

KORG Legacy Collection

Virtual Instruments/Effects Plug-ins



KORG Legacy Collection

WAVESTATION

Owner's manual

KORG

- Apple, the Apple logo and Mac are trademarks of Apple Computer, Inc., registered in the U.S. and other countries.
- The “Built for Mac OS X” graphic and the Optimized for G4 with Velocity Engine graphic are trademarks of Apple Computer, Inc., used under license.
- The Audio Units logo and the Audio Units symbol are trademarks of Apple Computer, Inc.
- Windows XP is a registered trademark of Microsoft Corporation in the U.S. and other countries.
- VST and ASIO are trademarks of Steinberg Media Technologies GmbH.
- All other product and company names are trademarks or registered trademarks of their respective holders.
- All specifications are subject to change without notice. All rights reserved.

About this manual

The owner's manuals and how to use them

- **WAVESTATION Reference Guide, Expanded Effects**

This is the reference guide included with the original WAVESTATION, provided in PDF format. Refer to this material in conjunction with the “KORG Legacy Collection WAVESTATION Owner’s Manual” to learn more about the functions and parameters of the WAVESTATION software.

- **WAVESTATION Performance Notes**

This lists the names of the performances, patches, and wave sequences that are built into the WAVESTATION software. Refer to this when you want to know the names of the sounds, etc.



The contents of the owner’s manual and reference guide for the original product may differ in some ways from the functionality and specifications of this WAVESTATION software synthesizer.

Conventions in this manual

This manual is written for users of two operating systems; Windows XP and Mac OS X.

Material that applies equally to both operating systems is given without comment. The screen shots printed in the manual are taken from the Windows XP version unless there are significant differences between the two operating systems. If there are differences, screens for the applicable operating system are shown.

The names of buttons such as “Open” or “Save” that appear in dialog boxes will differ according to the settings of your computer. Also, if you are using this software as a plug-in for your host application, the names that appear in menus will differ depending on your host application.

Key commands

The key commands differ between the two operating systems.

In this manual, the key command for Windows XP is given first, and then the key command for Mac OS X is given in parentheses ().

Example: “To use the ... function, hold down the [Ctrl] key (Mac: [Command] key) of your computer and click ...”

Buttons and knobs []

References to on-screen buttons or knobs are enclosed in square brackets [].

Parameters

Parameters displayed in the screen are enclosed in double quotation marks “ ”.



These indicate pages to which you can refer.



These symbols respectively indicate cautions and advice.

Example screen shots

The values of parameters shown in the example screens in this manual are only for explanatory purposes; they may not necessary match the values that appear on your screen.

MIDI-related explanations

CC# is an abbreviation for Control Change Number.

Table of Contents

Introduction	1
Main features	1
WAVESTATION.....	1
Stand-alone and plug-in versions for both Macintosh and Windows.....	1
How the WAVESTATION is structured	2
Performances.....	2
Patches.....	3
Waveforms	3
Wave sequences	3
Banks	3
Quick Start	4
Listening to the sounds	4
Start-up and set-up	4
Objects in the screen	5
Selecting and playing a performance.....	9
Master tuning	15

Performances	16
Performance Select page.....	16
Performance Edit page.....	17
Patch Assign (assigning a patch to each part)	18
DETAILS (part detail settings)	20
ZONES (key and velocity zone settings)	21
Writing, loading, and saving performances	22
[WRITE] button – writing a performance	22
[FILE] button – loading and saving performances	23
Patches	25
How a Patch is structured.....	25
Oscillators	25
Vector synthesis	25
Waveforms.....	27
Wave sequences	27
Filter.....	27
Pan	27
Macros	27
Modulation	28
Patch Edit page.....	29
[WRITE] button – writing a patch.....	29
Editing a patch	30
Patch parameters (selecting and editing a patch)	30
WAVES (assigning waveforms)	31
Osc (OSC Select)	31
MIXENV (vector synthesis settings).....	32
MIXENVMOD (vector synthesis modulation settings)	33
Editing with macros	34
PITCH (pitch settings)	34
FILTER (filter settings).....	36
AMP (amp settings)	37
PAN (pan settings)	38
ENV1 (envelope 1 settings)	39
LFO1, LFO2 (LFO settings)	41

Wave sequences	42
A brief introduction to wave sequences	42
WaveSeq Edit page.....	44
[WRITE] button – Writing a wavesequence	44
Wave Sequence Setting	45
Step Assign	47
Step display	49
Effects	50
Effect system	50
Effect structure	50
Parallel mode.....	51
Series mode.....	52
Effect Edit page	53
Connecting the performance parts to the effects	55
Effect list	56
Global.....	62
MIDI Controller	62
Joystick	63
MIDI Filter	63
TUNING.....	63
Key Transpose.....	63
WaveSeq Tempo Sync.....	64
Pitch Bend Range.....	64
Output 3/4.....	64
User Scale.....	64
Appendices	65
Main specifications.....	65
MIDI Implementation Chart	66

Introduction

Thank you for purchasing the KORG Legacy Collection. To ensure trouble-free enjoyment of the Legacy Collection's full potential, please read this manual carefully and use the system only as directed.

Main features

WAVESTATION

The WAVESTATION software synthesizer features a new graphical user interface that provides a revolutionary leap in user-friendliness. It also provides all waveforms, effects, and sound programs found on the original WAVESTATION series, delivering a perfect reproduction of the original sound.

All 550 of the WAVESTATION series' factory preset programs (performances) are provided as presets. Performances, patches, and wave sequence data created on the original WAVESTATION series can also be loaded as system exclusive files.

Stand-alone and plug-in versions for both Macintosh and Windows

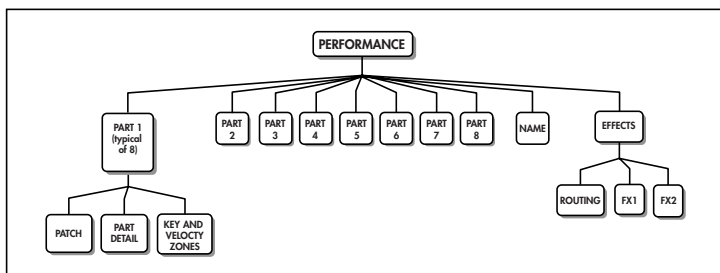
The WAVESTATION software synthesizer is provided in Macintosh and Windows format, both as a stand-alone version that runs by itself, and also as a VST or Audio Units plug-in instrument for use within a host application that supports VST or Audio Units.

