PC4 SE

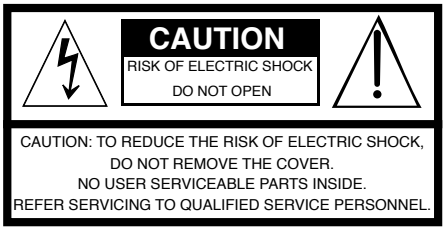
Musician's Guide

KURZWEIL®

It's the **sound**.®

Rev. 001

Part Number 910591-001



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 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. 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.
4. This product should only be used with a stand or cart that is recommended by the manufacturer.
5. 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 a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
6. This product should be located so that its location or position does not interfere with its proper ventilation.
7. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
8. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
9. 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.
10. 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.
11. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
12. The product should be serviced by qualified service personnel when:
    A. The power supply, power cord or plug have 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.
13. 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.
14. **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 the 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.

The normal function of the product may be disturbed by strong electromagnetic interference. If so, simply reset the product to resume normal operation by following the instructions in the manual. If normal function does not resume, please use the product in another location.

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 and power supply adapter from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11) Only use power adapters and 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) 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.

Prop 65 Warning: This product contains chemicals known to the state of California to cause cancer, or birth defects or other reproductive harm. *[As with most electronic equipment, the outer cables may contain phthalate and the copper alloy power plug contains lead. Wash hands after handling.]*

Kurzweil International Contacts

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

US Customers:

American Music & Sound
925 Broadbeck Dr #220
Newbury Park, CA 91320

Tel: 800-431-2609
Fax: 818-597-0411
Email: info@americanmusicandsound.com

Customers outside the US:

HDC YOUNG CHANG
196, Bongsu-daero, Seo-gu
Incheon, Korea Post Code: 22840

Tel: +82-32-570-1570
Fax: +82-32-576-2340

www.kurzweil.com

www.facebook.com/kurzweilmusicsystems/

www.twitter.com/KurzweilMusic

www.youtube.com/user/KurzweilTutorials

Table of Contents

Chapter 1
Getting Started

This chapter will give you a quick overview of the PC4 SE. Be sure to keep this manual on hand as you familiarize yourself with the features and functions of the PC4 SE.

Features of the PC4 SE

Sounds

- FlashPlay technology utilizing 2GB of instrument samples including:
  - Optimized German D and Japanese C7 Pianos, Triple Strike Piano, 73 Electric Piano, Clavinets, Harpsichords, Celeste, Bowed and Hit Crotales, Vector Synthesis Waveforms
  - Updated Rock, Synth and Orchestral sounds from Kurzweil's PC4, SP6, PC3, and KORE64
  - 10 Categories of Programs (Piano, E. Piano, Clav, Organ, Strings/Pad, Brass/Wind, Synth, Guitar/Bass, Drum/Perc, Misc)
- KSR: Kurzweil String Resonance (Piano String Resonance Simulation)
- Piano programs support optional Half-Damper pedal for half pedaling
- KB3 Organ simulation with control of 9 drawbars
- Kurzweil's highly acclaimed VAST Synthesis and FX engine
- FM: Classic 6 operator FM synthesis
- Arpeggiator with dedicated On/Off and Tap Tempo buttons (up to 5 simultaneous in Multi Mode)
- CC Sequencer with dedicated On/Off and Tap Tempo buttons (up to 5 simultaneous in Multi Mode)
- More than 4000 User IDs to save your own Programs and Multis
- 256 voices of polyphony
- 16 MIDI Channels for multitimbral applications in Program Mode
- 16 MIDI Tracks for recording in Song Mode
- 5 Zone MIDI Controller in Multi Mode

Controllers

- 88-key fully weighted hammer action keyboard with piano like feel
- Control section with 5 assignable knobs, sliders, and buttons
- Assignable Variation button
- EQ button
- Transpose buttons
- Arpeggiator section with buttons for Arpeggiator Enable, Arpeggiator Latch, CC Sequencer Enable, and Tap Tempo
- Pitch wheel
- Assignable modulation wheel
- 2 assignable switch pedal jacks (each jack can be used with a dual pedal for up to 4 switch pedals)
- 1 assignable CC pedal jack

Quick Start

Be sure to check the Kurzweil website at www.kurzweil.com for new sounds, documentation and software updates.

Setting Up the PC4 SE

1. If your PC4 SE keyboard has been out in the cold during shipping, give it time to warm up to room temperature before powering it on, since condensation may have formed inside.
2. Place the PC4 SE on a keyboard stand or on a hard, flat, level surface.
3. Connect the DC power adaptor to the PC4 SE DC Power jack.
4. Make sure your power outlet is compatible with the included power adaptor, then plug the power cable into the power outlet.
5. Plug the included Switch Pedal into the SW1 (SUSTAIN) jack on the PC4 SE rear panel.
6. If you have an additional switch pedal, plug it into the SW2 jack for Sostenuto control.
7. If you have a MIDI CC pedal (also known as a MIDI expression or volume pedal), plug it into the CC (VOLUME) jack for volume control.

8. If you are using speakers, turn the master volume all the way down on your amplifier or mixer. Using standard (1/4-inch) audio cables, first plug into the input jacks of your amplifier or mixer, then plug the other end of the cables into the PC4 SE AUDIO OUT jacks. (Connecting in this order minimizes the possibility of static discharge damage.) For a mono signal, only use the LEFT (MONO) jack, and leave the RIGHT jack unplugged. Balanced ("TRS" or "Stereo") cables are recommended if your mixer or amp supports balanced inputs.
9. If you are using headphones, connect stereo headphones to the headphone jack on the rear panel.
10. Move the PC4 SE VOLUME Slider all the way down.

Powering On the PC4 SE

1. Power on the PC4 SE by pressing the POWER button on the right rear panel.
2. If you are using speakers, turn up the volume on your amplifier or mixer.
3. Slowly turn up the PC4 SE VOLUME Slider and play some notes to check the volume level. (If you have a CC pedal plugged into the CC (VOLUME) jack, make sure it is set to the maximum volume position).
4. If you are using speakers and the PC4 SE is not loud enough, turn up the volume on your amplifier or mixer.
5. If you are using a mixer and hear distortion, reduce the gain level on the mixer, or use the mixer's Pad button if it has one (a button that typically decreases the audio input level by 20 dB).
6. After using the PC4 SE, if you are using speakers, turn the master volume all the way down on your amplifier or mixer before powering off the PC4 SE.

Auditioning PC4 SE Sounds

1. The PC4 SE starts up in Program Mode. Use the NAVIGATION buttons, ALPHA WHEEL, or CATEGORY buttons to select a different Program. See PC4 SE Sounds on page 1-13 for more details on selecting Programs or Multis.

1. To hear a Program Demo song for the current Program, press the KEYPAD and ENTER buttons simultaneously.
2. To hear the capabilities of the PC4 SE, you can play the multi-channel demo songs. Press the KEYPAD and 0/MISC buttons simultaneously to listen to a multi-channel demo song.
3. To switch between auditioning Programs or Multis, press the PROGRAM or MULTI Mode button under the MODE label to the right of the display.

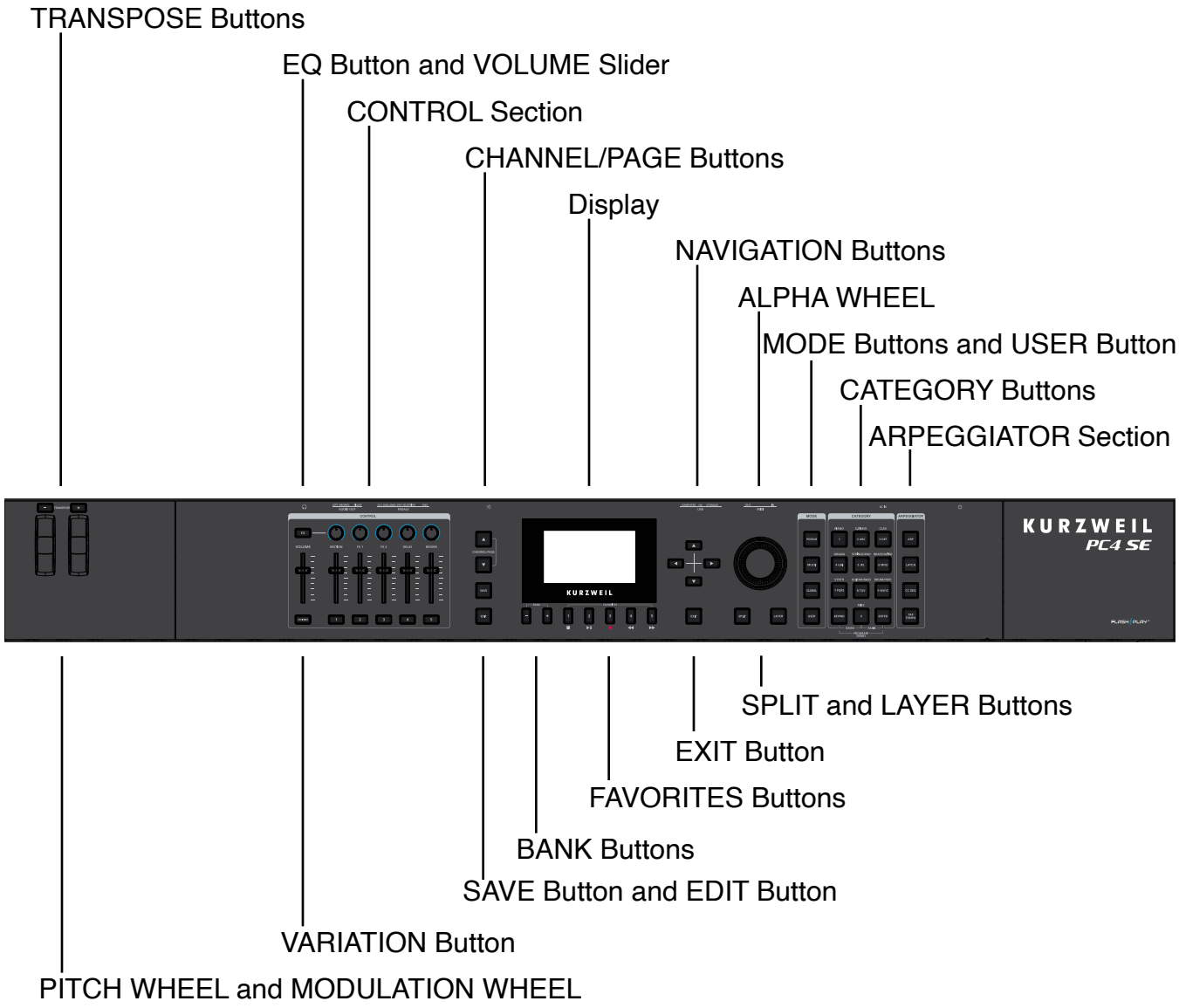
Automatic Power Saving

The PC4 SE has an automatic power saving feature (Auto Power Off) that can automatically power off the PC4 SE after a period of inactivity, in order to conserve electricity. The Auto Power Off feature is enabled by default. The default Power Off Time is 8 hours, which will cause the PC4 SE to power off after 8 hours of inactivity.

A count down timer warning will be shown in the display a few minutes before the PC4 SE is powered off. At any time, touching any PC4 SE control or playing a note will cause the PC4 SE to remain powered on, until the PC4 SE has been inactive for the set Power Off Time.

Auto Power Off can be disabled in Global Mode. The Power Off Time can also be adjusted in Global Mode.

The Front Panel



VOLUME Slider

The VOLUME Slider controls the volume level of the AUDIO OUT and HEADPHONE jacks.

Display

The display is the main user interface for the PC4 SE. Use the display to view Program and Multi names, controller assignments, and editing functions.

ALPHA WHEEL

In Program and Multi Mode, use the ALPHA WHEEL to navigate through the Program or Multi list.

In Program Edit or Multi Edit Mode, use the ALPHA WHEEL to scroll through the list of values for the currently selected parameter. Turn the ALPHA WHEEL counter-clockwise or clockwise to select the previous or next value. Turn the ALPHA WHEEL slowly to change the value by one increment, or turn it quickly to jump several increments.

NAVIGATION Buttons

The NAVIGATION buttons move the cursor in the display and allow you to select the current parameter to be edited.

MODE Buttons

Press the MODE buttons to access PROGRAM, MULTI or GLOBAL Mode. See Modes on page 1-16 for a description of each Mode.

CATEGORY Buttons

In Program Mode, the CATEGORY buttons allow you to select and browse Programs in 10 categories of instruments. Engaging the KEYPAD button allows you to use the CATEGORY buttons as an alphanumeric keypad. The KEYPAD button is always on in Multi Mode, and where needed for editing parameter values.

FAVORITES Buttons

The FAVORITES buttons can be used to instantly recall your favorite Programs and Multis. To assign the currently selected Program or Multi to a FAVORITES button, press and hold the desired FAVORITES button for a few seconds until the display indicates that the favorite has been saved. Press a FAVORITES button to instantly select the stored Program or Multi.

BANK Buttons

The BANK buttons can be used to select different banks of favorite Programs and Multis. In Program and Multi Mode, the currently selected Bank number and name are shown on the display. To select Bank 1, press both BANK buttons simultaneously.

TRANSPOSE Buttons

The TRANSPOSE buttons can be used to change the tuning of notes played on the PC4 SE keyboard in semitones (also known as half steps). The current transpose amount is shown in the display. Press both TRANSPOSE buttons simultaneously to reset the transposition to 0.

PITCH WHEEL and MODULATION WHEEL

Use each wheel to respectively perform pitch bends or vary the modulation amount. The MODULATION WHEEL will perform an assigned modulation for each Program or Multi. The name of the current assignment is shown in the display when the wheel is moved.

VARIATION Button

Pressing the VARIATION button will perform an assigned variation for each Program or Multi. The name of the current assignment is shown in the display when the button is pressed.

The VARIATION button will typically modify the sound by adding an orchestral string section or synth pad layer, or enabling an effect.

For KB3 Organ Programs, the VARIATION button controls the Rotary Speaker speed, changing between fast and slow. The display shows “KB3” when a KB3 Program is selected.

CONTROL Section

The CONTROL section is used to control various Program and Multi parameters.

In Program Mode: The knobs, sliders, and buttons control synthesis and FX parameters for the current Program. Controller assignments can be adjusted or set to user-assignable parameters in Program Edit Mode.

In Multi Mode: The knobs, sliders, and buttons typically control Zone volume, synthesis and FX parameters for the current Multi. Controller assignments can be adjusted or set to user-assignable parameters in Multi Edit Mode.

In Program and Multi Mode: When a KB3 Organ Program is selected, the knobs and sliders behave like Organ drawbars, and the buttons control various Organ functions. The display shows “KB3” when a KB3 Program is selected.

EQ Button

On the main Program and Multi Mode pages, turn on the EQ button to view and control the Master FX parameters, which can apply EQ and compression to all audio produced by the PC4 SE.

When viewing the Master FX parameters, use the Switch 1 button to enable/disable the Master EQ, and use the first 4 Knobs in the CONTROL section to control the 4 on screen Master EQ parameters.

When viewing the Master FX parameters, use Knob 5 in the CONTROL section to control the Master Compressor. When the knob is all the way down, the compressor is disabled. Turn the knob up to enable the compressor and increase the compression amount.

Note: To set your Master FX settings as default settings to be applied when the PC4 SE is powered on, you must enter and exit Global Mode, or select the desired settings on the Global Mode Master FX page, then exit Global Mode to save the settings as defaults.

When viewing the Global mode Master FX page, turn on the EQ button to control the parameters with the CONTROL section knobs and buttons as described above.

Turn off the EQ button to return the CONTROL section knobs and buttons to their Program or Multi assignments.

ARPEGGIATOR Section

Use the ARP and LATCH buttons to control the PC4 SE's Arpeggiator.

Use the CC SEQ button to turn the CC Sequencer On or Off.

Use the TAP TEMPO button to set the tempo of the Arpeggiator and CC Sequencer, the rate of tempo synced FX (such as Delay), or the tempo of the current Multi or Song. To set the tempo, press the TAP TEMPO button a few times at the desired rate. You can also set the tempo by pressing the TAP TEMPO button, then adjusting the tempo with the ALPHA WHEEL, or by using the KEYPAD buttons to type a numeric value followed by pressing ENTER.

SPLIT and LAYER Buttons

Use the SPLIT button to quickly create a Multi where keys in different ranges of the keyboard play different instrument sounds.

Use the LAYER button to quickly create a Multi where different instrument sounds are layered in the same key range, so that keys in one range of the keyboard play multiple instrument sounds at the same time.

The Split and Layer functions allow you to quickly create Multis without using Multi Edit Mode to configure Zone key ranges, Programs, and volumes. After creating and saving a Split or Layer Multi, you can edit additional Multi parameters in Multi Edit mode.

SAVE and EDIT Buttons

These buttons are used when editing Programs or Multis to create User sounds. In Program Mode, press the SAVE button to save a User Program with the current controller settings.

EXIT Button

In Program Edit Mode, Multi Mode, or Global Mode, press the EXIT button to return to Program Mode. In Multi Edit Mode, press the EXIT button to return to Multi Mode.

USER Button

Press and enable the USER button to access previously saved User Programs or Multis. Press and disable the USER button to access all Programs or Multis (Factory and User).

CHANNEL/PAGE Buttons

Use the CHANNEL/PAGE buttons to change the current MIDI Channel in Program Mode, or the current page in Program Edit, Multi Edit, or Global Mode.

The Rear Panel

POWER Button

Press the POWER button to power the PC4 SE on or off.

DC Power Jack

Plug the included power adaptor into the DC Power jack.

USB Ports

Use the USB ports to connect the PC4 SE to a computer/tablet or USB hard drive in order to do the following:

- Use the PC4 SE as a MIDI controller to play software instruments on a computer/tablet.
- Play and control the PC4 SE with a USB MIDI controller.
- Use a computer/tablet to sequence multi-channel songs on the PC4 SE.
- Backup and restore User Programs and Multis on a USB hard drive.
- Update the software and sounds of the PC4 SE.

MIDI IN and OUT Ports

Use the MIDI ports to communicate with other MIDI modules and controllers. The OUT port is the MIDI transmitting port, and the IN port is the MIDI receiving port.

To use the PC4 SE as a MIDI controller for another sound module, use a MIDI cable to connect the PC4 SE's MIDI OUT port to the MIDI input port of the module that you want to control.

To control the PC4 SE using another MIDI controller, use a MIDI cable to connect the PC4 SE's MIDI IN port to the MIDI output port of the controller that you will be using.

Display Brightness Knob

Use the display Brightness knob to control the display brightness.

SW1 (SUSTAIN) and SW2 Jacks

Use the SW1 (SUSTAIN) and SW2 jacks to connect switch pedals. One switch pedal is included with the PC4 SE.

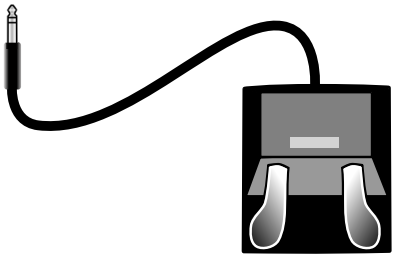
In Program Mode, SW1 (SUSTAIN) defaults to controlling Sustain, and SW2 defaults to controlling Sostenuto. (For KB3 Organ Programs, SW1 (SUSTAIN) defaults to controlling the Rotary Speaker speed, changing between fast and slow. This assignment can be changed in Global Mode. The display shows "KB3" when a KB3 Program is selected.)

In Multi Mode, pedal assignments can vary per Multi. Pedal assignments can be adjusted for each Zone by using Multi Edit Mode.

Global Mode can be used to set pedal overrides, which can change the pedal assignments for all Programs and Multis.

Note: Switch pedals must be plugged in before powering on the PC4 SE. Do not to step on the switch pedals when powering on the PC4 SE, as the state of the pedals is detected as part of the start up sequence.

Dual Switch Pedals



The SW1 (SUSTAIN) and SW2 jacks can be connected to dual switch pedals (2 pedals per jack), allowing up to four switch pedals to be used. Compatible pedals should use a single 1/4 inch tip-ring-sleeve plug. (Two single switch pedals can also be plugged into one jack by using a 1/4 inch stereo (male) to dual mono (female) splitter cable, aka TRS to dual TSF).

Pedals plugged into the SW1 (SUSTAIN) jack are referred to as SW1a and SW1b, and pedals plugged into the SW2 jack are referred to as SW2a and SW2b. In Program Mode the default assignments are:

SW1a	Sustain
SW1b	Sostenuto
SW2a	Sostenuto
SW2b	Soft Pedal

To emulate the 3 pedals of an acoustic piano, plug a single switch pedal into the SW1 (SUSTAIN) jack, and a dual switch pedal into the SW2 jack.

Continuous Switch Pedals (Half-Damper)

The SW1 (SUSTAIN) jack is also compatible with continuous switch pedals (Half-Damper) that use a 1/4 inch tip-ring-sleeve plug (such as the Kurzweil KP-1H). When connected to the SW1 (SUSTAIN) jack, a Half Damper pedal enables finer control of Sustain than a standard switch pedal. Half Damper control is enabled for Programs in the Piano category. Programs outside of the Piano category will respond to a Half Damper pedal as if it is a standard switch pedal.

CC (VOLUME) Jack

Use the CC (VOLUME) jack to connect a MIDI CC pedal (also known as a MIDI expression or volume pedal). By default this pedal is assigned to control Program and Multi volume (pre-FX).

For KB3 Organ Programs, the CC (VOLUME) pedal controls organ swell. Organ swell is similar to Program volume, except volume can not be turned all the way down to silence. The display shows “KB3” when a KB3 Program is selected.

For User Multis, the CC pedal can be assigned to a different function for each Zone by using Multi Edit Mode.

The optional Kurzweil CC-1 continuous control pedal will work best with the PC4 SE, but it is also possible to use third-party continuous control pedals designed for keyboards. Compatible pedals should use a 10 kΩ linear-taper potentiometer, with a 1/4 inch tip-ring-sleeve (stereo) plug with the wiper connected to the tip.

AUDIO OUT LEFT (MONO) and RIGHT Jacks

Use the AUDIO OUT jacks to connect to an amplifier or mixer. See Quick Start on page 1-2 for details.

HEADPHONE Jack

Use the HEADPHONE jack located on the left rear panel of the instrument to listen to the PC4 SE on stereo headphones. You will need a 1/8-inch-to-1/4-inch adapter in order to use headphones that have a smaller mini plug connector.

When headphones are plugged in, audio is still transmitted from the AUDIO OUT jacks.

PC4 SE Sounds

The PC4 SE contains Programs and Multis. A Program is typically a single instrument sound such as a Piano, Organ, or Synth. Programs are organized by instrument type in 10 categories.

A Multi is a combination of Programs arranged as layers and/or splits across the keyboard. Multis are not categorized by instrument type, so the KEYPAD button is always on when in Multi Mode.

Selecting Programs

In Program Mode, use any of the methods below to select a Program.

Browse All Programs

Make sure the USER button is off, then use the ALPHA WHEEL or NAVIGATION buttons to select a Program from all of the available Programs.

Select a Program by Category

Make sure the KEYPAD button is off, then press one of the CATEGORY buttons to select the first Program of a category (or the current Category Default Program). The selected CATEGORY button will turn on. Use the ALPHA WHEEL or NAVIGATION buttons to select Programs from the selected category.

Select a Previously Saved User Program

Press and turn on the USER button, then use the ALPHA WHEEL or NAVIGATION buttons to browse only User Programs. To return to browsing Factory and User Programs, press and turn off the USER button.

Select a Program by ID Number

Press and turn on the KEYPAD button. The KEYPAD button allows you to use the numbers labeled on the CATEGORY buttons to select Programs or Multis by ID number. Type an ID number followed by pressing the ENTER button to select the associated Program.

Select a Category Default Program

Each category has a Category Default Program (the Program which is selected when each CATEGORY button is pressed). By default the Category Default Program is set to the first Program of each category. To set a different Category Default Program, select a Program, make sure the KEYPAD button is off, then press and hold the currently lit CATEGORY button.

Selecting Multis

In Multi Mode, use any of the methods below to select a Multi.

Browse All Multis

Make sure the USER button is off, then use the ALPHA WHEEL or NAVIGATION buttons to select a Multi from all of the available Multis.

Select a Multi by ID Number

The KEYPAD button allows you to use the numbers labeled on the CATEGORY buttons to select Multis by ID number. Use the CATEGORY buttons to type an ID number followed by pressing the ENTER button. Multis are not organized by category, so the KEYPAD button is always on in Multi Mode.

Select a Previously Saved User Multi

Press and turn on the USER button, then use the ALPHA WHEEL or NAVIGATION buttons to browse only User Multis. To return to browsing Factory and User Multis, press and turn off the USER button.

Controllers

The Knobs, Sliders, Buttons, Wheels, and Pedals can control each of the Factory Programs and Multis, to produce variations to the sound. Don't forget to try these out as you explore the Factory sounds on the PC4 SE.

Generally, each control will perform the assignment labeled on the front panel, although some controls may have different assignments per Program or Multi. When a controller is moved, the name of the current assignment is shown in the display. Controller assignments can be adjusted in Program and Multi Edit Mode.

Favorites

Use the FAVORITES buttons to quickly store and recall a set of 5 favorite Programs and/or Multis while in Program or Multi Mode.

To recall a favorite Program or Multi, simply press one of the FAVORITES buttons. The FAVORITES buttons work from both Program or Multi Mode, and pressing a FAVORITES button will automatically bring you to Program Mode or Multi Mode if required.

To assign the currently selected Program or Multi to a FAVORITES button, press and hold the desired FAVORITES button for a few seconds until the display indicates that the favorite has been saved.

The BANK buttons can be used to select different banks of favorite Programs and Multis. In Program and Multi Mode, the currently selected Bank number and name are shown on the display. To select Bank 1, press both BANK buttons simultaneously.

Splits and Layers

The Split and Layer function can be used to Split or Layer the current Program or Multi. Different keyboard regions can play different Programs, or multiple Programs can be played from the same region. To Split or Layer a Multi, it must contain at least one Zone which is unused (Off).

In Program or Multi Mode, press the SPLIT or LAYER buttons to view the Split/Layer Page. You will then be able to configure up to three additional Programs to create a Split or Layered Multi containing up to four Programs.

Press the SAVE button once to view the Save Dialog. The Save Dialog allows you to choose an ID number and name for the Split/Layer Multi you are saving. Use the CHANNEL/PAGE buttons to switch between ID selection and naming pages. On the Multi Save Page, press the SAVE button again to save the Split/Layer Multi.

After saving the Split or Layer as a Multi, additional Multi Controller and FX settings can be edited in Multi Edit Mode.

Modes

Program Mode

The PC4 SE always powers up in Program Mode, where single instrument sounds can be played directly from the keyboard, or multitimbrally via MIDI.

Saving Programs

If you make changes to the current Program using any of the controllers (Knobs, Sliders, Buttons, Wheels), the SAVE button turns on to indicate that a change has been made to that Program.

To save a copy of the Program with the changes you've made, press the SAVE button once to view the Save Dialog. The Save Dialog allows you to choose an ID number and name for the Program you are saving. Use the CHANNEL/PAGE buttons to switch between ID selection and naming pages. On the Program Save Page, press the SAVE button again to save the Program as a User Program.

Program Edit Mode

Program Edit Mode allows you adjust the current Program's Arpeggiator settings, select parameters for the assignable controllers, and adjust other Program parameters. See above for details on saving an edited Program as a User Program.

Multi Mode

Multi Mode allows you to play Multis, which are arrangements of up to 5 Programs split and/or layered in Zones across selected ranges of the keyboard. The volume of the Program in each Zone can be easily adjusted while playing by using the sliders, and each Zone can be turned on or off by using the buttons below these sliders.

Controller settings can be adjusted in Multi Edit Mode.

Multi Edit Mode

Multi Edit Mode is used to modify the many parameters that make up Multis, including Program Selection, Key Range, Volume, Pan, and Controller assignments. Use Multi Edit Mode to create custom sound combinations.

To save a copy of the Multi with the changes you've made, press the SAVE button once to view the Save Dialog. The Save Dialog allows you to choose an ID number and name for the Multi you are saving. Use the CHANNEL/PAGE buttons to switch between ID selection and naming pages. On the Multi Save Page, press the SAVE button again to save the Multi as a User Multi.

Global Mode

Use Global Mode to adjust common settings that are shared between all Modes, such as velocity sensitivity and power saving options. Global Mode is also used for storing or loading User backup files, and restoring Factory default settings. Some of the more common settings are summarized below.

Info

The Info Page shows the currently installed operating system and sound object versions. Use this page to check if your PC4 SE is up to date with the most recent software and sounds posted at www.kurzweil.com.

Reset

You can return the PC4 SE to the Factory default state by doing a Reset.

Caution: Reset will delete ALL User objects, so it is important to back up your User objects before doing a Reset. Factory objects are not deleted.

Saving to External Storage

Programs and Multis that you have created can be saved to a USB Flash Drive.

Loading from External Storage

Programs and Multis can be loaded onto the PC4 SE from a USB Flash Drive. This allows you to load new sounds from Kurzweil or other developers, or to load sounds that you have previously saved.

Double Button Presses

Reset Transposition

To reset the current Program or Multi transposition to 0, simultaneously press both of the TRANSPOSE -/+ buttons.

Program Demo

In Program Mode, to hear a Program Demo song for the current Program, press the KEYPAD and ENTER buttons simultaneously.

Song Demo

To hear the capabilities of the PC4 SE, you can play the multi-channel demo songs. Press the KEYPAD and 0/MISC buttons simultaneously to listen to a multi-channel demo song.

Panic

Pressing the 0/MISC and ENTER buttons simultaneously deactivates all sounding notes by sending an "all notes off" message on all 16 MIDI channels.

Select Channel / Page 1

In Program Mode, pressing both of the CHANNEL/PAGE buttons simultaneously will select MIDI channel 1.

In Program Edit Mode, Multi Edit Mode, Global Mode and Song Mode, pressing both of the CHANNEL/PAGE buttons simultaneously will select Page 1.

Select Next Unused ID

When selecting an ID number to save a previously saved User object, press the NAVIGATION Left/Right buttons simultaneously to jump between selecting the previously used ID number, and the next unused ID number.

Search

The Search page allows you to find any term or series of characters within the currently selected list or range of values. Hold the ENTER button and press one of the numeric buttons 0-9 to view the Search page.

On the search page, use the category buttons to type the term you want to find, then press the ENTER button to search. For example, if the program list is selected and you want to find all programs containing the word "Horn," you would type h-o-r-n followed by the ENTER button. The Search page is not case-sensitive; it will find upper and lower case characters regardless of what you type.

After typing a term and pressing the ENTER button, the search page finds and selects the first instance of the term in the list (if it exists in the list). To find and select the next or previous instance of the term in the list, hold the ENTER button and press one of the BANK -/+ buttons to search for the previous lower numbered or next higher-numbered object that contains the search term.

Note: Each combination of the ENTER button and a numeric button 0-9 allows you store a different search term. For example, hold the ENTER button and press the 1 button, then search for a term like "piano". The term "piano" will now be available whenever you hold the ENTER button and press the 1 button. Next, hold the ENTER button and press the 2 button, then search for "string". The term "string" will now be available whenever you hold the ENTER button and press the 2 button. A different term can be stored for each of the numeric buttons 0-9. These terms are stored until power off.

Chapter 2
Program Mode

Use Program Mode to play a Program directly from the keyboard, or to play up to 16 Programs multitimbrally via MIDI. Programs typically contain a single instrument sound, although some Programs may contain multiple instrument sounds.

Each of the 16 channels in Program Mode can also control external sound modules or computer software through a MIDI or USB cable.

The PC4 SE always powers on with Program Mode selected. To enter Program Mode from another Mode, press and turn on the PROGRAM Mode button, or press the EXIT button repeatedly until you reach Program Mode.

The PC4 SE powers on with Program 1 selected, or the Program that was selected the last time Global Mode was exited.

Selecting Programs

In Program Mode, use any of the methods below to select a Program.

Browse All Programs

Make sure the USER button is off, then use the ALPHA WHEEL or NAVIGATION buttons to select a Program from all of the available Programs.

Note: The state of the KEYPAD button determines whether Programs browsed by using the ALPHA WHEEL or NAVIGATION buttons are ordered based on Category order then ID number (KEYPAD off), or based on ID number only and ignoring Category (KEYPAD on). When the USER button is on, only User Programs can be browsed by using the ALPHA WHEEL or NAVIGATION buttons, ordered based on Category order then ID number.

Select a Program by Category

Make sure the KEYPAD button is off, then press one of the CATEGORY buttons to select the first Program of a category (or the current Category Default Program). The selected CATEGORY button will turn on. Use the ALPHA WHEEL or NAVIGATION buttons to select Programs from the selected category.

Select a Previously Saved User Program

Press and turn on the USER button, then use the ALPHA WHEEL or NAVIGATION buttons to browse only User Programs. To return to browsing Factory and User Programs, press and turn off the USER button.

Select a Program by ID Number

Press and turn on the KEYPAD button. The KEYPAD button allows you to use the numbers labeled on the CATEGORY buttons to select Programs or Multis by ID number. Type an ID number followed by pressing the ENTER button to select the associated Program.

Select a Category Default Program

Each category has a Category Default Program (the Program which is selected when each CATEGORY button is pressed). By default the Category Default Program is set to the first Program of each category. To set a different Category Default Program, select a Program, make sure the KEYPAD button is off, then press and hold the currently lit CATEGORY button.

Program Demo

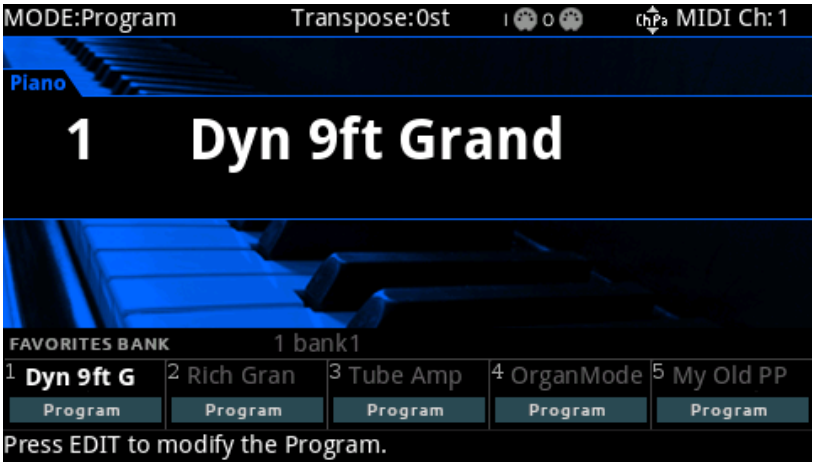
To hear a Program Demo song for the current Program, press the KEYPAD and ENTER buttons simultaneously.

The Display

In Program Mode, the top line of the display shows the current Mode, MIDI transposition, MIDI In/Out activity indicators, and MIDI channel.

The currently selected Program ID number and name are shown in the center of the display. If the selected program is a user program, a KB3 organ program, or if the program contains an FM layer or FM operator function, the USER, KB3, FM or FMOP icons are displayed next to the program name.

When a controller is moved, the controller assignment and value is briefly displayed below the Program ID and name.



Favorites

When the Global Mode Display parameter is set to Large, the display shows the current Favorites Bank number and name, and the names of the 5 Programs and/or Multis in the current Favorites Bank. Select a one of these Programs/Multis by pressing the corresponding FAVORITES button. To access other Favorites Banks, use the BANK buttons.

When the Global Mode Show Zone Info parameter is set to Off, Large view shows the names of 5 Programs and/or Multis in the current Favorites Bank in larger text.

MIDI In/Out Activity Indicators

MIDI In/Out activity indicators are displayed at the top of the screen (shown as 2 MIDI port symbols with “I” for “in” and “O” for “out”). These indicators briefly light up when MIDI has been recently sent to or received by the PC4 SE’s MIDI/USB ports. If the symbol is green, this indicates there has been MIDI activity on that port in the last few seconds. If the symbol is red, this indicates there has been communication with the external software editor on that port in the last few seconds. If the symbol is gray, this indicates there has been no MIDI activity on that port in the last few seconds.

FAVORITES Buttons

Use the FAVORITES buttons to quickly store and recall a set of 5 favorite Programs and/or Multis while in Program or Multi Mode.

To recall a favorite Program or Multi, simply press one of the FAVORITES buttons. The FAVORITES buttons work from both Program or Multi Mode, and pressing a FAVORITES button will automatically bring you to Program Mode or Multi Mode if required.

To assign the currently selected Program or Multi to a FAVORITES button, press and hold the desired FAVORITES button for a few seconds until the display indicates that the favorite has been saved.

BANK Buttons

The BANK buttons can be used to select different banks of favorite Programs and Multis. In Program and Multi Mode, the currently selected Bank number and name are shown on the display. To select Bank 1, press both BANK buttons simultaneously.

Controllers

In Program Mode, you can use the PC4 SE physical controllers (the Knobs, Sliders, Buttons, Wheels, Pedals, and ARPEGGIATOR section) to modify an instrument sound during a performance to add variation or expression.

Move a controller to view the assigned parameter name and value in the display.

Note: Assigned parameter names are not visible if the Global Mode "Display" parameter is set to List, or if the Global Mode "Show Controllers" parameter is set to No.

If you make changes to the current Program using any of the controllers, the SAVE button lights up to indicate that a change has been made to that Program. For more information on the SAVE button, see Save User Programs on page 2-11.

VAST Program Controller Assignments

In each of the Factory VAST Programs, each Knob, Slider and Button in the front panel CONTROL section will usually perform an assignment related to labels printed between the Knobs and Sliders. Some controls may have different assignments per Program. When a controller is moved, the name of the current assignment is shown in the display. Controller assignments can be adjusted in Program Edit Mode.

KB3 Program Controller Assignments

In each of the Factory KB3 Organ Programs, the knobs and sliders in the front panel CONTROL section behave like Organ drawbars, and the buttons control various organ functions. The display shows "KB3" when a KB3 Program is selected. When a controller is moved, the name of the current assignment is shown in the display. Controller assignments can be adjusted in Program Edit Mode.

TRANSPOSE Buttons

The TRANSPOSE buttons can be used to change the tuning of notes played on the PC4 SE keyboard in semitones (also known as half steps). This is a convenient way to change the key of a song without learning to play it in a different key.

The current transpose amount is shown in the top line of the display. Press both TRANSPOSE buttons simultaneously to reset the transposition to 0.

The TRANSPOSE buttons also transpose MIDI notes sent to the USB and MIDI Out ports.

PITCH WHEEL

Use the PITCH WHEEL to perform pitch bends. The Bend Up and Bend Down amount can be adjusted for each Program in Program Edit Mode.

MODULATION WHEEL

In Factory Programs, the MODULATION WHEEL will typically control vibrato or an effect amount. The name and value of the current assignment is shown in the display when the wheel is moved. The assignment can be adjusted in Program Edit Mode.

VARIATION Button

In Factory Programs, the VARIATION button will typically modify the sound by adding an orchestral string section or synth pad layer, or enabling an effect. The name of the current assignment is shown in the display when the button is pressed. The assignment can be adjusted in Program Edit Mode.

ARPEGGIATOR Section

ARP and LATCH Buttons

Press the ARP button to turn the Arpeggiator On or Off. When the Arpeggiator is On, the ARP button lights up.

