Tune so that the middle note of the range plays the sample without transposition.

Building a Keymap

Read below for detailed directions on manually creating and editing a keymap. (See the preview function on page 7-18 for a way to automatically create a program and keymap.) To build a keymap, first go to the Program mode main page (this can be done by repeatedly pressing the **Exit** button.) From the Program mode main page, use the alphanumeric pad to select program **999 Default Program**. Next press the **Edit** button to enter the Program Editor. Press the **KEYMAP** soft button, and the KEYMAP page will appear. The Keymap parameter will be automatically selected. Press **999** and **Enter** on the alphanumeric pad to assign the keymap **999 Silence**. This isn't absolutely necessary, but it makes it easier to recognize the key ranges that have samples assigned to them when you start assigning samples. You can actually choose any program or keymap you want to start with, but by choosing these, you are starting with a "blank slate."

With the Keymap parameter still selected, press the **Edit** button, and you'll enter the Keymap Editor. The Key Range parameter will be automatically selected, and you see its values: C 0 to G 10 (the entire MIDI keyboard range). The Sample parameter will have a value of **999 Silence-C 4**.

Now you're ready to start assigning samples to key ranges within the keymap. We'll assume that you are using samples with roots at C 1, C 2, C 3, etc. (most of the ROM samples are set up this way) and that you plan to assign a root to each octave. To begin, press the **Assign** soft button. The display will prompt you to select a sample. Use the Alpha Wheel to scroll to one of the samples, or type its ID on the alphanumeric pad and press **Enter**. When you've found the sample you want to use, press the **OK** soft button. The display will say "Strike low key…" Trigger A 0 (MIDI note number 21, the lowest A on a standard 88-note keyboard). The display will change to say "Strike High Key…"Now trigger F 1 (MIDI note number 29). The display will return to the Keymap-editor page. The Key Range parameter will show A 0–F 1, and the Sample parameter will show the sample you selected when you started the range assignment.

Each sample in a key range is automatically transposed based on each sample's RootKey parameter so that it plays at the correct pitch on the keyboard relative to its root key (see *Editing Samples* on page 10-9 for details on the RootKey parameter.) Other keys within the key range transpose the sample chromatically relative to the root key. Automatic transposition based on each sample's RootKey is important if you want the sample to play in tune with other PC3 programs or other instruments. The PC3 makes this easy because each ROM sample has the correct RootKey settings. Generally you should set a keyrange so that the sample's RootKey (displayed at the end of the sample name) is in the middle of the range. If you set a key range that does not cover the sample's RootKey, the sample will have to automatically transpose by many semitones, and will likely not sound correct. Samples are also limited to an octave of upward transposition from the sample's original pitch. If you set a keyrange too high based on the Root Key, some samples may not be able to transpose upward far enough to play in tune, and many keys may play the same note (the highest note that the sample can be transposed to.) Automatic transposition relative to the root key can be offset using the Coarse Tune and Fine Tune parameters on the EditKeymap page, (see *Coarse Tune* and *Fine Tune* on page 10-4.)

Continuing with the example, press the **Assign** soft button again. Select another sample root at the prompt, and press the **OK** soft button. Now trigger F# 1 for the Low Key prompt, and F 2 for the High Key prompt. At this point you've defined two key ranges, the first from A 0 to F 1, and the second from F# 1 to F 2. You can repeat the process as many times as you want, creating a new key range each time.

Once you have samples assigned, you may need to transpose them so that they play back at the correct pitch within the range you have chosen. To do this, highlight the Key Range parameter, scroll to the range you need, then highlight the Coarse Tune parameter. Adjust Coarse Tune to bring the sample to the proper pitch within that key range. Then scroll back up to the Key Range parameter, select the next range, and continue as needed.

Here's a fairly important point that may or may not affect your keymap construction. Suppose you want to build a keymap that uses the same sample in several adjacent key ranges, and you plan to add a bit of detuning to the samples in each range. You might think that you could build the keymap first, then go into the Sample Editor and tweak the sample settings of each keyrange when the keymap is finished. Yes, but…

Suppose you used the technique we described above to assign a sample whose root was C 4 to a key range from A 3 to E 4. Then you assigned the same sample to a key range from F 4 to B 4. You might be surprised to find that when you finished the F 4–B 4 key range and the Keymap-editor page reappeared, the current key range would not be F 4 to B 4, but A 3 to B 4! This is because the PC3 automatically merges adjacent key ranges that are identical (this is done to save memory). Therefore, some parameter must be different in each adjacent key range you create if you want to build keymaps using the technique we just described. So if you want to use the same samples in adjacent key ranges with, for example, minor pitch or volume modification, you should make those changes to the current sample on the Keymap-editor page *before* assigning the next range.