The software is optimized for the Apple G4 Velocity Engine and the Intel Pentium 4 SSE/SSE2 instruction set.

How the WAVESTATION is structured

Performances

A “performance” is the highest level into which WAVESTATION’s sounds are organized. A performance is not simply a single sound; each performance is created using up to eight individual parts. The following diagram shows the structure of a performance.



Each part contains a patch (sound), parameters that adjust its sound (PERFORMANCE, PART DETAIL), and a playing range (key and velocity zones). Since a performance contains eight of these parts, you have much greater tonal richness and a broader range of expressive potential than when playing a single patch. We suggest you use the Performance Edit page to take a look at one of the preset performances, and see how the patches are being used (e.g., how the key zones and velocity assignments are set).

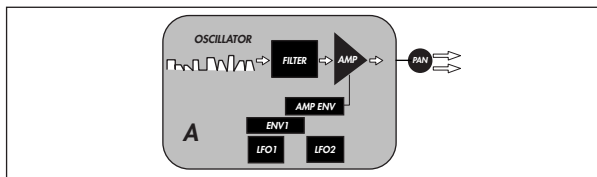
You can also apply two stereo effects to each performance, and adjust their effect parameters. For more about the effects, refer to “Effects” (p. 50).

A performance also includes keyboard mode settings (single, split, layer, velocity switch) and effect settings.

Performances are organized into banks, and each bank lets you store 50 performances, giving you a total of 550 performances when all banks are totaled.

Patches

A “patch” consists of an oscillator, filter, amp envelope, general-purpose envelope, and two LFOs. If we use the example of an acoustic instrument, the settings of a patch are what cause it to sound like that particular instrument.



Each bank can hold 35 patches. If we include ROM patches, the WAVESTATION lets you use up to 385 patches.

For more about patches, refer to “Patches” in this manual. (ⓘ p.25)

Waveforms

The oscillator within a WAVESTATION patch produces sound using waveform data stored in memory.

WAVESTATION contains 484 waveforms. The waveform data ranges from single-cycle waveforms to continuously looping waveforms, as well as sampled transients that sound only once.

Wave sequences

A wave sequence is a programmed order in which the oscillator will play a list of specified waveforms.

The waveforms can be connected smoothly by crossfading between them while you play.

You can make each step play for a specific duration, or control it by gate time (the duration that you hold down a note).

Since each bank holds 32 wave sequences, the entire memory of the WAVESTATION can store a total of 352 wave sequences. Up to 255 steps can be programmed in a single wave sequence.

For more about wave sequences refer to “Wave sequences” (ⓘ p.42).

Banks

The WAVESTATION software synthesizer (subsequently referred to as WAVESTATION) contains a total of eleven banks: three RAM banks (RAM1–3) and seven ROM banks (ROM4–11). These banks contain preset sounds. RAM1–3 are rewritable user banks. ROM8–ROM11 cannot be rewritten.

Each bank contains 50 performances, 35 patches, and 32 wave sequences. The internal ROM contains 484 types of wave data.

Quick Start

Listening to the sounds

Let's start by using the stand-alone version of the WAVESTATION software synthesizer to listen to the sound.

Start-up and set-up

- 1 Connect your computer and external MIDI device.
- 2 Navigate to the “KORG” folder → “WAVESTATION” folder, and double-click the “WAVESTATION” icon to start up the software.

Windows XP

The WAVESTATION folder is in the location you specified when installing the software. By default, it will be in the “KORG” folder within the “Program Files” folder.

Alternatively, you can click the [Start] button in the taskbar, then click [All Programs], and navigate the menu in the order of “KORG” – “WAVESTATION” – “WAVESTATION” to start up the software.



Mac OS X

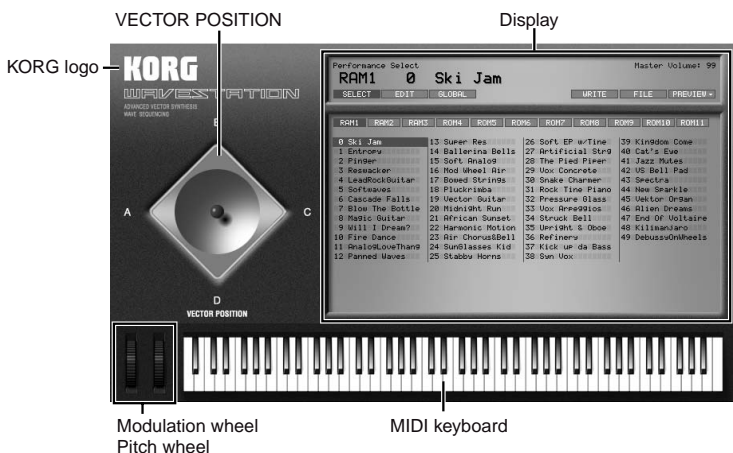
The KORG folder is located in the “Applications” folder.

When you start up, the Performance Select page will appear.
The Performance Select page always appears at start-up.

- 3 From the System menu, choose Settings. Then make audio, MIDI, and other settings.
For details on setting up the software, refer to the “WAVESTATION Setup” PDF (WAVESTATION_Setup_E.pdf) on the CD-ROM.

Objects in the screen

Each time you start up the WAVESTATION software, this Performance Select page will appear.



Display

The display is divided into upper and lower areas.

Upper display

This shows the currently selected performance, the name of the page shown in the lower display, and page select buttons etc.



Page name

This is the name of the page shown in the lower display. Use the page select buttons to switch pages.

Performance

This is the currently selected performance.

From the left, this shows the bank, performance number, and performance name. When you click the bank, a popup menu will appear, letting you select a bank.

You can select a performance by dragging the performance number up or down, or by double-clicking and entering a number from your computer keyboard.

Page select buttons

These buttons select the page shown in the lower display.

[SELECT] button

Makes the Performance Select page appear in the lower display.

The Performance Select page lists the performances in the bank; click a performance to select it.

[EDIT] button

Makes the Edit page appear in the lower display.