The Arpeggiator allows you to easily play arpeggios or note sequences by holding down a chord or a single note. Each program can be saved with different arpeggiator settings. For details on the Arpeggiator, see Arpeggiator Page on page 3-12.

With certain arpeggiator settings, pressing the LATCH button allows the arpeggiator to continue playing after notes are released on the keyboard.

CC SEQ Button

Press the CC SEQ button to turn the CC Sequencer On or Off. When the CC Sequencer is On, the CC SEQ button lights up.

The CC Sequencer allows you to rhythmically modulate up to 4 program parameters (such as filter frequency) based on preset or user patterns. For details on the CC Sequencer, see MIDI CC Step Sequencer Page on page 3-27.

TAP TEMPO Button

Use the TAP TEMPO button to set the tempo of the Arpeggiator and CC Sequencer, and the rate of tempo synced FX (such as Delay). To set the tempo press the TAP TEMPO button a few times at the desired rate.

SW1 (SUSTAIN) and SW2 Pedals

The SW1 (SUSTAIN) pedal defaults to controlling sustain, which will sustain any note that is played while the pedal is pressed, for as long as the pedal is held.

For KB3 Organ Programs, the SW1 (SUSTAIN) pedal controls the Rotary Speaker speed, changing between fast and slow. The display shows “KB3” when a KB3 Program is selected.

The SW2 pedal defaults to controlling Sostenuto, which will sustain notes from any keys that are being held when the pedal is pressed, for as long as the pedal is held.

The SW1 (SUSTAIN) and SW2 pedals can be enabled, disabled, or reassigned for each Program in Program Edit Mode.

Global Mode can be used to set pedal overrides, which can change the pedal assignments for all Programs.

Dual Switch Pedals

The SW1 (SUSTAIN) and SW2 jacks can be connected to dual switch pedals (2 pedals per jack), allowing up to four switch pedals to be used. To emulate the 3 pedals of an acoustic piano, plug a single switch pedal into the SW1 (SUSTAIN) jack, and a dual switch pedal into the SW2 jack. For details see Dual Switch Pedals on page 1-11.

Continuous Switch Pedals (Half-Damper)

The SW1 (SUSTAIN) jack is also compatible with continuous switch pedals (Half-Damper) that use a 1/4 inch tip-ring-sleeve plug (such as the Kurzweil KP-1H). When connected to the SW1 (SUSTAIN) jack, a Half Damper pedal enables finer control of Sustain than a standard switch pedal. Half Damper control is enabled for Programs in the Piano category. Programs outside of the Piano category will respond to a Half Damper pedal as if it is a standard switch pedal.

CC (VOLUME) Pedal

The CC (VOLUME) pedal defaults to control Program volume (pre-FX).

For KB3 Organ Programs, the CC (VOLUME) pedal controls organ swell. Organ swell is similar to Program volume, except volume can not be turned all the way down to silence. The display shows “KB3” when a KB3 Program is selected.

The CC (VOLUME) pedal can be enabled, disabled, or reassigned for each Program in Program Edit Mode.

Global Mode can be used to set pedal overrides, which can change the pedal assignment for all Programs.

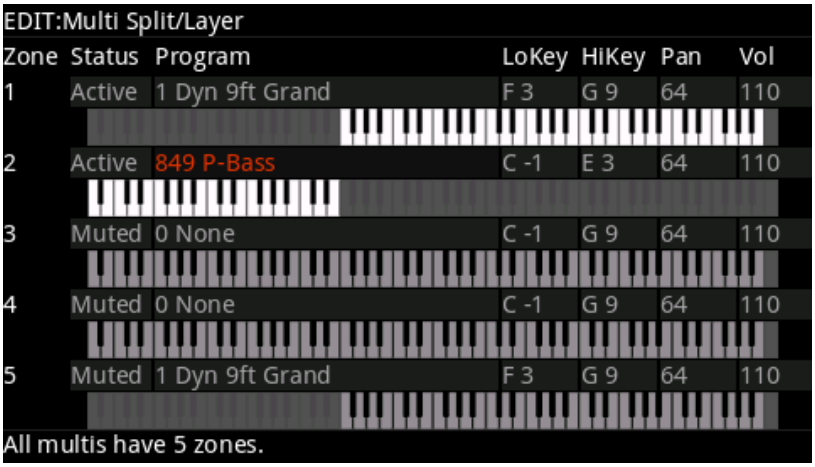
SPLIT and LAYER Buttons

Press the SPLIT or LAYER button to access the Split or Layer functions, which allow you to split or layer multiple Programs across the keyboard. The Split and Layer functions have identical parameters, but produce different results.

Use the SPLIT button to quickly create a Multi where keys in different ranges of the keyboard play different instrument sounds.

Use the LAYER button to quickly create a Multi where different instrument sounds are layered in the same key range, so that keys in one range of the keyboard play multiple instrument sounds at the same time.

The Split and Layer functions allow you to quickly create Multis without using Multi Edit Mode to configure Zone key ranges, Programs, and volumes. After creating and saving a Split or Layer Multi, you can edit additional Multi parameters in Multi Edit mode.



SPLIT

When you create a Split in Program Mode, you are creating a Multi with two Zones set to On.

The Program you were using in Program Mode is used in the right hand of the Split as the Zone 1 Program. You can choose a Program that will be used in the left hand of the Split as the Zone 2 Program.

Follow these steps to create a Split:

1. In Program Mode, select a Program for the right hand of the Split.
2. Press the SPLIT button to access the Split Page.

3. On the Split Page, Zone 2 is selected with a default Bass Program selected for the left hand of the Split. Use the ALPHA WHEEL or CATEGORY buttons to select a different Program for the left hand of the Split.
4. You may wish to adjust additional Split parameters, described in Split and Layer Parameters on page 2-11. Use the NAVIGATION buttons to select each parameter, and the ALPHA WHEEL or CATEGORY buttons to change the value of each parameter.
5. Press the SAVE button to save your Split as a Multi (See below for details on saving). After saving your Split Multi, you can edit additional Multi parameters in Multi Edit mode.

LAYER

When you create a Layer in Program Mode, you are creating a Multi with two Zones set to On.

The Program you were using in Program Mode is used for the Zone 1 Program. You can choose a Program that will be used as the layered Zone 2 Program.

Follow these steps to create a Layer:

1. In Program Mode, select a Program that you wish to layer.
2. Press the LAYER button to access the Layer Page.
3. On the Layer Page, Zone 2 is selected with a default layer Program selected for the layered Zone 2 Program. Use the ALPHA WHEEL or CATEGORY buttons to select a different Program for the layered Zone 2 Program.
4. You may wish to adjust additional Layer parameters, described in Split and Layer Parameters on page 2-11. Use the NAVIGATION buttons to select each parameter, and the ALPHA WHEEL or CATEGORY buttons to change the value of each parameter.
5. Press the SAVE button to save your Layer as a Multi (See below for details on saving). After saving your Layer Multi, you can edit additional Multi parameters in Multi Edit mode.

Split and Layer Parameters

The following parameters are available for each of the 5 Zones.

On the Split and Layer pages, the left hand Zone column indicates the Zone number associated with each of the 5 rows of parameters.

Status

Use the Status column to set each Zone to Active or Muted.

Zone Status can also be controlled by using the front panel 1-5 buttons in the CONTROL section. While creating a Split or Layer, Zones 3-5 can be turned On by turning on the front panel 3-5 buttons in the CONTROL section. By default the keyrange of Zones 3-5 cover the whole keyboard range, allowing these Zones to be used as additional layers.

Program

The default Split or Layer Program will appear in Zone 2. Use the ALPHA WHEEL or CATEGORY buttons to select a different Program for Zone 2.

LoKey / HiKey

The LoKey and HiKey parameters set the keyboard ranges for each Zone. Using Split sets the boundary between Zone 1 and Zone 2 to E3. Using Layer sets the Zone 2 keyboard range to C1 - G9. Change these parameters for each Zone to create custom Split and Layer key ranges.

Values for the currently selected Key Low or Key High parameter can be selected by holding down the ENTER button and then playing the desired key on the keyboard. Values can also be selected by using the ALPHA WHEEL, or by using the keypad function of the CATEGORY buttons, followed by pressing the ENTER button.

Pan

The Pan parameter sets the panning (left/right stereo placement) of each Zone. To change the panning of a Zone:

1. Select a Pan parameter for the desired Zone by using the NAVIGATION buttons.
2. Change the panning by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a pan value (0-127) followed by pressing the ENTER button.

A value of 0 is full left, 64 is center, and 127 is full right. Other values will move the stereo placement in between these positions.

A value of "None" can also be selected, which will use the last pan value used by the Zone's MIDI channel. A value of "None" can be entered by using the ALPHA WHEEL to scroll below 0.

Volume

The Volume parameter sets the volume of each Zone. To change the volume of a Zone:

1. Select a Volume parameter for the desired Zone by using the NAVIGATION buttons.
2. Change the volume by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a volume value (0-127) followed by pressing the ENTER button.

A value of "None" can also be selected, which will use the last volume value used by the Zone's MIDI channel. (This volume values is often set by the expression pedal.) A value of "None" can be entered by using the ALPHA WHEEL to scroll below 0.

Saving a Split or Layer

After setting the Split or Layer parameters, press the SAVE button to begin the saving process. For details on saving see Save User Multis on page 4-11.

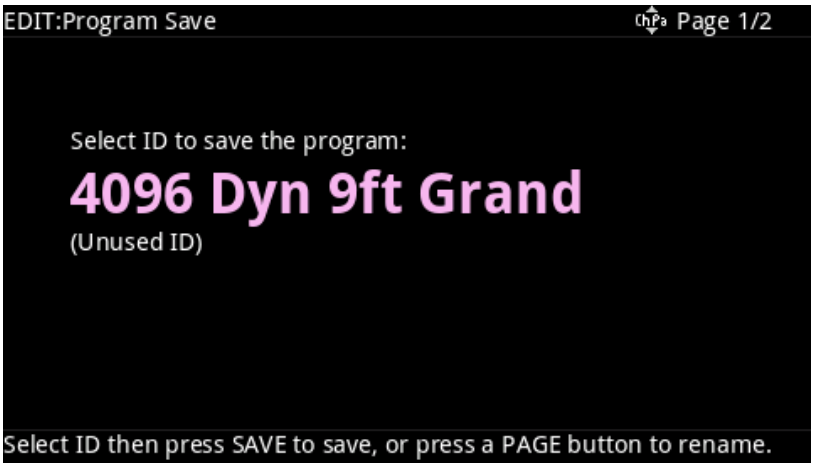
Once you have saved your Split or Layer, you can continue to add Zones to the Multi with the Split or Layer functions until you reach the maximum number of active Zones. You can also use Multi Edit Mode to edit controller assignments (like effects controls and sustain pedal per Zone), transposition per Zone, and other Multi parameters. For details see Multi Edit Mode on page 5-1.

Save User Programs

If you make changes to the current Program using any of the controllers (Knobs, Sliders, Buttons, Wheels), the SAVE button turns on to indicate that a change has been made to that Program.

To save a copy of the Program with the changes you've made, press the SAVE button once to view the Save Dialog. The Save Dialog allows you to choose an ID number and name for the Program you are saving. Use the CHANNEL/PAGE buttons to switch between ID selection and naming pages. On the Program Save Page, press the SAVE button again to save the Program as a User Program.

Changing ID Numbers



The display shows the first available ID number and the current Program name. You can save Programs with ID numbers from 4096 to 8191.

If you are saving a Program that has not been previously edited, the next available unused ID number will be selected.

If you are saving a previously edited User Program, the ID number that the Program was last saved with will be selected.

Press the NAVIGATION Left/Right buttons simultaneously to toggle between selecting the ID number that the Program was last saved with, or selecting the next available unused ID number.

To change the ID number, use the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type an ID number (4096 to 8191) followed by pressing the ENTER button. If you select an ID number that is already used by another Program, the bottom of display will show a message to warn that you are going to replace a Program.

Naming a User Program

In the Save Dialog, you can name a Program by using the Program Name Page.

Use the CHANNEL/PAGE buttons to select the Program Name Page.

The display shows the current Program name. Program names can total 16 characters in length.

Use the NAVIGATION Left/Right buttons to move the cursor to each character.

Change the current character by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a character.

Use the NAVIGATION Up/Down buttons to set a character to upper or lower case.

To insert a space before the selected character, press the BANK + button. The selected character and all characters to the right will move one space to the right.

To delete the selected character, press the BANK - button. All the characters to the right of the selected character will move one space to the left.

After naming the Program, press the SAVE button to return to the Program Save Page. On the Program Save Page, press the SAVE button again to save the Program as a User Program.

Saving a User Program

To save a User Program, select the Program Save Page and press the SAVE button, (or press the EXIT button to exit without saving). The display will show a brief message to confirm that the Program was saved.

After successfully saving, the Program will be selected in Program Mode in the User ID range (4096 to 8191). To find the Program again later, make sure to press the USER button.

Multichannel MIDI in Program Mode

Program Mode has 16 MIDI Channels that can be used for multichannel MIDI applications, such as playing multiple Programs at once from an external MIDI controller, or from a hardware/software sequencer for recording multitrack songs. A different Program can be selected for each MIDI Channel, and all Channels can be triggered simultaneously from an external MIDI device.

Changing the MIDI Channel

The current MIDI Channel is shown on the right side of the top line of the Display. Press the CHANNEL/PAGE Up/Down buttons to change the MIDI Channel. Pressing both of the CHANNEL/PAGE buttons simultaneously will select MIDI Channel 1.

When playing only a single Program at a time, any Channel can be used.

When playing multiple Programs at once from an external MIDI source, you can select the Program on each Channel manually, or by receiving Program Change messages on each Channel from an external MIDI device.

The MIDI OUT and USB ports will transmit MIDI to the selected Channel when the keyboard is played. This is useful for playing external MIDI instruments or software on a computer/tablet.

Note: The Aux FX Chains of the Program on the currently selected MIDI Channel are used for Programs on all Channels.

Multichannel FX

In Program Mode, Multi Mode, and Song Mode, FX resources are shared between the 16 Channels to load all Insert and Aux FX Chains, and two Aux FX Chains can be used by the Programs on all 16 Channels at one time.

In Program Mode, the Program on the currently selected MIDI Channel has priority for using FX resources, and its Aux Chains are used for Programs on all Channels. This ensure that the Program on the currently selected MIDI Channel will always be able to load its FX. After FX are loaded on the currently selected MIDI Channel, all other MIDI Channels (lowest to highest) will attempt to load their Insert FX Chains, until all FX resources are used. In most cases, higher numbered Channels will not be able to load their Insert FX Chains because the FX resources will be used by the lower Channel numbers.

Because the current MIDI Channel sets the Aux FX Chains for all Channels, you will hear Programs on other Channels use different Aux FX Chains when selecting a different Program on the current Channel, or when selecting a different current MIDI Channel. When using an external sequencer to record a multichannel song in Program Mode, this can cause the FX of your song to change when changing Channels on the PC4 SE to record different tracks. In this case, setting the Global Mode "FX Mode" parameter to "Multitrack" can help Program FX to remain loaded consistently on multiple Channels.

For better control of Aux Chains and FX unit resources, external sequencers can be used with Song Mode or Multi Mode. In these Modes you can designate an Aux FX Channel that will not change based on the currently selected Channel. These Modes also allow you to enable or disable the use of FX units for each Channel, which prevents the FX of your song from changing when changing Channels. These Modes also allow you to easily adjust Program Aux send levels, save Channel and Program configurations, and more.

PANIC

Pressing the 0 and ENTER buttons simultaneously performs the PANIC function. PANIC deactivates all sounding notes and resets controller values by sending an "All Notes Off " message and a "Reset All Controllers" message on all 16 MIDI channels.

Chapter 3
Program Edit Mode

Program Edit Mode allows you to edit and customize Programs. Any Program can be edited in Program Edit Mode and saved to one of the 4096 User IDs.

To enter Program Edit Mode, first press the PROGRAM Mode button to enter Program Mode, then press the EDIT button.

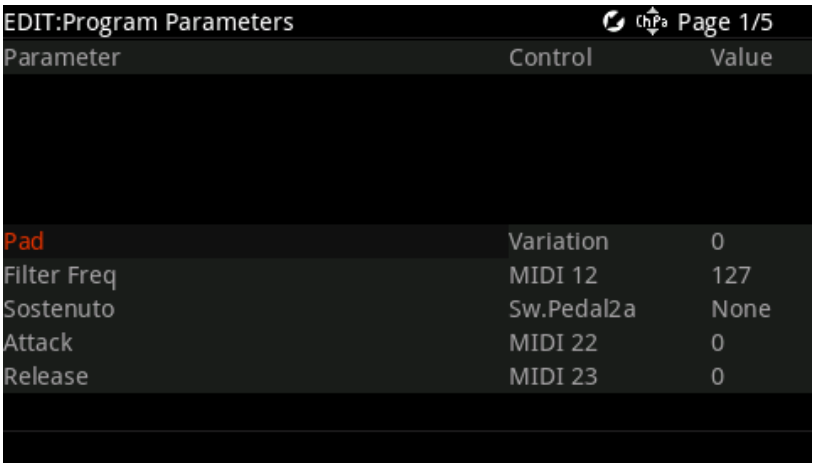
In Program Edit Mode, the top line of the display shows the current page name and number.

Navigate to each page by using the CHANNEL/PAGE buttons.

Navigate to each parameter on the current page by using the NAVIGATION buttons.

Change the value of the selected parameter by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a numeric value followed by pressing the ENTER button.

Parameters Page



The Parameters page shows all Program and FX parameters for the current program. These parameters can be controlled by the PC4 SE's physical controllers, or by MIDI CCs from an external MIDI device.

Use the Parameters page to set an initial value for each parameter, and change controller and MIDI CC assignments.

Parameter Column

The Parameter column shows all Program and FX parameters for the current program.

Effect Chain parameters are named with prefixes based on their effect type: “INS” for parameters from Insert effects, “LFX” for parameters from layer effects, and “AUX1” or “AUX2” for parameters from Aux effects.

To quickly find a parameter that is already assigned to a controller, select the parameter column, hold the ENTER button and move a controller to select the assigned parameter.

Control Column

The Control column determines which physical controller (or external MIDI CC number) will control the parameter in the selected row. To quickly assign one of the PC4 SE’s physical controllers to a parameter, select the control column in the row of the desired parameter, hold the ENTER button and move the desired controller. Alternatively, you can use the ALPHA WHEEL to select a controller from the list, or type in the controller’s MIDI number followed by the ENTER button. See below for a list of PC4 SE physical controllers and their associated MIDI numbers.

If you want to disable the controller for a parameter, you can select a value of None by scrolling to the bottom of the controller list.

To choose an external MIDI CC number as a control source, you can enter the number of the controller followed by the ENTER button, or use the ALPHA WHEEL. The PC4 SE’s physical controllers each use one of the available MIDI CC numbers, so you must choose one of the other available CC numbers when using an external MIDI control source or else the parameter will also be controlled by a PC4 SE physical controller. MIDI CC numbers associated with the PC4 SE’s physical controllers are shown in the list below.

PC4 SE Physical Controller MIDI CC Numbers

Mod Wheel (MIDI CC 1)	Slider 2 (MIDI CC 25)	Sw. Pedal 2b (MIDI CC 67)
Knob 4 (MIDI CC 3)	Slider 3 (MIDI CC 26)	Switch 1 (MIDI CC 85)
Knob 5 (MIDI CC 9)	Slider 4 (MIDI CC 27)	Switch 2 (MIDI CC 86)
CC Pedal (MIDI CC 11)	Slider 5 (MIDI CC 28)	Switch 3 (MIDI CC 87)
Knob 1 (MIDI CC 14)	Variation Button (MIDI CC 29)	Switch 4 (MIDI CC 89)
Knob 2 (MIDI CC 17)	Sw. Pedal 1a (MIDI CC 64)	Switch 5 (MIDI CC 90)
Knob 3 (MIDI CC 18)	Sw. Pedal 1b (MIDI CC 66)	
Slider 1 (MIDI CC 24)	Sw. Pedal 2a (MIDI CC 66)	

Value Column

To change the value of a parameter, use the NAVIGATION buttons to highlight the right column. In the value column, use the ALPHA WHEEL or the keypad function of the Category buttons followed by the ENTER button to enter a MIDI value from 0-127. You can also select a value of None by scrolling below 0. If you set the Value to None by scrolling below 0, the MIDI value will be 0 until you change the value with an assigned controller (though None will still be displayed).

Important Note: Values of "None"

For factory programs, standard parameters like Expression (program volume), Sustain, and Sostenuto are always set to **None** by default. If you change one of these values, either on the Parameters page in the Program Editor, or with a physical controller from Program Mode (or the Program Editor), **the same value will be used for any other program you select**, if you select another program that uses a value of **None** for the same parameter. **These values remain set even if you don't save the program**.

This can be useful, for example, when using an expression pedal to control program volume. By default, all factory programs have their Expression parameter set to a value of **None**, and Expression (program volume) by default can be controlled by an expression pedal plugged into the CC Pedal jack. With an expression pedal plugged into the CC Pedal jack, you can control the volume of any factory program, but when you select another factory program, it will have the same volume that you set with the expression pedal in the last program. This way, the volume of your programs will stay consistent, and can always be changed by the expression pedal. If you want a program to have a default volume, you must set a Value other than **None** for the Expression parameter.

For all parameters with a Value of None, any values set with a physical control will not be saved when saving the program. You must set the Value column for that parameter to something other than None in order to set and save a value. **These values will remain set until changed with a controller, or until a program is loaded on the current MIDI channel that does not have a value of None for these parameters**.

KB3 Organ FX Chain Parameters

For programs containing KB3 Organ FX Chain Parameters, different Value settings can activate different effects. See below for each parameter and the available Value settings.

Chorus/Vibrato Select

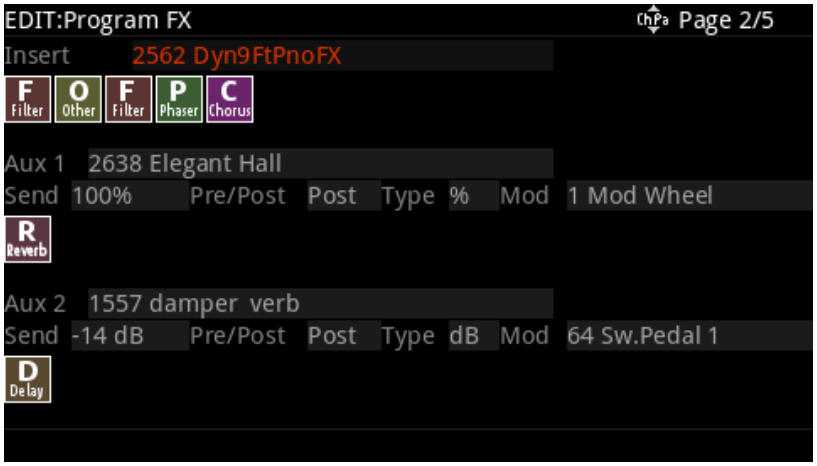
Values 0-63 = Vibrato, 64-127 = Chorus.

Chorus/Vibrato Depth

Values 0-42 = Depth 1, 43-85 = Depth 2, 86-127 = Depth 3. Depth 1 has the least amount of effect applied, Depth 3 has the most.

FX Page

Use the FX page to apply audio effects to a Program. You can select an Insert effects Chain and 2 Aux effects Chains, all of which apply to all layers in the Program (unless Layer FX are used, see below for details). In Program Mode, Programs on all MIDI channels share the Aux chains of the Program on the currently selected MIDI channel.



The PC4 SE's Chains contain a variety of effects. Each Chain displays icons representing the type of effects contained in the Chain, as well as the order of effects in the Chain (signal flows from left to right). The PC4 SE's Chains include different types of reverb, chorus, delay, flanger, phaser, tremolo, panner, rotary, distortion, EQ, compression, filter, envelope following filter, frequency stimulator, ring modulator, frequency offset, pitch LFO, and stereoizer.

FX Resources and DSP FX Units

The PC4 SE has 32 "units" of DSP (digital signal processing) effects resources that can be used to load effects chains. Each FX chain requires a certain number of FX units in order to load, depending on its complexity.

The top line of the display shows a fraction with the number of units used by the selected channel, over the total number of units used. When attempting to use more than 32 units of FX resources at once, some FX Chains will not be loaded.

When sustaining notes while switching between 2 Programs, FX resources from the first Program may be "stolen" in order to load effects from the second Program. Because of this, you may hear a change in the sound of the first Program when switching to the second Program. If both Programs each use 14 FX Units or less, then in most cases FX resources will not be stolen from the first Program, and you should not hear a change in the sound of the first Program.

Insert

Choose an effects Chain that will be applied to the current program. If you only need to use one Chain at a time on one MIDI channel, Insert effects may be all you need. If you plan to use multiple programs on different MIDI channels, it is best to use both Insert and Aux effects (see Aux below). Aux effects have the advantage of being available to all programs on each MIDI channel at the same time.

Aux 1, Aux 2

Choose an effects Chain for each of the two auxiliary audio buses. An aux bus is an audio channel with a shared effects Chain that can be used by programs on any of the 16 MIDI channels. The aux effect is useful when you want to use the same type of effect for multiple channels (typically used for Reverb or Delay). You apply an aux effect to the program on a MIDI channel by "sending" the audio from that channel to an aux bus.

Every channel is connected to the aux buses, but the aux buses don't receive the signal until you turn up the aux "send" level for that channel, which controls a channel's input level to the aux bus. On each MIDI channel you can control the aux send level for that channel's program, in turn controlling how loudly you can hear the aux effect applied to that channel's program. The aux send level is set by the Aux 1 and Aux 2 Send parameters on the FX page. Many Chains also have an additional Aux send, Wet/Dry, or Amount parameter that will appear on the Parameters page. For Reverb and Delay Chains, send parameters are often assigned by default to Slider 4 or Slider 5 respectively.

Send

The Aux Send parameters determine how much of the Program's signal is sent to each Aux FX Chain. Depending on the Type parameter, the send values are set either in dB or wet/dry percent.

Pre/Post

The Aux Pre/Post parameters determine whether or not the output of the Insert chain is sent to each Aux Chain (the "pre" or "post" insert signal).

When set to Pre, the output of the Insert chain is not sent to the Aux Chain.

When set to Post, the output of the Insert chain is sent to the Aux Chain.

Type

The Type parameter determines the values used for each Send parameter (dB or percent), and whether or not each send will work as a wet/dry control.

When Type is set to dB, the Aux send level is set in dB and works like a traditional send on an audio mixing board. As you turn up the Aux send, the Aux Chain's processed wet signal is layered over the program's unprocessed dry signal. Setting Type to dB is useful for setting a precise send value. The level of signal sent to the Chain is set in dB, the higher the value the more processed signal you will hear.

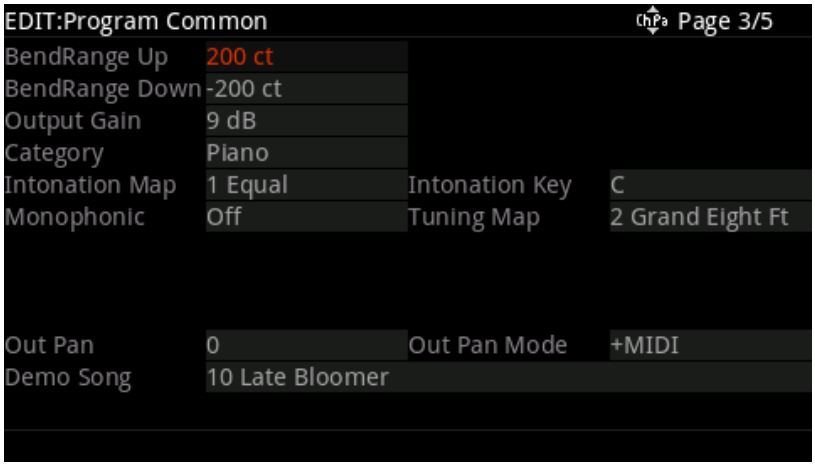
When Type is set to %, the Aux send level is set in % and works as a dry/wet mix. As you turn up the Aux send, the Aux Chain's processed wet signal is turned up and begins to replace the program's unprocessed dry signal, which is turned down. For example, with an Aux send set to 50% you hear an equal amount of unprocessed (dry) and processed (wet) signal. With an Aux send set to 100% you hear only the processed (wet) signal and none of the original unprocessed (dry) signal. Typically it's best to set Type to % when a continuous controller (like a Slider) is assigned to the Mod parameter, because it will give the controller more usable range then when set to dB.

Mod

Use each Mod parameter to select a physical controller or other control source to adjust each Aux Send value. The selected Mod control source will adjust the Send level using the range set by the Send parameter.

Common Page

Use the Common Page to control overall settings of the current Program.



BendRange Up & BendRange Down

Use these parameters to define how much the pitch will change when you move the Pitch Wheel. Pitch values are set in cents, where 100 cents = 1 half-step (1 semitone).

For both Bend parameters, positive values will cause the pitch to bend up, while negative values will cause the pitch to bend down. Large positive values can cause samples to bend to their maximum upward pitch before the Pitch Wheel is fully up (or down). This will not happen when bending the pitch down.

Output Gain

Use the Output Gain parameter to cut or boost the final gain stage of the post-FX program signal. This is useful for adjusting the overall volume of a program.

Category

This parameter sets the category that the program will be grouped into when you press one of the Category buttons from the Program mode main page.

Out Pan

Use the Out Pan parameter to adjust the left/right balance of the entire Program output signal (post-FX). Negative values pan the audio signal to the left channel, positive values to the right, and a value of zero pans to the center.

Out Pan Mode

When the Out Pan Mode is set to Fixed, the Out Pan position remains as defined with the Out Pan parameter, ignoring MIDI pan messages. When the Out Pan Mode is set to +MIDI, MIDI pan messages (MIDI 10) will shift the sound to the left or right of the Pan parameter setting. Message values below 64 shift it left, while those above 64 shift it right.

Demo Song

The Demo Song parameter allows you to choose the demo song for the current 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 Program mode by simultaneously pressing the KEYPAD and ENTER buttons.

Common Page VAST Parameters

The following parameters appear on the Common page for VAST programs.

Intonation Map

The Intonation Map parameter allows you to set a different intonation map for each program. The Intonation Map parameter works just like the Global mode Intonation Map parameter, except the Intonation Map parameter on the Program Common page only applies to the current program. (The Global mode Intonation Map parameter applies to all programs.) For more details on intonation maps, see Intonation Map on page 6-6.

Intonation Key

The Intonation Key parameter allows you to set a different Intonation Key for each program. The Intonation Key parameter works just like the Global mode Int Key parameter, except the Intonation Key parameter on the Program Common page only applies to the current program. (The Global Mode Int Key parameter applies to all programs.) For more details on intonation keys, see Intonation Key on page 6-7.

Tuning Map

Program Tuning Maps are primarily used to emulate stretched tuning techniques, which are commonly used for acoustic pianos and other acoustic keyboard instruments. Stretched tunings generally tune notes in the lowest octave increasingly flat, and notes in the highest octave increasingly sharp. For solo piano performances, stretched tunings can make the overtones and harmonics of notes in these lowest and highest octaves sound more in tune with notes in the middle octaves.

Three stretched tuning maps are included, Railsback (a common stretched tuning), Grand Eight Ft (based on a grand piano), and Tines EPiano (based on a common electric piano service manual).

When layering piano with other instruments using equal temperament (non-stretched) tunings, using an equal temperament piano tuning may be preferable so that notes in the lowest and highest octaves sound more in tune with other instruments which use equal temperament tuning. In this case, set the Tuning Map to 0 None to use equal temperament tuning.

Monophonic

When the Monophonic parameter is set to “Off”, the current edited program is polyphonic—it can play multiple notes at a time.

When the Monophonic parameter is set to “On”, the program will play only one note at a time, and the Legato parameter and the four Portamento parameters will appear on the Program Common page. The Monophonic, Legato and Portamento parameters are not available for KB3 programs.

Legato

When the Monophonic parameter is set to “On”, the Legato parameter appears. The Legato parameter is useful for emulating legato techniques of various acoustic instruments. When the Legato parameter is set to “On”, a played note will trigger a new amplitude envelope only if no other notes in the program are being held. Notes played while other notes are being held will use the previously triggered amplitude envelope of the first note that was played.

Portamento

When the Monophonic parameter is set to “On”, the Portamento parameter appears.

When the Portamento parameter is set to “On”, notes played in a monophonic Program can glide from the pitch of the previously played note to the pitch of the currently played note.

Portamento is often used in synthesizer lead sounds, or to mimic acoustic instruments like violin and bass, where a pitch glide is achieved by sliding a finger along a vibrating string.

See Portamento Rate (below) to set the Portamento glide speed, and Attack Portamento (below) to set the way that Portamento responds to played notes. See the Mono Sample XFade parameter (below) to improve the sound of Portamento in programs that use multiple samples.

Portamento Rate

When the Portamento parameter is set to "On", the Portamento Rate parameter appears.

The Portamento Rate parameter determines how fast a note glides from the pitch of one note to the pitch of the next played note. The value selected for this parameter determines how many seconds a note takes to glide one semitone (half-step) toward the pitch of the next played note. For example, at a setting of 12 keys/second the pitch would glide an octave every second. Select a higher value for a faster pitch glide, or a lower value for a slower pitch glide. The list of values is nonlinear; that is, the increments get larger as you scroll to higher values.

Portamento Attk

This parameter toggles between two types of portamento. When set to **On**, the pitch always glides to each new note played from the pitch of the last note played. When set to **Off**, the pitch glides to each new note played only if the last note played is still being held. This is useful when you want only some notes to use portamento.

Mono Sample XFade

When applying portamento to programs that use multiple samples (Acoustic Guitar, for example), the PC4 SE 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 PC4 SE performs a crossfade at each sample root transition to eliminate clicks.

Common Page KB3 Parameters

The following parameters appear on the Common page for KB3 Organ programs.

Leakage

This parameter controls the level of the simulated crosstalk and signal "bleed" of adjacent tone wheels in the model. This is provided to help "dirty up" the sound to make it a bit more realistic. A setting of -96 dB gives the purest tones; other values add more simulated leakage. This level is scaled by the drawbar levels, as well as the expression pedal level.

LeakMode

This parameter 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. **TypeX**, **TypeY**, **TypeZ**, and **TypeR** emulate different degrees of drawbar leakage, where the leakage components correspond to the nine drawbars, instead of all the tone wheels.

Chorus/Vib On/Off

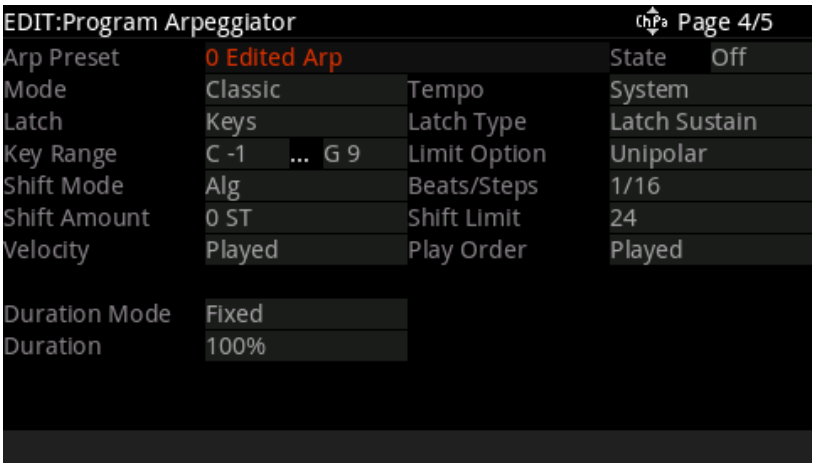
Use this parameter to turn Chorus or Vibrato On or Off. This is the same as setting the Chorus/Vibrato On/Off parameter on the Parameters page to 0 or 127. Use the Chorus/Vib Cntrl parameter to select between Chorus or Vibrato.

Chorus/Vib Cntrl

Use this parameter to select Chorus or Vibrato, and select from 3 depths for each effect. This is an easy way to select between the six possible Chorus or Vibrato settings by adjusting a single parameter. This parameter functions the same as setting the Chorus/Vibrato Depth parameter on the Parameters page to 0, 64 or 127, and setting the Chorus/Vibrato Select parameter on the Parameters page to 0 or 127.

Arpeggiator Page

Use the Arpeggiator page to adjust settings for the Program's Arpeggiator. The Arpeggiator takes note input from the keyboard (or via MIDI) and outputs a rhythmic and/or melodic pattern of MIDI notes. The Arpeggiator can affect both the internal programs and external MIDI instruments.



The Arpeggiator processes notes by playing them repeatedly, and/or transposing them up and down the keyboard. You have control over note output velocity, order, duration, transposition, and more. In Multi Mode, you can assign controllers to control several arpeggiator parameters in real time (see Multi Controller destinations 147, 150-160 and 170-178 in Controller Destination List on page 5-31). You can also select and edit patterns for note shifting, velocity shifting, and duration, either as independent patterns, or as a combination of all three in Step Sequencer mode. The Arpeggiator also has several different "latch" settings, which allows the arpeggiator to respond to played notes in different ways, such as continuing to play after you have released the keys.

Arpeggiator Common Parameters

The following common parameters are used by the Arpeggiator in both Classic and Step Sequencer mode.

Arp Preset

Use the Arp Preset parameter to recall factory or user created Arpeggiator settings. An Arp Preset contains settings for all of the parameters on the Arpeggiator page (except for the State and Key Range parameters, which are stored with the Program/Multi). Scrolling through the Arp Presets is an easy way to discover the different possibilities of the arpeggiator, or to find a preset similar to what you want and continue to edit it from there.

You can save your current settings as an Arp Preset by pressing the FAVORITES 1 button. If you select a different Arp Preset before saving your current Arpeggiator settings, the current Arpeggiator settings will be replaced by the settings from the preset without showing a warning. Be sure to save your settings as an Arp Preset if you want to be able to recall them after making additional changes. Even if you don't save the current Arpeggiator settings as an Arp Preset, the most recent settings will always be saved with the Program or Multi when the Program or Multi is saved. Changing any of the Arp parameters will change the Preset to "0 Edited Arp", to indicate that the previous preset settings are no longer being used.

Save Arp Preset

If you have adjusted any Arpeggiator settings, you have the option of saving a new Arp Preset to a User location, where it will be available to use with other Programs and Multis. All settings on the Arpeggiator page are saved as part of the Arp Preset, except for the State and Key Range parameters, which are stored with the Program/Multi. If you don't save an Arp Preset, the arpeggiator settings will still be saved with the current Program or Multi.

In Program Edit Mode, press the FAVORITES 1 button to initiate a save. In Multi Edit Mode, press the SAVE button to initiate a save. You will have the option to select the ID number and name for your Arp Preset.

State

Use the State parameter to turn the Arpeggiator On or Off.

In Program Mode, the State parameter can also be controlled by pressing the ARP button in the front panel ARPEGGIATOR section, or by a switch pedal by setting one of the Global Mode SW Override parameters to Arp On/Off (see Switch Pedal Overrides on page 6-8).

In Multi Mode, the State parameter is shown for each Zone in the Arpeggiator column of the Arpeggiator, CC Sequencer and Riff page.

In Multi Mode, State can also be controlled in each Zone by the front panel ARP button, by another controller, or by one of the Global Mode SW Override parameters. To control State with the front panel ARP button, in each Multi the ARP button must be assigned for each Zone on the Multi Edit Controls page by setting the Controller Mode to MIDI CC, MIDI Dest to 147 (Arp On/Off), On Value to 127 and Off Value to 0. State can also be controlled with other controllers on the Multi Edit Controls page by using Destination 147 (Arp On/Off).