Editing Samples

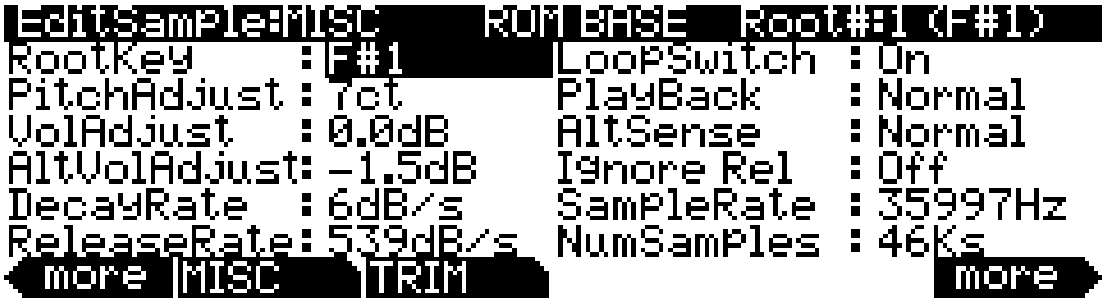
To enter the Sample Editor, first select the program you wish to edit in Program mode. With the program selected, press the **Edit** button to enter the Program Editor. In the program editor the KEYMAP page will be selected (if not press the **KEYMAP** soft button.) With the KeyMap parameter selected on the KEYMAP page, press the **Edit** button again to enter the Keymap Editor. On the EditKeymap page, select the KeyRange parameter and use the Alpha Wheel or -/+ buttons to choose one of the available key ranges (if there is more than one keyrange.) You can edit the existing sample of a keyrange, or choose a new sample for the keyrange and edit that. When the Keymap parameter is selected you can hold the **Enter** button and trigger notes to select different key ranges.

If you want to select a different sample, use the cursor buttons to select the Sample parameter. Use the Alpha Wheel to select a sample. Press the **Edit** button once more, and you'll enter the Sample Editor. The sample will play through the effects of the current program. The name of stereo samples end with an **S**. To use a stereo sample, the *Stereo* parameter must be set to **On** in the Program Editor, and two keymaps must be selected, see *The KEYMAP Page* in the *Program Mode* chapter of *The PC3 Musician's Guide* for details.

There are two sample editing pages—MISC (Miscellaneous) and TRIM. The soft buttons for these pages are visible when you enter the Sample Editor. You can trigger notes at any time while you're editing, to hear your changes as you make them. When you have finished editing your sample or samples, see the preview function on page 7-18 for a way to automatically create a program and keymap using a sample or group of sample roots.

The Miscellaneous (MISC) Page

On the MISC page, you'll set several parameters that affect the behavior of the current sample. These parameters affect the entire sample. The right side of the top line displays the root number and RootKey of the sample. For stereo samples, **L** or **R** is displayed after the Root# parameter to indicate that you are viewing parameters for the left or right channel of the sample. Use the **Chan/Layer** buttons to move between channels of stereo samples. Although you can edit parameters for the left and right channels of a sample, both channels can only be heard if the *Stereo* parameter is set to **On** in the Program Editor, and the same keymap is selected for the Keymap1 and Keymap2 parameters in the Program Editor. If the *Stereo* parameter is set to **Off** in the Program Editor, only the left channel of stereo samples will be heard (in mono.) If the sample is part of a group of sample roots, you can also use the **Chan/Layer** buttons to scroll through each sample in the group. A representative MISC page is shown below:



Parameter	Range of Values
Root Key Number	C -1 to G 9
Pitch Adjust	Variable (depends on sample rate)

Parameter	Range of Values
Volume Adjust	-64.0 to 63.5 dB
Alternative Volume Adjust	-64.0 to 63.5 dB
Decay Rate	0 to 5000 dB per second
Release Rate	0 to 5000 dB per second
Loop Switch	Off, On
Playback Mode	Normal, Reverse, Bidirectional
Alternative Sample Sense	Normal, Reverse
Ignore Release	Off, On

Root Key

The root key represents the keyboard key at which the sample will play back without transposition (that is, at the same pitch as the pitch of the original sample). Use the -/+ buttons or Alpha Wheel to select a RootKey note, or use the alphanumeric pad followed by the **Enter** button to enter a RootKey by MIDI note number.