The Edit page consists of several pages that let you edit the various parameters that make up a performance. Pages within the Edit page can be selected in the lower display.

[GLOBAL] button

Makes the Global page appear in the lower display.

In the Global page you can make settings that affect the entire WAVESTATION.

Master Volume

Indicates the output level of the WAVESTATION software synthesizer.

To adjust the output level, use your mouse to drag this up or down, or double-click and enter a value directly from the numeric keys of your computer. The range is 00–99.


[WRITE] button

Here's how to write (update) an edited performance or patch into memory.

(p.22)

The [WRITE] button appears in pages where you can write a performance or patch.

[FILE] button

This button lets you load all performance data from your computer or save it on your computer, or import system exclusive data that was created by the original WAVESTATION series. When you click this button, the [LOAD ALL], [SAVE ALL], and [IMPORT] buttons will appear. (p.23)

[PREVIEW] button

This button lets you hear the performance play a pre-assigned phrase. (p.11)

Lower display

The lower display shows the page selected using the page select buttons in the upper display.

For the displayed contents, refer to the explanation of each page.

Pitch wheel

You can control the pitch by dragging this wheel up or down. The range of pitch change can be specified in the Global page. Some patches may exceed the pitch range specified in the Global page.

Modulation wheel

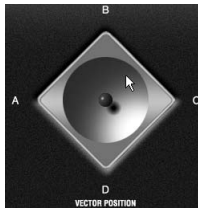
You can control the depth of modulation by dragging this wheel up or down. What happens when you control the modulation will depend on the parameter settings of each patch. You can also use this wheel to control a combination of effects such as vibrato, tremolo, chorus, and pan.

VECTOR POSITION

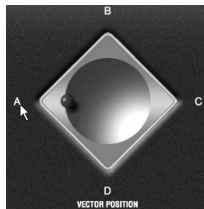
Use VECTOR POSITION to mix the four oscillators. (p. 12)

When creating a program, you can set mixer envelope points by dragging the ball and moving it as shown below to adjust the mix of the four sounds.

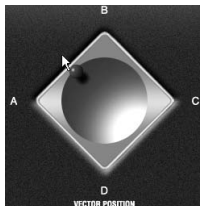
- If you [Control]-click (Mac: Command-click) inside the circle, the ball will move to the center; the oscillator outputs will be mixed equally.



- If you double-click a character "A," "B," "C," or "D," the ball will move to the edge nearest that character. In the example shown below, only oscillator "A" is being output. (Output A: 100%)



- If you double-click between two of the characters “A,” “B,” “C,” and “D,” the ball will move to the point mid-way between those characters. In the example shown below, oscillators “A” and “B” are being output. (Output A: 50%, Output B: 50%)



By dragging the ball while you play, you can control the programmed mix in real-time. You can also control the position by using MIDI control changes sent from your host application or from an external MIDI device connected to your computer.

MIDI keyboard

This is an 88-note keyboard.

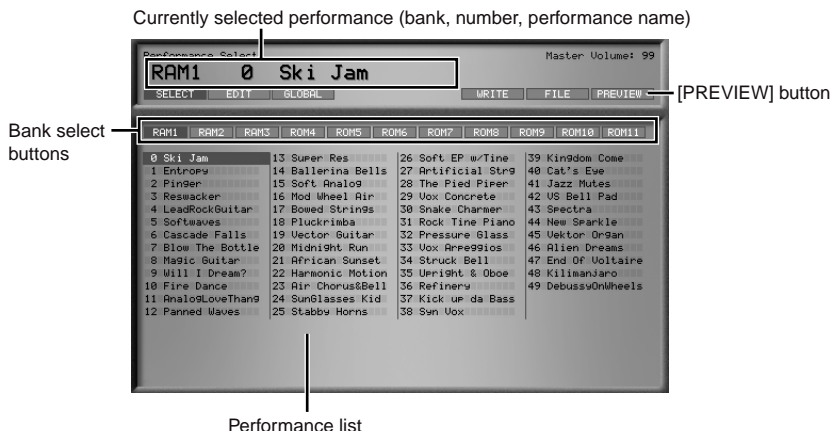
Click a note to play it. You can play a glissando by dragging over the keyboard toward the left or right.

KORG logo

Click this to view information about the WAVESTATION software, such as the version number.

Selecting and playing a performance

In the Performance Select page, you can select and play performances.



The currently selected performance is shown in the upper display. At start-up, the preset performances will be loaded, and the RAM1 bank performance 0 “Ski Jam” will be selected.

There are eleven banks of preset performances, with fifty performances in each bank, giving you a total of 550 performances in memory.

Selecting a bank

To select a bank, click one of the bank select [RAM1]–[RAM3] or [ROM4]–[ROM11] buttons shown in the lower display.



Simply clicking a bank select button in the lower display will not switch the performance. The performance will switch when you select one in the performance list.

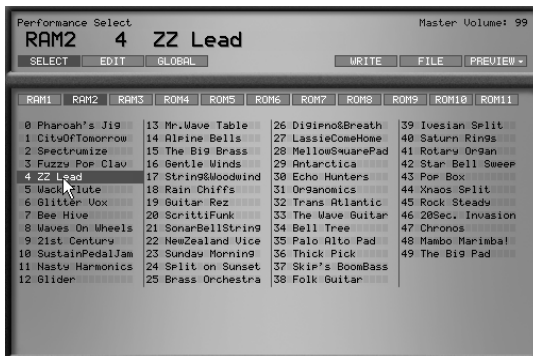
Alternatively, you can click the bank shown in the upper display and choose a bank from the popup menu that appears.



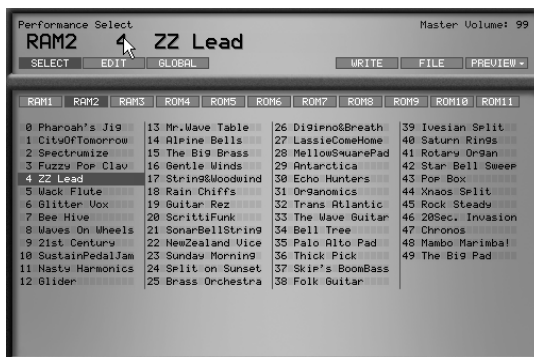
note When you select a bank in the upper display, the performance will switch to the identically-numbered performance of the bank you select.