Arp Mode

The two Arpeggiator modes, Classic and Step Sequencer, offer different means of shaping and editing Arpeggiator patterns. Depending upon this mode, the Arpeggiator page will provide access to different options and editable patterns.

In **Classic** mode, the Arpeggiator page will offer algorithmic options, as well as independent note-Shift, Velocity and Duration patterns. These patterns are editable. See Arpeggiator Classic Mode Parameters on page 3-17 for details on Classic mode parameters.

In **Step Sequencer** mode, you can edit sequences step-by-step, specifying Note, Velocity, Duration and Beat for each step in a sequence. See Arpeggiator Step Sequencer Mode Parameters on page 3-25 for details on Step Sequencer mode parameters.

Tempo

Use the Tempo parameter to set the arpeggiator tempo in beats-per-minute. This parameter also sets the tempo for tempo synced effects and LFOs. Use the Keypad or ALPHA WHEEL to set a tempo that will be saved with the program.

You can also set the tempo to System by scrolling below 20 BPM. When Tempo is set to System, the arpeggiator will use the system tempo. System tempo is useful when you wish to set a tempo that will be used by many programs. The system tempo can also be used to set the tempo of the CC Sequencer, the rate of tempo synced FX (such as Delay), or the tempo of the current Multi or Song. Programs set to System are not saved with a set tempo, and will always use the global System tempo. To set the System tempo, press the TAP TEMPO button a few times at the desired rate. You can also set the System tempo by pressing the TAP TEMPO button, then adjusting the tempo with the ALPHA WHEEL, or by using the KEYPAD buttons to type a numeric value followed by pressing ENTER.

In Multi Edit Mode, the Tempo parameter is not shown, and the arpeggiator tempo is determined by the Tempo parameter on the Common page.

Latch

The Latch parameter allows you to control how and when notes played on the keyboard (or via external MIDI) will be arpeggiated. For example, some latch settings allow notes to continue arpeggiating after keys have been released (these are called latched notes), and some settings only arpeggiate certain notes. **Keep in mind, notes played outside of the Arp Key Range are never latched or arpeggiated.**

Some Latch settings require using the Latch switch. In Program Mode, the Latch switch can be controlled by the LATCH button in the front panel ARPEGGIATOR section, or by a switch pedal by setting one of the Global Mode SW Override parameters to Arp Latch (see Switch Pedal Overrides on page 6-8). In Multi Mode, the Latch switch can be controlled in

each Zone by the front panel LATCH button, by another controller, or by one of the Global Mode SW Override parameters. In each Multi, the LATCH button or other controller must be assigned on the Multi Edit Controls page of each Zone using Destination 157 (Latch Sustain) or 158 (Latch2 Sost) with On Value 127 and Off Value 0.

Each of the Latch settings are described below.

Keys: If the Latch switch is turned off, notes are arpeggiated only when keys are held. As you hold different notes, they get added to the arpeggiation, and as you release notes, they get taken out.

When Latch is set to Keys, the LATCH button in the front panel ARPEGGIATOR section can be used to latch played notes so that they will arpeggiate even after they are released.

In Program Edit Mode, when the Keys setting is selected, the **Latch Type** parameter appears. The Latch Type parameter determines the behavior of the LATCH button in the front panel ARPEGGIATOR section. When the Latch Type parameter is set to Latch Sustain, if the Latch switch is turned on, any played notes will become latched. When the Latch Type parameter is set to Latch2 Sost, any played notes will become latched, **only** when the Latch switch is turned on while notes are held. Latched notes will arpeggiate until the Latch switch is turned off.

Note: In Multi Edit Mode, when the Keys setting is selected, the Latch Type parameter does not appear. In Multi Edit Mode, the behavior of the LATCH button in the front panel ARPEGGIATOR section is determined per Zone on the Controls page. For details see Switch Controllers on page 5-25.

Overplay: Notes are arpeggiated **only** when the Latch switch is turned on while notes are held. Overplay latches any keys that are being held when the Latch switch is turned on. Latched keys continue arpeggiating after they are released until the Latch switch is turned off. Any notes that you play after the Latch switch is turned on do not get arpeggiated.

Arpeg: Notes are arpeggiated **only** when the Latch switch is turned on while notes are held. Arpeg latches any keys that are being held when the Latch switch is turned on. Latched keys continue arpeggiating after they are released until the Latch switch is turned off. Any notes that you play after the Latch switch has been turned on become part of the arpeggiation, and they drop out of the arpeggiation as soon as you release them.

Add: Notes are arpeggiated **only** when the Latch switch is turned on while notes are held. Add latches any keys that are being held when the Latch switch is turned on, and also latches any notes played after this. Latched keys continue arpeggiating after they are released until the Latch switch is turned off.

Auto: 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.

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 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 front panel ARP 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 "Shift Pattern" on page 3-18) 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 ensures that Shift Patterns will sound correct by only allowing one note at a time to trigger the pattern. You can use the ARP button in the front panel ARPEGGIATOR section 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. You can use the ARP button in the front panel ARPEGGIATOR section to stop arpeggiation at any time.

Limit Option

This parameter determines what the Arpeggiator does when it has shifted the currently arpeggiated notes up (or down) to the value set by the Shift Limit parameter.

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 cycle of notes.

Unipolar means that after a note reaches the shift limit, the note is shifted in the opposite direction, until it reaches the original pitch, where it reverses direction again. If Shift Amount is set to a positive value, a note will never be shifted below it's original pitch. If Shift Amount is set to a negative value, a note will never be shifted above it's original pitch.

Bipolar means that after a note reaches the shift limit, the note is shifted in the opposite direction, until it reaches the shift limit in the *opposite* direction, where it reverses again.

FloatRst (float reset) means that when the Arpeggiator reaches the shift limit, 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 Shift Amount, until it reaches the shift limit again.

Here's a very simple example. Suppose that the only note in the Arpeggiator cycle is C4, Shift Amount 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 Arpeggiator 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.

FloatUnip uses the same concept as FloatRst 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.

FloatBip is similar to FloatUnip, but the downward shift limit isn't the original pitch, it's the negative of the Shift Limit value.

Key Range (Low Key and High Key)

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. When the Low Key or High Key parameter is selected, you can easily set the value by holding the ENTER button and striking the desired key. Key Range is not saved with each Arp Preset, but instead is saved as part of each program (or Multi Zone). This allows you to try different presets while maintaining the same Key Range.

Arpeggiator Classic Mode Parameters

Beats

The Beats parameter sets the number of notes per beat. The tempo is based on quarter notes. Therefore, if you set Beats 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. The maximum value is 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.

Shift Mode

Use the Shift Mode parameter to set how the arpeggiator will shift the pitch of played notes. The **Alg** (algorithm) setting will let you create note sequences based upon a fixed Shift Amount. When you select **Patt** (pattern), the **Shift Pattern** parameter will appear, allowing you to select a preset or user defined shift pattern. See Shift Pattern below for details.

Shift Limit

When the Shift Amount parameter is set to a value other than 0, **Shift Limit** determines how far up or down the Arpeggiator can shift the arpeggiated notes. Try setting Shift Limit to 12 or 24 to create an arpeggio that repeats the same pattern of notes in different octaves. This works well when Shift Amount is set to 12 or when a Shift Pattern is selected.

Shift Amount

When the Shift Mode is set to Alg, **Shift Amount** appears. Shift Amount determines how much transposition will occur for each cycle of notes. Try setting Shift Amount to 12, and Shift Limit to 12 or 24 to create an arpeggio that repeats the same pattern of notes in different octaves.

Shift Pattern

When Shift Mode is set to Pattern, the **Shift Pattern** parameter appears, which allows you to select a step sequence for arpeggiator note patterns. The note number of each played key is shifted according to a sequenced pattern, thus "Shift Pattern." There are pre-programed shift patterns including many useful chords, intervals, and rhythms. You can also create a custom user pattern using the pattern editor (see below for details).

Shift Pattern steps are played back at the rate set for **Beats**. Keep in mind that Shift Patterns are affected 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. Triggering shift patterns from one key allows the pre-programed patterns to sound like what you would expect from their names (otherwise the results can be unpredictable). 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 settings other than "Keys," though a newly triggered pattern will always start at step 1).

Editing Shift Patterns

You can edit the highlighted pattern by pressing the EDIT button. You can create a new user pattern by editing an existing pattern and saving it to a user ID.

In the Shift Pattern editor, pressing the BANK - button removes the last step in the list, pressing the BANK + button inserts a new note step at the end of the list. Use the NAVIGATION buttons to move between pattern steps, use the ALPHA WHEEL or keypad function of the CATEGORY buttons to enter the note shift amount for each step. You can set a step to a value of “none” by selecting -127 and then scrolling down one more value. 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.

Use the CHANNEL/PAGE 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 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 in the octave below the first note played. When the pattern direction is set to Up or Down, the pattern will repeat transposed in the next higher or lower octave (limited by the Arpeggiator page Shift Limit parameter). Patterns set to **Flat** play without transposition, in which case the Shift Limit parameter can be used to restrict note range.

To save an edited pattern, press the front panel **SAVE** button to view the save dialog and select a user ID. You can also rename the pattern if desired. Press the **EXIT** button to return to the Arpeggiator page.

Play Order

When the Shift Mode is set to Alg, **Play Order** appears. Play Order determines the order in which the arpeggiator plays notes.

Played causes them to play back in the chronological order in which you played them.

Upwards means that notes play in ascending pitch order.

Downwards means that notes play in 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.

UpDownRep is similar to UpDown, except that the notes at the top and bottom play *twice* when the Arpeggiator reverses direction.

Random plays the notes in 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 played four notes—G4, B4, D5, and F5—in that order. The first note the Arpeggiator plays is the G4. The second note will be either B4 (the next note chronologically), or F5 (the "previous" note chronologically—that is, the last arpeggiated note). If the second note is B4, the third note will be either D5 or G4. If the second note is F5, the third note will be either G4 or D5.

Simultaneous makes the Arpeggiator repeat each note simultaneously. 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.

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 **MIDI109**, all notes play with the same velocity. The default MIDI109 velocity is 100. In Multi Mode, you can control the velocity in real-time by assigning a controller to destination 109.

With Velocity set to **Fixed**, all notes play with the same velocity. The Velocity Fixed field appears, which allows you to set a specific velocity. In Multi Mode, you can control the velocity in real-time by assigning a controller to destination 175 VelFixed.

When you select **Pattern**, the **Velocity Patt** parameter will appear, allowing you to select a preset or user defined velocity pattern. See Velocity Patt below for details.

The Velocity Modes **Human1** through **Human4** 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 Velocity Modes **Chimp1** through **Chimp4** 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 randomization 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

Velocity Modes MissNotes1 through MissNotes9 make the PC4 SE 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

Velocity Patt

When Velocity is set to **Pattern,** the **Velocity Patt** parameter appears, which allows you to select a step sequence for arpeggiator velocity patterns. A Velocity Pattern shifts the velocity of each arpeggiated note according to a sequenced pattern. Select a factory pattern, or create a custom user pattern using the pattern editor (see below for details).

Velocity Patterns use the velocity received from the first note played as the center position to shift velocities up or down from. Velocity Pattern steps are played back at the rate set for **Beats**. Rhythms can be created by using velocity values of -127 or "none" to leave rests in the arpeggiation.

If no other keys are playing, patterns will start over each time a key is pressed (there are some exceptions to this when using ARP 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 Play Order parameter on the Arpeggiator page.

Editing Velocity Patterns

You can edit the highlighted pattern by pressing the EDIT button. You can create a new user pattern by editing an existing pattern and saving it to a user ID.

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 selecting -127 and then scrolling down one more value. 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 the BANK - button removes the last step in the list, pressing the BANK + button 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 NAVIGATION buttons to move between pattern steps, use the ALPHA WHEEL or keypad function of the CATEGORY buttons to enter the velocity shift amount for each step.

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.

To save an edited pattern, press the front panel **SAVE** button to view the save dialog and select a user ID. You can also rename the pattern if desired. Press the **EXIT** button to return to the Arpeggiator page.

Duration Mode

Use the Duration Mode parameter to set how the arpeggiator will control the duration of played notes. When Duration Mode is set to **Fixed,** the Duration parameter appears which allows you to set a fixed duration that will be applied to all arpeggiated notes. See the Duration section below for details. When **Pattern** is selected, the **Duration Pattern** parameter will appear, allowing you to select a preset or user defined duration pattern. See the Duration Pattern section below for details.

Duration

Duration determines how long each arpeggiated note plays based on the current arpeggiator Beats value. 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 0%—staca*ttissimo*. This parameter has no effect on percussion sounds or other sounds whose duration is fixed.

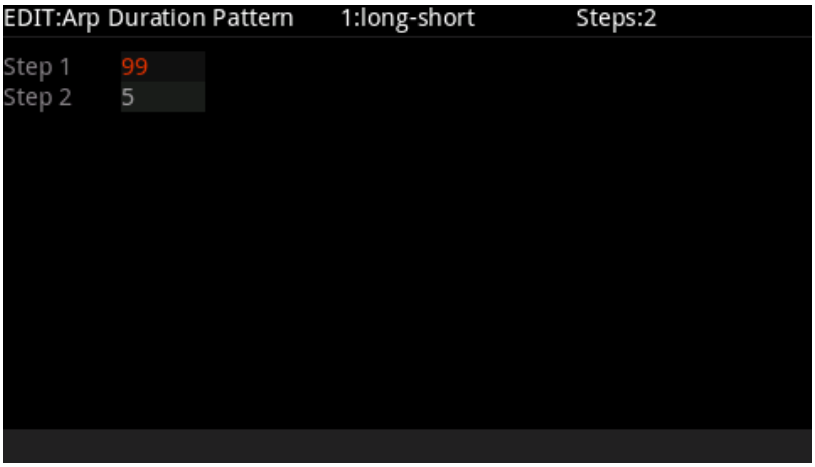
Duration Patt

When Duration Mode is set to **Pattern,** the **Duration Patt** parameter appears, which allows you to select a step sequence for arpeggiator duration patterns. A Duration Pattern sets the duration of each arpeggiated note according to a sequenced pattern. Duration Pattern steps are played back at the rate set for **Beats**. The duration of each note is a percentage of the current arpeggiator Beats value. Select a factory pattern, or create a custom user pattern using the pattern editor (see below for details).

Editing Duration Patterns

You can edit the highlighted pattern by pressing the EDIT button. You can create a new user pattern by editing an existing pattern and saving it to a user ID.

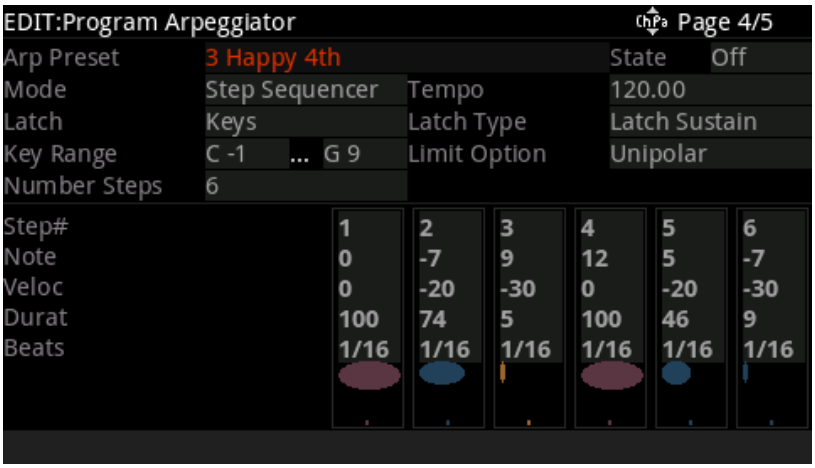
Each step can have a duration from 0-100% of the current arpeggiator Beats setting. Each pattern can have up to 48 steps. Pressing the BANK - button removes the last step in the list, pressing the BANK + button inserts a new note step at the end of the list (the pattern editor remembers the values of removed steps until you save or exit). Use the NAVIGATION buttons to move between pattern steps, use the ALPHA WHEEL or keypad function of the CATEGORY buttons to enter the duration amount for each step.



To save an edited pattern, press the front panel SAVE button to view the save dialog and select a user ID. You can also rename the pattern if desired. Press the EXIT button to return to the Arpeggiator page.

Arpeggiator Step Sequencer Mode Parameters

In Step Sequencer mode, the Arpeggiator page will give you the ability to create a unique Arpeggiator pattern step-by-step.



Select a parameter using the NAVIGATION Up/Down buttons. To change steps, select the Step# parameter, then press the NAVIGATION Left/Right buttons.

Colored oval graphics provide a quick visual interpretation of the Step Sequence:

- Color = **Note** number.
- Height = **Velocity** level.
- Width = **Duration**.
- The line under each oval changes length depending on the **Beats** value for the current step.

Number Steps

Use the Number Steps parameter to set the number of steps in the current sequence.

Step#

The Step# parameter shows the number of each step in the sequence, and can be used to navigate between the steps.

Note

Note values create the shift pattern for the Step sequence. Notes are specified in half-steps from the last latched note (represented as 0). Thus, this series of notes: 0, 4, 7 will play a triad in sequence. Note values can range from -128 to +127, with negative numbers shifting below the latched note.

Veloc (Velocity)

Veloc (Velocity) values shift the velocity of each step up or down from the last latched note. Velocity can be shifted -127 to +127 from the original value of the last latched note.

Durat (Duration)

Durat (Duration) determines how long each step is sustained, based on the Beats value of each step. The duration range is 0-100, which represents a percentage of the Beats value of each step. A setting of 100 will sustain the note for the entire length of the step.

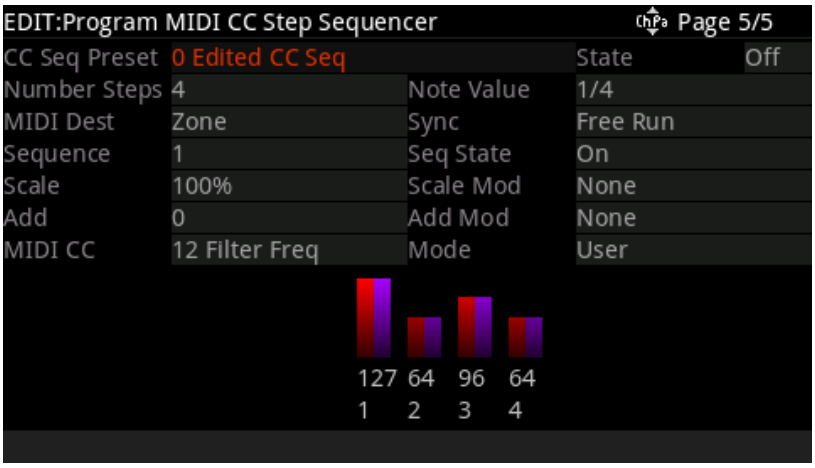
Beats

Beats sets the length of time between each step in the sequence, which allows you to alter the rhythm of a sequence. Beats is set in fractions of a 4 beat measure, whose rate is set by the Tempo parameter. A step with Beats set to 1/4 will play a quarter note based on the current Tempo setting.

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.

MIDI CC Step Sequencer Page

The CC Sequencer allows you to rhythmically modulate up to 4 program parameters (such as filter frequency) based on preset or user patterns. CC is short for continuous controller, which is a type of MIDI message that can be used to control assigned parameters. The CC Sequencer can affect both internal programs and external MIDI instruments.



CC Seq Preset

Use the CC Seq Preset parameter to recall factory or user created CC Sequencer settings. A CC Seq Preset contains settings for all of the parameters on the CC Sequencer page (except for the State parameter, which is stored with the Program/Multi). Scrolling through the CC Seq Presets is an easy way to discover the different possibilities of the CC Sequencer, or to find a preset similar to what you want and continue to edit it from there.

You can save your current settings as a CC Seq Preset by pressing the FAVORITES 1 button. If you select a different CC Seq Preset before saving your current CC Sequencer settings, the current CC Sequencer settings will be replaced by the settings from the preset without showing a warning. Be sure to save your settings as a CC Seq Preset if you want to be able to recall them after making additional changes. Even if you don't save the current CC Sequencer settings as a CC Seq Preset, the most recent settings will always be saved with the Program or Multi when the Program or Multi is saved. Changing any of the CC Sequencer parameters will change the Preset to "0 Edited CC Seq", to indicate that the previous preset settings are no longer being used.

Save CC Seq Preset

If you have adjusted any CC Sequencer settings, you have the option of saving a new CC Seq Preset to a User location, where it will be available to use with other Programs and Multis. All settings on the CC Sequencer page are saved as part of the CC Seq preset (except for the State parameter, which is stored with the Program/Multi). If you don't save a CC Seq preset, the CC Sequencer settings will still be saved with the current Program or Multi.

In Program Edit Mode, press the FAVORITES 1 button to initiate a save. In Multi Edit Mode, press the SAVE button to initiate a save. You will have the option to select the ID number and name for your CC Seq preset.

State

Use the State parameter to turn the CC Sequencer On or Off.

In Program Mode, the State parameter can also be controlled by pressing the CC SEQ button in the front panel ARPEGGIATOR section.

In Multi Mode, the State parameter is shown for each Zone in the CC Sequencer column of the Arpeggiator, CC Sequencer and Riff page.

In Multi Mode, State can also be controlled in each Zone by the front panel CC SEQ button. In each Multi, the CC SEQ button must be assigned for each Zone on the Multi Edit Controls page by setting the Controller Mode to MIDI CC, MIDI Dest to 148 (CC Seq On/Off), On Value to 127 and Off Value to 0. State can also be controlled with other controllers on the Multi Edit Controls page by using Destination 148 (CC Seq On/Off).

Number Steps

Use the Number Steps parameter to set the number of steps in the sequence.

Sync

When the State parameter is set to On, the Sync parameter determines when the CC sequence will re-start.

When the Sync parameter is set to **Free Run**, the sequence begins playing as soon as the program is selected, and it restarts whenever it reaches the end of the sequence.

When the Sync parameter is set to **Every Note**, the sequence begins playing as soon as the program is selected, and it restarts whenever it reaches the end of the sequence, or whenever a new note is played.

When the Sync parameter is set to **All Keys Up**, the sequence begins playing as soon as the program is selected, and it restarts whenever it reaches the end of the sequence, or whenever all keys have been released.

When the Sync parameter is set to **Arp**, the sequence begins playing only when the program's arpeggiator is playing, and it restarts whenever it reaches the end of the sequence.

When the Sync parameter is set to **Arp with Reset**, the sequence begins playing only when the program's arpeggiator is playing, and it restarts whenever it reaches the end of the sequence, or whenever the program's arpeggiator restarts its sequence.

The **AnyOther CCSeq** setting only applies to Multi Mode. When the Sync parameter is set to AnyOther CCSeq, the sequence begins playing as soon as the Multi is selected, and it restarts whenever it reaches the end of the sequence, or whenever a CC Sequence for a program in another Zone begins or restarts.

Note Value

The Note Value parameter sets the number of steps that will be played per beat. The tempo is based on quarter notes. Therefore, if you set Note Value to 1/4, you will get one step per beat of the clock. At 1/16, you will get 4 steps per beat, and so forth.

MIDI Dest

The MIDI Dest parameter sets the MIDI destination for the CC messages generated by the CC Sequencer. You can send CC messages to a PC4 SE Program, to the MIDI Out ports, to the USB port, or to any combination of these destinations.

By default, CC messages are sent to all possible destinations. When using the PC4 SE to control or layer with external MIDI instruments, you may wish to send CC messages only to certain destinations.

In Program Mode, when the MIDI Dest parameter is set to Zone, the CC messages will be sent to the PC4 SE Program and to the MIDI and USB ports.

In Multi Mode, when the MIDI Dest parameter is set to Zone, the CC messages will be sent to the destination set by the Zone's Main page Destination parameter.

Seq State

The CC Sequencer can play 4 simultaneous sequences which can each control a different parameter or CC number. Use the Seq State parameter to turn the selected sequence On or Off.

Sequence

The CC Sequencer can play four simultaneous sequences which can each control a different parameter or CC number. Use the Sequence parameter to select one of four sequences to edit.

Each of the four sequences uses the same settings for the State, Number Steps, Sync, Note Value, and MIDI Dest parameters. All other CC Sequencer parameters can be adjusted independently for each of the four sequences.

Scale

Use the Scale parameter to change the range of CC values sent by the sequence (in combination with the Scale Mod, Add, and Add Mod parameters). The Scale parameter multiplies the CC values sent from the sequence. CC messages are limited to sending values from 0-127, even if the Scale and Add parameters are set to produce values outside of this range.

Each step in a CC Sequence can send CC values 0-127. These values can be multiplied by the percent value of the Scale parameter in order to change the range of CC values. For example:

When when Scale is set to 100% the sequence can send CC values 0-127.

Scale values 1-99% make the sequence send a smaller range of CC values. When Scale is set to 50% the sequence is limited to sending CC values 0-63.

Scale values 101-200% multiply each sequencer step CC value to send higher CC values. For example, when Scale is set to 200% a CC sequencer value of 62 will be sent as 126.

Scale Mod

Use the Scale Mod parameter to change the range of CC values sent by the sequence using a physical controller (in combination with the Scale, Add, and Add Mod parameters).

The selected physical controller will use values 0-127 to multiply the CC values sent from the sequence by 0%-200%.

Add

Use the Add parameter to change the range of CC values sent by the sequence (in combination with the Scale, Scale Mod, and Add Mod parameters). The Add parameter adds a value to the CC values sent from the sequence. CC messages are limited to sending values from 0-127, even if the Scale and Add parameters are set to produce values outside of this range.

Add Mod

Use the Add Mod parameter to change the range of CC values sent by the sequence using a physical controller (in combination with the Scale, Scale Mod, and Add parameters).

The selected physical controller will use values 0-127 to add -127 through 127 to the CC values sent from the sequence.

MIDI CC

Use the MIDI CC field to select a MIDI CC number and/or assigned program parameter to control with a CC Sequence. If a MIDI CC number is assigned to a program parameter, the program parameter name will be shown next to the CC number (for example "12 Filter Freq").

Mode

Use the Mode parameter to select a preset or user pattern of CC Sequence steps.

When the Mode parameter is set to **User**, the user sequence is displayed. The CC value of each step is shown as a number as well as represented by the height of a red and purple bar. Use the NAVIGATION buttons to select each step and adjust each CC value. For each step, the purple bar shows an approximation of the step value that will be sent after the Scale and Add parameters have been applied.

The other Mode parameter settings each display a preset 16 step sequence. Each step of the sequence has a red dot representing a CC value from 0 to 127.

Patterns with Random or Rand in the name will produce random values for each step. The possible range of random values for each step is shown by white arrows.

Save User Programs

For details on saving User Programs, see Save User Programs on page 2-13.

Chapter 4
Multi Mode

Use Multi Mode to play up to 5 split or layered Programs directly from the keyboard or via MIDI. Each of the 5 Zones in a Multi can have a different Program, controller settings, and MIDI transmit channel.

Multi Zones can also control external sound modules or computer software through a MIDI or USB cable.

To enter Multi Mode from another Mode, press and turn on the MULTI Mode button.

The PC4 SE powers on with Multi 1 selected, or the Multi that was selected the last time Global Mode was exited.

Selecting Multis

In Multi Mode, use any of the methods below to select a Multi.

Browse All Multis

Make sure the USER button is off, then use the ALPHA WHEEL or NAVIGATION buttons to select a Multi from all of the available Multis.

Select a Multi by ID Number

The KEYPAD button allows you to use the numbers labeled on the CATEGORY buttons to select Multis by ID number. Use the CATEGORY buttons to type an ID number followed by pressing the ENTER button. Multis are not organized by category, so the KEYPAD button is always on in Multi Mode.

Select a Previously Saved User Multi

Press and turn on the USER button, then use the ALPHA WHEEL or NAVIGATION buttons to browse only User Multis. To return to browsing Factory and User Multis, press and turn off the USER button.

The Display

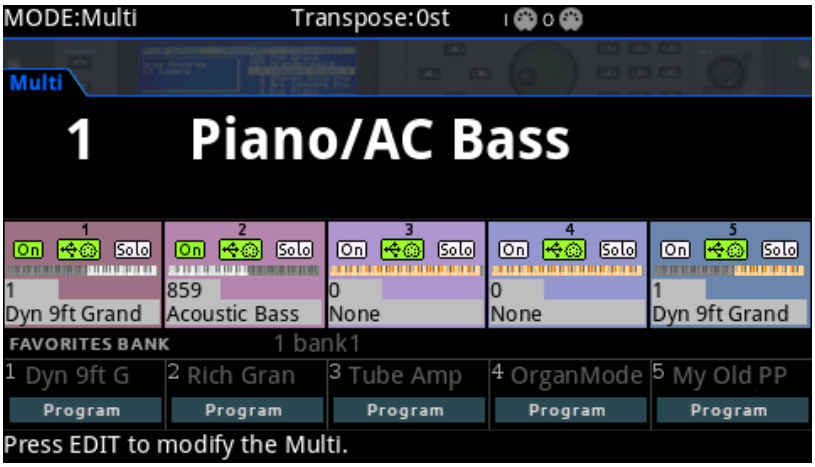
In Multi Mode, the top line of the display shows the current Mode, MIDI transposition, and MIDI In/Out activity indicators.

The currently selected Multi ID number and name are shown in the center of the display. If the selected multi is a user multi, the USER icon is displayed next to the multi name.

When a controller is moved, the controller assignment and value for each Zone/MIDI Channel is briefly displayed below the Multi ID and name (the Global Mode Display parameter must be set to Favorites, and the Global Mode Show Controllers parameter must be set to Yes.).

Note: Factory Multis with names that end with "[A0]" will play a looping Riff when the A0 key (the lowest key) is pressed. Press A#0 to stop the Riff. Other keys in the octave above A0 will often play a Riff or Arpeggiator Step Sequence which can be transposed by playing each key.

Factory Multis with names that end with a note range like "[A0~B1]" will play a Riff or Arpeggio Step Sequence which can be transposed by playing each key in the range.



MIDI In/Out Activity Indicators

MIDI In/Out activity indicators are displayed at the top of the screen (shown as 2 MIDI port symbols with "I" for "in" and "O" for "out"). These indicators briefly light up when MIDI has been recently sent to or received by the PC4 SE's MIDI/USB ports. If the symbol is green, this indicates there has been MIDI activity on that port in the last few seconds. If the symbol is red, this indicates there has been communication with the external software editor on that port in the last few seconds. If the symbol is gray, this indicates there has been no MIDI activity on that port in the last few seconds.

Zone Info

When the Global Mode Display parameter is set to Favorites, the display shows the following information below the Multi ID and name for each of the 5 Zones:

- Zone **Solo** status: The **Solo** icon turns red for any soloed Zone.
- Zone **On** status: The **On** icon turns white for any Zone that is not active (muted). The **On** icon turns green for any Zone that is active (not muted) if it has a MIDI destination which includes LOCAL. The **On** icon turns orange for any Zone that is active (not muted) if it has a MIDI destination which does not include LOCAL.
- Zone **MIDI Output** status: The **MIDI Output** icon has a symbol for USB (on the left) and standard MIDI 5-pin DIN (on the right). This icon changes color depending on the MIDI destination of each Zone. If the Zone has no USB or MIDI output selected for Destination, the icon turns white. If the Zone has USB and/or MIDI selected for Destination, the corresponding left and/or right side of the icon turns green.
- Zone **Key Range**: The **Key Range** icon shows an overview of the Key Range settings for each Zone.
- Zone **Program ID number and name**: The **Program ID number and name** of each Zone is displayed.

Favorites

When the Global Mode Display parameter is set to Favorites, the Display shows the current Favorites Bank number and name, and the names of the 5 Programs and/or Multis in the current Favorites Bank. Select a one of these Programs/Multis by pressing the corresponding FAVORITES button. To access other Favorites Banks, use the BANK buttons.

FAVORITES Buttons

Use the FAVORITES buttons to quickly store and recall a set of 5 favorite Programs and/or Multis while in Program or Multi Mode.

To recall a favorite Program or Multi, simply press one of the FAVORITES buttons. The FAVORITES buttons work from both Program or Multi Mode, and pressing a FAVORITES button will automatically bring you to Program Mode or Multi Mode if required.

To assign the currently selected Program or Multi to a FAVORITES button, press and hold the desired FAVORITES button for a few seconds until the display indicates that the favorite has been saved.

BANK Buttons

The BANK buttons can be used to select different banks of favorite Programs and Multis. In Program and Multi Mode, the currently selected Bank number and name are shown on the display. To select Bank 1, press both BANK buttons simultaneously.

Controllers

In Multi Mode, you can use the PC4 SE physical controllers (the Knobs, Sliders, Buttons, Wheels, Pedals, and ARPEGGIATOR section) to modify an instrument sound during a performance to add variation or expression.

When a controller is moved, the controller assignment and value for each Zone/MIDI Channel is briefly displayed below the Multi ID and name. Controllers can also be disabled or reassigned for each Zone in Multi Edit Mode. Because of this, controllers may function differently for each Zone in each Multi.

Note: Assigned parameter names are not visible if the Global Mode "Display" parameter is set to List, or if the Global Mode "Show Controllers" parameter is set to No.

CONTROL Section

In Factory Multis, the 5 CONTROL section buttons and sliders are often assigned to Zone On/Off and Zone Volume, or various effects and synthesis parameters. Move a controller to view the assigned parameter name and value for each Zone/MIDI Channel in the display.

TRANSPOSE Buttons

The TRANSPOSE buttons can be used to change the tuning of notes played on the PC4 SE keyboard in semitones (also known as half steps). This is a convenient way to change the key of a song without learning to play it in a different key.

The current transpose amount is shown in the top line of the display. Press both TRANSPOSE buttons simultaneously to reset the transposition to 0.

The TRANSPOSE buttons also transpose MIDI notes sent to the USB and MIDI Out ports.

PITCH WHEEL

Use the PITCH WHEEL to perform pitch bends. The Bend Up and Bend Down amount can be adjusted for each Zone in Multi Edit Mode.

MODULATION WHEEL

In Factory Multis, the MODULATION WHEEL will typically control vibrato or an effect amount. The name and value of the current assignment for each Zone/MIDI Channel is shown in the Display when the wheel is moved. The assignment can be adjusted for each Zone in Multi Edit Mode.

VARIATION Button

In Factory Multis, the VARIATION button will typically enable an additional layer or effect for the Program in some Zones. The name of the current assignment for each Zone/MIDI Channel is shown in the Display when the button is pressed. The VARIATION button can be enabled or disabled for each Zone in Multi Edit Mode.

ARPEGGIATOR Section

ARP and LATCH Buttons

Press the ARP button to turn the Arpeggiator On or Off. When the Arpeggiator is On, the ARP button lights up.

The Arpeggiator allows you to easily play arpeggios or note sequences by holding down a chord or a single note. Each Multi Zone can be saved with different arpeggiator settings. For details on the Arpeggiator, see Arpeggiator, CC Seq and Riff Page on page 5-13.

With certain arpeggiator settings, pressing the LATCH button allows the arpeggiator to continue playing after notes are released on the keyboard.

CC SEQ Button

Press the CC SEQ button to turn the CC Sequencer On or Off. When the CC Sequencer is On, the CC SEQ button lights up.

The CC Sequencer allows you to rhythmically modulate up to 4 Program parameters (such as filter frequency) based on preset or user patterns. For details on the CC Sequencer, see Arpeggiator, CC Seq and Riff Page on page 5-13.

TAP TEMPO Button

Use the TAP TEMPO Button to set the tempo of the current Multi. The Multi tempo typically sets the tempo of the Arpeggiator, riffs, and the rate of tempo synced FX (such as Delay). To set the tempo press the TAP TEMPO button a few times at the desired rate.

SW1 (SUSTAIN) and SW2 Pedals

The SW1 (SUSTAIN) pedal defaults to controlling sustain, which will sustain any note that is played while the pedal is pressed, for as long as the pedal is held.

For KB3 Organ Programs, the SW1 (SUSTAIN) pedal controls the Rotary Speaker speed, changing between fast and slow. The Display shows "KB3" when a Multi containing a KB3 Program is selected.

The SW2 pedal defaults to controlling Sostenuto, which will sustain notes from any keys that are being held when the pedal is pressed, for as long as the pedal is held.

The SW1 (SUSTAIN) and SW2 pedals can be enabled, disabled, or reassigned for each Zone in Multi Edit Mode. Because of this, the pedals may function differently for each Zone in each Multi.

Global Mode can be used to set pedal overrides, which can change the pedal assignments for all Multis.

Dual Switch Pedals

The SW1 (SUSTAIN) and SW2 jacks can be connected to dual switch pedals (2 pedals per jack), allowing up to four switch pedals to be used. To emulate the 3 pedals of an acoustic piano, plug a single switch pedal into the SW1 (SUSTAIN) jack, and a dual switch pedal into the SW2 jack. For details see Dual Switch Pedals on page 1-11.

Continuous Switch Pedals (Half-Damper)

The SW1 (SUSTAIN) jack is also compatible with continuous switch pedals (Half-Damper) that use a 1/4 inch tip-ring-sleeve plug (such as the Kurzweil KP-1H). When connected to the SW1 (SUSTAIN) jack, a Half Damper pedal enables finer control of Sustain than a standard switch pedal. Half Damper control is enabled for Programs in the Piano category. Programs outside of the Piano category will respond to a Half Damper pedal as if it is a standard switch pedal.

CC (VOLUME) Pedal

The CC (VOLUME) pedal defaults to control Program volume (pre-FX).

For KB3 Organ Programs, the CC (VOLUME) pedal controls organ swell. Organ swell is similar to Program volume, except volume can not be turned all the way down to silence. The Display shows "KB3" when a KB3 Program is selected.

The CC (VOLUME) pedal can be enabled, disabled, or reassigned for each Zone in Multi Edit Mode. Because of this, the pedal may function differently for each Zone in each Multi.

Global Mode can be used to set pedal overrides, which can change the pedal assignment for all Multis.

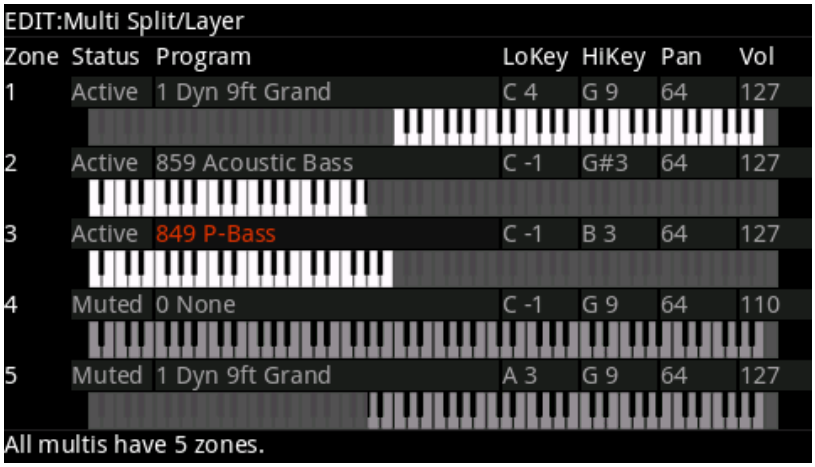
SPLIT and LAYER Buttons

Press the SPLIT or LAYER button to access the Split or Layer functions, which allow you to split or layer multiple Programs across the keyboard. The Split and Layer functions have identical parameters, but produce different results.