Pitch Adjust

Use this parameter to change the pitch of the sample relative to the key from which it's played. Setting a value of **100cts**, for example, will cause the sample to play back one semitone higher than normal. This parameter is handy for fine tuning samples to each other if they're slightly out of tune.

Volume Adjust

Uniformly boost or cut the amplitude of the entire sample.

Alternative Start Volume Adjust (AltVolAdjust)

This parameter sets the amplitude of the sample when the alternative start is used. See *The KEYMAP Page* in the *Program Mode* chapter of *The PC3 Musician's Guide* for details on AltSwitch.

Decay Rate

This parameter defines how long the sample takes to decay (fade) to zero amplitude (silence). DecayRate takes effect in the loop portion of the sample, after all the attack stages of the amplitude envelope are complete. Decay Rate affects each sample individually, and is in effect only when the amplitude envelope for the program (the Mode parameter on the AMPENV page in the Program Editor) is set to **Natural**. If Mode is **User**, the settings on the AMPENV page override the setting for DecayRate.

Release Rate

The release rate determines how long the sample will take to decay to zero amplitude when the note trigger is released. The higher the value, the faster the release rate.This release affects each sample individually, and is in effect only when the amplitude envelope for the program (the Mode parameter on the AMPENV page in the Program Editor) is set to **Natural**. In this case, the release begins as soon as the note is released.If Mode is **User**, the settings on the AMPENV page override the setting for ReleaseRate.

To create an extended sample loop that will play data after the sample's loop on key-up, set the Alternative Start sample pointer after the sample end pointer, then set a relatively low value for the release rate.

Loop Switch

This parameter activates or deactivates the looping of the currently selected sample. When set to **On**, the sample will loop according to the settings on the TRIM page. When set to **Off**, the sample will play through to its End point and stop.

Playback Mode (Playback)

This parameter lets you modify the direction in which the sample is played. Set it to a value of **Reverse** if you want the sample to play from its End (E) point to its Start (S) point. Choose a value of **Bidirectional** to cause the sample to play from Start to End, then reverse direction and play again from End to Loop and back, repeating until the note trigger is released (this works only when the Loop Switch parameter is set to **On**).

Alternative Sample Sense (AltSense)

This provides a convenient way to activate the alternative start of a sample. When set to **Normal**, the alternative start will be used when the Alt Switch control is **On** (this is set on the KEYMAP page), or when the control source assigned to it is above its midpoint. When set to **Reverse**, the alternative start will be used when the Alt Switch control is **Off**, or when the control source assigned to it is below its midpoint.

Ignore Release (IgnRelease)

When set to a value of **Off**, the sample will release normally when the note trigger is released. When set to **On**, the note will not release, even when the note trigger is released. This setting should be used only with samples that normally decay to silence; nondecaying samples will play forever at this setting. This parameter is equivalent to the IgnRelease parameter on the LAYER page, but affects only the currently selected sample.

SampleRate and NumSamples

These parameters cannot be edited, but show the sample's sample rate and the sample's length in samples. Samples that are longer than 1 million samples are displayed a 1Ms.

The Soft Buttons on the MISC Page

Rename

Call up the page that enables you to change the name of the current sample.

Save

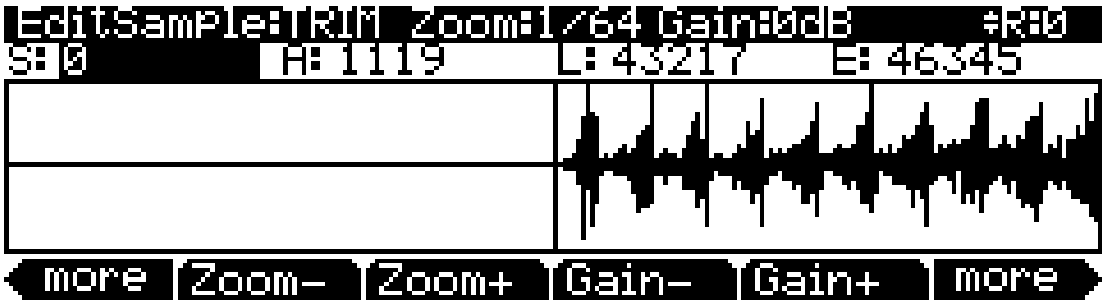
Start the process of saving the current sample.