Selecting a performance

To select a performance program, click it in the performance list.



Alternatively, you can select a performance by dragging up or down on the performance number shown in the upper display.



Go ahead and play the performance program you selected.

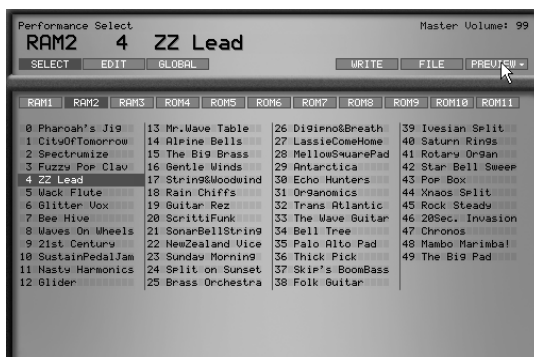
To play it, you can either use an external MIDI device connected to your computer, or click on the MIDI keyboard displayed at the bottom of the Performance page.

The WAVESTATION software also lets you preview (i.e., audition) the performance by clicking one of the [PREVIEW] buttons located at the lower right of the upper display.

The performance will be played (previewed) using a preset phrase.

When you right-click (Mac: [Control] click) the [PREVIEW] button or click the ▼ symbol at the right, a popup menu will appear, allowing you to select a phrase for preview playback.

Five different phrases are provided.

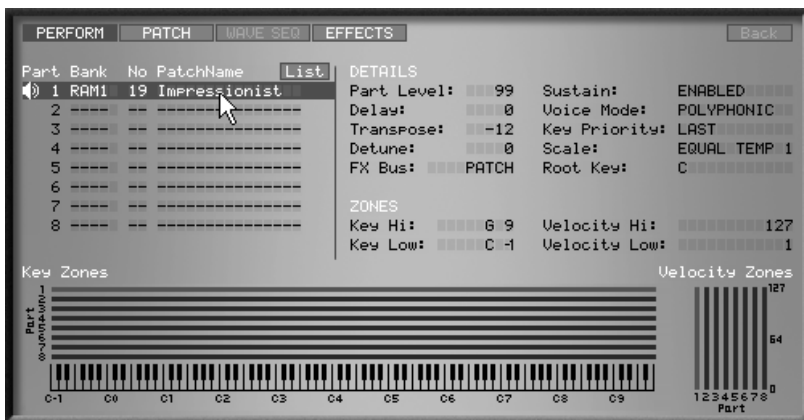
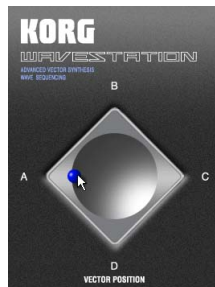


Click the [PREVIEW] button once again to stop playback.

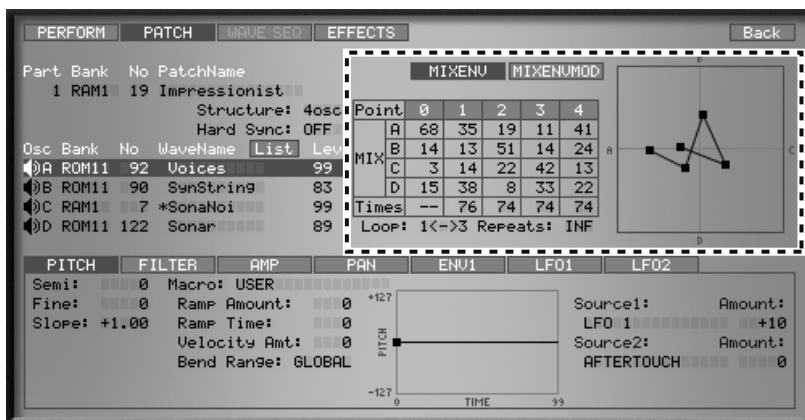
Listening to the sound of Vector Synthesis

Vector Synthesis mixes the output of multiple oscillators in a way that varies over time. Let's select a performance that uses four oscillators, and play the sound while you mix between these oscillators and adjust the vector synthesis settings.

- 1 Select the **RAM2** bank performance **9 "21st Century"** and play it. Performance 9 "21st Century" is a sustained sound created using vector synthesis. The sound will develop as time passes from note-on.
- 2 While playing, drag the **VECTOR POSITION** ball to various positions.
The sound will change according to the position of the ball.
By manipulating the **VECTOR POSITION** in this way while you perform, you can mix between multiple oscillators in realtime to produce a wide variety of tonal changes.
- 3 Click the **[EDIT]** button in the upper display.
The lower display will show the Performance Edit page.
In the Performance Edit page you can edit performance parameters and key/velocity zones.



- 4 Double-click the text “Impressionist” shown in the upper left of the lower display. The Patch Edit page will appear in the lower display. You can also open the Patch Edit page by clicking the text “Impressionist” and then clicking the [PATCH] button.



The vector synthesis settings are shown in the upper right of the display. The mixer envelope lets you specify the mixing proportion of the oscillators at five points. You can specify the transition time between points, and the number of times that looping will occur between points. For details on these parameters, refer to “Patches” (p.25).

The WAVESTATION’s memory contains numerous performances that let you use VECTOR POSITION to vary the sound. Go ahead and try them out!

Listening to the sound of a Wave Sequence

The WAVESTATION's Wave Sequence system plays various complex waveforms in a succession of consecutive steps.

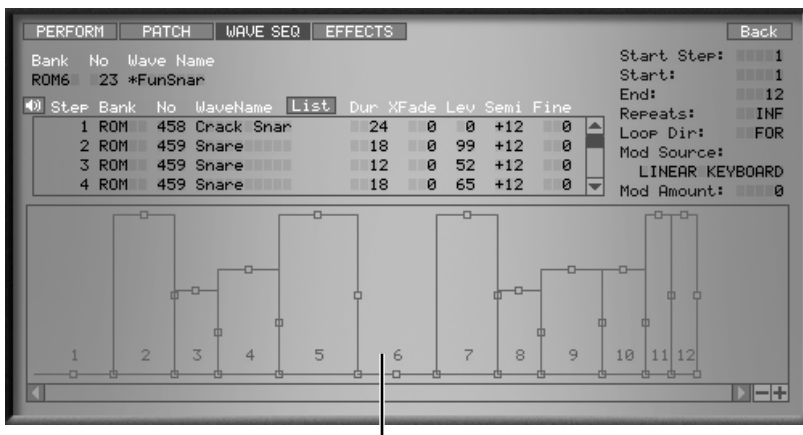
This lets you play complex rhythm patterns or melodic phrases as a single sound. Let's select and play a performance that uses a wave sequence.