Use the SPLIT button to quickly create a Multi where keys in different ranges of the keyboard play different instrument sounds.

Use the LAYER button to quickly create a Multi where different instrument sounds are layered in the same key range, so that keys in one range of the keyboard play multiple instrument sounds at the same time.

The Split and Layer functions allow you to quickly create Multis without using Multi Edit Mode to configure Zone key ranges, Programs, and volumes. After creating and saving a Split or Layer Multi, you can edit additional Multi parameters in Multi Edit mode.



SPLIT

When you create a Split in Multi Mode, you are activating a new Zone in the current Multi. The previously active Zones will keep their previously assigned keyboard ranges. After this you can choose a Program that will be used in the left hand as a Split Program for the newly activated Zone.

Follow these steps to create a Split:

1. In Multi Mode, select a Multi.
2. Press the SPLIT button.
3. On the Split Page, a new Zone is selected with a default Bass Program selected for the left hand of the Split. Use the ALPHA WHEEL or CATEGORY buttons to select a different Program for the left hand of the Split.

4. You may wish to adjust additional Split parameters, described in Split and Layer Parameters on page 2-9. Use the NAVIGATION buttons to select each parameter, and the ALPHA WHEEL or CATEGORY buttons to change the value of each parameter.
5. Press the SAVE button to save your Split as a Multi (See below for details on saving). After saving your Split Multi, you can edit additional Multi parameters in Multi Edit mode.

LAYER

When you create a Layer in Multi Mode, you are activating a new Zone in the current Multi. You can choose a Program that will be used as the new layered Zone.

Follow these steps to create a Layer:

1. In Multi Mode, select a Multi.
2. Press the LAYER button.
3. On the “Layer” Page, the new Zone is selected with a default layer Program selected. Use the ALPHA WHEEL or CATEGORY buttons to select a different Program for the new layered Zone.
4. You may wish to adjust additional Layer parameters, described in Split and Layer Parameters on page 2-9. Use the NAVIGATION buttons to select each parameter, and the ALPHA WHEEL or CATEGORY buttons to change the value of each parameter.
5. Press the SAVE button to save your Layer as a Multi (See below for details on saving). After saving your Layer Multi, you can edit additional Multi parameters in Multi Edit mode.

Split and Layer Parameters

The following parameters are available for each of the 5 Zones.

On the Split and Layer pages, the left hand Zone column indicates the Zone number associated with each of the 5 rows of parameters.

Status

Use the Status column to set each Zone to Active or Muted.

Zone Status can also be controlled by using the front panel 1-5 buttons in the CONTROL section. While creating a Split or Layer, Zones 3-5 can be turned On by turning on the front panel 3-5 buttons in the CONTROL section. By default the keyrange of Zones 3-5 cover the whole keyboard range, allowing these Zones to be used as additional layers.

Program

The default Split or Layer Program will appear in Zone 2. Use the ALPHA WHEEL or CATEGORY buttons to select a different Program for Zone 2.

LoKey / HiKey

The LoKey and HiKey parameters set the keyboard ranges for each Zone. Using Split sets the boundary between Zone 1 and Zone 2 to E3. Using Layer sets the Zone 2 keyboard range to C1 - G9. Change these parameters for each Zone to create custom Split and Layer key ranges.

Values for the currently selected Key Low or Key High parameter can be selected by holding down the ENTER button and then playing the desired key on the keyboard. Values can also be selected by using the ALPHA WHEEL, or by using the keypad function of the CATEGORY buttons, followed by pressing the ENTER button.

Pan

The Pan parameter sets the panning (left/right stereo placement) of each Zone. To change the panning of a Zone:

1. Select a Pan parameter for the desired Zone by using the NAVIGATION buttons.
2. Change the panning by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a pan value (0-127) followed by pressing the ENTER button.

A value of 0 is full left, 64 is center, and 127 is full right. Other values will move the stereo placement in between these positions.

A value of "None" can also be selected, which will use the last pan value used by the Zone's MIDI channel. A value of "None" can be entered by using the ALPHA WHEEL to scroll below 0.

Volume

The Volume parameter sets the volume of each Zone. To change the volume of a Zone:

1. Select a Volume parameter for the desired Zone by using the NAVIGATION buttons.
2. Change the volume by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a volume value (0-127) followed by pressing the ENTER button.

A value of "None" can also be selected, which will use the last volume value used by the Zone's MIDI channel. (This volume values is often set by the expression pedal.) A value of "None" can be entered by using the ALPHA WHEEL to scroll below 0.

Saving a Split or Layer

After setting the Split or Layer parameters, press the SAVE button to begin the saving process. See Save User Multis below for details on saving.

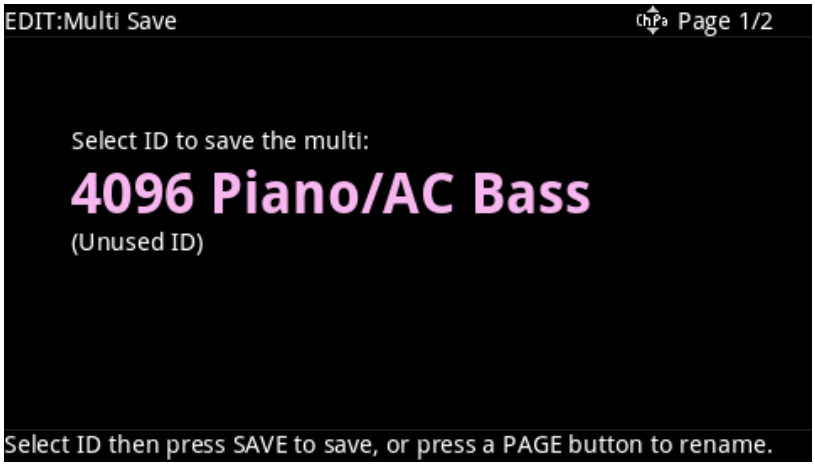
Once you have saved your Split or Layer, you can continue to add Zones to the Multi with the Split or Layer functions until you reach the maximum number of active Zones. You can also use Multi Edit Mode to edit controller assignments (like effects controls and sustain pedal per Zone), transposition per Zone, and other Multi parameters. For details, see Multi Edit Mode on page 5-1.

Save User Multis

Press the SAVE button to view the Save Dialog, which allows you to save a Split or Layer Multi as a User Multi, or to save a Multi with its current Zone On/Off status. To save the changed state of Multi controllers which have other assignments, you must set an entry value for each controller on the Multi Edit Mode Controls Page. See Controls Page on page 5-24 for details.

To save a copy of the Multi, press the SAVE button once to view the Save Dialog. The Save Dialog allows you to choose an ID number and name for the Multi you are saving. Use the CHANNEL/PAGE buttons to switch between ID selection and naming pages. On the Multi Save Page, press the SAVE button again to save the Multi as a User Multi.

Changing ID Numbers



The display shows the first available ID number and the current Multi name. User Multis can be saved to ID numbers from 4096 to 8191.

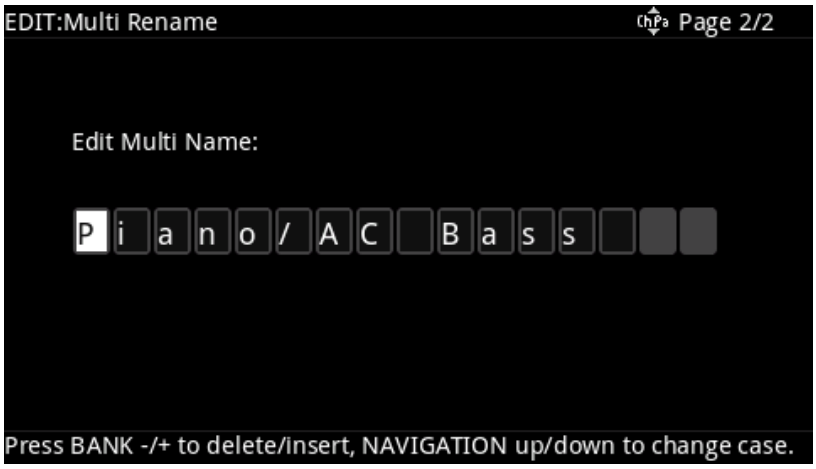
If you are saving a Multi that has not been previously edited, the next available unused ID number will be selected.

If you are saving a previously edited User Multi, the ID number that the Multi was last saved with will be selected.

Press the NAVIGATION Left/Right buttons simultaneously to toggle between selecting the ID number that the Multi was last saved with, or selecting the next available unused ID number.

To change the ID number, use the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type an ID number (4096 to 8191) followed by pressing the ENTER button. If you select an ID number that is already used by another Multi, the bottom of display will show a message to warn that you are going to replace a Multi.

Naming a User Multi



In the Save Dialog, you can name a Multi by using the Multi Name Page.

Use the CHANNEL/PAGE buttons to select the Multi Name Page.

The display shows the current Multi name. Multi names can total 16 characters in length.

Use the NAVIGATION Left/Right buttons to move the cursor to each character.

Change the current character by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a character.

Use the NAVIGATION Up/Down buttons to set a character to upper or lower case.

To insert a space before the selected character, press the BANK + button. The selected character and all characters to the right will move one space to the right.

To delete the selected character, press the BANK - button. All the characters to the right of the selected character will move one space to the left.

After naming the Multi, press the SAVE button to return to the Multi Save Page. On the Multi Save Page, press the SAVE button again to save the Multi as a User Multi.

Saving a User Multi

To save a User Multi, select the Multi Save Page and press the SAVE button, (or press the EXIT button to exit without saving). The display will show a brief message to confirm that the Multi was saved.

After successfully saving, the Multi will be selected in Multi Mode in the User ID range (4096-8191). To find the Multi again later, make sure to press the USER button.

PANIC

Pressing the 0 and ENTER buttons simultaneously performs the PANIC function. PANIC deactivates all sounding notes and resets controller values by sending an “All Notes Off ” message and a “Reset All Controllers” message on all 16 MIDI channels.

PANIC

Chapter 5
Multi Edit Mode

Multi Edit Mode allows you to edit and customize Multis. Any Multi can be edited in Multi Edit Mode and saved to one of the 4096 User IDs.

To enter Multi Edit Mode from another Mode, press and turn on the MULTI Mode button to enter Multi Mode, then press and turn on the EDIT button.

In Multi Edit Mode, the top line of the display shows the current page name and number.

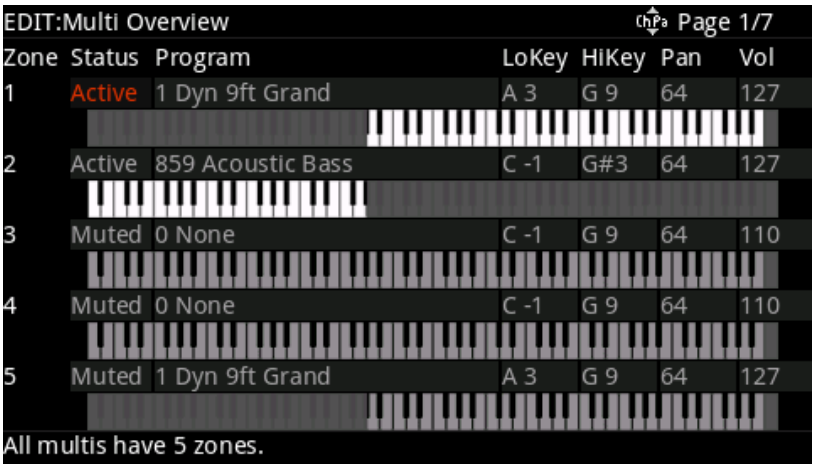
Navigate to each page by using the CHANNEL/PAGE buttons.

Navigate to each parameter on the current page by using the NAVIGATION buttons.

Change the value of the selected parameter by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a numeric value followed by pressing the ENTER button.

Many parameters apply only to one of the 5 Zones (Zone specific parameters). Pages with Zone specific parameters show “Zone” in the top left of the page and list Zone numbers 1-5 on the lines below. This indicates that the parameters in lines 1-5 each respectively apply only to Zones 1-5.

Overview Page



Use the Overview Page to select a Program, Volume, and Panning for each of the 5 Zones.

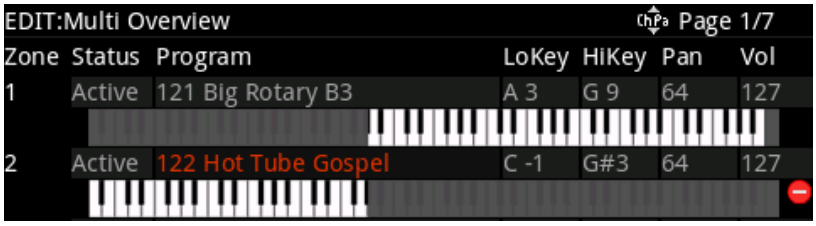
Status

The Status parameter determines whether the currently selected Zone is Active or Muted.

Program

The Program parameter determines the Program for the currently selected Zone. Use any of the methods below to select a Program for each Zone.

Note: Only one KB3 Organ program can be loaded at a time, using the designated KB3 Channel (for details see "KB3 Channel" on page 5-39). If a second KB3 program is selected on a Zone that is not using the KB3 Channel, a red and white warning symbol will be displayed to the right of the Zone, and the previously selected non-KB3 program will be used for the Zone.



Browse All Programs

Make sure the USER button is off, then use the ALPHA WHEEL to select a Program from all of the available Programs.

Select a Program by Category

Make sure the KEYPAD button is off, then press one of the CATEGORY buttons to select the first Program of a category (or the current Category Default Program). The selected CATEGORY button will turn on. Use the ALPHA WHEEL to select Programs from the selected category.

Select a Previously Saved User Program

Press and turn on the USER button, then use the ALPHA WHEEL to browse only User Programs. To return to browsing Factory and User Programs, press and turn off the USER button.

Select a Program by ID Number

Press and turn on the KEYPAD button. The KEYPAD button allows you to use the numbers labeled on the CATEGORY buttons to select Programs or Multis by ID number. Type an ID number followed by pressing the ENTER button to select the associated Program.

LoKey / HiKey

The LoKey and HiKey parameters set the playable key range of each Zone by setting the lowest and highest playable key of each Zone. Keys played within this range will trigger a note for the selected Zone. (You can also set a range where playing keys will not trigger a note, by setting LoKey to a higher key than HiKey).

A Value for the currently selected LoKey or HiKey parameter can be selected by holding down the ENTER button and then playing the desired key on the keyboard. Values can also be selected by using the ALPHA WHEEL, or by using the keypad function of the CATEGORY buttons, followed by pressing the ENTER button.

Pan

The Pan parameter sets the panning (left/right stereo placement) of each Zone. Change the panning of a Zone by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a pan value (0-127) followed by pressing the ENTER button.

A value of 0 is full left, 64 is center, and 127 is full right. Other values will move the stereo placement in between these positions.

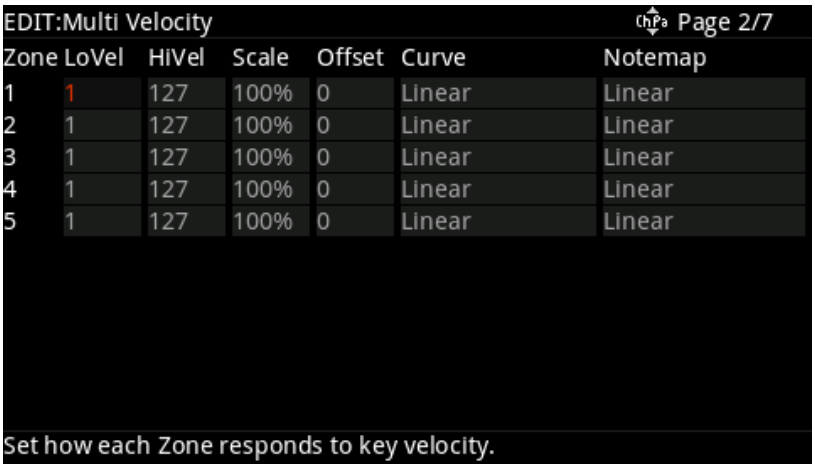
A value of "None" can be selected by using the ALPHA WHEEL to scroll below 0. A value of "None" will use the last pan value used by the Zone's MIDI channel (a MIDI channel from Program Mode or from the previously selected Multi).

Vol

The Vol parameter sets the volume of each Zone. Change the volume of a Zone by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a volume value (0-127) followed by pressing the ENTER button.

A value of "None" can be selected by using the ALPHA WHEEL to scroll below 0. This is useful if you wish to manually set Zone volumes with the PC4 SE knobs, rather than using default values when the Multi is selected. A value of "None" will use the last volume value used by the Zone's MIDI channel (a MIDI channel from the previously selected Multi, or from Program Mode).

Velocity Page



LoVel / HiVel

The LoVel and HiVel parameters set the playable velocity range of each Zone by setting the lowest and highest playable velocity of each Zone. Velocities within this range will trigger a note for the selected Zone. (You can also set a range where playing velocities will not trigger a note, by setting Velocity Low to a higher velocity than Velocity High).

These parameters are useful for "velocity switching"—having a key play different sounds depending on how hard you strike it.

Scale

The Scale parameter lets you amplify or diminish velocity response from -300% to 300%. Normal response is 100%. Higher values make the keyboard more sensitive (you don't need to play as hard to get higher MIDI velocities) while lower values make it less sensitive (playing harder doesn't change MIDI velocity as much). You can also set the scale to a negative number, in which case the velocity response is turned upside-down: playing harder produces a softer sound and vice versa. This is useful for creating velocity-based crossfades between zones.

Offset

The Offset parameter changes the velocity response, by adding or subtracting a value to the played key velocity.

Curve

The Curve parameter lets you taper the velocity response. The default setting is **Linear**, which means that the output velocity changes directly proportionally to the played velocity.

Expand produces a curve that is less steep than the linear curve at keystrike velocities below 64, and steeper than the linear curve at keystrike velocities above 64. In other words, when you're playing softly, you'll notice velocity differences less than with a linear curve, while when you're playing hard, you'll notice velocity differences more.

Compress produces a velocity curve that is the opposite of the expanded curve—that is, you'll notice velocity differences more when you're playing softly than when you're playing hard.

Crossfade is designed to be used in tandem with the Reverse Crossfade curve, enabling you to perform smooth crossfades between different programs.

Bump tapers velocity response to resemble a bell curve, so that notes are loudest when your keystrike velocity is 64. Notes get softer as the keystrike velocity approaches 0 or 127.

The next four velocity curves are Reverse Linear (**Rvrs Linear)**, Reverse Expand (**Rvrs Expand**), Reverse Compress (**Rvrs Compress**), and Reverse Crossfade (**Rvrs Crossfade**). These taper velocity in reverse of the five curves we just covered. For example, Reverse Linear's response is such that striking a key harder will produce a lower volume, striking it softer will produce a higher volume, and so on. This provides a convenient way to achieve negative scaling, by letting you set one parameter instead of two.

Note Map

Note Map allows you to arrange the notes of a Zone across the keyboard in different configurations. See below for details on each of the Note Map settings:

Off

With Note Map set to Off, keys in the Zone will not play notes. This can be useful when controlling external MIDI equipment, you may wish to send controller values without notes.

Linear

With Note Map set to Linear, all keys produce notes as played. This is the default setting.

Inverse

With Note Map set to Inverse, the keyboard plays upside-down, with the highest note being played by key A0 and the lowest note being played by key C9.

Constant

With Note Map set to Constant, all of the keys on the keyboard will play the same note (C4). Use the Transpose parameter to change the note that is played. This is useful for layering a percussion sound from a particular key to play with every note of another zone. For example, playing a ride cymbal with every note in a bass line.

Alternating (1 of 2 through 4 of 4)

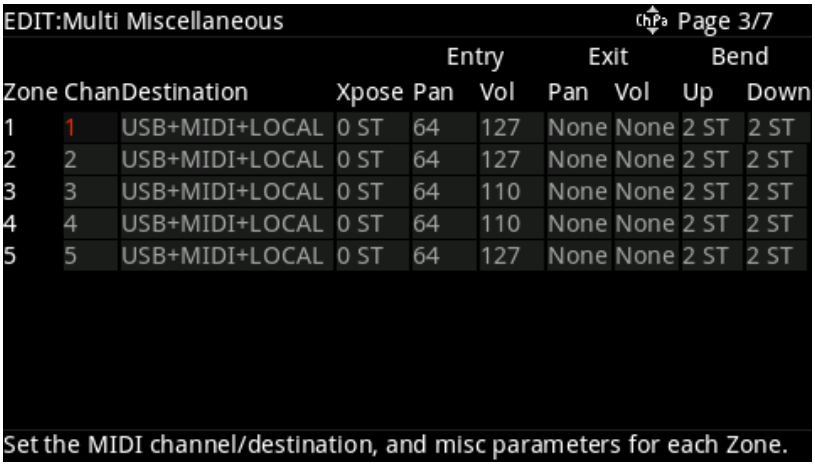
The Note Map parameter includes various alternating note maps (1 of 2 through 4 of 4). If you are using two or more MIDI devices (including the PC4 SE), you can expand polyphony by assigning each zone to a different alternating note map.

For example, if you have two PC4 SEs, you can assign two zones to each play the same program on a different PC4 SE, thereby doubling polyphony. Follow these steps:

1. Set Zone 1 to Note Map 1 of 2; now the zone plays on every second key, starting on C, but won't play on any other keys.
2. Set Zone 2 to Note Map to 2 of 2, and this zone will play on every second key, starting on C#, thus covering the remaining keys. Three and four-zone alternating note maps work the same way, but cause each zone to play only on every third and every fourth key, respectively.

Miscellaneous Page

The Miscellaneous Page shows various settings for each Zone.



Channel

The Channel parameter determines the MIDI transmit and receive channel for each Zone. You can set this parameter to any of the 16 MIDI channels (1-16).

You can assign different Zones to the same channel, but only one Program can be loaded in a channel at a particular time. The Program loaded will be whichever program change message is received last.

Destination

The Destination parameter determines whether MIDI data generated by the keyboard and physical controllers of each Zone is sent to a PC4 SE Program, through the MIDI Out/USB ports, or all three. You can set this parameter to any of the eight combinations for the three destinations for this parameter.

Note that Zone MIDI data is also affected by the Global Mode Destination parameter (see page 6-10). For example if Global Mode Destination is set to MIDI, and Zone Destination is set to Local + MIDI, transmission will be limited to MIDI only.

Xpose

The Xpose parameter sets the transposition of each Zone. The Xpose parameter changes the pitches generated by each Zone, without changing the Key Low and Key High range on the keyboard. This is done by changing the MIDI note numbers generated by the keys in the Zone.

If you transpose out of the range of the selected Program in the selected Zone, notes from that Zone's Program will not produce sound, though MIDI notes will still be transmitted from the Zone.

Entry Pan / Vol

Entry Pan and Entry Vol determine the Pan and Volume of each Zone when the Multi is selected. These parameters are the same as the Pan and Vol parameters on the Overview page, for details see "Pan" on page 5-4 and "Vol" on page 5-4. The parameters are shown on the Miscellaneous page for convenience when setting the Exit Pan / Vol parameters.

Exit Pan / Vol

Exit Pan and Exit Vol determine the Pan and Volume of each Zone when the Multi is exited by selecting another Multi or Program. You can set this parameter to None, or 0-127.

Exit Pan and Exit Vol should typically be set to a value of "None", which sends no message. To select a value of None, scroll below 0. Setting an Exit Value to 0-127 can be useful for advanced MIDI configurations and when controlling external MIDI instruments or software. For example, an Exit Vol message of 0 could silence an external MIDI instrument when exiting a Multi. For Zones which are playing local programs, Exit Vol should typically be set to None to avoid unwanted volume changes when selecting Multis.

Bend Range Up / Down

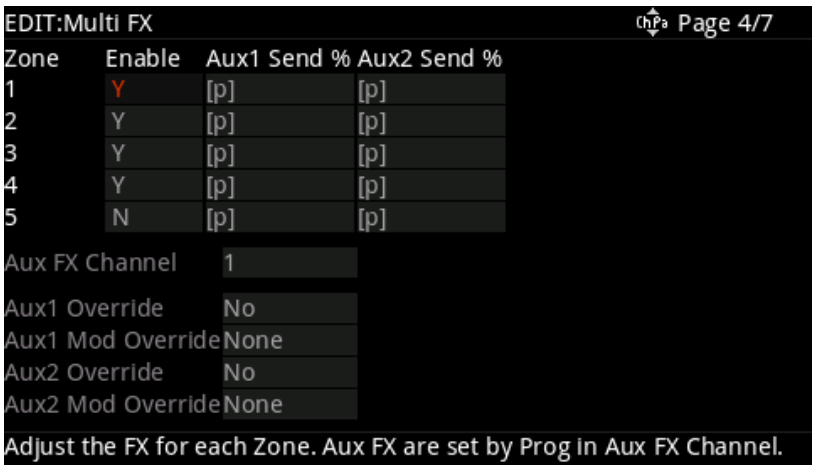
The Bend Range Up / Down parameters set the pitch bend up and pitch bend down range of the PITCH WHEEL for each Zone. Use these parameters to set how much the pitch will change when you move the PITCH WHEEL up or down. Change the Bend Up or Bend Down values by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a value (0-88) followed by pressing the ENTER button.

A value of "Prog" can also be selected, which will use the respective BendRange Up or BendRange Down value of the Program in the selected the Zone. A value of "Prog" can be entered by using the ALPHA WHEEL to scroll below 0.

Bend Up values greater than 12 can cause samples to bend to their maximum upward pitch before the PITCH WHEEL is fully up.

FX Page

The FX Page allows you to set Aux send levels for each channel, and enable or disable FX resources for each channel, which is useful for managing Insert FX resources.



Enable

Use the FX Page to enable or disable the FX of the Program in each Zone. Each Zone can be set to Y to enable effects, or to N to disable effects. Some Zones set to Y may be displayed as (Y). This means that there are not enough effects resources available for that Zone, and that Zone's effects are not loaded. If you want to use the FX for a Zone displayed as (Y), try setting other Zones to N to make more FX resources available.

If the Channel number of the current "Aux FX Channel" setting is set to N or (Y), the Aux Chains will be disabled for all channels.

Aux FX Channel

The Aux FX Channel determines the MIDI channel that will be used for the Aux 1 and Aux 2 FX Chains. For example, if the Program in channel 2 uses the Chain "25 Basic Delay 1/8" as an Aux 1 Chain, then setting the Aux FX Channel to 2 allows the programs in all channels to send their signal to the Aux FX Chain "25 Basic Delay 1/8".

Keep in mind that the MIDI channel number of each Zone does not have to match the Zone number. For example, if Zone 1 is assigned to use MIDI channel 5, then Aux FX Channel must be set to 5 in order to use the Aux FX Chains of Zone 1. To view or change the MIDI Channel for each Zone, see Channel on page 5-8.

Aux1 Send %, Aux2 Send %

Use the Aux1 Send % and Aux2 Send % parameters to set the Aux 1 and 2 FX send levels for the Program in each MIDI channel.

The default setting "[p]" will use the dB level or wet/dry percent send value specified in the Program of the selected MIDI channel. To override one of these send level values, select the Aux1 Send % or Aux2 Send % parameter for the desired MIDI channel, and enter a new wet/dry percent send value (0=fully dry, 100=fully wet). A value of [p] can be set by using the ALPHA WHEEL to scroll below 0.

Aux Mods

The Aux Send levels for each Zone are scaled by the Aux Send Mod assignment in each program (set in Program Edit Mode). In most factory Programs, the send level for Aux 1 is controlled by an Aux Mod set to MIDI 28 and MIDI 90 (usually controlled by Slider 5 and Switch 5 in Program Mode). Because of this, in many cases you may need to assign 2 Multi controllers to these MIDI destinations in order to Adjust the Multi Send levels. Alternatively, you can set a single Aux Mod Override.

For example, if Zone 1 contains factory Program 1, and the Zone 1 "Aux1 Send %" is set to 100%, the Aux 1 volume will also be scaled by the Program's entry value for Slider 5, with values of 0-127 scaling between 0% wet and the Zone 1 "Aux1 Send %" value. In this case, use the Multi Edit Controls page to set a Zone 1 Controller to MIDI Dest 28. This will allow you to use a Multi Controller to adjust the send level.

For factory Programs that use MIDI 90 (Switch 5) to enable to the Aux 1 send, you will also need to use the Multi Edit Controls page to set a Zone 1 Controller to MIDI Dest 90 with an Entry Value of 127 in order to enable the Aux send in Multi Mode.

To bypass Aux Mods and set Aux Send levels without worrying about controller assignments, see the Mod Override parameter below.

Aux1 Override, Aux2 Override

Normally, the Aux Effects Chains are specified by the program on the specified Aux Effects channel. When Aux1/2 Override is set to Yes, the Chain parameter can be selected, allowing you to choose a different Aux effect Chain.

Set Aux1/2 Override to Yes to select an override Aux Chain on this page. Set Override to No to use the Aux FX chain of the specified Aux FX Channel.

Chain

When Aux1/2 Override is set to Yes, you can use the Chain field to select an Aux Override Chain for the corresponding Aux Effect.

Aux1 Mod Override, Aux2 Mod Override

When the Aux1/2 Mod Override parameter is set to None, the Aux Send levels for each Zone are scaled by the Aux Send Mod assignment in each program (set in Program Edit Mode). In most factory Programs, the send level for Aux 1 is usually controlled by an Aux mod set to MIDI 28 and MIDI 90 (usually controlled by Slider 5 and Switch 5 in Program Mode). Because of this, in many cases you may need to assign 2 Multi controllers to these MIDI destinations in order to Adjust the Multi Send levels.

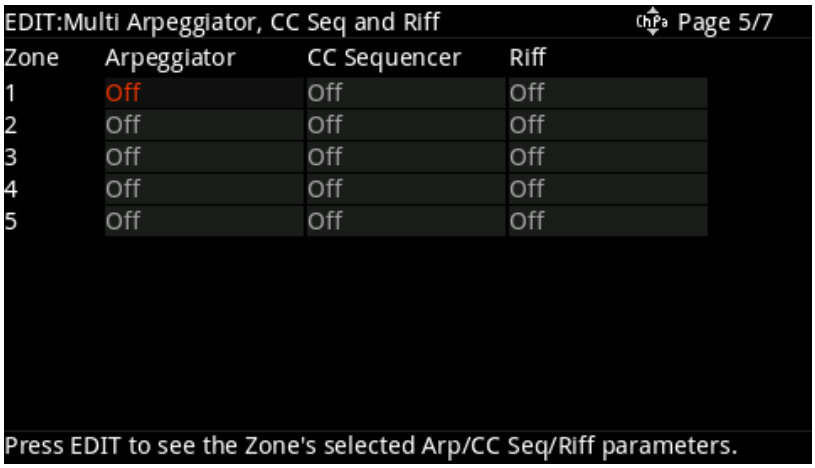
Each Mod Override parameter allows you to select a single controller or modulation source which will control the send level or dry/wet amount for the Aux 1 or Aux 2 Chain. Selecting a Mod Override will disable any Aux Mod controllers or modulation sources that were assigned in the Program of the Aux FX Channel.

The easiest way to adjust Aux send levels in Multi Mode is to set the Aux1/2 Mod Override parameter to ON. This will cause each Program to use the selected send level value.

If you wish to have real time control over the Aux Send levels, set the Aux1/2 Mod Override parameter to a Controller by holding the ENTER button and moving the desired controller (knob, slider, wheel).

If you select a MIDI controller for the Mod Override (entries 1 through 95 in the Mod Override list), you must select the same MIDI controller number in the “MIDI Dest” field for the desired controller on the Multi Controls page. This must be done for each Zone that you wish to apply the Mod override controller. The Multi Controls page allows you to set entry/exit values as well as scaling and offset values for the Mod Override controller.

Arpeggiator, CC Seq and Riff Page



Arpeggiator

The Arpeggiator parameters set whether the Arpeggiator is On or Off for the Program in each Zone.

Arpeggiator On/Off can also be controlled in each Zone by the front panel ARP button. In each Multi, the ARP button must be assigned for the desired Zones on the Multi Edit Controls page. Set Controller to Arp On/Off, then select Destination 147 (Arp On/Off) with On Value 127 and Off Value 0.

Arpeggiator On/Off can also be controlled with other controllers on the Multi Edit Controls page by using Destination 147 (Arp On/Off), or by a switch pedal using one of the Global Mode SW Override parameters.

Edit Arpeggiator Settings

To edit the Arpeggiator settings, select the Arpeggiator parameter for the desired Zone, set the parameter to On, then press the EDIT button to view the Arpeggiator page.

The Arpeggiator in Multi Mode is very similar to the Program Mode arpeggiator. See Arpeggiator Page on page 3-12 of the Program Edit Mode Chapter for a full description of each arpeggiator parameter.

In Multi Mode, the Arpeggiator works the same as in Program Mode, except there is one arpeggiator per Zone. The Arpeggiator in each Zone can each have different settings, and they can be played at the same time. Also, in Multi Mode the Arpeggiator page does not have the Tempo parameter, instead the **Tempo** parameter on the Multi Common page should be used.

Unlike the Arpeggiator in Program Mode, the Arpeggiator in Multi Mode has the **Sync Type** parameter. Setting the Sync Type parameter to Any Beat will keep arpeggiators in sync to the same beat pulse across multiple Zones. When the Sync Type parameter is set to Any Beat, playing an arpeggiator in one Zone will wait for the next beat of any currently playing arpeggiators before starting. Set the Sync Type parameter to Off if you don't want to keep arpeggiators in sync. Additional Sync Type settings are available, which behave the same as the Riff Sync Types. See Trigger Type on page 5-20 for details.

To assign the ARP and LATCH button for the arpeggiator in each Zone, go to the Controls page and set the Controller field to ArpOn/Off or ArpLatch for each desired Zone. See "Switch Controllers" on page 7-13 for details.

CC Sequencer

The CC Sequencer parameters set whether the CC Sequencer is On or Off for the Program in each Zone.

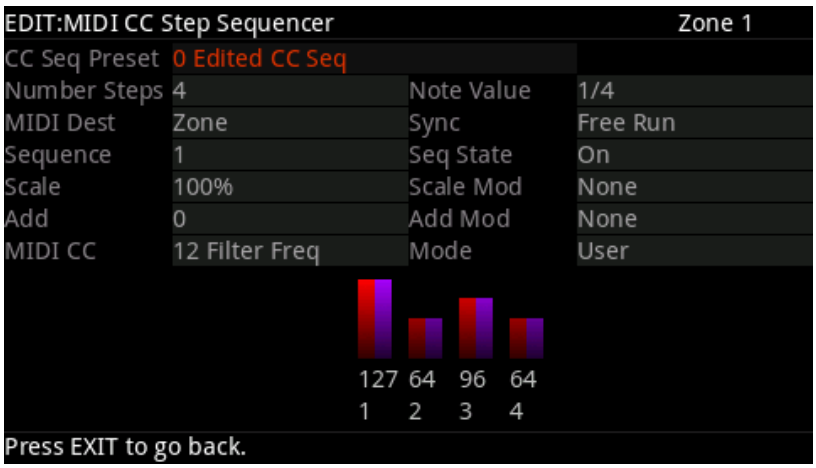
CC Sequencer On/Off can also be controlled in each Zone by the front panel CC SEQ button. In each Multi, the CC SEQ button must be assigned for the desired Zones on the Multi Edit Controls page. Set Controller to CC Seq, then select Destination 148 (CC Seq On/Off) with On Value 127 and Off Value 0.

CC Sequencer On/Off can also be controlled with other controllers on the Multi Edit Controls page by using Destination 148 (CC Seq On/Off).

Edit CC Sequencer Settings

To edit the CC Sequencer settings, select the CC Sequencer parameter for the desired Zone, set the parameter to On, then press the EDIT button to view the CC Sequencer page.

The CC Sequencer in Multi Mode is very similar to the Program Mode CC Sequencer. See MIDI CC Step Sequencer Page on page 3-27 of the Program Edit Mode Chapter for a full description of each CC Sequencer parameter.



In Multi Mode, the CC Sequencer works the same as in Program Mode, except there is one CC Sequencer per Zone. The CC Sequencer in each Zone can each have different settings, and they can be played at the same time.

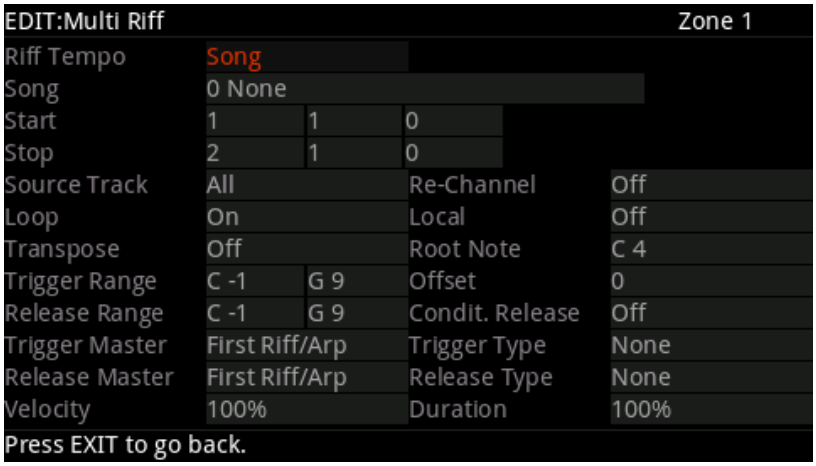
Riff

The Riff parameters set whether the Riff is On or Off for the Program in each Zone.

Riffs are full songs or individual tracks of a song created in the PC4 SE's Song mode that you can trigger in Multi mode. Standard MIDI files may also be imported to Song mode and then used as riffs in Multis. Every zone in a Multi can have it's own riff—a completely independent sequence. You can use a Multi with many riffs to trigger and stop looped sequences of different instrument parts. Alternatively, a single riff can play multiple instrument parts, and each riff can be used as a different song section of a backing track.

Edit Riff Settings

To edit the Riff settings, select the Riff parameter for the desired Zone, set the parameter to On, then press the EDIT button to view the Riff page.



Follow these steps to use a riff:

1. Go to Song mode and find or record the song that you wish to use for your riff. Note the song ID#, as well as the desired track and start/stop points.
2. Go to Multi mode and edit a Multi. On the Multi Edit Overview page, choose the program that you want to use for the riff on the desired zone. (Program changes that are recorded in song mode will be ignored when using the song as a riff in a Multi.)
3. Go to the Arpeggiator, CC Sequencer and Riff Page page, set the Riff parameter to On for the desired Zone, and press the EDIT button to got to the Riff page.
4. On the Riff page, select the desired song, track, song Start/Stop points. See below for descriptions of these parameters, as well as many other parameters that determine the behavior of a riff.

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 5-19.

Song

Use the Song parameter to select the song that you wish to use for the Riff of the currently selected Zone.

Start, Stop

Use the Start and Stop parameters to specify the riff start and stop points. The time format is *Bar : Beat : Tick. Bar* can be set to any bar in the song, 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. See Beat Subdivisions in Ticks on page 7-23 for a list of beat subdivisions in ticks.

Note: The Stop point is automatically adjusted so that the current riff is at least one beat long.

Transpose, Root Note

When the Transpose parameter is set to On, the riff can be transposed chromatically by playing the keyboard within the selected trigger range. Use the Root Note parameter to select the key that will play the riff at its original pitch. Root Note is only applied when the Transpose parameter is set to On.