Delete

Start the process of deleting the current sample. If the current sample has been saved to a user ID# (above 1024,) this deletes the sample settings at that ID# (the sample audio data cannot be deleted and remains in the factory ROM under the sample's original factory ID#.) If the current sample has been saved to a factory ROM ID# (1-1024,) this restores the factory default settings and audio data for that sample ID#.

The TRIM Page

The TRIM page lets you set the Start, Alternative Start, Loop, and End points of the current sample. The top line indicates the Zoom and Gain settings. This Gain setting doesn't affect the amplitude of the sample, just the view in the display. The right side of the top line displays the root number of the sample. If the sample is part of a group of sample roots, you can use the **Chan/Layer** buttons to scroll through each sample in the group.



The four parameters on this page are Start (S), Alternative Start (A), Loop (L), and End (E). Selecting these parameters and adjusting their values enables you to modify how the sample plays back when notes are triggered. Each of these parameter points are expressed in individual samples. For example, a one second sample at a sample rate of 44,100Hz would have 44,100 values available to adjust for each of these parameters.

There is a vertical line in the center of the display indicating the placement of the current parameter in the sample waveform. The sample waveform will move relative to the line when each parameter is selected or adjusted. The line remains in the center of the display, and the waveform shifts to indicate the new position of the point. Each parameter can be adjusted with the -/+ buttons, the Alpha Wheel, or the alphanumeric button pad followed by the **Enter** button.

The **Start (S)** point determines the beginning of the current sample. You can truncate the beginning of the sample by increasing the value of the Start (S) parameter. You might do this to remove silence at the beginning of a sample, or to remove some or all of the attack. You can't decrease the Start point of samples below zero.

The **Alternative Start (A)** parameter lets you set a second, optional start or end point for the current sample. The Alternative Start will be used when the Alt Switch parameter on the KEYMAP page is set to **On**, or when it's set to a specific control source and that control source is generating a value of more than +.5. (For example, if you assign **MWheel** as the control source for the Alt Switch parameter, the Alternative Start will be used when the Mod Wheel—or whatever control source you have set to send MWheel—is above its halfway point.) The Alternative Start can be set before, after, or at the same point as the Start or End.

If you set the Alternative Start after the End, you can extend the play of looped samples. Normally, looped samples will play through to the End, then will loop back to the Loop point, and continue looping like this until the note is released, when they go into their normal release. If the Alternative Start is set after the End, looped samples will loop in the same way while notes are sustained. As soon as you release the notes, however, the samples will play through to the Alternative Start point before going into release.

The **Loop (L)** parameter sets the beginning of the looped portion of the current sample. The Loop can be set at any point before the End, including before the Start and Alternative Start. If you try to move it after the End, the End will move with it. When you're setting a loop segment for a sample, you should adjust both the Loop and End parameters so that the two ends of the waveform would meet (or come as close as possible) when the loop occurs. You can do this visually by zooming in close to the waveform (until it becomes a single line,) then adjusting the Loop and End parameters of the waveform until both ends are the same distance above or below

the zero point of the display (the horizontal line in the middle of the waveform display.) Though adjusting these points visually is helpful, always listen to the sample and make the final settings based on what sounds best. You'll notice an audible click in your sample loop if the ends of the waveform do not meet where the loop occurs. The closer you can get the two ends of the waveform, the better the sound quality of your loop will be. Using zero-crossings for the Loop and End parameters may also help reduce clicks at the loop point, see *Zero- and Zero+* below for details.

The **End (E)** parameter sets the point at which the current sample will stop playback. Typically you'll use this parameter to trim unwanted silence off the end of a sample, although you can use it to shorten a sample as much as you want.

***Note On Saving Samples**: Trimmed portions of a sample are not saved. Trimmed portions before the Start (S), or Alternative Start (A) points (whichever has a lower value) will be lost upon saving, and whichever parameter had a lower value will have a value of zero the next time it is loaded (values for all other sample point parameters will be adjusted relatively.) Trimmed portions after the Alternative Start (A) or End (E) points (whichever has a higher value) will be lost upon saving. If you wish to save a copy of the original untrimmed sample, save the trimmed version under a different ID#. If you save a trimmed sample at its original ID#, you can always restore the original version by deleting the modified version that you saved. To delete a sample, see Delete on page 10-11, or OBJECT on page 7-13, the Delete function.*

Zoom- and Zoom+

These buttons increase or decrease the resolution of the waveform display, enabling you to see a larger or smaller segment of the waveform of the currently selected sample. The top line of the display indicates the zoom position in terms of a fraction—for example, 1/256—which indicates the number of individual sample elements represented by each display pixel. A value of 1/256 means that each pixel represents 256 individual sample elements. The maximum zoom setting of 1 shows you a very small segment of the sample. The minimum setting of 1/16384 shows you the largest possible segment of the sample. Each press of a **Zoom** soft button increases or decreases the zoom by a factor of 4.