- 1 In the Performance Select page, select the **ROM8** bank performance **00 "Layers Of Funk"** and play it.

The performance 00 "Layers Of Funk" uses note-on events below C4 to play a drum pattern created by a wave sequence. Each oscillator uses a drum-type wave, and a drum pattern is created by specifying the pitch and volume level for these waves.

You can edit this type of wave sequence in the WaveSeq Edit page. Let's move to the WaveSeq Edit page and take a look at the wave sequence settings.

- 2 Click the [EDIT] button in the upper display, and then click the [PACH] button in the lower display.
- 3 Click the [WAVE SEQ] button in the lower display. The lower display shows the WaveSeq Edit page.



Step display

The WaveSeq Edit page shows the wave data and parameters for each step. You can select waveforms from the waveform list, and set the parameters by dragging the wave sequence waveforms shown in the lower part of the display. For details on the wave data and these parameters, refer to "Wave sequences" (p.42).

The WAVESTATION software synthesizer contains a wide variety of sounds that use vector synthesis and wave sequences. Go ahead and try out these performances. Notice how the parameters are set, and have fun playing and editing them.

Master tuning

By default, the overall pitch of the WAVESTATION software synthesizer is set to A=440 Hz. If you're using WAVESTATION as a plug-in and need to match the tuning to other tracks or plug-in instruments, you can adjust the pitch using the Global page "Master Tune" parameter.

As an example, here's how to adjust the pitch to 441 Hz.

- 1 Click the [GLOBAL] button in the upper display.
The Global page appears in the lower display.



- 2 Set "Master Tune" to 441.00 Hz by dragging the value up or down.
To make more precise adjustments, hold down the [Shift] key of your computer while you drag the value.
Alternatively, you can double-click this and enter a value directly from the numeric keypad of your computer. This method allows you to set the value in 0.01 Hz units.

Performances

A “performance” is the highest level into which WAVESTATION’s sounds are organized. A performance is not just a single sound; it lets you play up to eight patches (sounds) simultaneously.

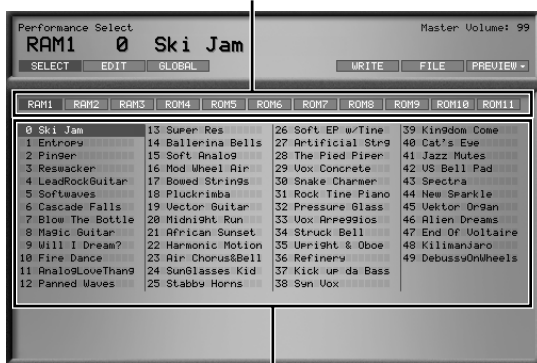
Each bank stores 50 performances, giving you a total of 550 performances when all banks are totaled. The Performance Select page is where you select and play a performance.

You can edit the settings of a performance (PERFORMANCE, PART DETAIL) and adjust its key zone and velocity zone settings. The Performance Edit page is where you edit these parameters.

Performance Select page

The Performance Select page is where you select the performance that you want to play and/or edit.

Bank select buttons



Performance list

Bank select buttons

Use these buttons to select the performance bank.

There are a total of eleven banks: RAM banks RAM1–3 and ROM banks ROM4–11. The eight ROM banks contain preset performances that cannot be overwritten. The three banks RAM1–3 are user banks into which you can write your own edited performances.

Simply pressing a bank select button to select a bank does not switch the performance. You need to click a performance in the performance list displayed below the bank select buttons.

Performance list

This area shows the performances in the currently selected bank.

You can select one of these performances by clicking it. The performance you select is shown in the upper display.

If you double-click a performance, the Performance Edit page for that performance will appear in the lower display.



If you double-click a performance in the performance list, the Performance Edit page for that performance will appear in the lower display.

Rename a performance

To rename a performance, double-click the performance name, use your computer keyboard to type a new name, and press the [Enter] key.

Performance Edit page

A performance consists of eight parts (p.2). For each part, you can specify “Details” that determine how the part’s patch will sound, and key/velocity “Zone” settings. In the Performance Edit page you can assign a patch to each part, and perform simple editing for each assigned patch.

To access the Performance Edit page, click the [EDIT] button in the upper display, and the [PERFORM] button in the lower display.

You can also access this page by double-clicking a performance in the performance list of the Performance Select page.



[BACK] button

The [BACK] button appears when you press the [EDIT] button in the upper display. By pressing this button you can return to the previously-shown edit page.

Patch Assign (assigning a patch to each part)

The “Patch Assign” area is where you assign a patch to each of the eight parts. (This is the first step in creating a performance.)

Part	Bank	No	Patch Name	LIST
1	RAM1	0	Wave Dance	
2	ROM11	22	Mini	
3	ROM11	22	Mini	
4	RAM2	33	Spectrum 2	
5	RAM1	30	Doublepad	
6	ROM11	3	DigitalResWave	
7	----	--	-----	
8	----	--	-----	

Patch Select

This displays the patch used by each part.



From the left, this shows the part number (Part), the bank of the patch assigned to that part (Bank), the patch number (No), and the patch name (Patch Name). If no patch is assigned to a particular part, this is indicated by “-----”.

note If you double-click a part number, the Patch Edit page for the patch assigned to that part will appear in the lower display.



Selecting the part to edit


To select a part for editing, click one of the part numbers shown at the left edge (the part will be highlighted). The DETAILS and ZONES settings you make will apply to the part that is selected here. If you double-click the part number, the Patch Edit page for the patch used by that part will appear.

Muting/un-muting a part

If a patch is assigned to a part so that it will sound when a note-on is received, a “” symbol is displayed at the left of the part number. Each time you hold down the [Ctrl] key (Mac: [Command]) of your computer and click this symbol, the part will switch between muted and un-muted states. If a part is muted, the symbol will change to “”.