For example, if Transpose is set to On and you have a riff based around D4, set the Root Note to D4 so that the riff will play in tune with other Zones. It is also useful to set the Root Note to a different octave than the original pitch, in order to play the riff at the original pitch from a higher or lower region of the keyboard.

Note: If you are transposing a riff that includes a Drum Track, you can prevent the drum track from being transposed by editing the song. See “Drum Track” on page 7-13 for details.

Source Track

The Source Track parameter determines the song track or tracks that the riff plays. A riff can play either a single track or all tracks of the selected song.

To create a Multi with multiple riffs each playing a single instrument part, use the same song for the riff in each Zone, and select a different Source Track for each riff.

To create a Multi with a single riff that plays multiple instrument parts, set Source Track to All. Each track of the song will play through the zones which have a corresponding MIDI channel. See “Channel” on page 7-7 for details on the MIDI channel used for each Zone.

Re-Channel

Song Track numbers and Multi Zone numbers have matching MIDI channel numbers by default. When the current zone's MIDI channel and the channel of the riff's selected Source Track do not match, it can make the riff play programs from other Zones. To prevent this you can use the Re-Channel parameter.

When Re-Channel is set to On, the track selected for the Source Track parameter will play through the MIDI channel of the current zone. For example, if you want to use a riff on zone 2 (set to use MIDI channel 2) and the riff was recorded on track 4 (set to use 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 (set to channel 4) instead of zone 2.

When Re-Channel is set to On and Source Track is set to All, *all* of the tracks of the song will play through the MIDI channel of the current zone.

Trigger Range

Use the Trigger Range parameters to set the keyboard range that will trigger the Riff. The left and right Trigger Range parameters set the lowest and highest keys that will trigger the Riff. For a key to trigger a riff, the key must also be within the Zone's Key Range (set on the Overview page).

You can select a key using the ALPHA WHEEL, or by pressing and holding the ENTER button and pressing the desired key.

Note: Riffs can also be triggered and released by assigning a controller destination 163 **Riff OnOff**.

Release Range

Use the Release Range parameters to set the keyboard range that will stop the Riff when a key is released. The left and right Release Range parameters set the lowest and highest keys that will stop the Riff when a key is released. For a key to stop a riff, the key must also be within the Zone's Key Range (set on the Overview page).

You can select a key using the ALPHA WHEEL, or by pressing and holding the ENTER button and pressing the desired key.

Note: Riffs can also be triggered and released by assigning a controller destination 163 **Riff OnOff**.

Conditional Release (Condit. Rel)

When the Condit. Rel parameter is set to On, the riff will play when a key is pressed and held, and other keys will not stop or restart the riff until the key original key is released. To use conditional release, set the same range for the Trigger Range and Release Range. To stop the riff, release the original key.

Local

When Local is set to Off, notes will only be played by the riff. When Local is set to On, notes in the current zone can be played normally by the keyboard, and by the riff.

Loop

When Loop is set to Off, the riff will play once until it is retriggered. When Loop is set to On, the riff will play in a loop until a key in the Release Range is released.

Riff Tempo

Use the Riff Tempo parameter to set the tempo of your riff. With Riff Tempo set to **Song**, the riffs original tempo from song mode will be used. With Riff Tempo set to **Multi**, the tempo set on the Multi Edit Common page will be used. The Multi setting is useful for tempo syncing different riffs or arpeggiators. With Riff Tempo 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**.

Trigger Master

The Trigger Master parameter determines which zone a riff will sync to when triggered. This allows you to trigger riffs in sync with other riffs or arpeggios by syncing to the beat of riffs or arpeggios in other zones.

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 Trigger Master to **Riff Zone 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 Trigger Master to **First Riff**. 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 **First Riff**, 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 **First Arp**, which behaves the same way as **First Riff**, but makes your riff look for the first available arpeggiator to sync to. A setting of **First Riff/Arp** will sync the riff to the first available riff or arpeggiator.

Note: If you have multiple riffs or arpeggiators already playing when using First Riff, First Arp, or First Riff/Arp 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.

Trigger Type

The Trigger Type parameter allows you to choose how your riff will sync to other riffs and arpeggiators (in combination with the Trigger Master parameter).

With Trigger Type set to **None**, the riff will start playing as soon as it is triggered. It will not sync to anything.

With Trigger Type set to **Down Beat**, if there is already something playing to sync to, the current riff will wait for the down beat 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 down beat of the next measure.

With Trigger Type set to **Any Beat**, 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 up beat or a down beat.

With Trigger Type set to **Down Beat Wait**, the riff will wait for the down beat of the next measure to start. The difference from Down Beat is that if there is nothing playing to sync to, the riff will not start. If another riff is already running, Down Beat Wait behaves just like Down Beat. Down Beat Wait is useful if you want to start multiple riffs synced to one riff. For example, You could have a drum riff on Zone 1, a bass riff on Zone 2, and a guitar riff on Zone 3 , with the Zone 2 and 3 Trigger Type set to Down Beat Wait, and Trigger Master set to Riff Zone 1. If you trigger the riffs on Zone 2 and 3 while no other riffs are playing, as soon as you start the Zone 1 drum riff, the zone 2 and 3 bass and guitar riffs will start playing as well.

With Trigger Type set to **Any Beat Wait**, the riff will wait for the next beat to start. The difference from Any Beat is that if there is nothing playing to sync to, this riff will not start. If something is already playing to sync to, Any Beat Wait behaves just like Any Beat.

With Trigger Type set to **Loop**, if there is already a riff playing to sync to, the current riff will wait for the playing riff to restart its loop (if Loop is set to On) before starting (see "Loop" on page 5-19). 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's loop.

With Trigger Type 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 or arpeggiator that you are syncing to. If there is nothing playing to sync to, the riff will start immediately.

With Trigger Type set to **Start Wait**, if there is nothing playing to sync to, the current riff will wait for something it can sync to begin playing first before starting. This is similar to Down Beat Wait, 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 or arpeggiator 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, Start Wait will not start the riff.

With Trigger Type set to **Loop Wait**, if there is already a riff playing to sync to, the current riff will wait for the playing riff to restart its loop (if Loop is set to On) before starting (see "Loop" on page 5-19). 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 's loop. The difference from Loop is that if there is nothing playing to sync to, the riff will not start. If the riff that you are syncing to is already running, Loop Wait behaves just like Loop.

With Trigger Type set to **Stop Wait**, 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 or arpeggiator 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 arpeggiator that you are syncing to is already running, Stop Wait behaves just like Stop.

Release Master

Release Master has the same settings available as Trigger Master, but Release Master determines what the releasing (stopping) of the current riff will be synced to when a parameter other than **None** is selected for Release Type.

Release Type

Release Type has the same settings available as Trigger Type, but Release Type determines how the releasing (stopping) of the current riff will be synced to other riffs and arpeggiators (in combination with the Release Master parameter).

With Release Type set to **None**, your riff will stop playing as soon as it is released. It will not sync to anything.

With Release Type set to **Down Beat**, if there is already something playing to sync to, the current riff will wait for the Down Beat 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 Down Beat of the next measure.

With Release Type set to **Any Beat**, 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 up beat or a down beat.

With Release Type set to **Down Beat Wait**, the riff will wait for the down beat of the next measure to stop when released. The difference from Down Beat is that if there is nothing playing to sync to, the riff wont stop when released. If another riff is already running, **Down Beat Wait** behaves just like **Down Beat**.

With Release Type set to **Any Beat Wait**, if there is already a something playing to sync to, the riff will wait for the next beat before releasing. The difference from Any Beat 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, Any Beat Wait behaves just like Any Beat.

With Release Type set to **Loop**, if there is already a riff playing to sync to, the current riff will wait for the playing riff to restart its loop (if Loop is set to On) before starting (see "Loop" on page 5-19). This way you can release the riff ahead of time, and have it stop in sync at the start of the playing riff's loop.

With Release Type 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 or arpeggiator that you are syncing to. If there is nothing playing to sync to, the riff will stop immediately.

With Release Type set to **Start Wait**, 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 Down Beat Wait, 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 or arpeggiator 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, **Start Wait** will not stop the riff.

With Release Type set to **Loop Wait**, if there is already a riff playing to sync to, the current riff will wait for the playing riff to restart its loop (if Loop is set to On) before starting (see "Loop" on page 5-19). 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'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 that you are syncing to is already running, **Loop Wait** behaves just like **Loop**.

With Release Type set to **Stop Wait**, 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 stop in sync at the release (stopping) of the riff or arpeggiator 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 arpeggiator that you are syncing to is already running, **Stop Wait** behaves just like **Stop**.

Note: For all **Release Type** settings except **Stop, Start Wait** and **Stop Wait**, 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 **Release Master** parameter. Then, if you set **Down Beat** for the **Release Type** parameter, when released the riff would always wait until its next Down Beat to stop.

Duration

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.

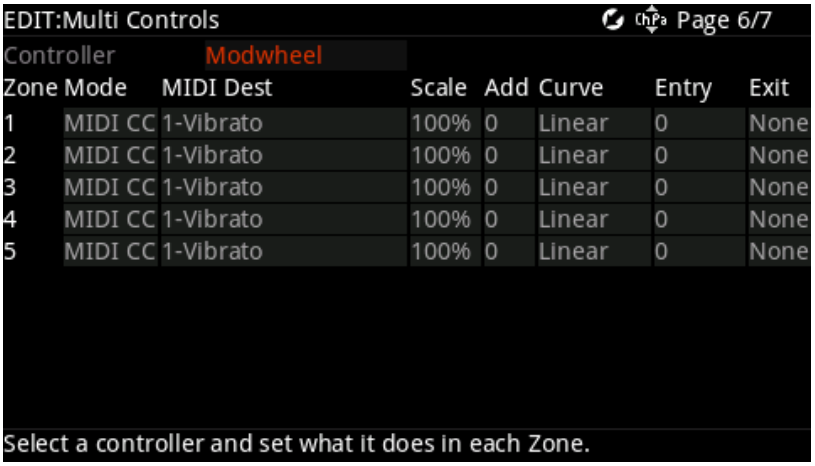
Real-time Control of Riff Parameters

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 Multi. Remember, each of the following Controller Destinations affects only the riff for the zone which your controller is assigned to.

Controller Number	Controller Destination	Description
163	Riff OnOff	If Riff is set to On on the RIFF page, values 64-127 will trigger the riff, values 0-63 will release the riff.
165	Riff Duration	Controls the Riff Duration parameter. 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	Riff Velocity	Controls the Riff Velocity parameter. The Velocity value is calculated by multiplying the received controller value by 2. For Example, 25 = 50%, 50 = 100%, 100 = 200%, 127 = 254%.
167	Riff Delay	Controls the Riff Offset parameter. 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.

Controls Page

Use the Controls Page to adjust controller settings for each Zone. The PC4 SE has 2 types of controllers, switch controllers and continuous controllers. Each type of controller has different parameters, see each section below for details.



Controlling Program Parameters from Multi Mode

To assign a Multi controller to a Program parameter, use the MIDI Dest field. In the MIDI Dest list, destinations that are assigned to parameters for the Program of the current Zone will show the Program Parameter name next to the MIDI Dest number. Select one of these destinations to control an assigned Program parameter.

You can also select the MIDI Dest field, hold the ENTER button, then move the controller that was assigned in Program Mode.

Switch Controllers

This section describes parameters for the following switch controllers:

- SW pedal jacks 1 and 2 (Up to 2 pedals per jack: Sw.Pedal 1a, 1b, 2a, 2b)
- VARIATION button
- ARP button (Arp On/Off)
- LATCH button (Arp Latch)
- CC SEQ button
- CONTROL buttons 1-5 (Switch 1 - Switch 5)

Controller

Use the Controller field to select a controller and view the controller settings for each Zone.

When the Controller field is selected, you can select a controller by using the ALPHA WHEEL, or by holding the ENTER button and moving a controller.

If a pedal is selected which has a pedal override enabled in Global mode, a message "Global Pedal Override is enabled" will display when that pedal is viewed to remind you that the Global mode pedal override settings are being used instead of the Multi mode pedal settings.

Mode

When Mode is set to Off, the controller is disabled for this zone.

When Mode is set to MIDI CC, the controller can send MIDI control messages.

Type

Use the Type parameter to set a switch controller to Momentary or Toggled. This parameter affects the selected switch controller for all Zones.

When Type is set to Momentary, the switch controller sends its "On Value" when pressed, and its "Off Value" when released.

When Type is set to Toggled, the switch controller alternates between sending its "On Value" or "Off Value" each time it is pressed. No value is sent when the controller is released.

MIDI Dest

Use the MIDI Dest field to select a parameter to control.

Destinations 0-127 are MIDI continuous controller messages (CC numbers), which can be used to control PC4 SE Program parameters, or external MIDI gear.

CC numbers that are assigned to Program parameters will show the parameter name next to the CC number. These CC numbers will control the Program in the current Zone.

Destinations 128 and greater can be used to control PC4 SE Program and Multi functions. For details see "Controller Destination List" on page 5-31.

Note: When Controller is set to ArpOn/Off or ArpLatch, the MIDI Dest parameter can only be set to Arp On/Off or Latch destinations.

On

The On field determines the "On Value", the MIDI value sent when a switch controller is set to On. You can set this parameter to any number between 0 and 127, or to None.

Off

The Off field determines the "Off Value", the MIDI value sent when a switch controller is set to Off. You can set this parameter to any number between 0 and 127, or to None.

Entry

The Entry parameter determines the state of a switch controller when the current Multi is loaded. You can set this parameter to None, On, or Off. This parameter affects the selected switch controller for all Zones.

If Entry is set to None, then when you load the current Multi, the switch controller state will not change.

Exit

The Exit parameter determines the state of a switch controller when the current Multi is exited by selecting another Multi or Program. You can set this parameter to None, On, or Off. This parameter affects the selected switch controller for all Zones.

Exit should typically be set to a value of "None", which sends no message. Setting Exit to On or Off can be useful for advanced MIDI configurations and when controlling external MIDI instruments or software.

Continuous Controllers

This section describes parameters for the following continuous controllers:

- Modulation Wheel
- Pitch Wheel up and down
- CONTROL Knobs 1-5
- CONTROL Sliders 1-5
- CC pedal

Controller

Use the Controller field to select a controller for the currently selected Zone.

When the Controller field is selected, you can select a controller by using the ALPHA WHEEL, or by holding the ENTER button and moving a controller.

If a pedal is selected which has a pedal override enabled in Global mode, a message "Global Pedal Override is enabled" will display when that pedal is viewed to remind you that the Global mode pedal override settings are being used instead of the Multi mode pedal settings.

Mode

Continuous Controllers can be set to the following modes: Off, or MIDI CC.

When Mode is set to Off, the controller is disabled for this zone.

When Mode is set to MIDI CC, the controller can send MIDI control messages.

MIDI Dest

Use the MIDI Dest field to select a parameter to control.

Destinations 0-127 are MIDI continuous controller messages (CC numbers), which can be used to control PC4 SE Program parameters, or external MIDI gear.

CC numbers that are assigned to Program parameters will show the parameter name next to the CC number. These CC numbers will control the Program in the current Zone.

Destinations 128 and greater can be used to control PC4 SE Program and Multi functions. For details see "Controller Destination List" on page 5-31.

Scale

Use the Scale parameter to change the range of CC values sent by the controller (in combination with the Add and Curve parameters). The Scale parameter multiplies the CC values sent, changing the lowest and highest values sent by the controller. MIDI controllers are limited to sending values from 0-127, even if the Scale and Add parameters are set to produce values outside of this range.

By default, each continuous controller sends CC values 0-127, 0 at its lowest position, and 127 at its highest position. These values can be multiplied by the percent value of the Scale parameter in order to change the range of CC values. For example:

When when Scale is set to 100% (with Add set to 0 and Curve set to Linear), the controller sends CC values 0-127, 0 at its lowest position, and 127 at its highest position.

Scale values 1-99% make the controller send a smaller range of CC values, allowing for finer control of CC values. When Scale is set to 50% (with Add set to 0 and Curve set to Linear), the controller sends CC values 0-63, 0 at its lowest position, and 63 at its highest position.

Scale values 101-300% make the controller send a values 0-127 over a smaller range of controller positions, allowing for coarser control of CC values. When Scale is set to 200% (with Add set to 0 and Curve set to Linear), the controller sends CC values 0-127, 0 at its lowest position, and 127 at its middle position through its highest position.

When Scale is set to a negative number, the controller range is reversed. For example, when Scale is set to -100% (with Add set to 0 and Curve set to Linear), the controller sends CC values 127-0, 127 at its lowest position, and 0 at its highest position.

Add

Use the Add parameter to change the range of CC values sent by the controller (in combination with the Scale and Curve parameters). The Add parameter adds or subtracts from the CC values sent, changing the lowest and highest values sent by the controller. MIDI controllers are limited to sending values from 0-127, even if the Scale and Add parameters are set to produce values outside of this range.

By default, each continuous controller sends CC values 0-127, 0 at its lowest position, and 127 at its highest position. These values can be added to the value of the Add parameter in order to change the range of CC values. For example:

When when Add is set to 0 (with Scale set to 100% and Curve set to Linear), the controller sends CC values 0-127, 0 at its lowest position, and 127 at its highest position.

When when Add is set to 64 (with Scale set to 100% and Curve set to Linear), the controller sends CC values 64-127, 64 at its lowest position, and 127 at its middle position through its highest position.

When Scale is set to 50%, the controller sends CC values 0-63, 0 at its lowest position, and 63 at its highest position. With the Add parameter set to 64, the controller sends CC values 64-127, 64 at its lowest position, and 127 at its highest position.

When Scale is set to 200%, the controller sends CC values 0-127, 0 at its lowest position, and 127 at its middle position through its highest position. With the Add parameter set to 64, the controller sends CC values 64-127, 64 at its lowest position, and 127 at its middle position through its highest position.

Curve

The Curve parameter lets you apply different curves to the controller values, in order to make the controller more or less responsive in certain ranges of controller positions, or to distribute high and low values over different ranges of controller positions.

The **Linear** setting distributes CC values 0-127 evenly over the range of the controller, with 0 at its lowest position, and 127 at its highest position. This is the default setting.

The **Compress** settings distributes more of CC values 0-127 over the bottom half of the controller range, and fewer CC values over the top half of the controller range.

The **Expand** setting distributes more CC values 0-127 over the top half of the controller range, and fewer CC values over the bottom half of the controller range.

The **Crossfade** setting is designed to be used in combination with the Rvrs Crossfade setting, in order to smoothly crossfade between two programs on different Zones. Assign the Same controller to Destination 7 on two Zones, and select one of these curves for the controller on each Zone.

The **Bump** setting distributes CC values 0-127 to resemble a bell curve, with 0 at its lowest and highest positions, and 127 at its middle position

The Reverse settings (**Rvrs Linear, Rvrs Expand**, **Rvrs Compress**, and **Rvrs Crossfade**) distribute values in the reverse compared to the regular version of these settings. For example,the **Rvrs Linear** setting distributes CC values 0-127 evenly over the range of the controller, with 0 at its highest position, and 127 at its lowest position. .

Entry

The Entry parameter determines the value of a continuous controller when the current Multi is loaded. You can set this parameter to None, or 0-127.

This parameter affects the selected continuous controller for all Zones. The Scale, Add and curve parameters are applied to the Entry value individually on each zone, allowing one controller to send different values to different zones, if desired.

If Entry is set to None, then when you load the current Multi, the continuous controller value will not change.

If the Global Mode “Multi Controllers” parameter is set to Pass Entry, and the physical controller is above or below the Entry value when the Multi is selected, moving the controller will have no effect until it is moved past the Entry value.

Exit

The Exit parameter determines the value of a continuous controller when the current Multi is exited by selecting another Multi or Program. You can set this parameter to None, or 0-127. This parameter affects the selected continuous controller for all Zones.

Exit should typically be set to a value of “None”, which sends no message. To select a value of None, scroll below 0. Setting an Exit Value to 0-127 can be useful for advanced MIDI configurations and when controlling external MIDI instruments or software.

Controller Destination List

The table below contains the available values for the MIDI CC (continuous controller) destinations. The PC4 SE's physical controllers can send MIDI values to these destinations in order to control the parameters of PC4 SE Programs, Multis, PC4 SE system parameters, or external MIDI equipment.

Controller Number	Controller Destination	Description
0	Bank	MIDI Bank change message
1	MWheel	Default destination for the Modulation Wheel
2	Breath	Default assignment for breath controller in compatible synths
3	MIDI 03	MIDI Controller 3
4	Foot	Default assignment for continuous foot controller in compatible synths
5	PortTim	Monophonic PC4 SE Programs respond to this Controller if portamento is turned on.
6	Data	MIDI Controller 6
7	Volume	MIDI Volume
8	Balance	MIDI Balance
9	MIDI 09	MIDI Controller 9
10	Pan	MIDI Pan
11	Express	Default assignment for CC Pedal. In most Programs it acts as a volume control. It scales between 0 and the current value of Volume.
12	MIDI 12	Default assignment for Slider 1
13	MIDI 13	Default assignment for Slider 2
14-21	MIDI 14-21	MIDI Controllers 14-21
22	MIDI 22	Default assignment for Slider 3
23	MIDI 23	Default assignment for Slider 4
24	MIDI 24	Default assignment for Slider 5
25	MIDI 25	Default assignment for Slider 6
26	MIDI 26	Default assignment for Slider 7
27	MIDI 27	Default assignment for Slider 8
28	MIDI 28	Default assignment for Slider 9
29	MIDI 29	Default assignment for Variation switch
30-31	MIDI 30-31	MIDI Controllers 30–31
32	MIDI Bank	MIDI Bank change message
33–63	MIDI 33–63	MIDI Controllers 33–63
64	Sustain	Default destination for Sustain Pedal
65	MIDI 65	MIDI Controller 65
66	Sostenuto	Default destination for Sostenuto Pedal (Sustains notes that are currently down, but not notes played subsequently.)
67	Soft	Lowers the volume by a preset amount and may soften the timbre as well.
68	Legato	Forces mono playback.
69	Freeze	Envelopes freeze at current state.
70–79	MIDI 70–79	MIDI Controllers 70–79
80	MIDI 80	Default assignment for Switch 1

Controller Number	Controller Destination	Description
81	MIDI 81	Default assignment for Switch 2
82	MIDI 82	Default assignment for Switch 3
83	MIDI 83	Default assignment for Switch 4
84	Portamento	Standard MIDI controller for setting Portamento starting note
85	MIDI 85	Default assignment for Switch 5
86	MIDI 86	Default assignment for Switch 6
87	MIDI 87	Default assignment for Switch 7
88	MIDI 88	MIDI Controller 88
89	MIDI 89	Default assignment for Switch 8
90	MIDI 90	Default assignment for Switch 9
91–95	MIDI 91–95	MIDI Controllers 94–95
96	Data Inc	Equivalent to pressing the Next Value button
97	Data Dec	Equivalent to pressing the Previous Value button
98	NRegParL	Non–Registered Parameter Least Significant Byte
99	NRegParM	Non–Registered Parameter Most Significant Byte
100	RegParL	Registered Parameter Least Significant Byte
101	RegParM	Registered Parameter Most Significant Byte
102–109	MIDI 102–109	MIDI Controllers 102–109
110-119	MIDI 110–119	Reserved - Not available for use in the PC4 SE.
120	Sound Off	Stops all sound in the corresponding channel.
121	RstCtls	Resets Controllers to defaults in the corresponding channel.
122	Local	Reserved for use by MIDI specification.
123	Notes Off	Sends Note Off Message to all playing notes in the corresponding channel.
124	Poly	Reserved for use by MIDI specification.
125	Omni	Reserved for use by MIDI specification.
126	Mono On	Reserved for use by MIDI specification.
127	Mono Off	Reserved for use by MIDI specification.
128	Pitch	Values above 64 and below 64 bend the pitch up and down, respectively.
129	PitchRev	Values above 64 and below 64 bend the pitch down and up, respectively
130	PitchUp	Values above 0 bend the pitch up
131	PitchDwn	Values above 0 bend the pitch down
132	Pressure	Default Destination for Pressure
133	Tempo	Tempo
134	KeyNum	Triggers playback of notes by Key Number—e.g., C4 is 60. Send a velocity first with Destination 135, KeyVel.
135	KeyVel	Key Velocity
136	ProgInc	Program Increment—increments current Program number.
137	ProgDec	Program Decrement—decrements current Program number.
138	ProgGoto	Go to Program—selects Program.
139	MultiInc	Multi Increment—increments current Multi number.
140	MultiDec	Multi Decrement—decrements current Multi number.
141	SetpGoto	Go to Multi—selects Multi.
145	TransUp	Transpose Up (ST)

Controller Number	Controller Destination	Description
146	TransDown	Transpose Down (ST)
147	Arp On/Off	Values 0-63 turn the Arpeggiator Off, Values 64-127 turn the Arpeggiator On
148	CC Seq On/Off	Values 0-63 turn the CC Sequencer Off, Values 64-127 turn the CC Sequencer On.
149	Mute Zone	Mute Zone – Values above 64 will mute the zone that sends values to this destination, values below or equal to 64 will unmute the zone.
150	ArpOrder	Arpeggiator PlayOrder, each range of values selects one of nine settings in order of the parameter list: 0-14, 15-28, 29-42, 43-56, 57-70,71-84, 85-98, 99-112, 113-127. (See Play Order on page 3-20)
151	ArpBeats	Values from 0-127 change the Arpeggiator Beats value (see Beats on page 3-17 for details).
152	ArpShift	The 88 Arpeggiator Shift steps are scaled over the 128 MIDI controller values, so that 0 = 0 steps and 127 = 88 steps. (See Shift Amount on page 3-18 for details).
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. (See Shift Limit on page 3-18)
154	ArpLmtOp	Arpeggiator Shift Limit Option, each range of values selects one of seven options in order of parameters list: 0-18, 19-36, 37-54, 55-72, 73-90, 91-108, 109-127. (See Limit Option on page 3-16)
155	ArpVel	Arpeggiator Velocity Mode, each range of values selects one of twenty-three options in order of parameters list: 0-5, 6-10, 11-15...101-105, 106-110, 111-127. (See Velocity on page 3-20).
156	Arp Dur	The Arpeggiator Duration % values are scaled over the 128 MIDI controller values, so that 0 = 1% and 127 = 100%. (See Duration on page 3-24)
157	Latch Sustain	To control the Arpeggiator Latch switch, 0-63 = off, 64-127 = on. (See Latch on page 3-14)
158	Latch2:Sost	To control the Arpeggiator Latch2 switch, 0-63 = off, 64-127 = on.
160	SusLatch	For Arpeggiator Latch Pedals mode, 0-63 = off, 64-127 = on.
161	Panic	Sends an “all notes off” message and an “reset all controllers” message on all 16 MIDI channels.
162	SoloZn	Solo Zone - Values above 64 will solo the zone that sends values to this destination, values below or equal to 64 will unsolo the zone. When soloing a Zone, all other Zones will become muted, and unmuting a muted Zone will make that Zone the soloed zone. If the currently soloed Zone has a controller assigned to Destination 149 (Mute Zone), solo mode can be canceled by sending a value to this destination.
163	Riff OnOff	If Riff is set to On on the Riff page, values 64-127 will trigger the riff, values 0-63 will release the riff.
165	Riff Duration	Controls the Riff Duration parameter. 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	Riff Velocity	Controls the Riff Velocity parameter. The Velocity value is calculated by multiplying the received controller value by 2. For Example, 25 = 50%, 50 = 100%, 100 = 200%, 127 = 254%.
167	Riff Delay	Controls the Riff Offset parameter. 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.
168	TapTempo	Assign this to a switch (set to Type: Toggled) to control the tap tempo function, then tap the switch in time to set the Multi tempo.
170	-ArpShift	Sets Arpeggiator values for Shift to negative. 0-63 = off, 64-127 = on. (See Shift Amount on page 3-18)
171	ShiftPatt	Selects one of the 128 patterns in the current Arpeggiator Shift Pattern Bank. (See Shift Pattern on page 3-18)
172	ShiftPBank	A controller value selects the corresponding Shift Pattern Bank for the Arpeggiator page of a controller’s zone. For example, controller value 2 selects Shift Pattern bank 2, controller value 7 selects Shift Pattern bank 7.

Controller Number	Controller Destination	Description
173	VelPatt	Selects one of the 128 patterns in the current Arpeggiator VelPatt Bank. (See Velocity Patt on page 3-22)
174	VelPBank	A controller value selects the corresponding Velocity Patt Bank for the Arpeggiator page of a controller's zone. For example, controller value 2 selects Velocity Patt bank 2, controller value 7 selects Velocity Patt bank 7.
175	VelFixed	Set's arpeggiator velocity when Arpeggiator Velocity Mode is set to Fixed. (See Velocity on page 3-20)
176	ShKeyNum	Shift Key Number (see below)
177	ShiftKey	Shift Key (see below)
178	ShKeyNuV	Same as 176 ShKeyNum, but the Shift Pattern's velocity will be modified by the current velocity pattern of the zone.
180	Chan Intonation	Selects the Intonation Map (IDs 0-127) in a MIDI channel in real time. On the Multi Edit Controls page, when setting a switch controller to this Destination the name of the selected Intonation Map will be displayed. For example: 18 (EastMed).
181	Chan Int Key	Selects the Intonation Key (C through B) in a MIDI channel in real time. On the Multi Edit Controls page, when setting a switch controller to this Destination the MIDI number and note name of the selected Intonation Key will be displayed. For example: 41 (D#).
182	Arp Step	Toggles a selected Arpeggiator pattern step on or off. Assign this destination to a Switch Controller with Type set to Momentary, On Value set to the desired step number, and Off Value set to None. The current Zone must have an Arpeggiator set to Classic Mode using a Shift Pattern, Velocity Pattern, or Duration Pattern, or must be set to Step Sequencer Mode.
183	CC Seq Step	Toggles a selected CC Sequencer pattern step on or off. Assign this destination to a Switch Controller with Type set to Momentary, On Value set to the desired step number, and Off Value set to None. The current Zone must have a CC Sequencer with at least one Sequence which has the Mode parameter set to User.

Shift Key Number, Shift Key (ShKeyNum, ShiftKey)

These controller destinations allow you to play musical scales and single note patterns on any programmable continuous controller in a Multi, without the need of playing the physical keys of the keyboard. These features are especially useful for playing fast arpeggiations. These destinations only work when combined with other destinations and features, so be sure to read this whole section to gain a complete understanding.

Shift Key Number (**ShKeyNum**, controller destination **176**) works in a similar way to Key Number (KeyNum, controller destination 134). Both controllers basically generate a monophonic stream of notes. The difference is that Key Number plays through all notes chromatically, while **Shift Key Number** only plays notes relative to a Shift Pattern.

For example, when controlling Shift Key Number from a slider, notes are triggered from a Shift Pattern in forwards order as you move the slider up, and backwards order as you move the Slider down. If a Zone contains the Shift Pattern 2: minor, the notes being played by the slider will be only the root, the minor third and fifth in the chosen key, triggering notes in any octave up and down the keyboard. (See Shift Key below for details on selecting the root note and octave.)

Selecting Notes

You must select a Shift Pattern for the desired zone in order for Shift Key Number to have an effect. To select a Shift Pattern for the current zone in a Multi, enter the Multi editor, go to the Arpeggiator page and set Arp Mode to Classic. Set Shift Mode to Patt and select a Shift Pattern from the Shift Pattern field. If using multiple zones, a different pattern can be selected for each.

The Shift Pattern field is usually used with the arpeggiator, but can also be used in combination with the controller destinations Shift Key Note, Shift Key, and Key Velocity. These destinations can use a zone's Shift Pattern whether the arpeggiator is on or off without conflict. For more information on Shift Patterns such as editing and saving, see Shift Pattern on page 3-18. (Note that the Shift Pattern Up or Down options, as well as any of the arpeggiator parameters other than Shift Pattern do not have an effect on Shift Key Number.) You can also set controllers to destination 171 (ShiftPatt) to select a pattern from the current bank of 128 shift patterns, and destination 172 (ShiftPBank) to select a bank from banks of 128 shift patterns each.

Selecting Velocity

In order to have a note sound when using Shift Key Number, you first need to send a Key Velocity message (**KeyVel**, controller destination **135**) with a non zero velocity. To do this, use the Multi Controls page to assign a controller to Destination 135. It's useful to assign a slider or other continuous controller in order to control velocity while playing. Make sure this assignment uses the same Zone as ShKeyNum.

Notes triggered by Shift Key Number will be played with the last received KeyVel velocity. One note triggered by these controllers sounds until another note is triggered or until a KeyVel message with velocity 0 is sent.

Selecting Key (Root Note)

Shift Key (**ShiftKey**, controller destination **177**) allows the user to select the key (root note) of the Shift Pattern triggered by Shift Key Number. A Shift Pattern is a relative pattern based on a root note. All notes triggered by a Shift Pattern are shifted from the root note by the value of each pattern step (in half-steps.)

Shift Key Settings	
Value	**Key (Root note)**
0-9	C
10-19	C#
20-29	D
30-39	D#
40-49	E
50-59	F
60-68	F#
69-78	G
79-88	G#
89-98	A
99-108	A#
109-118	B
119-127	Last Note Played

When using a Shift Pattern with Shift Key Number you can select the key with one or more controllers assigned to the Shift Key destination. (Make sure this assignment uses the same Zone as ShKeyNum.) You can use a continuous controller such as a slider to cycle through keys, or switches set to predetermined keys. For example, if you are playing a song that moves between 2 or 3 keys, a couple of switches could be programmed in order to send the appropriate Shift Key message for each key change. That way all the notes you are triggering with a Shift Key Number controller will be in the appropriate scale. You could also create a Multi for a song with multiple zones, each with its own pre-set key and appropriate shift pattern. That way, for each chord change you could move a different controller that would create the correct harmony.

Another way to choose a key is to set Shift Key to **Last Note Played** mode, in which the last note played in the zone will set the key. For example, you could set the zone being used for Shift Key Number to have a Key Range that covers only a few of the keyboard's lowest octaves. This would allow you to play root note bass lines that change the key that Shift Key Number plays in, leaving the upper octaves of the keyboard open for use by other zones.

A Note About Octave Range

When using Shift Key Number, shift patterns with more than 12 steps begin triggering notes in higher octaves. This is done because longer shift patterns use up more of a controller's range, and limit the number of octaves that a single controller can trigger. Since the lowest octave of a program is often too low to be musically useful, the PC4 SE will automatically start triggering notes from longer shift patterns in higher octaves. This saves room in the controller's range of values for triggering more useful octaves. See the table below for Shift Pattern step ranges and their corresponding starting octave.

If Shift Key is set to Last Note Played and no note is played, the default key is C. Each zone can have a different Shift Key, so you can have zones preprogrammed with the keys you want to use, or have them all in the same key, or just change the key in real time while you are playing.

Default Octave Shifting	
Total # of Shift Pattern Steps	Starting Octave
1-12	C0-C1
13-24	C1-C2
25-36	C2-C3
37-48	C3-C4

Selecting Octave Range

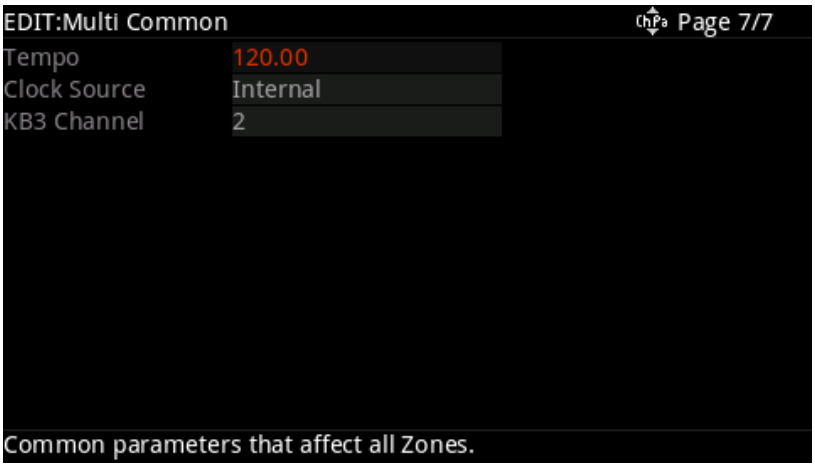
You can adjust the pattern's starting octave by using the **Add** parameter on the Multi Edit Controls page containing your ShKeyNum assignment. In the Add field, the addition or subtraction of the number of steps in your current shift pattern will raise or lower the starting octave in relationship to the default starting octave. For example, in a shift pattern with 3 steps, an Add value of 9 would cause a controller value of 0 to make Shift Key Number trigger notes in octave C3-C-4, 3 octaves above the default C0-C1. Add values that are not multiples of the number of current shift pattern steps will change which step the pattern begins on at controller value 0, thus offsetting the relationship between all of the controller's values and current shift pattern's steps. (See Add on page 5-28.)

Adjusting Controller Range

When using Shift Key Number, the number of steps in the Shift Pattern also affects the range of values that will cause a controller to trigger a shift pattern step, and in turn affect the useful range of the physical controller. With a shift pattern of 12 notes, the 128 different notes that the PC4 SE can trigger are evenly spaced over the range of the controller. Patterns with less than 12 steps will trigger notes in every octave over a shorter range of the controller. For example, in a shift pattern with 3 steps, by default the controller values 0 to 2 will trigger notes starting in the lowest possible octave, and controller values 27 to 30 will trigger notes in the highest possible full octave. Using a or this controller, only about 1/4th of the length of the slider would be triggering notes. This decreased useful range makes the controller harder to use accurately. To remedy this, you can adjust a controllers behavior by using the **Scale** parameter on the Multi Edit Controls page containing your ShKeyNum assignment. Adjust the Scale value to stretch the useful values of the controller across it's whole physical range. A scale value of less than 100% will be helpful for patterns with fewer than 12 steps.

Experiment by adjusting the scale value until the highest desired note is triggered at the top of the controller's physical range. See Scale on page 5-28 for more details on the Scale parameter. For shift patterns with more than 12 steps, you will run out of controller values before your shift pattern triggers in every octave. If you want to be able to access all of the available octaves, you can achieve this by setting multiple controllers to Shift Key Number. Next, use the Scale and Add parameters for each controller, adjusting each to trigger the desired range of octaves (see Add on page 5-28).

Common Page



Tempo

Use the Tempo parameter to set the rate of the Arpeggiator or tempo synced FX (such as Delay). You can set a value by using the ALPHA WHEEL, or by using the keypad function of the CATEGORY buttons to type a value followed by pressing the ENTER button.

The value of the Tempo parameter can also be set by tapping the TAP TEMPO button at the desired rate.

Clock Source

Use the Clock Source parameter to set whether the selected Multi will use its own tempo, or whether it will sync with the tempo from an external MIDI device.

Set the Clock Source parameter to Internal to use the tempo set by the Tempo parameter.

Set the Clock Source parameter to External to use the tempo from an external MIDI device. When the Clock Source parameter is set to External, an external MIDI device must be sending MIDI clock data to the USB or MIDI in port.

KB3 Channel

If KB3 Organ Programs are selected for more than one Zone, this parameter specifies which MIDI Channel has priority to load a KB3 Program. Only one KB3 Program can be loaded at a time. If you want a KB3 Program to play in a zone, set the KB3 channel to the channel of the Zone. If no KB3 programs are selected in the current Multi, the KB3 Channel will be set automatically when a KB3 program is selected for the first time. To view the MIDI Channel of each Zone, see Channel on page 5-8.