Gain- and Gain+

These buttons increase or decrease the magnification of the currently displayed sample waveform, enabling you to see the waveform in greater or lesser detail. At the left of the display, you'll see the magnification setting, which is expressed in dB units. You can adjust the magnification from 48 dB (maximum magnification) to 0 dB. This doesn't affect the actual amplitude of the sample, only the magnification of its display.

The simplest way to think of the **Zoom** and **Gain** buttons is to remember that the **Zoom** buttons control the left/right magnification of the waveform, while the **Gain** buttons control the up/down magnification. Neither button has any affect on the sound of the sample. You'll often use the **Zoom** and **Gain** soft buttons together to focus in on a particular sample segment, then magnify it to see it in close detail.

For example, you might want to zoom out to view an entire sample waveform, to decide which segment you want to edit. You could then zoom in to focus on a particular segment. Once you've zoomed in, you may want to boost the Gain to enable you to set a new Start (S) point with greater precision, or ensure that you get a smooth loop transition.

Zero- and Zero+

Pressing the **Zero-** or **Zero+** buttons will search left or right respectively for the sample's next zero-crossing. A zero-crossing is a point where the sample waveform is neither positive or negative (crossing the horizontal line in the middle of the waveform display.) The currently selected parameter (Start (S), Alternative Start (A), Loop (L), or End (E)) will be set to this point in the sample. Setting these parameters to zero-crossings can help minimize clicks at the start, end, or loop point of a sample. It's best to have each of these points set first by adjusting each parameter and listening to the sample, then if needed search for a nearby zero-crossing.

Appendix A
PC3 Legacy File Conversion

The PC3 can load objects from older Kurzweil K2 series products. Loaded objects are converted to object types native to the PC3 (see below for object types that can be converted.) Some object parameters cannot be converted and must be adjusted by the user after conversion (see object types below for details.) **The PC3 does not load samples**, so during keymap conversion the PC3 will try to find similar samples to use in the PC3 ROM. This process may or may not be successful. The PC3 is unable to convert the sample skipping parameter (SmpSkp,) so PC3 ROM samples used for converted K2 series keymaps can only be transposed upward by one octave.

Only legacy objects ending with the file extension .P3K, .K26, .K25, or .KRZ can be loaded and converted.

Object Types and Conversion Details

Keymap Objects

All K series Keymap objects can be loaded, all parameters will be used or converted to PC3 specific parameters. The PC3 is unable to convert the sample skipping parameter (SmpSkp,) so PC3 ROM samples used for converted K2 series keymaps can only be transposed upward by one octave.

Program Objects

Most K series Program objects can be loaded, but FX are not converted and must be set by the user. A reverb effect is set by default for converted Programs. Some DSP ALGS and DSP objects (some filters, oscillators, etc.) can not be converted, so user may have to adjust some Program layers to use new ALGs or DSP objects. **The PC3 does not load samples**, so during keymap conversion the PC3 will try to find similar samples to use in the PC3 ROM. This process may or may not be successful. The PC3 is unable to convert the sample skipping parameter (SmpSkp,) so PC3 ROM samples used for converted K2 series keymaps can only be transposed upward by one octave. KB3 programs created with a K2500 or K2600 cannot be loaded to the PC3, however the PC3 contains a variety of KB3 programs which can easily be modified and edited. Also, Triple Mode programs created with the K26 series cannot be loaded to the PC3, however PC3 programs can use Cascade Mode. Cascade Mode allows a program signal to be routed through up to 32 layers of DSP algorithms (see *Alt Input for Algorithms (Cascade Mode)* in the Program Mode chapter of the PC3 Musician's Guide for details.)

Setup Objects

All K series Setup objects can be loaded, but FX are not converted and the user set Program effects are used by default (Program FX are not converted and must be set by the user.) Also, any controller settings for a fourth switch pedal will not be converted (because the PC3 only has three switch pedals.)

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