Soloing a part

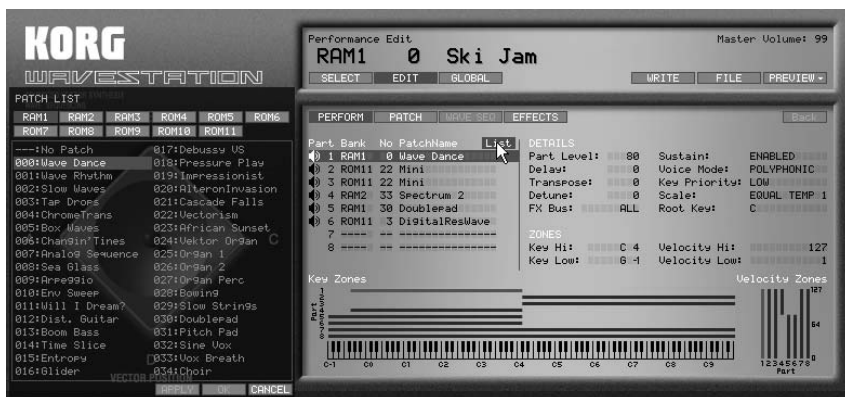
Each time you click the “” symbol, you can switch solo mode on/off for that part. If a part is being soloed, the remaining parts are displayed as “” and will not sound.

When a part is being soloed, you can hold down the [Control] key (Mac: Command key) of your computer and click the “” symbol of a different part to solo that part as well. This lets you solo two or more parts simultaneously.

Assigning a patch to a part

Click the [LIST] button, and select a patch from the patch list that appears.

- 1 Select the part to which you want to assign a patch. (⇧ Selecting a part to edit)
- 2 Click the [LIST] button.
The patch list will appear in the left side of the lower display.



- 3 Select a patch bank by clicking one of the bank buttons displayed above the patch list.
- 4 Click a patch in the list to select it.
One note will be played on the selected patch.
- 5 Click the [OK] button or the [APPLY] button.
The selected patch will be assigned to the part.
If you clicked the [OK] button, the patch list will close when the patch is assigned.
If you clicked the [APPLY] button, the patch list will remain open. Click the [APPLY] button if you want to continue assigning patches to other parts.

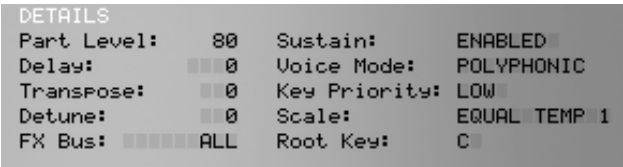


If you decide not to assign a patch, click the [CANCEL] button.

Alternatively, you can assign a patch by clicking a bank displayed in Patch Select, choosing a bank from the popup menu that appears, and dragging the patch number up or down.

DETAILS (part detail settings)

In the Part Details area you can specify how the patch assigned to the part will function, and how it will be output.
Click a part number in Patch Assign to select the part whose Part Details you want to edit.




Part Level..... [0...99]
Specifies the output level of the part.

Delay..... [0...9999]
Specifies the time in step of one millisecond from when a note-on is received until the part begins sounding.

Transpose[-24...+24]
Adjusts the pitch of the part in semitone (100 cent) steps. The range is ± 2 octaves.

Detune.....[-49...+49]
Adjusts the pitch of the part in steps of one cent. The range is ± 49 cents.

FX Bus [BUS-A...PATCH]
Specifies how the part is routed (connected) to the effects.
For more about routing, refer to “Effects” (p.55).

 You can double-click on the “FX Bus” parameter to display the Effect Edit page.

Sustain [ENABLED, DISABLED]
Specifies whether the part will respond to the sustain pedal.

Voice Mode..... [POLYPHONIC, UNI RETRIG, UNI LEGATO]
Specifies how the part will respond to note-on messages.
With the **POLYPHONIC** setting, the part can play multiple voices up to the limit of polyphony.
With the **UNI RETRIG** setting, all voices of this part will be layered on a single note, and will be retriggered at each note-on.
With the **UNI LEGATO** setting, all voices of this part will be layered on a single note. If you play legato, individual notes will not be retriggered unless all previous notes have been released.

Key Priority [LOW, HIGH, LAST]
 This setting is valid only if “Voice Mode” is set to **UNI LEGATO** or **UNI RETRIG**. It specifies which key will be given priority for sounding if two or more note-on messages are received.

Scale [EQUAL TEMP 1...USER 12]
 Selects the scale type of the part. You can choose one of fifteen scale types.

EQUAL TEMP 1

This is the most widely used temperament. Every semitone step is the same pitch distance (exactly 1/12th of an octave) apart.

EQUAL TEMP 2

This scale includes random detuning useful for simulations of acoustic instruments.

PURE MAJOR

This temperament adjusts the pitches so that the principal major chords in the selected key will be pure.

PURE MINOR

This temperament adjusts the pitches so that the principal minor chords in the selected key will be pure.

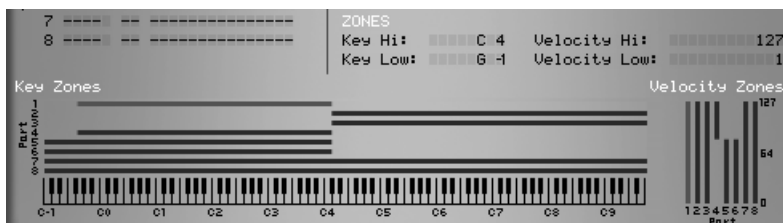
USER1-12

These are scales that you create in Global page “MICRO TUNE.” You can choose from up to twelve user scales you create.

RootKey..... [C...B]
 Specifies the key (tonic) of the scale that will be used if you’ve selected PURE MAJOR or PURE MINOR as the “Scale.”

ZONES (key and velocity zone settings)

Key and velocity zones specify the range of notes and velocity values that each patch will play. The key and velocity zones you specify are shown graphically.



note Use the Patch Assign to select the part whose key/velocity zone settings you want to set.

Key Hi [C-1...G9]

Specifies the upper limit of notes that will play this part. Note numbers above this setting will not play the part. You can drag the note number up or down to set “Key Hi.”