Save User Multis

For details on saving User Multis, see Save User Multis on page 4-11.

Chapter 6
Global Mode

Global Mode allows you to adjust performance settings which affect all Programs and Multis. Global Mode also allows you to Store, Load, and Delete Programs and Multis, or restore factory defaults by performing a Reset.

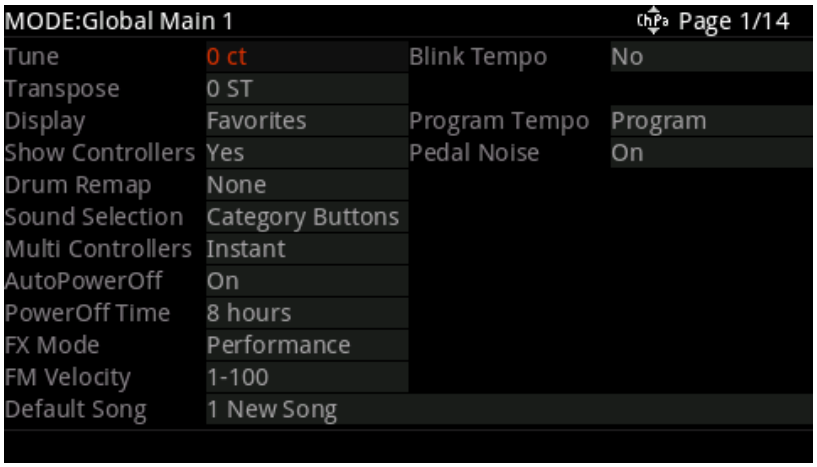
Navigate to each page by using the CHANNEL/PAGE buttons.

Navigate to each parameter on the current page by using the NAVIGATION buttons.

Change the value of the selected parameter by using the ALPHA WHEEL, or use the keypad function of the CATEGORY buttons to type a numeric value followed by pressing the ENTER button.

Main 1 Page

The Main 1 page allows you to adjust global tuning, FX settings, display and navigation settings, and other basic global parameters.



Tune

The Tune parameter allows you to fine-tune the unit in cents—one cent is one hundredth of a semitone (100 cents comprise a semitone). You can select any tuning from -100 cents to 100 cents. By default this parameter is set to 0.

Transpose

The Transpose parameter allows you to tune the pitch of the unit in semitones.

Display

The Display parameter allows you to change the way that Programs and Multis are displayed on the Program and Multi Mode main pages by selecting one of two different "views".

The default view is **Favorites**, which displays the Program or Multi name with large text, along with the category name and background image.

The names of 5 favorite Programs and/or Multis are also shown at the bottom of the display, which can be selected by pressing the corresponding Favorites buttons below the display. To access more than 5 Programs/Multis, use the BANK -/+ buttons to select a different Favorites Bank. The current Favorites Bank number and name is shown above the Favorite Program/Multi names.

Press and hold one of the Favorites buttons to store the currently selected Program or Multi to a spot in the current Favorites Bank.

Favorites view can also show controller assignments and values when a controller is moved (Knobs, Sliders, Switch buttons, Wheels, and Pedals). See "Show Controllers" below for details.

List view displays the current Program or Multi as a selected item in a list showing the next and previous Programs or Multis.

Show Controllers

When Favorites view is selected for the Display parameter (see above), the Program and Multi Mode main pages can briefly show controller assignments and values when a controller is moved. Set this parameter to **No** to hide controller assignments. Set it to **Yes** to briefly show controller assignments when a controller is moved (Knobs, Sliders, Switch buttons, and Wheels, but not Pedals). Set it to **Yes (Incl. pedals)** to show all controllers, including Pedals.

Sound Selection

The **Category Buttons** setting allows you to select Programs and Multis normally.

The **Enter Button** setting allows you to scroll through the Program or Multi list without immediately loading the selected Program or Multi. This allows you to find the next Program or Multi to load without interrupting the Program or Multi that is currently being played. When scrolling through the Program or Multi list, Programs and Multis will appear with

their names in parenthesis to indicate that they have not been loaded. Press the ENTER button to load the currently selected Program or Multi. When switching to Program or Multi mode, the current Program or Multi will be loaded automatically. When pressing a Favorites button, the assigned Program or Multi will be loaded automatically.

Multi Controllers

When a multi is selected, this parameter determines how the continuous controllers (knobs, sliders, wheels, CC pedal) respond to movement. When set to instant, moving a controller will result in the assigned parameter immediately jumping to the current controller value. With some parameters an abrupt change to the sound may be undesirable. In this case set this parameter to Pass Entry Value, the controller will only become active when it is moved past the controllers Entry value. This results in smooth changes to the sound.

Auto Power Off

The auto power off parameter turns the power saving feature on. When the Auto Power Off parameter is set to On, the PC4 SE will automatically power off after the Power Off Time has expired, from the last key press (physical or MIDI), button press, controller movement, or USB MIDI activity.

Power Off Time

If the Auto Power Off parameter is set to On, then the PC4 SE will power off after the time selected by the Power Off Time parameter has elapsed. The PC4 SE will display a warning before powering off. Press a key or move any PC4 SE control to dismiss the warning message. After dismissing this message, the PC4 SE will wait the selected amount of time before showing this warning again.

FX Mode

When using Program Mode to play a single Program, set FX Mode to Performance. The PC4 SE will minimize disruption of currently loaded Program effects when changing Programs, and entry values will not disrupt sustained notes when changing Programs in Program Mode.

When using Program Mode to play Programs on multiple MIDI Channels at one time from an external sequencer, setting FX Mode to Multitrack can help Program effects to remain loaded consistently on multiple Channels. For more details on multichannel FX in Program Mode, see “Multichannel FX” on page 2-15.

FM Velocity

The FM Velocity parameter determines how FM layers in Programs respond to note velocity.

When FM Velocity is set to 1-100, FM layers will respond to note velocities 1-127, but will sound as they did in classic FM synthesizers which only transmitted velocities 1-100. This is useful when playing FM layers loaded from classic FM synthesizer (.SYX) files.

When FM Velocity is set to 1-127, FM layers will respond to note velocities 1-127. This provides more velocity range than classic FM synthesizers; FM layers loaded from classic FM synthesizers may sound different (loaded FM layers will often sound brighter).

Default Song

The Default Song parameter determines which song will be used as a new song template when 0*New Song* is selected in Song mode. By selecting an edited user song, this allows you to set custom settings for the new song template (such as metronome Program and Count Off settings).

Blink Tempo

When the Blink Tempo parameter is set to No, the TAP TEMPO button does not blink. When the Blink Tempo parameter is set to Yes, the TAP TEMPO button will blink in sync with quarter notes of the system tempo.

Program Tempo

When this is set to Program, each program can be saved with a specific tempo, or be set to use the system tempo. Tempo is used for the Arpeggiator, CC Sequencer, and Tempo synced LFOs and effects. This is set on the Program Edit Arp page (see Arpeggiator Page on page 3-12). Per-program Tempos can also be overridden by selecting System for the Global tempo parameter.

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.

When the Drum Remap is set to **None**, no remapping takes place. When the Drum Remap is set to **GM**, the PC4 SE remaps Drum programs to the GM drum map.

Pedal Noise

Some piano Programs have a Pedal Noise feature programmed into the sound. This parameter allows you to turn the Pedal Noise off if you prefer not to use it. If it is on, it will only activate noise on those Programs that have been programmed to use it.

Main 2 Page

The Main 2 page in Global Mode allows you to adjust velocity and intonation settings, as well as other global controller settings.

Velocity Map

The Velocity Map parameter determines the way the PC4 SE generates MIDI velocity information. Different maps generate different MIDI velocity values for the same physical key strike velocity.

The default map (Linear) 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. You can select from any of the following settings:

Light3 **Light2** **Light1**	Makes it increasingly easier to produce high MIDI velocity values for the same key strike velocity (with Light3 being the easiest). These maps work best for those with a light touch.
Linear	The PC4 SE default map. Linear, allows MIDI velocities to pass unchanged. It follows a linear response.
Hard1 **Hard2** **Hard3**	Makes it increasingly harder to produce high MIDI velocity values for the same key strike velocity (with Hard3 being the hardest). These maps work best for those with a heavy touch.
PianoTouch	Simulates the general velocity response of an acoustic piano, and is best suited for playing acoustic piano programs.
Easy Touch	Similar to the Light1/Light2/Light3 settings. Makes higher velocities easier to play, but 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 response 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.

Intonation Map

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 PC4 SE supplies you with 18 different factory intonation maps which are useful for a range of different styles. 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.

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 PC4 SE's intonation maps are set to root note C by default. You can change the root key of the current intonation map by using the Intonation Key parameter (see the Intonation Key section below.)

0 None	No intonation map is used, intonation is equal.
1 Equal	No detuning of any intervals. The standard for modern western music.
2 Just	Tunings are defined based on the ratios of the frequencies between intervals. The original tuning of Classical European music.
3 Just/b7th	Similar to Just, but with the Dominant 7th flatted an additional 15 cents.
4 Harmonic	The perfect 4th, Tritone, and Dominant 7th are heavily flatted.
5 JustHarm	Approximation of a historical intonation.
6 Werkmeister	Named for its inventor, Andreas Werkmeister, it was developed to enable transposition with less dissonance than classic equal temperament.
7 1/5thComma	Approximation of a historical intonation based on the comma system.
8 1/4thComma	Approximation of a historical intonation based on the comma system.
9 IndianRaga	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 BaliJava1, slightly more subtle overall.
13 BaliJava3	A more extreme variation.
14 Tibetan	Based on the Chinese pentatonic scale.
15 Carlos A	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.
18 EastMed	Eastern Mediterranean. The Major 3rd and Major 7th are flat by 50 cents.

Intonation 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 Intonation Key to the key you're playing in.

If the Intonation parameter is set to Equal, changing Intonation Key has no effect.

Switch Pedal Overrides

The Switch Pedal Override parameters (SW1A-SW2B Override) allow the controller assignments for the Switch Pedals to be changed for all Programs and Multis. (KB3 organ programs have a separate override for the SW1A pedal, see the Rotary Override section below for details.) The alternative assignments available for the Switch Pedal Overrides include the standard pedal controls of Sustain, Sostenuto and Soft as well as Data Inc, Data Dec, Favorite Inc and Favorite Dec, which can be used to change Programs, Multis or Favorites spots by using a pedal.

Use the Data Inc and Data Dec assignments (data increment/decrement) to select the next or previous ID when you depress the pedal. If you are in Program mode, Data Inc and Data Dec will select the next or previous Program. If you are in Multi mode, Data Inc and Data Dec will select the next or previous Multi.

Use the Favorite Inc and Favorite Dec assignments (Favorites increment/decrement) to select the next or previous Favorites spot when you depress the pedal. If you do not have a Favorites spot selected, Favorite Inc and Favorite Dec will select the first Favorites spot, or the last spot that was selected since turning on the PC4 SE.

Use the Arp On/Off and Arp Latch assignments to easily control arpeggiator functions. The Arp On/Off assignment allows you to toggle the arpeggiator on and off by pressing a switch pedal. The Arp Latch assignment allows you to latch held notes to be played by the arpeggiator by holding down a switch pedal. When using the Arp Latch assignment, make sure the arpeggiator is turned on. Play the notes you wish to latch, press and hold the assigned pedal, then release the notes. The notes will continue to arpeggiate until the pedal is released. (The functionality may differ depending on the current arpeggiator Latch settings, see Latch on page 3-14 for details.)

In Multi Edit Mode, if a pedal is selected which has a pedal override enabled in Global mode, a message “Global Pedal Override is enabled” will display when that pedal is viewed to remind you that the Global mode pedal override settings are being used instead of the Multi mode pedal settings.

In Multi Edit Mode, setting a Pedal Mode to “Off” will disable the override for that Pedal in the selected Zone. It can be useful in Multi Mode to disable the Pedal Override for some Zones. For example, you may want to use a Pedal Override to control Sustain in all Zones of a Multi, but disable Sustain for one Zone.

When a Pedal Switch Override is used, the pedal will behave in Multi Mode as if the OnValue and OffValue are set to 127 and 0 respectively (this will not be shown in Multi Edit Mode). When a Pedal Switch Override is set to Sustain, Sostenuto or Soft, the pedal will behave in Multi Mode as if Pedal Type is set to Momentary (this will not be shown in Multi Edit Mode). When set to Data Inc, Data Dec, Favorite Inc or Favorite Dec the pedal will behave in Multi Mode as if Pedal Type is set to Toggle (this will not be shown in Multi Edit Mode).

CC Pedal Overrides

In a similar manner to Switch Pedal Overrides, the CC Override parameters allows the Continuous Control Pedal assignment to be changed for all Programs and Multis. The alternative assignments available for the CC Pedal Override include Mod Wheel (MIDI CC 1), Foot/Wah (MIDI CC 4), Volume (MIDI CC7), Expression (MIDI CC11) and Pressure.

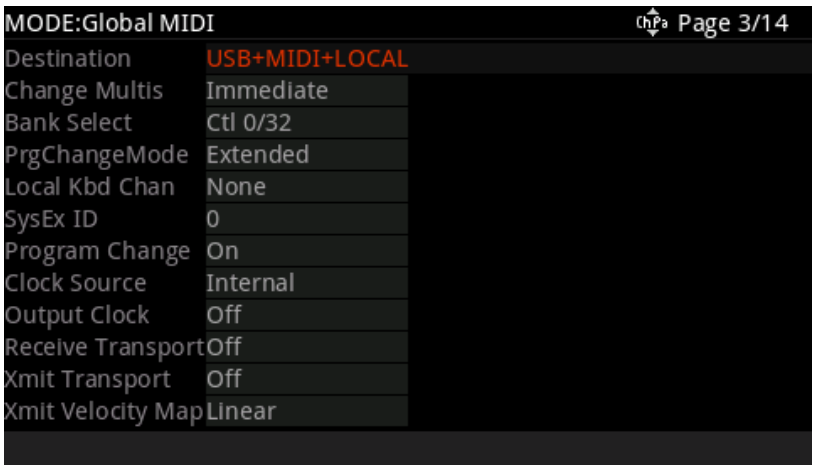
In Multi Edit Mode, if a pedal is selected which has a pedal override enabled in Global mode, a message "Global Pedal Override is enabled" will display when that pedal is viewed to remind you that the Global mode pedal override settings are being used instead of the Multi mode pedal settings.

Rotary Override

By default KB3 organ programs have the Slow/Fast speed control for the Rotary speaker effect assigned to the VARIATION button and the Sustain Pedal (SW1A). The Rotary Override parameter allows you set the sustain pedal to function as sustain for all KB3 Programs, instead of Rotary Slow/Fast. The VARIATION button will always control the Rotary speed, regardless of this parameter's setting.

MIDI Page

The PC4 SE can transmit and receive MIDI via its MIDI ports and USB. The MIDI page in Global Mode allows you to configure how this will be handled.



Destination

The Destination parameter determines the destination of MIDI data generated by striking keys or activating controllers. This data can be sent to the PC4 SE sound engine, through the MIDI out ports, or both. You can set this parameter to NONE, or any combination of the three available destinations.

Note that this parameter is always active and works in conjunction with the Multi Mode Destination parameter (see Destination on page 5-8). These parameters act like filters, so if the Multi Mode Destination parameter is set to USB+MIDI+LOCAL and the Global Mode parameter is set to LOCAL, the MIDI data will only be transmitted locally.

If you want to play the PC4 SE, but not send any MIDI information to other MIDI instruments, then select LOCAL.

If you want to use the PC4 SE strictly as a MIDI controller for the other modules in your MIDI chain using the MIDI port, then select MIDI.

If you want to make use of the PC4 SE's sounds as well as use it as a MIDI controller (MIDI port), then select MIDI+LOCAL.

If you want to use the PC4 SE strictly as a MIDI controller for the other modules in your MIDI chain using the USB (Computer) port, then select USB.

If you want to use the PC4 SE strictly as a MIDI controller for the other modules in your MIDI chain using the MIDI port and the USB (Computer) port, then select USB+MIDI.

If you want make use of the PC4 SE's sounds and use it as a MIDI controller for the other modules in your MIDI chain using the MIDI port and the USB (Computer) port, then select USB+MIDI+LOCAL.

Change Multis

The Change Multis parameter determines the exact timing of Multi changes when you select a different Multi, either by a normal data entry method or via MIDI program change commands.

Choose AllKeysUp to indicate that you want Multi changes to take place only when you've released all currently held notes.

Choose Immediate to indicate that you want such changes to happen immediately when you select the Multi.

Bank Select

The Bank Select parameter determines the controller number with which MIDI Bank change messages are received.

For MIDI Bank change messages, various manufacturers have chosen different MIDI controller numbers. Most have chosen Ctl 0, Ctl 32, or both. You can set this parameter to any of the following three settings:

Ctl 0	MIDI Bank change messages are received with controller number 0.
Ctl 32	MIDI Bank change messages are received with controller number 32.
Ctl 0 / 32	MIDI Bank change messages are received with controller numbers 0 and 32.

PrgChangeMode

The Program Change Mode (PrgChangeMode) parameter determines the format of program change messages received by the PC4 SE.

Program Change Type	For Use With
Extended	Bank changes and Program changes. A bank has 128 IDs. This is for controlling the PC4 SE from a generic MIDI device or software.
K2600	Bank changes and Program changes. A bank has 100 IDs. The PC4 SE will recognize 21 banks, from 0 to 20. This is for controlling the PC4 SE from a K2600. With MIDI out from a K2600 into the MIDI in of the PC4 SE, if you select a Program number in the K2600, the same Program number will be selected in the PC4 SE.
Favorites	For use with other PC4 SE's.

Local Kbd Chan (Local Keyboard Channel)

The Local Keyboard Channel enables an external MIDI keyboard to function as if it is the PC4 SE's keyboard and physical controllers. This allows all Channels/Zones of a Multi to be played simultaneously from an external MIDI keyboard transmitting on a single MIDI channel (or a single MIDI channel of a sequencer), with split and layered Zones laid out across the external MIDI keyboard. To do this, set Local Kbd Chan to the same MIDI channel that your external MIDI keyboard or sequencer is transmitting.

If you are not using an external MIDI device to play Multis, you can ignore this parameter and leave it set to None. When Local Keyboard Channel is set to None, an external MIDI device transmitting on one channel will only play one Channel/Zone of a Multi.

In Program Mode, an external MIDI keyboard or sequencer transmitting on the Local Kbd Chan will always play the Program on the currently selected Program Mode MIDI channel.

Sysex ID

The SysEx ID parameter determines the ID number for the unit if you are using more than one device with the same MIDI manufacturer ID number. You can set this parameter to any number from 0 to 127.

Unless you have multiple PC4 SE keyboards receiving Sysex messages from a single source, you will not need to change the Sysex ID from the default setting of 0.

If you do have multiple PC4 SEs receiving Sysex messages from a single source, make sure each PC4 SE has a different Sysex ID. This will allow you to direct Sysex messages to the appropriate PC4 SE by specifying which unit with the Sysex ID byte that's included with every Sysex message.

To have the unit respond to Sysex messages regardless of the Sysex ID, set Sysex ID to 127.

Program Change

Use the Program Change parameter to enable or disable sending program change messages to external MIDI devices when selecting Programs in Program Mode, Multi Edit Mode, or when selecting a Multi in Multi Mode.

Clock Source

With the Clock Source parameter set to Internal, PC4 SE plays using its own Tempo. If you wish to sync the PC4 SE to the tempo of an external device, use the External setting.

Output Clock

To send a MIDI clock pulse to the USB and MIDI Out ports, set this parameter to On. Otherwise, set it to Off.

Receive Transport

Use the Receive Transport parameter to enable or disable receiving of System Real-Time and MMC (MIDI Machine Control) Play and Stop transport messages sent to the PC4 SE's MIDI In or USB ports.

When Receive Transport is set to Off, the PC4 SE will ignore System Real-Time and MMC transport messages.

When Receive Transport is set to On, the PC4 SE's Song Mode will respond to System Real-Time and MMC transport messages for Song Play and Song Stop. This allows you to use an external sequencer sending System Real-Time or MMC messages to start or stop the currently selected song in PC4 SE's Song Mode.

Note: If you are triggering PC4 SE sounds from an external sequencer that sends these messages, either turn off outgoing System Real-Time and MMC messages on the external sequencer, or set the Receive Transport parameter to Off. If this is not done, you will simultaneously trigger the PC4 SE from the external sequencer and from the currently selected song in Song mode.

Xmit Transport

Use the Xmit Transport parameter to enable or disable transmitting of System Real-Time and MMC (MIDI Machine Control) Play and Stop transport messages from the PC4 SE's MIDI Out or USB ports.

When Xmit Transport is set to Off, the PC4 SE will not send System Real-Time and MMC transport messages.

When Xmit Transport is set to On, the PC4 SE's front panel Play and Stop buttons will send System Real-Time and MMC transport Play and Stop messages. This allows you to use the PC4 SE to start or stop an external sequencer (if it is able to receive these messages).

Xmit Velocity Map

The Xmit Velocity Map parameter allows you to select a velocity map for MIDI notes transmitted from the USB or MIDI Out ports. This is useful for adjusting the overall velocity sensitivity for MIDI notes sent to external MIDI instruments. Different maps generate different MIDI velocity values for the same physical key strike velocity. The default map (Linear) provides the widest range of velocity expression. The Light and Hard maps make it increasingly easier or harder to produce high MIDI velocity values for the same key strike velocity (with Light3 being the easiest, Hard3 being the hardest). These maps have the same properties as the local Velocity Maps, for a description of each see "Velocity Map" on page 6-6.

Master FX Page

The Master FX page contains master EQ and compressor settings. When the master EQ or compressor is enabled, all audio signals from the PC4 SE are processed by these effects.

When the EQ is set to On, use the EQ Low, Mid and Hi Gain parameters to boost or cut each frequency range. Use the Mid Freq parameter to set the center frequency of the Mid range.

When the Compressor is set to On, use the Comp Amount parameter to set the compression amount between 1 (least compressed) and 11 (most compressed).

EQ Button

When viewing the Global mode Master FX page, turn on the front panel EQ button to control the parameters with the CONTROL section knobs and buttons as described below.

Use the Switch 1 button to enable/disable the Master EQ, and use the first 4 Knobs in the CONTROL section to control the 4 on screen Master EQ parameters.

Use Knob 5 in the CONTROL section to control the Master Compressor. When the knob is all the way down, the compressor is disabled. Turn the knob up to enable the compressor and increase the compression amount.

In Program and Multi Mode, you can also turn on the EQ button to view and control the Master FX parameters with the CONTROL section knobs and buttons as described above.

Turn off the EQ button to return the CONTROL section knobs and buttons to their Program or Multi assignments.

Note: When you exit Global Mode, the current Master FX settings will be saved as default settings to be applied when the PC4 SE is powered on. To save Master FX settings set in Program or Multi Mode as default settings, you must enter and exit Global Mode.

Enter Storage Page

The Storage pages lets you use a USB device (such as a thumb drive) to store or load files. While using the Storage pages, the playing of notes is disabled.

To view the Storage pages, select the Enter Storage page, plug a USB storage device into the rear panel STORAGE port, then press the ENTER button to view the Storage Load page.

When viewing the Storage pages, press the CHANNEL / PAGE Up / Down buttons to navigate between the Storage Load page, Storage Store All page, and Storage Store Selected Objects page.

Storage Pages Common Features

The following features are used in the Storage pages when saving or loading files:

Directories

A directory lets you group files together, as you might separate documents using folders in a file cabinet. By default all storage devices have at least one “root” directory. To organize files in a USB device, you can create additional directories, as well as subdirectories within directories. (Directories/folders can be created on a computer.) Directories appear in the file list with the indicator <DIR> to the right of the directory name.

Path

The Path field shows the selected directory. By default the root (top-level) directory is selected for the Path field. The root directory is displayed as a backslash:

Path:\

When viewing a page that has the Path field, if there are any directories available in the root directory you can select one using the ALPHA WHEEL or NAVIGATION Up/Down buttons.

Press the FAVORITES 2 button to open the selected directory. The name of the directory will be displayed in the Path field. For example, if you have a directory called SOUNDS that is located in the current device's root directory, the Path field will appear as:

Path:\SOUNDS\

The backslash character is a directory separator, as in the following Path:

Path: \BACKUP\COVERBAND\SONGS\

This represents the directory SONGS, which is a subdirectory of the COVERBAND directory, which is a subdirectory of the BACKUP directory in the root directory.

Use the FAVORITES 2 button to navigate into directories and their subdirectories, away from the root directory. To navigate out of subdirectories back towards the root directory, use the FAVORITES 1 button to move one level back from the current directory.

Load Page

Select the Load page to load compatible files from a storage device.

Use the NAVIGATION Up/Down buttons or the ALPHA WHEEL to browse the files in the storage device.

Press the FAVORITES 2 button to open the selected directory.

Press the FAVORITES 1 button to move one level back from the current directory.

After selecting a file to load, press the ENTER button to continue, then use the CHANNEL/PAGE buttons to select the page for your desired loading method: Fill, Overwrite or Merge. See below for details on each loading method.

Load Fill Page

Select the Storage Load Fill page to load objects with the Fill method. The Fill method keeps existing User objects in the keyboard, and loads the User objects from the file into empty User ID locations in the keyboard.

On the Storage Load Fill page, choose the User ID number at which you would like to begin loading objects. This allows you to organize your user objects if desired by loading them to specific ID ranges. Your User objects may be loaded to higher IDs than selected, if IDs in the selected range are already used.

Load Overwrite Page

Select the Storage Load Overwrite page to load objects with the Overwrite method. The Overwrite method deletes existing User objects in the keyboard, then loads the User objects from the file using the ID numbers stored in the file. This is useful for loading a backup file of user objects, to restore the instrument to a previous state.

Load Merge Page

Select the Storage Load Merge page to load objects with the Overwrite method. The merge method loads the user objects from the file using the object ID numbers stored in the file, only deleting existing objects in the keyboard which use the same ID numbers. Existing user objects that use other IDs will not be deleted. This is useful for loading a backup file of user objects, to restore the instrument to a previous state while keeping some existing user objects.

Loading Method Example

The following example shows how each loading method affects how programs are loaded into the User bank when it already contains programs.

Example: Starting with the following objects already stored in the PC4 SE User bank:

Programs currently in PC4 SE	
Program ID	Program Name
4096	3rd World Order
4097	PC3 Strings
4100	JuPiTaR BazZ
4103	VA1 Lead

Suppose you were to load a .P4S file containing the following Programs:

File to be Loaded	
Program ID	Program Name
4097	Synth Horn
4098	NYJazzy
4099	Saxxy
4100	Stabbatha

The two tables below show the results if you use Fill from 4096 or Overwrite.

PC4 SE after using Fill	
Program ID	Program Name
4096	3rd World Order
4097	PC3 Strings
4098	Synth Horn
4099	NYJazzy
4100	JuPiTaR BazZ
4101	Saxxy
4102	Stabbatha
4103	VA1 Lead

PC4 SE after using Overwrite	
Program ID	Program Name
4096	
4097	Synth Horn
4098	NYJazzy
4099	Saxxy
4100	Stabbatha
4101	
4102	
4103	

Loading Individual Objects From a .P4S or Compatible File Type

Since a .P4S file can contain thousands of objects, it is often useful to load only some of the objects contained in a file. You can select individual objects or groups of objects (Programs, Multis, etc) for loading from within a single .P4S, .K27, .PC4, .SP6, .FSE, .FOR, .ASE, .ART, .P3A, .PC3, .P3K, .PLE, .SPX, K26, .K25, or .KRZ file.

To load individual objects, use the Load page to highlight a compatible file type, then press the FAVORITES 2 button to view a list of objects within the file. The objects in the list are grouped by type (Programs, Multis, etc.). Scroll through the list using the ALPHA WHEEL or NAVIGATION Up/Down buttons. Each line in the list represents one object, and displays the object's number in the list, as well as the object's type, original ID number, and name.

Press the FAVORITES 1 button to select or deselect the highlighted object for loading. Multiple objects can be selected. An asterisk (*) is placed to the left of selected objects.

Press the ENTER button to select a loading method and load the selected objects, or press the EXIT button to return to the file list dialog.

Loading Compatible Object File Types

Aside from loading objects from its own .P4S files, the PC4 SE can load sounds and objects from other instruments with the following file types: .K27, .PC4, .SP6, .FSE, .FOR, .ASE, .ART, .P3A, .PC3, .P3K, .PLE, .SPX, .K26, .K25, .KRZ, and .SYX.

In some cases object parameters may need to be edited by the user after loading. See each object file section below for details when loading file types other than .P4S.

Objects from most of the recent Kurzweil models should sound and function exactly the same as on the original instruments (except in cases where unavailable physical controllers change the sound or function). Objects from older legacy Kurzweil instruments can often sound and function very closely or exactly the same as on the original instruments.

Loading K2700 and Forte Object Files (.K27, .FOR)

When loading K2700 and Forte objects from .K27 and .FOR files, some Programs and Keymaps may not be compatible if they use user samples, or if they use factory samples that are not available on the PC4 SE.

Loading Legacy Program/Keymap/Sample Object Files

When loading objects from .P3A, .P3K, .PC3, .PLE, .SPX, .K26, .K25, or .KRZ files, some objects may not be compatible if they use user samples.

Loading Legacy K2 Series Object Files (K26, .K25, .KRZ)

When loading objects from K26, .K25, or .KRZ files, objects are converted to PC4 SE object types. Some object parameters cannot be converted, and some objects may not be compatible if they use user samples.

All K2 series Keymap objects can be loaded, some parameters will be converted to PC4 SE specific parameters.

Most K2 series Program objects can be loaded. FX cannot be converted and must be edited after loading.

A small number of DSP algorithms and functions (some filters, oscillators, etc.) cannot be loaded.

KB3 programs created with a K2500 or K2600 cannot be loaded, however the PC4 SE contains a variety of KB3 programs which can easily be modified and edited.

Triple Mode programs created with the K2600 cannot be loaded.

All K series Setup objects can be loaded and converted to Multis. FX cannot be converted and must be edited after loading.

Loading FM Preset Files (.SYX)

The PC4 SE can load .SYX files containing FM presets from classic 6 operator FM synthesizers. Loaded FM presets can be edited in Program Mode to adjust FX chain parameters and other program settings.

Loading MIDI Song Files (.MID)

MIDI song files (.MID) can be loaded, they appear as Songs in Song Mode. Songs that use the General MIDI sound set are not supported and must be edited after loading to select appropriate instrument programs for each track. For details on selecting programs for each track, see Program on page 7-6.

Store Pages

Store All Page

Select the Store All page to store all user objects into a single file, or press the EXIT button to return to the previous page. On the Store All page, you must select a directory and file name with the Select Directory dialogue, see below for details. The PC4 SE stores files using the file extension .P4S.

Store Selected Objects Page

Select the Store Selected Objects page to select one or multiple individual objects to store, instead of saving all user objects. The Store Selected Objects page shows a list of all user objects grouped by type. Use the ALPHA WHEEL or NAVIGATION Up/Down buttons to navigate through the list. The object that is currently highlighted can be selected or deselected for storing by pressing the FAVORITES 1 button. An asterisk (*) appears between the ID and object type of selected objects.

After selecting objects to store, press the ENTER button to store the selected objects, or press the EXIT button to return to the previous page. After pressing ENTER, you must select a directory and file name with the Select Directory dialogue, see below for details. The PC4 SE stores files using the file extension .P4S.

Select Directory Dialogue

When storing, you must select a directory in which to store.

Use the NAVIGATION Up/Down buttons or the ALPHA WHEEL to browse the directories in the storage device.

Press the FAVORITES 2 button to open the selected directory.

Press the FAVORITES 1 button to move one level back from the current directory.

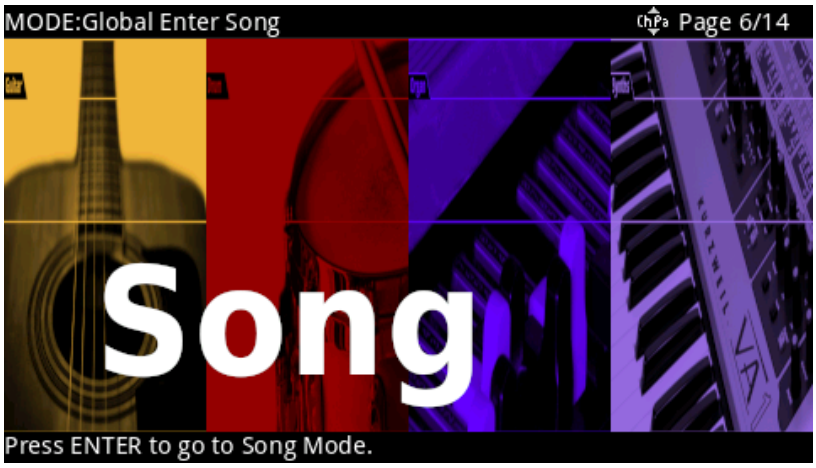
When you have chosen your directory, press the ENTER button to go to the File Name dialogue and complete the storing process (see below).

File Name Dialogue

When storing, you will be prompted to enter a name with the File Name dialogue. Edit the name using the keypad, ALPHA WHEEL, and NAVIGATION Left/Right buttons. Press the ENTER button to finish the operation.

Enter Song Page

On the Enter Song page, press the ENTER button to enter Song Mode. Song Mode allows you to record MIDI songs with up to 16 tracks. You can also jump directly to Song Mode from Program or Multi Mode by doing a double button press of the NAVIGATION Left/ Right buttons. For details see Ch. 6 Chapter 6.



Objects Utils Page

Use the Global Object Utils page to move or delete User objects.

Caution: Deleted User objects can not be restored. All User objects that you wish to save should be saved to an external USB device before deleting, see Store Pages on page 6-22 for details.

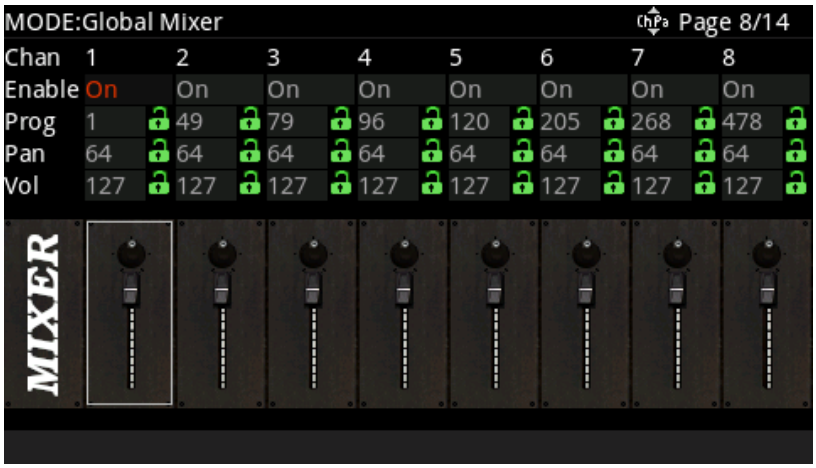
Use the ALPHA WHEEL or NAVIGATION Up/Down buttons to highlight the object that you wish to move or delete, then press the FAVORITES 1 button to select the object. Selected objects are marked with an asterisk, and multiple objects can be selected at the same time.

After selecting objects, press the ENTER button to continue, then use the ALPHA WHEEL to select one of the following actions from the Action field:

Select **Delete selected objects** to delete the selected objects. Press the ENTER button to continue, you will see a warning message. Press the ENTER button again to delete the objects.

Select **Move selected objects** to move the selected objects to a different ID. Press the ENTER button to view the Object Utils Move page. On the Object Utils Move page, choose the User ID number where you would like to move the objects. The selected objects will be moved into empty User ID locations starting at the selected ID number. Press the ENTER button to move the selected objects.

Mixer Pages



The Mixer pages allow you to view and control the current state of the PC4 SE's 16 MIDI channels.

Select Mixer page 1 or 2 to view channels 1-8 or 9-16.

Use the **Enable** parameter to enable or disable the Program on each MIDI channel.

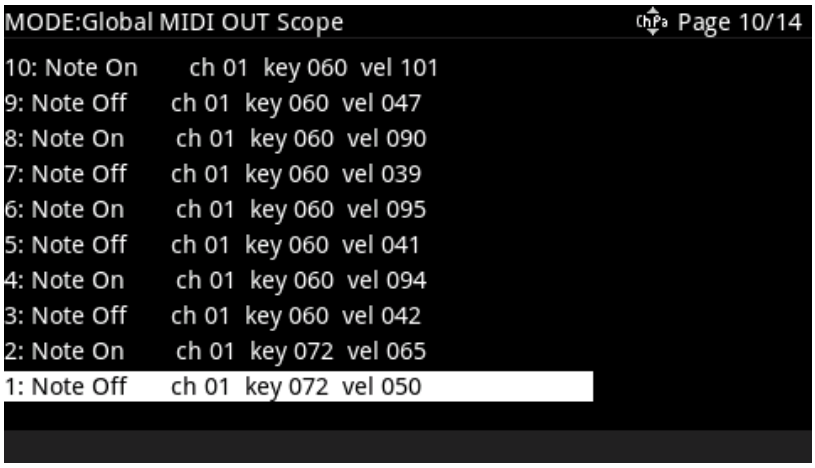
The **Prog** parameter allows you to view and change the Program number of each Channel.

The **Pan** and **Vol** parameters allow you to view and adjust the left right panning (MIDI CC 10) and channel volume (MIDI CC 7) of each Channel.

The **lock** symbol next to each Prog, Pan and Vol parameter allows you to lock the current Program, Pan and Volume setting for each channel so that it can not be accidentally changed by external MIDI messages sent to the PC4 SE when using external MIDI equipment. When the lock symbol is green, the value is unlocked and can be changed normally. When the lock symbol is red, the value is locked. Select the lock symbol and use the ALPHA WHEEL to unlock or lock each parameter.

MIDI Out and MIDI In Scope Pages

Select the MIDI Out or MIDI In Scope Pages to can monitor MIDI messages sent or received by the MIDI Out or In ports. The MIDI Out Scope page allows you to view MIDI messages sent from the PC4 SE, while the MIDI In Scope page allows you to view MIDI messages received by the PC4 SE. The MIDI Out Scope page is useful for making sure controls are assigned as you want them, checking note velocities, and checking controller values or other MIDI messages. The MIDI In Scope page is useful for checking MIDI messages sent to the PC4 SE from external MIDI devices. Each MIDI Scope page can store a history of 512 messages. Use the ALPHA WHEEL or NAVIGATION Up/Down buttons to scroll through the list of messages. The most recently sent or received message will be labeled number 1 at the bottom of the list.



MIDI State Page

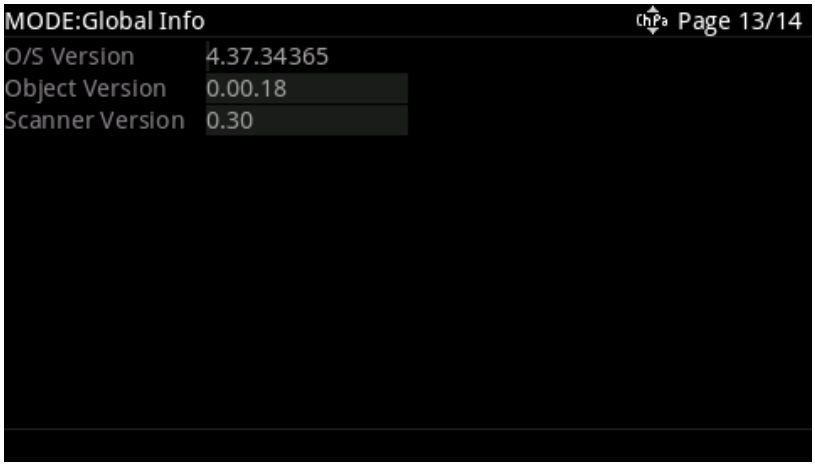
The MIDI State page shows the state of the MIDI CCs in each PC4 SE MIDI channel.