Key Low [C-1...G9]

Specifies the lower limit of notes that will play this part. Note numbers below this setting will not play the part. You can drag the note number up or down to set “Key Low.”

 This cannot be set higher than the “Key Hi” setting.

note You can also set “Key Hi” and “Key Low” by dragging left or right across the graphical key zone setting. If you double-click the key zone setting, “Key Hi” will be set to G9 and “Key Low” to C-1.

Velocity Hi [1...127]

Specifies the upper limit of velocities that will play this part. Velocities above this setting will not play the part. You can drag the number up or down to set “Velocity Hi.”

Velocity Low [1...127]

Specifies the lower limit of velocities that will play this part. Velocities below this setting will not play the part. You can drag the number up or down to set “Velocity Low.”

 This cannot be set higher than the “Velocity Hi” setting.

note You can also set “Velocity Hi” and “Velocity Low” by dragging up or down on the graphical velocity zone setting. If you double-click the velocity zone setting, “Velocity Hi” will be set to the maximum and “Velocity Low” to the minimum value.

Writing, loading, and saving performances




[WRITE] button – writing a performance

Here’s how to write (update) your edited performance into memory.

1 In the Performance Select page or Performance Edit page, click the [WRITE] button.

An [OK] button and [CANCEL] button will appear in the lower right of the upper display.




If you click the [WRITE] button in the Performance Edit page, the lower display will show the same performance list as in the Performance Select page.

- 2 Click a performance in the list to specify the writing-destination for your performance.
-  You can't select banks ROM4–11 as the writing-destination.
- 3 Click the [OK] button.
The performance program that previously occupied the writing-destination will be overwritten.
If you decide to cancel, click the [CANCEL] button.
-  Even if you have updated your edited performance in this way, it will be lost if you exit the application without saving. If you want to keep your updated performances, click the [FILE] button and use [SAVE ALL] to save them.
-  Part mute/unmute and solo settings (p. 18) and the step solo settings of the WaveSeq Edit page (p. 44) are not written.

[FILE] button – loading and saving performances


Here you can load all performances from your computer, save all performances to your computer, or import system exclusive data that was created by the original WAVESTATION series.

When you click the [FILE] button located at the right of the upper display, the [LOAD ALL], [SAVE ALL], and [IMPORT] buttons will appear.

-  The performances you edit will disappear if you close the application without saving. If you want to keep your edited performances, use [SAVE ALL] to save them on your computer.
-  Saving and loading in VST plug-in program file format (.fxp) is not supported.
-  The names of the buttons etc. appearing in the dialog boxes will differ depending on your operating system.

[LOAD ALL] button – Loading performance data

Here's how to load performance data saved on your computer into the WAVESTATION. The data loaded contains 550 performances; RAM1–RAM3 and ROM4–ROM11.

-  Loading this data will overwrite all performances within the WAVESTATION. If there are any edited performances that you want to keep, use [SAVE ALL] to save them on your computer before you continue with this procedure.
- 1 Click the [LOAD ALL] button.
The LOAD ALL dialog box will appear.

- 2 Select a file that has a “.fxb” filename extension, and click the [Open] button. The performance data will be loaded.
If you decide not to load, click the [CANCEL] button.

note You can also drag a performance data file from any location in your computer and drop it onto the upper or lower display.

[SAVE ALL] button – Saving performance banks

Here's how to save all performances in RAM1–RAM3 and ROM4–ROM11 to your computer.

- 1 Click the [SAVE ALL] button.
The SAVE ALL dialog box will appear.
- 2 Type a filename, specify the location for saving, and click the [Save] button. All 550 performances will be saved on your computer as a single file of performance bank data. The filename is given an extension of “.fxb”.
If you decide not to save, click the [CANCEL] button.

[IMPORT] button – Loading performance data

Here's how system exclusive data that was created by the original WAVESTATION can be loaded from your computer.

- 1 Click the [IMPORT] button.
A dialog box will appear.
- 2 Select a file that has a “.syx” extension, and click the [Open] button. The data will be loaded into the currently selected performance.
If you decide not to load, click the [CANCEL] button.

note For more about system exclusive data, refer to the “WAVESTATION Reference Guide” on the CD-ROM.

Patches

How a Patch is structured

Traditional analog synthesizers produce sound by applying a low pass filter and amplifier to a basic waveform or noise.

The WAVESTATION provides thirty-two digital sound generators, each consisting of a fully-digital oscillator, filter, amplifier, plus two envelope generators and two LFOs. While fully utilizing the strengths of traditional analog synthesizers, the WAVESTATION delivers vastly more sophisticated and powerful sounds.

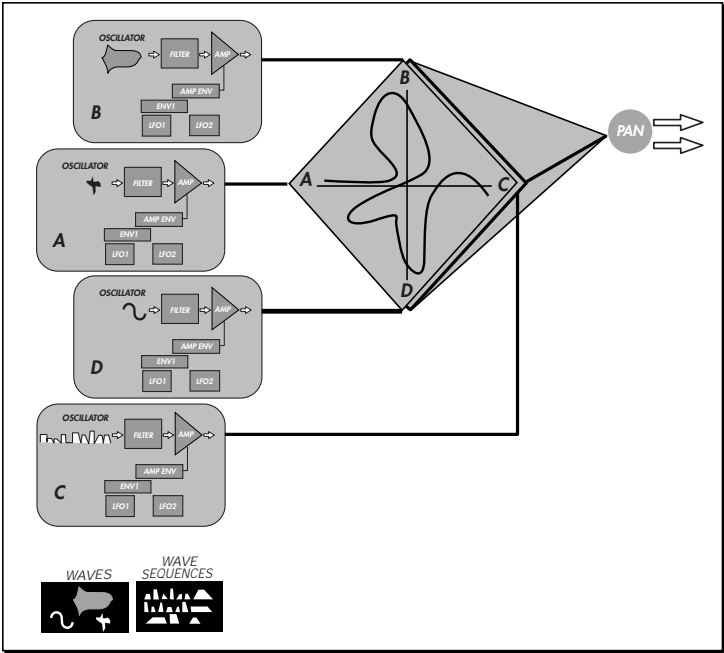
Oscillators

A patch can use either a single oscillator mode (only one oscillator), two oscillator mode, or four oscillator mode. Larger numbers of oscillators let you create richer and more complex sounds. Using fewer oscillators will let you play a larger number of voices simultaneously. You can adjust the pitch of each oscillator in steps of one cent, over a range of eight octaves. Since you can also specify how each oscillator is assigned to the keyboard, you can set the range of keys for which an oscillator will sound, or even invert its tuning so that the pitch will descend as you play upward on the keyboard.