For example, if a channel is not making any sound, you can check the values for MIDI CC 7 (Volume) and MIDI CC 11 (Expression). Use the NAVIGATION Up/Down buttons to select the Channel or MIDI CC fields, then use the ALPHA WHEEL to select the desired Channel and MIDI CC to view.

Info Page

The Info page contains the system information indicating what version of operating system and objects is currently installed.

Go to the Kurzweil website at www.kurzweil.com and make sure that you have the latest operating system available.

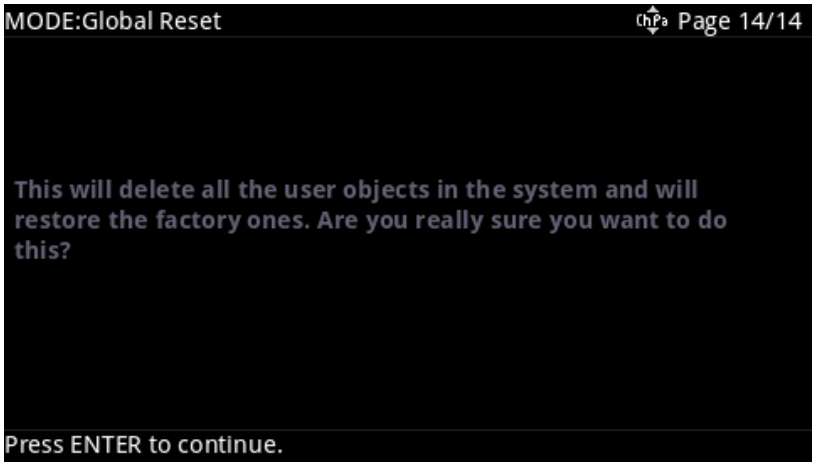


Reset Page

Use the Reset page to perform a Hard Reset. A Hard Reset restores all Global mode settings to their factory defaults, and deletes all User objects. Press the ENTER button to perform a hard reset.

When the hard reset is completed, the PC4 SE will enter System Mode. In System Mode, select RUN PC4 SE and press ENTER to return to Program Mode.

Caution: Hard Reset will delete all User objects. All User objects that you wish to save should be saved to an external USB device before doing a Hard Reset, see Store Pages on page 6-22 for details. Factory objects are not deleted.



Chapter 7
Song Mode

To access Song Mode, press the GLOBAL Mode button, then select the Song Enter page and press the ENTER button. You can also jump directly to Song Mode from Program or Multi Mode by doing a double button press of the NAVIGATION Left/Right buttons. Use Song Mode to record and play multi-track songs sequenced by MIDI.

A MIDI sequencer is similar in some ways to a multi-track audio recorder: you can record and play back all sorts of music and sounds, layer sounds on top of other sounds, and change or manipulate things that you've previously recorded. Unlike an audio recorder, however, you do not actually record sounds with a sequencer. Rather, you are recording MIDI commands that cause sounds to be played.

There are several advantages to recording a song by sequencing. For example, you can make changes to the timing and pitch of individual notes, as well as change the instrumentation of previously recorded sequences.

Note: Song Mode has no "undo" function. Before recording to a track or making any kind of edit to the current song, you should save the current version of your song if you have made unsaved changes that you wish to keep. After doing this, if you make changes that you wish to undo, you can select a different song, select No when asked to save the changes, then select your song again. This will allow you to return to a previously saved version of your song. Also, as you work on a song it can be helpful to save multiple versions of a song at different ID numbers (for example, save a backup version before performing a Track function or overdub). This allows you to have multiple back up versions of a song, which can be useful in case you accidentally save changes that you want to undo.

Note: See "Pan/Vol Initial Values" on page 7-18 and "Prog Initial Values" on page 7-19 for details on setting initial Program, Volume and Pan values for each track. Initial values are needed in order for songs to sound correct after being saved and recalled.

Transport Buttons

In Song Mode, the Favorite Buttons below the display can be used to control playback and recording.

PLAY/PAUSE Button

When the song status is Stopped, press the **PLAY/PAUSE** button to play the song from the bar and beat specified by the Locate parameter.

When the Song Status is Rec Ready, press the **PLAY/PAUSE** button to begin recording.

When the song is status is Playing, press **PLAY/PAUSE** to pause the playback. Press **PLAY/PAUSE** again to continue playing from the same location.

When the song is status is Recording, press **PLAY/PAUSE** to stop the recording, as if you had pressed the **STOP** button.

STOP Button

When the song is status is Playing or Recording, press the **STOP** button to stop playback or recording and reset the song's location to the bar and beat previously specified by the Locate parameter. If the location previously specified by the Locate is something other than Bar 1, Beat 1, press **STOP** twice to reset to **1:1**.

When the song is status is Recording, pressing the **STOP** button will display the "Save Changes" dialog (see below).

RECORD Button

RECORD: When the Song Status is Stopped, press the **RECORD** button to change the Song Status to Rec Ready. When the Song Status is Playing, press the **RECORD** button to change the Song Status to Recording.

LOCATE BACK Button

Press the **LOCATE BACK** button to subtract one Bar from the current value of the Locate parameter.

LOCATE FORWARD Button

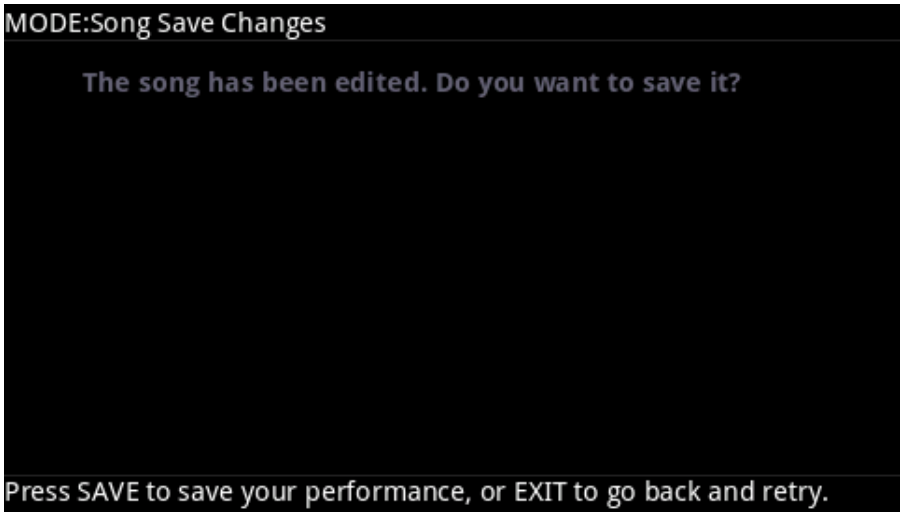
Press the **LOCATE FORWARD** button to add one Bar to the current value of the Locate parameter.

Controlling Song Mode with External Sequencers

You can control the PLAY/PAUSE, and STOP buttons from an external sequencer sending System Real-Time or MIDI Machine Control (MMC) messages. To receive these messages, go to the Global Mode MIDI page and set the Receive Transport parameter to the desired message type.

Save Changes Dialog

The following dialog appears after you have recorded a track and pressed **STOP**.



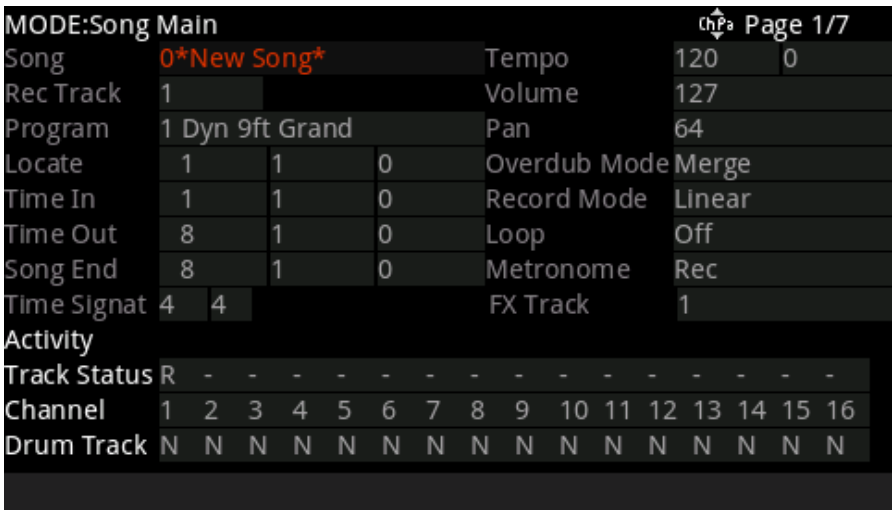
Press the **SAVE** button to save the song with the performance you just recorded. The Save Dialog will be displayed.

Use the Save Dialog to save the Song by selecting a User ID to save to, and renaming the Song if desired. Saving changes to a Song is very similar to saving a user program, see Save User Programs on page 2-13 for more details.

Press the **EXIT** button to return to Song Mode without saving your performance. Though your performance is not saved, Song Mode will remember changes to certain settings from the Song Main page. These settings are Tempo, Merge/Erase Mode, Locate, Track Status, Time In, Time Out, Song End, Loop, Punch, and Metronome. To permanently save these changes with the song, make sure to press the SAVE button before powering off or loading a new song. Alternatively, you will be prompted to save these changes upon loading a new song if the Main page settings were changed while recording or with recording armed.

Main Page

Use the Song mode Main page to select a Song, and view and edit the tracks' channel, program, volume and pan settings, and other parameters.



Song Status

The Song Status is shown on the top line of the display:

Stopped	The default status; also appears when you press the **STOP** or **PAUSE** button.
Playing	Appears when the **PLAY** button is pressed (if recording is not armed).
Rec Ready	Appears when the **RECORD** button is pressed while Song Status is Stopped. When Rec Ready is displayed, it indicates that Song mode is waiting to start recording.

Song

The Song parameter shows the ID and name of the song currently selected for recording, playback, or editing. When a song is selected, Program Change, Volume, and Pan information is sent to all MIDI channels assigned to tracks that have events on them, and the internal clock is set to match the setting of the Tempo parameter. When looking for a previously saved song, you can scroll through songs while the sequencer is playing to quickly hear the beginning of each.

Recording Track (Rec Track)

The Rec Track parameter determines which track is record enabled. You can select a single track, or set Rec Track to **Mult** to record more than one channel simultaneously. See the Track Status section below for details on arming multiple tracks.

The parameter(s) below Rec Track change according to the value of Rec Track. If Rec Track is set to a single track (**1–16**), Program is displayed and you can select the program to be assigned to that track. If you switch through the channels, the program also changes, showing the program currently assigned to that channel.

If you change Rec Track to **None** or **Mult**, the display changes to show Track. This field indicates which track is currently being triggered by the keyboard, and you can use this Track field to select a track.

Program

Use this field to select a program before initially recording each track of your song. A program selected on the current Rec Track becomes the track's initial program the first time that the track is recorded. An initial program is the program that will be used for a track when it is played from the start of bar 1 (or any other point if there are no program changes and Control Chase is turned on, see "Control Chase" on page 7-14). Programs selected in Program Mode are selected as the program on the current Rec Track when you enter Song mode.

Follow these steps to change the current Rec Track's initial program after recording has taken place on that track. While the song is stopped, press the **RECORD** button, select the program, press the **STOP** button, and save the song. (This preserves all changes you have made to any other track parameters: volume, pan, tempo, etc.) You can also change the initial program at the top of a track's event list (see "Event Page" on page 7-20).

Any MIDI program changes recorded on the current Rec Track cause the ID and name of the track's program to change during playback. Program changes can be written to the event list of the current Rec Track by changing the Program parameter while recording. If a program change takes place, the program will only return to the initial program if triggered by another program change, or if the song is stopped and restarted from the beginning. One exception to this is when using the Control Chase feature, you would only need to restart the song before the first program change in order to return to the initial program (see "Control Chase" on page 7-14).

The Program parameter changes to Track if Rec Track is set to None or Mult. This field indicates which track is currently being triggered by the keyboard, and you can use this Track field to select a track.

Track Number (Track)

This parameter is available only when Rec Track is set to **None** or **Mult** (replacing the Program parameter). It indicates which track is currently being triggered by the keyboard, and you can use this field to select a track.

Tempo

The Tempo parameter determines the initial tempo for the selected song. The song will always start playback at the initial tempo. Whatever the tempo is set to when you record your first track will be the song's initial tempo. During playback, the current tempo is shown in this field. During recording, changing the tempo value will record changes to the Tempo Track. The initial tempo and other tempo changes can also be edited in the event list for the Tempo Track. The Tempo track also allows you to program more precise fractional tempos with two decimal places.

To quickly change a song's initial tempo, make sure the song is stopped, press the **RECORD** button to change the Song Status Rec Ready, set the desired tempo, then press the **RECORD** button again to change the Song Status to **Stopped**. The initial tempo can also be changed at the top of the event list for the Tempo track on the Event page (see "Event Page" on page 7-20). Make sure to save the song after changing the initial tempo.

Note: You can also set the tempo using the TAP TEMPO button (located in the front panel ARPEGGIATOR section). To change the initial tempo, set the Song Status to Rec Ready, then press the TAP TEMPO button a few times at the desired rate.

You can also set the tempo to be controlled by an external sequencer. Use the keypad function of the CATEGORY buttons to enter "0" in the tempo field, and press enter. "EXT" will appear in the tempo field. Any MIDI Time Clock (MTC) signal received at the PC4 SE's USB or MIDI in port will now set the Song playback tempo.

Volume

You can set a volume level for each track as a value between **0** and **127**. If the channel of the Rec Track (or the control channel, if Rec Track is set to **Multi** or **None**) contains any recorded volume change (continuous controller 7), the change will be reflected as the Volume parameter's value in real time, as well as on the Mixer page. Also, changing the Volume value while recording will write volume automation (CC 7 messages) to the current Rec Track's event list.

Initial Volume Settings

Each song file does not automatically save your volume setting for each track. To make a song save your volume settings for each track, you must write an initial volume for each track. Initial volume is the volume setting that will be used when your song is played back from the start of bar 1. An initial volume setting is essentially a volume automation message that is written before the first tick of a track. Initial volume settings are not automatically written during recording because they make it harder to try out different volume settings for a track. For example, an initial volume will reset any volume adjustments that you make during playback each time the song is stopped and played from the start of bar 1, or if the song is stopped and played from any point if the Control Chase parameter set to On on the Song Misc page (see "Misc Page" on page 7-14). If you plan to try out different volume settings, it is easier if you write an initial volume after you have found the desired setting.

Setting Initial Volume Per Track

Follow these steps to change the current Rec Track's initial volume. While the song is stopped, press the RECORD button, change the value of Volume, press the STOP button, and save the song. Use the same method to quickly set initial program or pan settings. Initial program, volume, and pan can also be set at the top of each track's event list (see "Event Page" on page 7-20).

Setting Initial Values For All Tracks

An important last step before saving a finished song is to store initial values of Program, Volume and Pan for all tracks. This can be done at any time, but is best done as a last step if you plan to make a lot of adjustments to these settings. To write initial settings for all tracks, press the ENTER button on the Song Mixer page (see "Mixer Pages" on page 7-18). After pressing the ENTER button you must save your song to save these settings. Pressing the ENTER button stores the current value of each track's Program, Volume and Pan settings as initial settings. Be sure that these values on each track are set to the value that you wish to store, as the settings may have changed if you have written any automation.

Note: Don't use the ENTER button if you would like certain tracks to not be stored with initial values. In this case, only set initial values for each desired parameter as described above in "Setting Initial Volume Per Track".

Volume Sources When An Initial Volume Is Not Set

Volume settings are tied to MIDI channels, so the volume of each track will be dependent on which MIDI channel is assigned to each track in each song. If an initial volume is not stored with each track of a song, the each track will use the last volume setting set in each MIDI channel. For example, if you are in Song mode and have played a song, and then you load a song without initial volumes, the volume of each track of the newly loaded song will be set

by the MIDI channel volumes in the previously played song. If you are in Song mode and you load a song that does not have initial volumes without playing another song first, each MIDI channel will have the volume settings last used in Program mode (set by any MIDI volume messages (CC 7) received while in Program Mode).

Pan

You can set an initial pan position (the balance between the Left and Right audio channels) for the playback and recording of each track as a value between **0** and **127**. A value of **64** is center. If the channel of the Rec Track or the control channel contains any panning events (continuous controller 10), the change will be reflected as the Pan parameter's value in real time, as well as on the Mixer page. Also, changing the Pan value while recording will write Pan automation (CC 10 messages) to the current Rec Track's event list.

Initial Pan Settings

Each song file does not automatically save your Pan setting for each track. To make a song save your Pan settings for each track, you must write an initial Pan value for each track. Initial Pan is the Pan setting that will be used when your song is played back from the start of bar 1. An initial Pan setting is essentially a Pan automation message that is written before the first tick of a track. Initial Pan settings are not automatically written during recording because they make it harder to try out different Pan settings for a track. For example, an initial Pan setting will reset any Pan adjustments that you make during playback each time the song is stopped and played from the start of bar 1, or if the song is stopped and played from any point if the Control Chase parameter set to On on the Song Misc page (see "Misc Page" on page 7-14). If you plan to try out different pan positions, it is easier if you write an initial Pan after you have found the desired setting.

Setting Initial Pan Per Track

Follow these steps to change the current Rec Track's initial Pan. While the song is stopped, press the RECORD button, change the value of Pan, press the STOP button, and save the song. Use the same method to quickly set initial program or volume settings. Initial program, pan, and volume can also be set at the top of each track's event list (see "Event Page" on page 7-20).

Setting Initial Values For All Tracks

An important last step before saving a finished song is to store initial values of Program, Volume and Pan for all tracks. This can be done at any time, but is best done as a last step if you plan to make a lot of adjustments to these settings. To write initial settings for all tracks, press the ENTER button on the Song Mixer page (see "Mixer Pages" on page 7-18). After

pressing the ENTER button you must save your song to save these settings. Pressing the ENTER button stores the current value of each track's Program, Volume and Pan settings as initial settings. Be sure that these values on each track are set to the value that you wish to store, as the settings may have changed if you have written any automation.

Note: Don't use the ENTER button if you would like certain tracks to not be stored with initial values. In this case, only set initial values for each desired parameter as described above in "Setting Initial Pan Per Track".

Pan Sources When An Initial Pan Is Not Set

Pan settings are tied to MIDI channels, so the Pan of each track will be dependent on which MIDI channel is assigned to each track in each song. If an initial Pan setting is not stored with each track of a song, the each track will use the last Pan setting set in each MIDI channel. For example, if you are in Song mode and have played a song, and then you load a song without initial Pan settings, the volume of each track of the newly loaded song will be set by the MIDI channel Pan settings in the previously played song. If you are in Song mode and you load a song that does not have initial Pan settings without playing another song first, each MIDI channel will have the Pan settings last used in Program mode (set by any MIDI Pan messages (CC 10) received while in Program Mode).

Locate

The Bar and Beat displayed as the Locate value changes to show the current location of the song during playback and recording. You can set this to a negative Bar and Beat location to start playback a set length of time before the beginning of the song.

Whenever you set the Locate point and then press the PLAY button, that location will be used as the return point when the STOP button is pressed. Pressing the STOP button a second time will always reset the song to the start of the song (1 : 1).

Time In

The Time In parameter determines the start time for Loop or Punch In recording (more on this below).

Time Out

The Time Out parameter determines the stop time for Loop or Punch In recording.

Song End

The Song End parameter determines the end point for the song. Note that when Time Out and Song End are set to the same location, changes made to Song End are reflected in Time Out. When recording beyond your initially specified Song End point, you'll notice that the Song End location automatically moves and rounds to the next bar, so as to always be ahead of the Locate time. It is possible to move the Song End point to a location before other MIDI events (i.e., in the middle of the current song)—song mode will ignore (but not delete) events after this point.

Time Signat

Use this parameter to set the time signature of the current song.

Overdub Mode

Set Overdub Mode to **Merge** to record events on record armed tracks, without deleting previously recorded events.

Set Overdub Mode to **Erase** to record events on record enabled tracks, previously recorded events within the time you are recording will be erased.

Record Mode

With the Record Mode parameter set to **Linear**, Song mode will record normally, from where ever you start, to where ever you stop, or until the Song End point is reached.

With the Record Mode parameter set to **PunchIn**, Song mode will record events only between the points set for Time In and Time Out parameters.

With the Record Mode parameter set to **UnLoop**, you can record a linear track over a short looping section without first having to copy the section over and over again. 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. The End point of the Song is extended automatically when Stop is pressed. To use the UnLoop setting, a loop length must be set with the Time In and Time Out parameters. (Note that if the Loop parameter is set to On, it will automatically be set to Off when recording with Record Mode set to UnLoop.)

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 MIDI events are repeating in the loop, it will be recorded to the track. So now if you look at the drum track, you will see events in bars 5-8 (a duplicate of the events in bars 1-4).

Loop

With the Loop parameter set to On, the sequencer will loop the segment of the song between Time In and Time Out. Set Loop to Off for regular playback.

Metronome

The Metronome parameter determines the recording modes in which the metronome will play. With Metronome set to Off, the metronome doesn't play at all. With Metronome set to Rec, the metronome only plays while recording is in progress. 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 on the Metronome page is set to something other than Off.)

FX Track

The FX Track parameter determines which track's Program will provide the Aux FX Chains for the song (used by all MIDI channels). The program in the selected FX Track determines the Aux Chains of the current song (unless an override chain is selected). See "FX Page" on page 7-37 for details on Song Mode FX.

Activity

The Activity row shows the MIDI activity for each track. Track Activity Indicators appear above Track numbers for tracks that contain events and have a Track Status Indicator set to **Play** (P) or **Mute** (M). Track Activity Indicators are small squares with a colored circle in the middle. During playback and recording, the circle will flash when any MIDI events are executed.

When the Overdub Mode parameter is set to **Merge**, the circle in the square will turn red for any track that has the Track Status Indicator set to record (R) .

When the Overdub Mode parameter is set to **Erase**, the circle in the square will turn gray for any track that has the Track Status Indicator set to record (R) .

Track Status

The Track Status row can be used to view and set the track status for each of the 16 tracks. Tracks 1-16 are arranged in left to right order. Possible track status settings are: Empty (–), Record (R), Play (P), and Mute (M).

The Track Status row is most useful for muting previously recorded tracks, or arming multiple tracks when recording to more than one track at a time. When recording a single track, you may find it easier to use the Rec Track parameter to arm a single track at a time.

When an empty track (–) is selected, you can change the status to Record (R) by using the ALPHA WHEEL.

Once a track contains events, it will have (P) as a Track Status, and it will be played during playback. You now will be able to toggle between Play (P), Mute (M), and Record (R).

The track selected as the Rec Track will display an (R), designating it as the recording track. If the Rec Track is set to **Mult**, the status of all empty tracks will change to Record (R), and any track can be changed back to empty (–) , mute (M), or Play (P) if recording is not desired on some tracks.

Channel

Each track has a MIDI Channel that it uses to receive and transmit events. By default, tracks 1–16 of a new song are assigned to Channels 1–16 respectively, although a track can play or record on any channel and the same channel can be used for more than one track. Keep in mind, however, that only one program can be assigned to a channel at a time, so if you have more than one track assigned to the same channel, they'll play the same program—the one on the higher-numbered track, since that's the most recent Program Change command received on that channel.

Drum Track

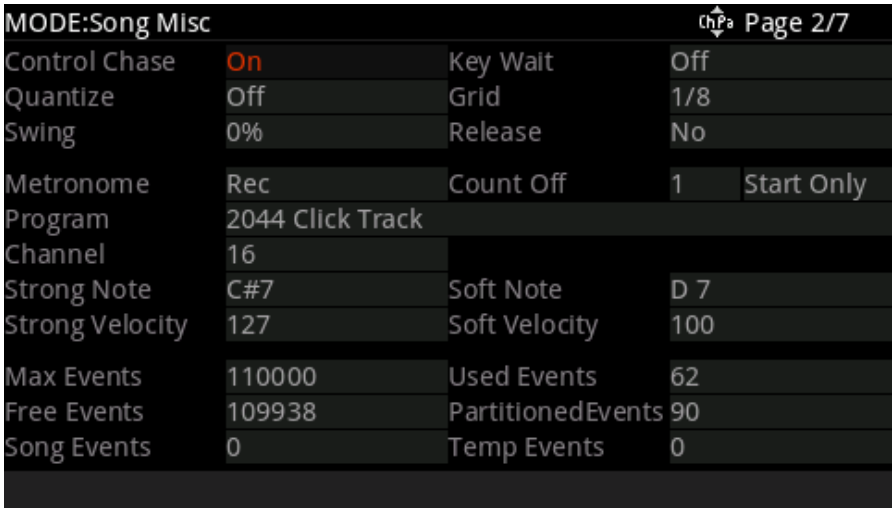
Any of the song's tracks can be defined as a Drum Track so that their Note events do not get transposed if transposition is applied when using the track as a riff in a Multi (see "Arpeggiator, CC Seq and Riff Page" on page 5-13 and "Transpose, Root Note" on page 5-17). With tracks designated as drum tracks, you can transpose a whole song that is being used as a Riff, but the drum tracks will continue to play the correct sounds that they played in the original key. Otherwise, the drum sounds would change with each transposition.

With the desired track number selected in the Drum Track field, use the ALPHA WHEEL to toggle between "Y", to designate the track as a drum track, or "N" to designate the track as a non-drum track.

The Drum Track settings do not have any effect on edits made in Song Mode. Any tracks defined as Drum Tracks are still transposed when a transposition is applied to these tracks from the Track Functions page.

Misc Page

The Misc page contains miscellaneous sequencer parameters. The Misc page appears below:



Quantize and Miscellaneous Parameters

Control Chase

A common shortcoming of many sequencers is that when you start a sequence at some point in the middle of sequence, the controllers remain at their current levels until the sequencer comes across a controller event. Control Chase remedies this (generally) undesired behavior.

When Control Chase is On, all non-note MIDI events from the beginning of the song up to the current time are computed, and the most recent non-note MIDI event is sent out before starting playback. This ensures that the volume, panning, program changes, and other controllers for the song are correct, regardless of where you start the song. With Control Chase set to Off, the sequencer behaves as previously described.

Key Wait

With Key Wait set to on, a key strike will trigger playback of a sequence (if the PLAY/PAUSE button has been pressed), or trigger recording of a sequence (if the RECORD button is armed.)

Quantize

The Quantize parameter determines the amount of real-time quantization (if any) applied to the sequence during recording. The percentage specified for this parameter is the amount of quantization the sequencer applies to the grid (see below) for each Note event recorded.

Note that using real-time quantization has the same effect as recording normally, and then using the Quantize Track Editing operation.

Grid

The grid parameter determines the resolution of quantization and the position of the grid points.

Swing

The Swing parameter determines the amount (in units of percent) of "swing" applied during quantization.

Release

The Release parameter determines whether or not note-off events are quantized.

Metronome Parameters

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).

Count Off

This parameter determines the number of measures the PC4 SE will count off before recording. With Start Only selected, the PC4 SE will only count off at the beginning of a sequence. With Always selected, the PC4 SE will count off from any point in a sequence.

Program

This parameter determines the program with which the metronome is played.

Channel

This parameter determines the MIDI channel to which the metronome program and events are sent.

Strong Note

This parameter determines the MIDI number of the note played by the metronome for the first beat of each measure.

Strong Velocity

This parameter determines the velocity of the note played by the metronome for the first beat of each measure.

Soft Note

This parameter determines the MIDI number of the note played by the metronome for all beats other than the first beat of each measure.

Soft Velocity

This parameter determines the velocity of the note played by the metronome for all beats other than the first beat of each measure.

Event Statistics

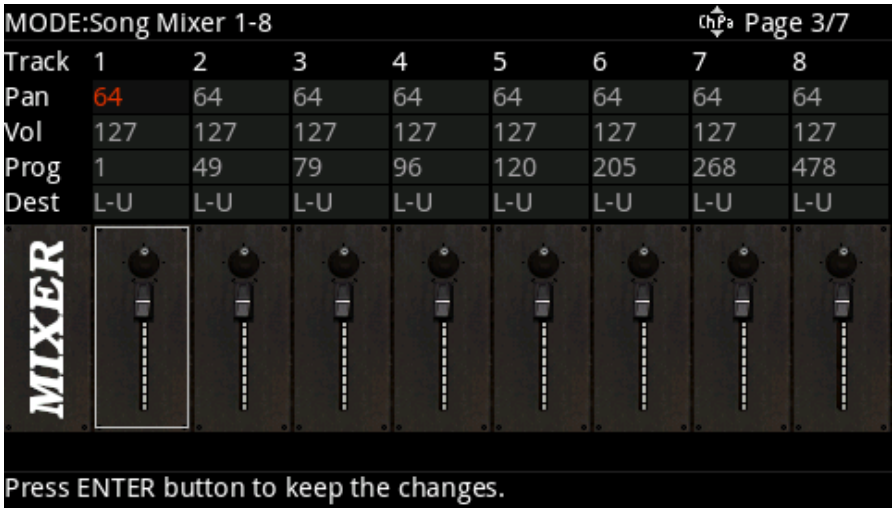
An Event is a note, CC message, or other MIDI message that can be recorded into the tracks of a PC4 SE song. Each song in the PC4 SE can use up to 50,000 Events. Some of these Events may also be used by other functions such as Riffs. 50,000 Events is more than enough for most songs, and most users will never run out of events. In the rare case that you run out of events in the current song, the Event Statistics can be used to determine which functions are using Events.

When calculating Event Statistics, a pair of note-on and note-off events are considered a single event. All other events are stored as single events on the PC4 SE. The Event Statistics fields are:

- **Max Events:** The maximum number of notes/events in memory.
- **Free Events:** The number of notes/events that are free.
- **Song Events:** The total number of events (including notes) in the current song.
- **Used Events:** The total number of notes/events being used.
- **Partitioned Events:** The number of partitioned events, which are events for which space in memory is allocated.
- **Temp Events:** The total number of events in the temp buffer (the temp buffer is used when grabbing events from a different song).

Mixer Pages

The Mixer pages show the current settings for the Program number, panning, volume, and MIDI destination of each track. Select Mixer page 1 or 2 to view Tracks 1-8 or 9-16.



Pan, Vol, Prog

Use the Pan, Vol, and Prog parameters to view or change the Panning (left/right stereo placement), Volume, or Program of each track. Pan values range from 0 (left), 64 (center), to 127 (right). Volume values range from 0-127.

Pan/Vol Initial Values

Initial values are used to recall each track's settings whenever a song is loaded. Initial values for each track can be seen at the top of the Event page (see "Event Page" on page 7-20).

When recording to an unused track, the track's Pan and Vol parameters will have an initial value of "none". An initial value of "none" allows you to try different Pan and Volume settings for the track, without having the track return to specific initial values.

Once you have decided on the Pan and Volume settings for the track, you should apply these settings as initial values so that they will be recalled the next time the song is loaded. To set initial values, make sure the song is stopped, press the RECORD button to change the song status to Rec Ready, select the desired initial values again (even if they are already selected), then press the RECORD button again to change the song status to Stopped. Make sure to save these initial values by saving the song before exiting song mode or selecting another song.

Once you have set initial values, if you change the values of Pan or Vol while the song is playing (but not recording), they will return to the initial values if the song is paused/stopped and played again. This allows you try out different settings without losing your initial values.

Prog Initial Values

When recording to an unused track, the track's currently selected Prog setting is written into the header of the track as the initial Program. The initial Program is used to recall each track's Program whenever a song is loaded. The initial Program for each track can be seen at the top of the Event page (see "Event Page" on page 7-20).

If you change the value of Prog while the song is playing (but not recording), it will return to the initial Program if the song is paused/stopped and played again. This allows you try out different Programs without losing your initial Program setting.

To change the initial Program after you have recorded to a track, make sure the song is stopped, press the RECORD button to change the song status to Rec Ready, select a different Program, then press the RECORD button again to change the song status to Stopped. Make sure to save the initial Program setting by saving the song before exiting song mode or selecting another song.

Pan, Vol, and Prog Automation

Pan, Vol, and Prog settings can be automated to change automatically while a song is playing. You can simply change these values in real-time while a track is recording, or use the Event page to insert and edit Pan (CTRL 10), Volume (CTRL 7), and Program Change (PCHG) messages (see "Event Page" on page 7-20).

Dest

The destination of each track can be set with the Dest parameter. You can choose between combinations of the four possible destinations:

L = Local. The track's MIDI events will be transmitted locally only, to the PC4 SE's internal sound generator. None of the track's MIDI events will be sent to the USB or MIDI Out port.

M = MIDI. The track's MIDI events will be transmitted only to the MIDI Out.

U = USB MIDI. The track's MIDI events will be transmitted only to the USB port.

—— = None.

Keeping the Mixer Settings

Press the ENTER button to view the Keep dialog, which allows you to capture the current values for each track's program, panning, and volume as the initial values. After using the Keep dialog, remember to save the song if you want these changes to be permanent.

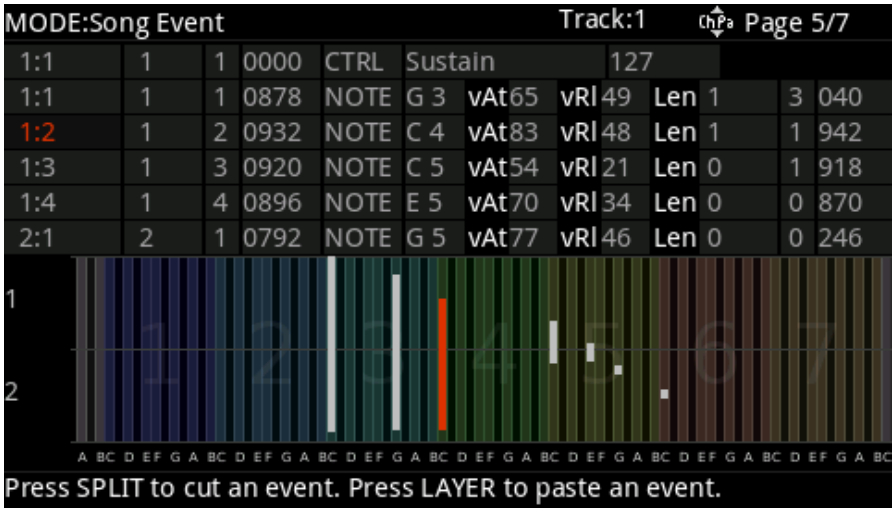
If you don't use the Keep dialog, tracks will not have initial program, panning, and volume values unless they are manually set for each track. See the Vol, Pan, Prog section above for details on manually setting initial values for each track.

Note: Don't use the ENTER button if you would like certain tracks to not be stored with initial values. In this case, only set initial values for each desired parameter as described in "Setting Initial Volume Per Track".

Event Page

The Event page allows you to view and modify any MIDI event on each track. Every type of recorded MIDI event is visible from this page. You can also access the tempo track.

The top line of the page displays the current song location, and the currently selected track and corresponding channel. Use the BANK -/+ buttons to select a track. Each track displays its initial program, volume, and pan at the top of its event list.



To scroll through the events, make sure the location (Bar and Beat, in the left column) is highlighted. Use the ALPHA WHEEL or NAVIGATION Up/Down buttons to move through the list. As you scroll through the events, each event is executed by the sequencer. In the case of Note events, you will hear the note played, although the duration will be short. If you have scrolled through a Sustain (CTRL 64) message with a value of 127 then you will hear the note sustain as if the sustain pedal was depressed. The note will continue to sustain until you scroll through a Sustain message with a value of 0.

You can also jump directly to a specific bar and beat by typing the bar number and beat number, then pressing the ENTER button. Keep in mind if you have controller or program events previous to the point that you jump to, those events may not have been executed and you may hear unexpected results. For example, if you have program changes at bar 1 and bar 8, and you jump from bar 1 to bar 9, any notes you scroll through will be played with the program change from bar 1.

The bottom half of the page displays notes from the current track, graphically represented as squares spread out over 7 octaves of a keyboard. The currently selected note in the list will be shown as a red square.

Initial Program, Volume, Pan

At the top of the event list for each track, you can view and change the initial program, volume and pan settings for the current track. Initial values are needed in order for songs to sound correct after being saved and recalled. If you do not want initial values, Program can be set to 0 None, Volume and Pan can be set to NONE by using the ALPHA WHEEL to scroll below 0.

Location

The first column represents the Bar and Beat Locations of the different events in a song. Scroll through the events on the selected track(s) with the ALPHA WHEEL, or type a specific Bar and Beat with the keypad function of the CATEGORY buttons to jump to events occurring on that Beat. A quick way to jump to the End point in a track is to type 9999 and then press the ENTER button.

Bar, Beat, and Tick

Bar, Beat, and Tick are editable parameters for each event. They determine when an event happens relative to the other events within the song. Tick can be set from 0 to 959. See Beat Subdivisions in Ticks on page 7-23 for a list of beat subdivisions in ticks.

Event Type and Value

The Event Type and Value region displays the MIDI event type (and related information) at each Event-list location in the song. Different event types display different kinds of information, and have different editable values.

The event type is the left-most field. You can highlight this field and change the event type. MIDI note events are denoted by a "NOTE" followed by the note name. To change the note, highlight the note name, then use the ALPHA WHEEL or type a note number (0-127) and press the ENTER button. You can also hold the ENTER button and play the desired note on the keyboard.

This table lists the available event types and value ranges:

Event Type	Values	
Program Change (PCHG)	0 to 127	
Pitch Bend (BEND)	-8192 to 8191	
Mono Pressure (MPRS)	0 to 127	
Poly Pressure (PPRS)	0 to 127	C -1 to G 9
MIDI Note Events (NOTE)	Note events have four editable values: Note Name/Number, Attack Velocity (indicated by a "vAt"), Release Velocity (indicated by a "vRl"), and Note Length (Len).	
	Note Name/Number	C -1 to G 9
	Attack Velocity (vAt)	0 to 127
	Release Velocity (vRl)	0 to 127
	Note Length (Len)	Bar : Beats : Ticks
MIDI Controller Events (CTRL)	Controller events have two editable values: Controller Type and Controller Value. Defined controllers are referred to by their names.	
	Controller Type	Control Source List (0 to 127)
	Controller Value	0 to 127
Tempo Change (TEMPO)	20.00 BPM to 400.00 BPM	

Editing Functions on the Event Page

CUT: Press the SPLIT button to cut an event. This removes the currently selected event from the Event list. Cut events can be pasted into a new location.

PASTE: Press the LAYER button to paste an event. This inserts the most recent cut event into the Event list at the currently selected Bar : Beat : Tick location. The pasted event will share the same location with the event that already existed at that location in the Event list, but it will appear before the pre-existing event.

Tempo Track

To access the tempo track, use the BANK -/+ buttons to navigate to track 1, then press the BANK - button. The tempo track functions the same as the other tracks, except the only event type available is tempo change.

Beat Subdivisions in Ticks

In song mode, each quarter note is divided into 960 ticks (0-959), which allows for unquantized performances to keep their original nuanced timings. If you wish to find specific quantized beat divisions in ticks, use the table below:

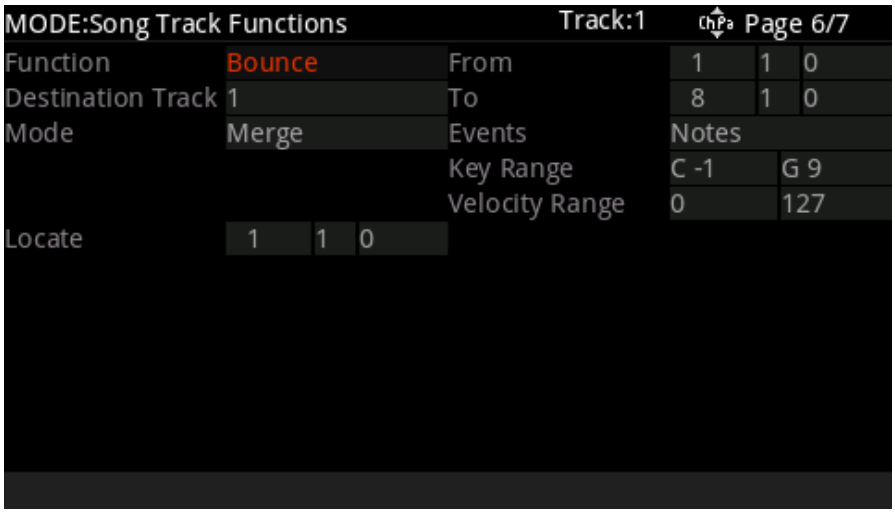
Beat Subdivision		Tick Value
Quarter note	1st	0
8th note	1st	0
	2nd	480
8th note triplet	1st	0
	2nd	320
	3rd	640
16th note	1st	0
	2nd	240
	3rd	480
	4th	720
16th note quintuplet	1st	0
	2nd	192
	3rd	384
	4th	576
	5th	768
16th note triplet (sextuplets)	1st	0
	2nd	160
	3rd	320
	4th	480
	5th	640
	6th	800

Track Functions Page

Use the Track Functions page to perform track-based edit functions such as Erase, Copy, Bounce, Insert, Delete, Quantize, Shift, Transpose, Grab, Change, and Remap.

For each function, there is a set of parameters to control how the function operates, and on what region of the selected track(s). The top right corner of the page displays the selected track or tracks. Use the BANK -/+ buttons to select the desired Track(s).

Below is an example of the Track page for the Bounce function.



Use the parameters on the right side of the page to select the range of time and the type of events that you wish to edit. Different event parameters may be available for each function. For example, Quantize and Transpose apply only to notes, while Remap applies only to Controllers.

The Locate parameter is always positioned on the bottom left of the page.

Note: Before using any of the track functions, it is a good idea to save your song if you have previously made any unsaved changes that you would like to keep. After applying a track function, there is no way to undo the changes, but if you have a previously saved version of the song, you can revert to the previously saved version by selecting another song, pressing the EXIT button when asked to save changes, then selecting the desired song again.

Once you've chosen a function and set the parameters to your liking, press the **ENTER** button. This executes the editing function. You can then play the song to hear the results of your edit. If you don't like your edit, select another song and press the **EXIT** button when you are asked if you want to save (you will lose any other unsaved changes that you have made). If you do like the changes you have made, press the **SAVE** button and save the song.

Common Parameters for Track Functions

Locate

This parameter is available for every function on the Track page. It appears at the lower left hand corner of the page.

The Locate bar, beat, and tick will change in real time during playback and recording to reflect the song's current position. It can be set to any bar, beat, and tick. Playback begins at this position, and Stop resets the song to this position.

From and To

From and To are available in most Track edit functions to define a range of time on the selected track(s). The From value defines the first bar, beat, and tick in a range of time selected for editing. The To value defines the final bar, beat, and tick in a range of time selected for editing.

Events

Use the Events parameter to select the type of MIDI event to edit. Available Event types are: All, Notes, Velocity, Controllers, MonoPress, PitchBend, ProgChange, PolyPress. Some event types are available only for certain Functions.

When Events is set to All, all MIDI events on the track(s) you are editing that occur in the region of time between the From and To settings will be affected by the edit function.

When Events is set to Notes, note number and velocity ranges can be set for Note events. (Some Functions may not provide velocity range parameters).

When Events is set to Velocity, the velocity range can be set for Note events.

When Events is set to Controllers, the Controller and Value Range can be set for Controller events.

Key Range

The left and right Key Range fields respectively determine the lowest and highest notes in a range of notes that will be affected by the selected Track Function.

Velocity Range

The left and right Velocity Range fields respectively determine the lowest and highest velocities in a range of velocities that will be affected by the selected Track Function.

Controller

The Controller parameter selects the Controller (or All Controllers) to be affected.

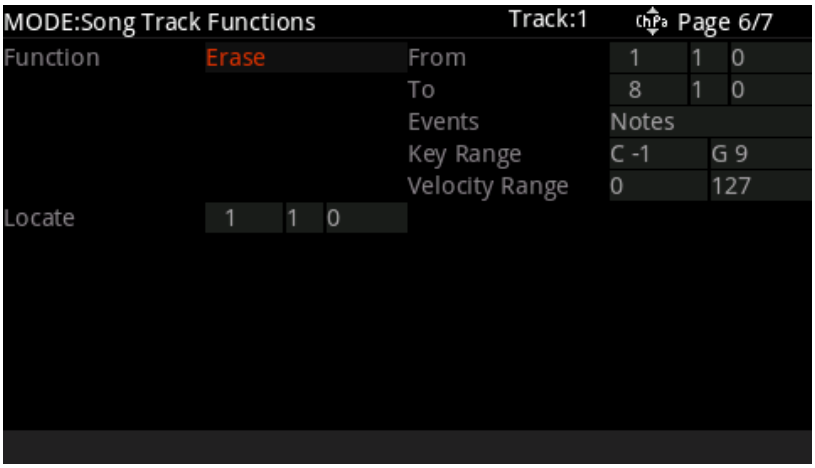
Value Range

The left and right Value Range fields respectively determine the lowest and highest values in a range of MIDI Continuous Controller (CC) values that will be affected by the selected Track Function.

Track Functions

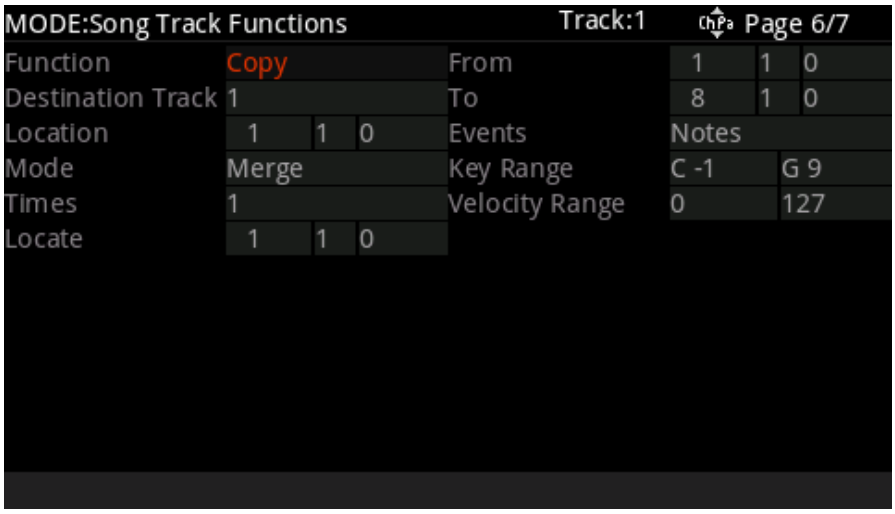
Erase

This function erases specified events from a region of time, but it doesn't delete the region of time. The result is like erasing a section of recording tape. If you want to completely remove a segment and shorten the length of the track, you can do it with the Delete function.



Copy

Use the Copy function to duplicate the selected events from the current track and place them in the same track or on another track, either merging with or overwriting existing events.



If you do not want to copy all of the MIDI events in the defined range of time on the current track, use the Events parameter to select a specific MIDI event type you would like to copy.

Destination Track: 1 to 16 / All

Select a destination track for the copied events with the **Destination Track** parameter. Copied events will be placed in the destination track(s) at any Bar and Beat you specify.

If the currently selected track is All tracks then the destination track will be All tracks as well.

Location: Bars : Beats : Ticks

Use the Location parameter to specify a bar, beat, and tick location in the destination track where the copied events will be placed. If the length of the copied region extends from the Location point beyond the song's existing End point, a new End point is defined.

Mode: Merge/Erase/Slide

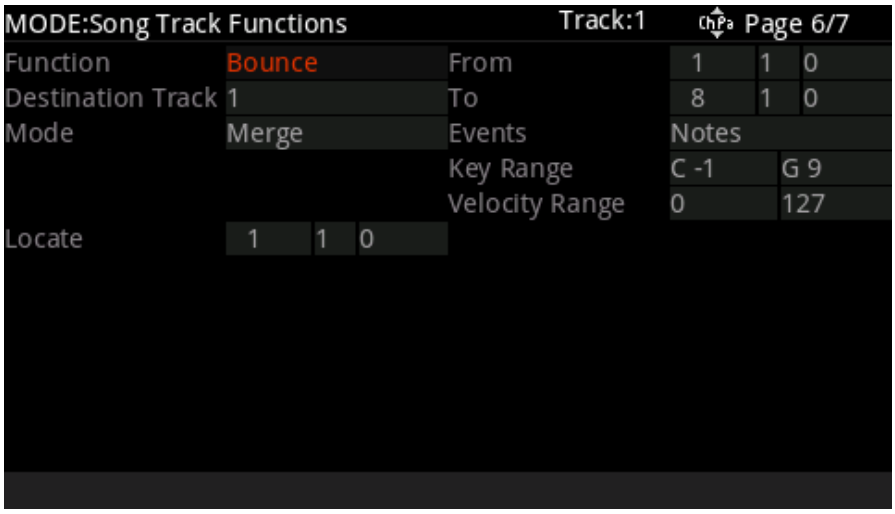
The Mode setting determines whether the copied events merge with, or erase existing events on the destination track from the location point to the end of the copied region. With Mode set to Slide, the sequencer creates space for the new events, and slides the existing events to uniformly later times in the song.

Times: 1 to 127

The value selected for the Times parameter determines how many copies of the selected region are placed, one after another, in the destination track.

Bounce

Use the Bounce function to move the selected events from the current track to another track, either merging with or overwriting existing events on the destination track. The Bounce function differs from the Copy function in that events on the source track are deleted. As on a multi-track tape recorder, Bounce will always put the copied events at the same place in time on the Destination Track that they were on the source track.



Destination Track: 1 to 16

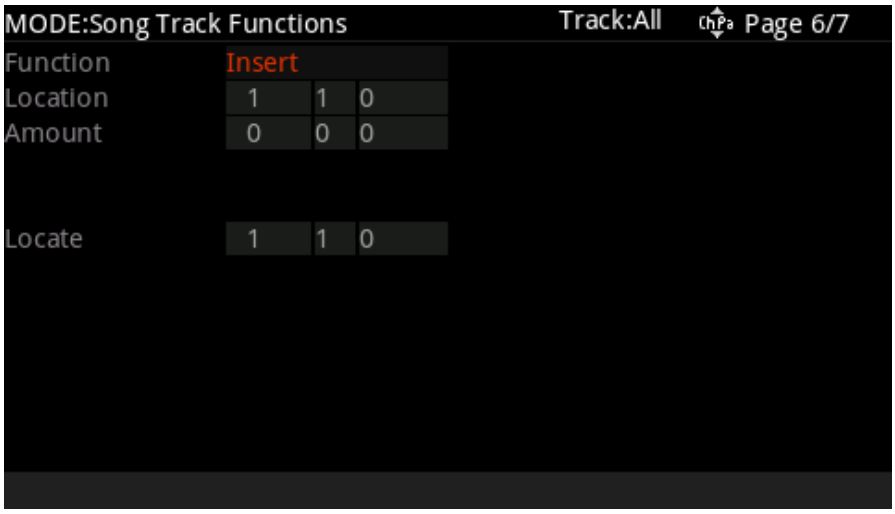
Select a destination track for the bounced events with the **Destination Track** parameter. Bounced events will be placed in the destination track at the events' original location.

Mode: Merge/Erase

The Mode setting determines whether the bounced events merge with, or erase existing events on the destination track from the location point to the end of the bounced region.

Insert

The Insert function is used to add blank time to the current song, modifying the song's End point appropriately. The Insert function will affect all tracks. This is similar to splicing a piece of blank tape to an existing segment of recording tape.



Location: Bars : Beats : Ticks

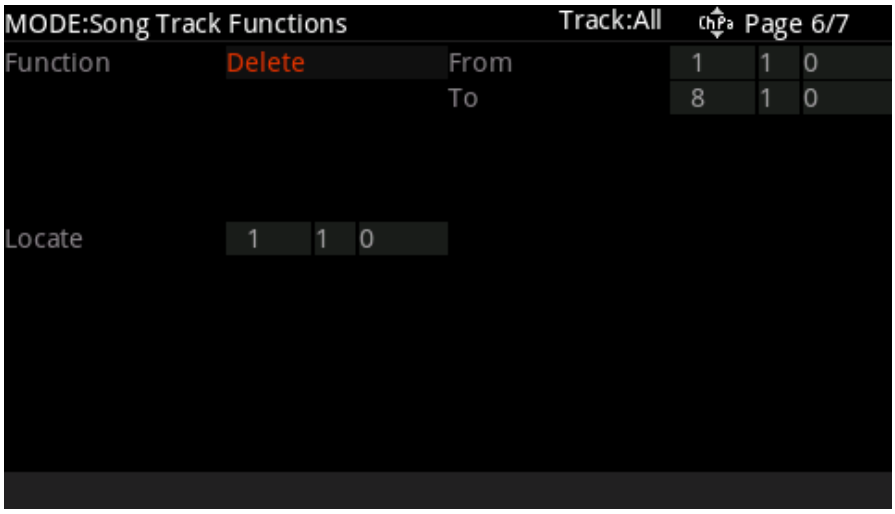
Use the Location parameter to specify a bar, beat, and tick location in the destination track where the blank time will be inserted. Events that occur on or after this Bar and Beat are offset by the length of the blank time being inserted.

Amount: Bars : Beats : Ticks

Use the Amount parameter to set the number of blank Bars, Beats, and ticks to insert.

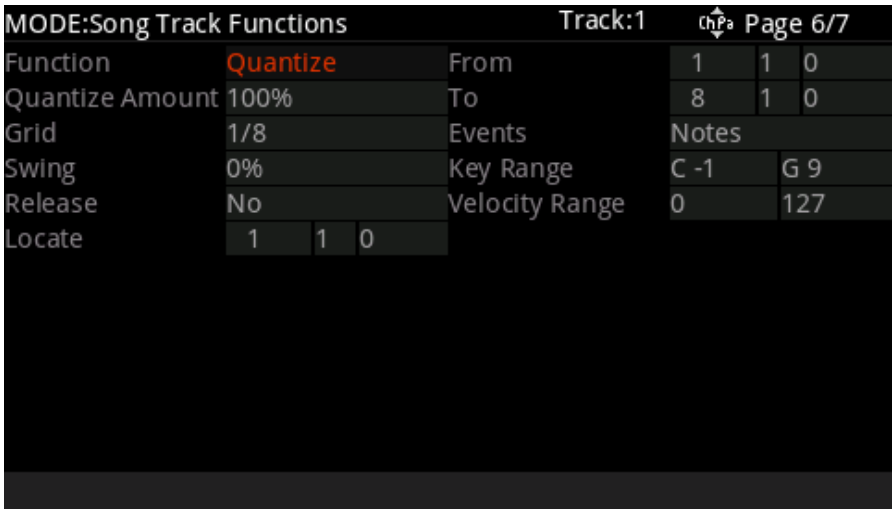
Delete

The Delete function is used to remove a region of time from the current song. This function is different from the erase function because not only does it remove the events from the selected time, it will delete the entire selected range of time from the song, modifying the song's End point appropriately (on all tracks). This is similar to cutting a section out of a tape and splicing the ends.



Quantize

Use the Quantize function to adjust the timing of Note events. Keep in mind that only Note events are quantized; other types of events, such as controllers, are not quantized.



Quantize Amount: 0 to 100%

The Quantize Amount parameter determines how much the selected Note events are moved towards grid locations. For example if set to **100%**, notes will be moved to the closest grid location, defined by the Grid setting. If set to **50%**, notes will be moved to a position half way between the closest Grid location and the original note location.

Grid: 1/1 to 1/480

This setting determines the size of the Quantize grid, expressed as a fraction of a Bar with a 4/4 meter. Set Grid to **1/1** for whole note grid, **1/16** for sixteenth notes. All of the standard note durations and every fractional Bar divisions in between are available as the size of the Quantize grid.

Swing: -100 to 125%

The Swing percentage is applied to the quantize grid. **0%** swing is straight time, **100%** produces a swing feel (triplet feel). A positive Swing value determines how close every other grid location is moved to a point 1/3 of the way towards the next grid point. Negative Swing moves every other grid location closer to a point 1/3 of the way towards the previous grid point.

Release: Yes/No

The Release parameter determines whether Note Off events will be quantized, in addition to Note On events.

Shift

The Shift function allows you to offset the existing MIDI events forward or backward in time any number of bars, beats and ticks. Events can not be shifted before Bar 1 : Beat 1 : Tick 0.

Amount: Bars : Beats : Ticks

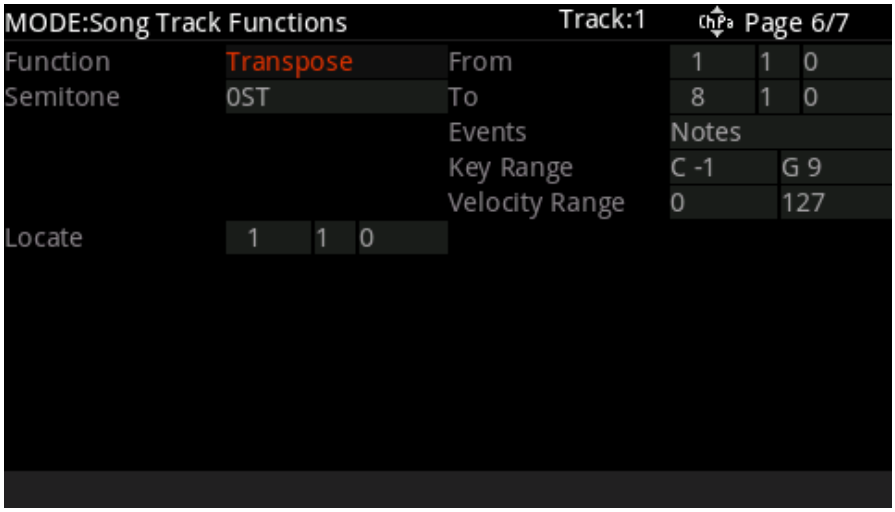
The Amount parameter specifies the number of bars, beats, and ticks that the selected MIDI events are moved forward or backward in time.

Mode: Merge/Erase

The Mode setting determines whether the shifted events merge with or erase existing events.

Transpose

Use the Transpose function to change the MIDI Note numbers of the selected Note events.

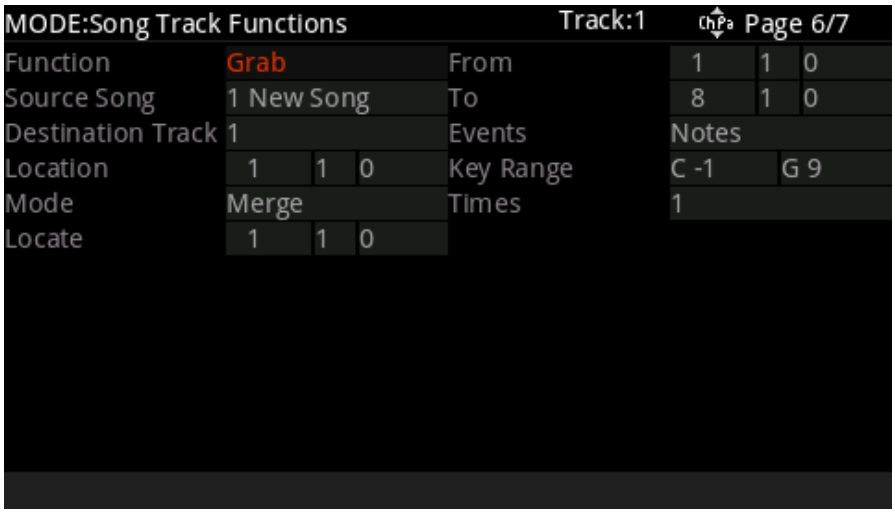


Semitone: -128 to 127 semitones

An increment of one semitone represents a change of one MIDI Note number. You can transpose Note events only within the range of MIDI Note numbers 0 to 127.

Grab

Grab is similar to the Copy function, except that the Grab function allows you to copy selected events from tracks that exist in other songs in memory.



Source Song: Song List

Use the Source Song parameter to select a song to Grab. The source track is determined by the Track parameter displayed on upper right hand side of the page, selectable with the CHANNEL/PAGE buttons.

Destination Track: 1 to 16/All

Select a destination track for the grabbed events with the Destination Track parameter. All selected events from the source song and track will be placed in the destination track(s) at the bar, beat, and tick you specify.

If the currently selected track is All tracks then the destination track will be All tracks as well.

No matter what channel the current track (source track in the source song) is set to when you use the grab function, the events will be played on the destination track's channel.

Location: Bars : Beats : Ticks

Use the Location parameter to specify a bar, beat, and tick location in the destination track where the grabbed events will be placed. If the length of the grabbed region extends from the Location point beyond the song's existing End point, a new End point is defined.

Mode: Merge/Erase/Slide

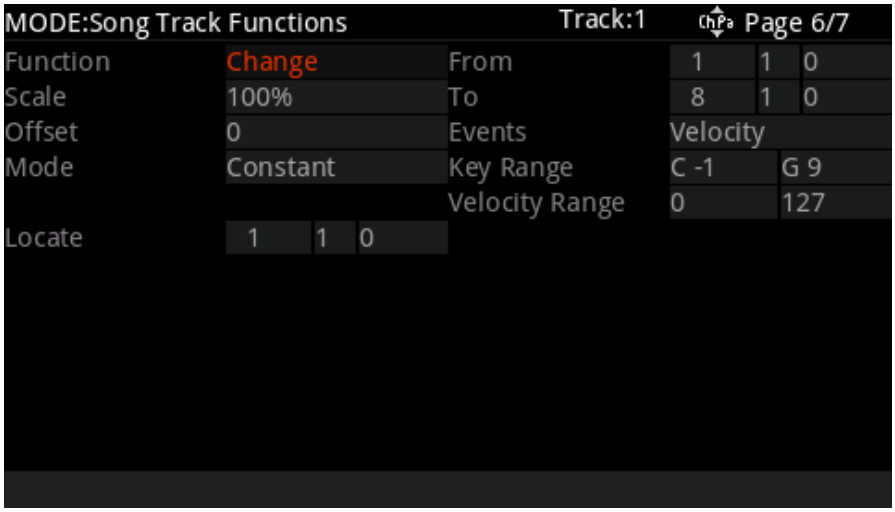
The Mode setting determines whether the grabbed events merge with, or erase existing events on the destination track from the location point to the end of the grabbed region. With Mode set to Slide, the sequencer creates space for the new events, and slides the existing events to uniformly later times in the song.

Times: 1 to 127

The value selected for the Times parameter determines how many copies of the selected region are placed, one after another, in the destination track.

Change

The Change function is used to modify existing velocities, controller events, or other MIDI events on the current track. A static change of values can be made as well as having the change take place over a region of time.



Scale: 0% to 20000%

Use the Scale parameter to multiply the selected event values by percentage. Values can be scaled from 0% to **20,000%**.

Offset: -128 to 127

Offset can be used alone or in conjunction with Scale to add or subtract a set amount to or from the original (or scaled) values. Values for velocities can not be less than 1 or greater than 127. Values for controllers can not be less than 0 or greater than 127.

For example, to set all Velocities to a value of 55, you would set Scale to **0%** (multiplies all original values by zero) and set Offset to **55** (adds 55 to the product of the Scale parameter).

Mode: Constant/PosRamp/NegRamp

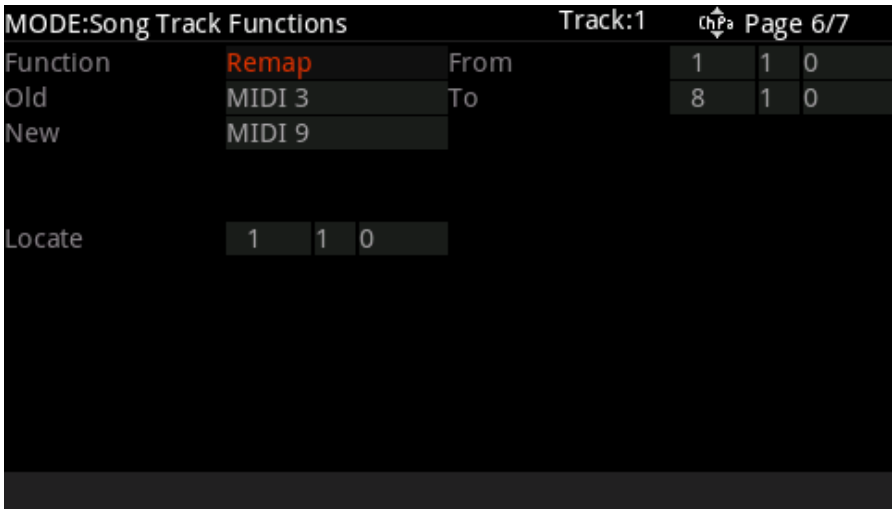
Set Mode to **Constant** to have values modified in a uniform fashion, as determined by the Scale and Offset settings, for the entire selected region of time and range of values.

When the Change function is applied with Mode set to **PosRamp**, the selected velocity or controller values will gradually change over the region of time, defined by the locations set for the From and To parameters, from the original value to the new value determined by the Scale and Offset settings. The first events being modified within the region will have little or no change from their original values. The amount of Scale and Offset applied will increase as the song approaches the Bar and Beat defined in the To parameter, where the full amount of Scale and Offset will be applied.

You can set Mode to **NegRamp** to achieve the opposite dynamic effect of **PosRamp**. **NegRamp** works in the same way, but the amount of Scale and Offset applied will decrease from the full amount to little or no change as the song approaches the bar, beat, and tick defined in the To parameter.

Remap

Use the Remap function to apply values from existing controller events to another controller number.



Old: Controller List (0 to 120)

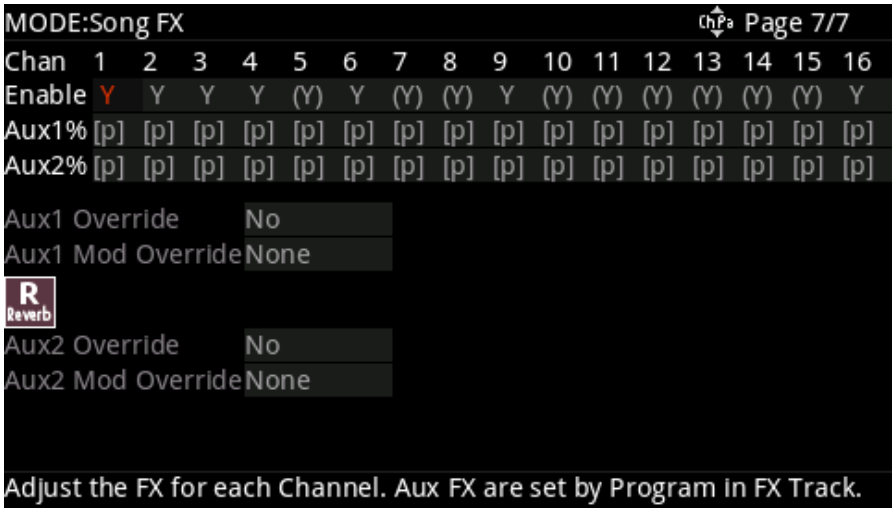
Use the "Old" parameter to select the Controller that you wish to remap. This Controller must already have events on the current track in order to apply it to the "New" Controller type. The old events will be deleted.

New: Controller List (0 to 120)

Use the "New" parameter to select the Controller that will use the existing values from the "Old" Controller.

FX Page

The Song mode FX page works the same way as the FX page in Multi Edit mode, with the following exception: Song Mode does not have an AuxFX Ch parameter. Instead, in Song Mode the Aux 1 and 2 Chains are determined by the "FX Track" parameter on the Song Mode Main page (see "FX Track" on page 7-12 for details). The program in the selected FX Track determines the Aux Chains of the current song (unless an override chain is selected). For details on the FX Page parameters, see "FX Page" on page 5-10.



Chapter 8 Troubleshooting

Use this chapter to learn how to maintain your PC4 SE and solve operational problems.

Maintenance

Clean the PC4 SE with a soft cloth dampened with water. Never use abrasives or solvents as they may damage the PC4 SE.

Power On Problems

This is the normal power on sequence:

1. The display backlight turns on.
2. "Loading..." appears in the display for a few seconds.
3. The PC4 SE enters Program Mode with Program 1 or the default boot up Program selected.

If your PC4 SE does not follow the normal power on sequence, check the problems and solutions below:

Problem	**The PC4 SE does not power on**
Solutions	Plug the power cable securely into the wall outlet.
	Plug the power cable securely into the PC4 SE power jack.
	Use a different wall outlet, power strip, or extension cord.

Problem	**The PC4 SE powers on but operation is abnormal**
Solution	Try plugging the power cable into a different wall outlet on a different circuit.

Problem	**The PC4 SE powers on but the display is difficult to read**
Solution	Adjust the rear panel display brightness knob.

Audio Problems

CAUTION: To protect your ears, do not troubleshoot audio problems while wearing headphones. Additionally, always set the PC4 SE and connected audio system or mixer to a low volume level when troubleshooting audio problems.

NOTE: When solving audio problems, playing the PC4 SE Demo Songs is an easy way to test if the audio is working properly. To play the PC4 SE Demo Songs, press the KEYPAD and 0 buttons simultaneously.

Problem	**The PC4 SE functions normally but does not produce sound or has low volume**
Solutions	If the VOLUME slider is turned down, slowly turn the VOLUME slider up.
	If an expression pedal is plugged into the CC jack, try to turn up the volume using the expression pedal.
	Use the MIDI Panic function by simultaneously pressing the 0 and ENTER buttons to reset the MIDI Volume and Expression values for all MIDI Channels.
	In Global Mode, go to the MIDI page and set the Destination parameter to “USB+MIDI+LOCAL”.
	If the volume control on your audio system or mixer is turned down, slowly turn the volume control up.
	If your audio cables are not securely plugged into the PC4 SE, audio system, or mixer, set the volume of the audio or mixer to the lowest level, securely plug in the audio cables on both ends, and then slowly turn up the volume.
	Try using different audio cables. Obtain and securely connect the correct type of audio cables. The PC4 SE accepts both balanced (TRS) and unbalanced (TS) 1/4-inch audio cables.
	If the signal source selection on your audio system or mixer is incorrect, set the volume of the audio or mixer to the lowest level, select the correct signal source, and then slowly turn up the volume.
	If the input to your audio system or mixer is set for low impedance, set the volume of the audio or mixer to the lowest level, change the impedance setting to high, and then slowly turn up the volume of the audio system or mixer.
	If the input trim to your audio system or mixer is set too low, slowly turn up the trim on your audio system or mixer.

MIDI Problems

Problem	**Sending MIDI messages to a computer or external MIDI device is not working**
Solutions	Make sure the MIDI channel being used by the PC4 SE matches the MIDI channel being used by the external device.
	In Global Mode, go to the MIDI page and set the Destination parameter to “USB+MIDI+LOCAL”.
	If using a MIDI cable, make sure the MIDI cable is plugged into the PC4 SE MIDI OUT port and the external MIDI device MIDI IN port.
	Make sure the USB or MIDI cable being used is securely plugged in at both ends.
	Try using a different USB or MIDI cable.

Problem	**Receiving MIDI messages from a computer or external MIDI device is not working**
Solutions	Make sure the MIDI channel being used by the PC4 SE matches the MIDI channel being used by the external device.
	If using a MIDI cable, make sure the MIDI cable is plugged into the PC4 SE MIDI IN port and the external MIDI device MIDI OUT port.
	Make sure the USB or MIDI cable being used is securely plugged in at both ends.
	Try using a different USB or MIDI cable.

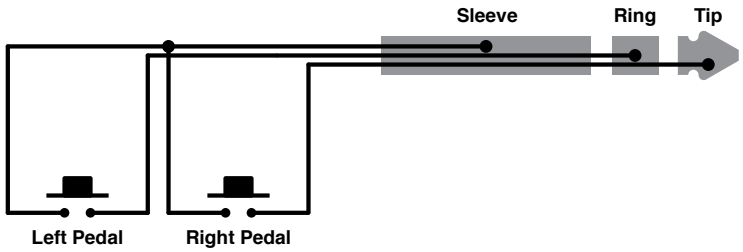
Pedal Problems

Switch Pedal Problems

Problem	Sustain or Sostenuto pedals are stuck “on”, or functioning backwards (“on” when up instead of down)
Solution	Always plug pedals in before powering on the PC4 SE, and do not press the pedals before the PC4 SE has powered on. Turn power off, then on, if necessary.

Problem	A switch pedal is not doing the expected function
Solutions	Check the Global Mode Main 2 page to see if you have applied any pedal overrides.
	If you have pedal problems in Multi Mode, use the Multi Edit Mode Controls page to check the pedal settings for each Zone in each Multi.

Problem	A dual switch pedal is not working correctly
Solution	A dual switch pedal must be wired as shown below. Any other wiring pattern will not work correctly.



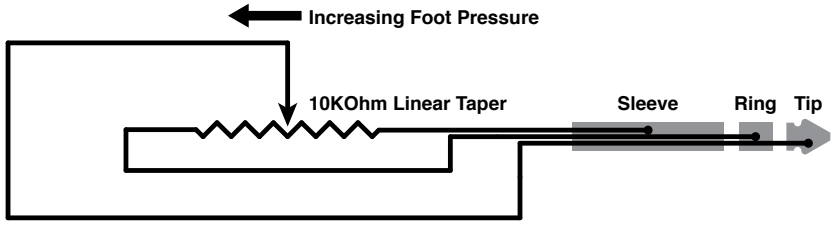
Continuous Control (Expression) and Half Damper Pedal Problems

Problem	A Continuous Control (Expression) or Half Damper pedal is not working correctly
Solution	For best results, use a Kurzweil CC-1 Continuous Control pedal, or Kurzweil KP-1H Half Damper pedal, available from your dealer. See below for specifications when using Continuous Control or Half Damper pedals from other manufacturers.

A Continuous Control (Expression) or Half Damper pedal must be wired to a single stereo 1/4-inch plug as follows:

- Wiper to Tip
- Top end of resistance element to Ring
- Bottom end of resistance element to Sleeve

These connections are shown schematically below:



A continuous control pedal should have an impedance between 5,000 and 100,000 ohms. An impedance less than 5,000 may overload the reference voltage source in the PC4 SE and interfere with operation of other controls. An impedance more than 100,000 may result in electrically noisy operation, which may cause your PC4 SE to send unwanted MIDI controller messages.

The taper of the control should be linear for easy, predictable control. Pedals designed for volume control typically have an exponential (or anti log) taper, which results in most of their range being concentrated in the upper half of pedal's path of travel.

Pedals may have a control range that is less than 100%. Make sure that when the pedal is in the fully down position, its impedance is 0, and when it is in the fully up position, the impedance is at its maximum rating.

Kurzweil Support

For additional help, contact Kurzweil support at kurzweil.com/support. You may also find unofficial help at some of the internet communities listed at kurzweil.com/community.

Service Centers

To contact the nearest Kurzweil service representative, see Kurzweil International Contacts on page iv in the front of this manual for contact information.

Restoring Factory Defaults

For restoring your PC4 SE back to the factory defaults, see Reset Page on page 6-28

Appendix A
MIDI Implementation

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1	1	Memorized
	Changed	1–16	1–16	
Mode	Default	Mode 3	Mode 3	For details on multi-timbral use of Program Mode, see Multichannel MIDI in Program Mode on page 2-15.)
	Messages			
	Altered			
Note Number			0–127	
	True Voice	0–127	0–127	
Velocity	Note ON	O	O	
	Note OFF	O	O	
Aftertouch	Keys	X	O	
	Channels	X	O	
Pitch Bender		O	O	
Control Change		O 0–31 32–63 (LSB) 64–127	O 0–31 32–63 (LSB) 64–127	
Program Change		0 to 2,097,151	0–511	Standard and custom formats
	True #	0–127	0–127	
System Exclusive		O	O	
System Common	Song Pos.	X	X	
	Song Sel.	X	X	
	Tune	X	X	
System Real Time	Clock	O	O	
	Messages	O	O	
Aux Messages	Local Control	O	O	
	All Notes Off	O	O	
	Active Sense	X	X	
	Reset	X	X	
Notes		Manufacturer's ID = 07 Device ID: default = 0; programmable 0–127		
Mode 1: Omni On, Poly **Mode 3: Omni Off, Poly**		Mode 2: Omni On, Mono Mode 4: Omni Off, Mono		O = Yes X = No

Appendix B
Physical Specifications

Keyboard:	RPHA: Real Piano Hammer Action. 88-key, fully-weighted hammer-action with velocity sensitive adjustable keys
Display:	480 x 272 pixel high resolution color LCD with adjustable brightness
Polyphony:	256 Voice Polyphony, dynamically allocated
Multitimbral:	16 parts (one per MIDI channel)
Quick Split / Layer:	Easy access with adjustable volume and panning
Programs:	Over 1500 Factory Programs (in 10 instrument Categories) plus 4000 User Program IDs
Multis:	Over 700 Factory Multis, 4000 User Multi IDs, 5 programmable zones for splits and layers
Effects Resources:	32 DSP units
Controllers:	• Pitch wheel • Modulation wheel • Volume slider • 5 assignable knobs • 5 assignable sliders • 5 assignable switch buttons • Variation button • Arpeggiator On/Off button • Arpeggiator Latch button • CC Sequencer On/Off button • Tap Tempo button • 2 switch pedal inputs, each supporting a dual switch pedal or single half damper pedal (for up to 4 switch pedals) • Continuous control pedal input • 2 Transpose buttons • 5 Favorites buttons with Bank -/+ buttons • EQ button for controlling EQ with assignable knobs
Analog Outputs:	Two 1/4” TRS Balanced Outputs (Stereo Pair) 32-bit D-to-A Converters
Headphones:	1/4” Rear-Mounted Stereo Headphone Output
MIDI:	IN, OUT
USB:	Complete MIDI functionality over USB, and can act as a host for other USB MIDI controllers User Program / Multi file transfer to/from PC / Mac / USB Flash Drives Operating System updates from PC / Mac / USB Flash Drive
Height:	6.5” (16.51 cm)
Depth:	14.75” (37.46 cm)
Length:	51.25” (130.175 cm)
Weight:	27.5 lb (12.48 kg)
Power:	External Power Supply, 15VDC 2.5A

Specifications subject to change without notice

Index

A

B

C

D

E

F

G

H

I

K

L

M

N

O

P

R

S

T

U

V

KURZWEIL®

It's the **sound**.®