Vector synthesis

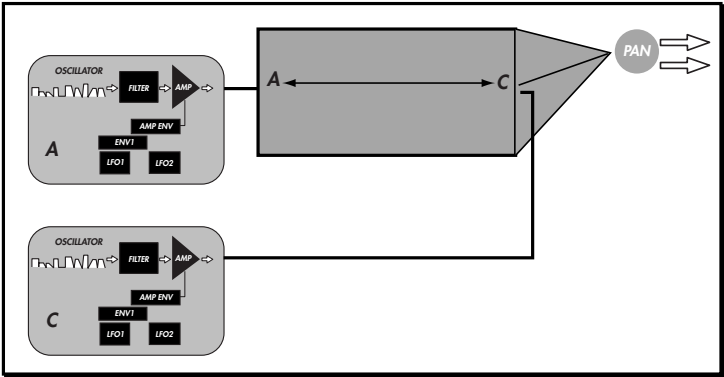
If you create a patch using four oscillators, the WAVESTATION lets you use vector synthesis to modulate the sound freely.

Signal flow in a four-oscillator patch

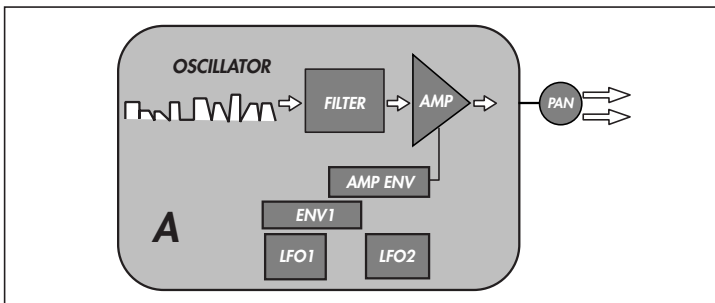


Even in the case of a two-oscillator patch, you can use vector synthesis to simply mix between the oscillators. The diagram below shows vector operation for two oscillators, which lets you smoothly mix between the oscillator A and oscillator C waveforms.

Signal flow in a two-oscillator patch



Signal flow in a single-oscillator patch



Waveforms

The waveform selected for each oscillator can be either a continuously looping waveform or a transient that plays only once without looping. Alternatively, you can use a wave sequence as the waveform.

Wave sequences

You can assemble a wave sequence by choosing from 484 different waveforms. Wave sequence waveforms can be processed just like a conventional waveform. Wave sequences can also be used in vector synthesis.

Filter

This is a standard -24 dB/octave low pass filter.

The filter has a built-in exciter that can give the sound greater clarity and definition.

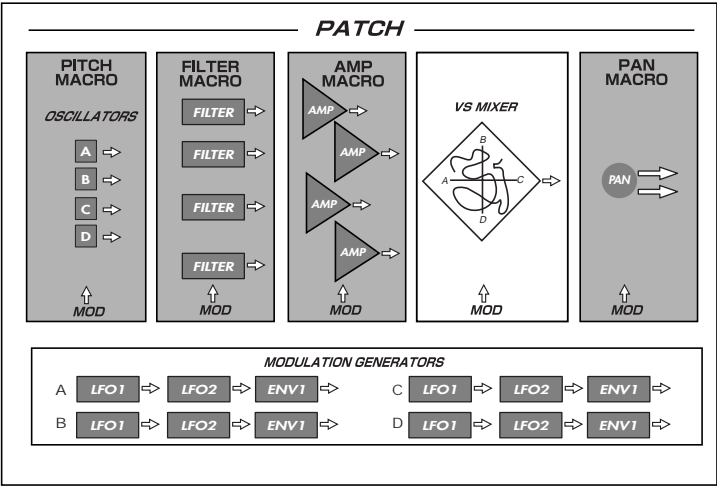
Pan

This pans the sound between left and right. You can also use modulation to control panning.

Macros

Patch parameters are divided into four groups; pitch, filter, amp, and pan. You can use a Macro to make settings for each of these four groups of parameters independently. By assigning a macro you can make major changes in the sound of a patch without having to adjust parameters individually. For example, the WAVESTATION provides amp macros containing envelopes that simulate acoustic instruments such as piano or clavinet, and you can automatically set multiple parameters of a sound simply by selecting an amp macro such as “Piano,” “Clav,” or “String.” This means you won’t have to set the envelope parameters individually.

Patch macros (areas shaded in gray)



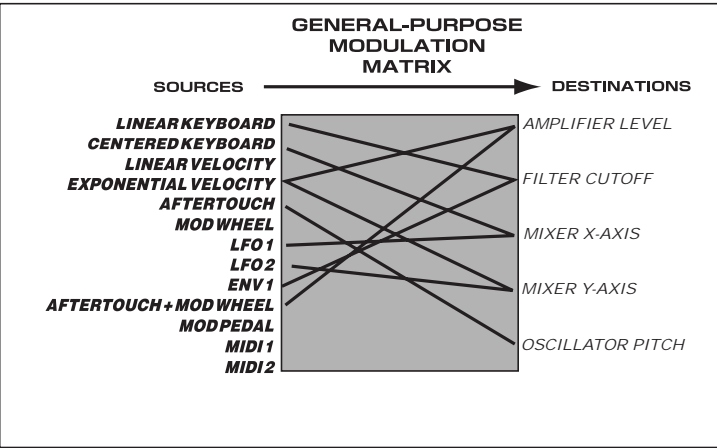
Modulation

The WAVESTATION's modulation system lets you modulate each patch in a variety of ways. For each destination module, you can select a source that will apply modulation.

For example in the amp envelope, you can use two modulation sources to modulate each destination. The number and type of the available modulation sources will differ according to the destination.

The illustration below shows a commonly-used combination of modulation source and destination settings.

Modulation system (typical example)



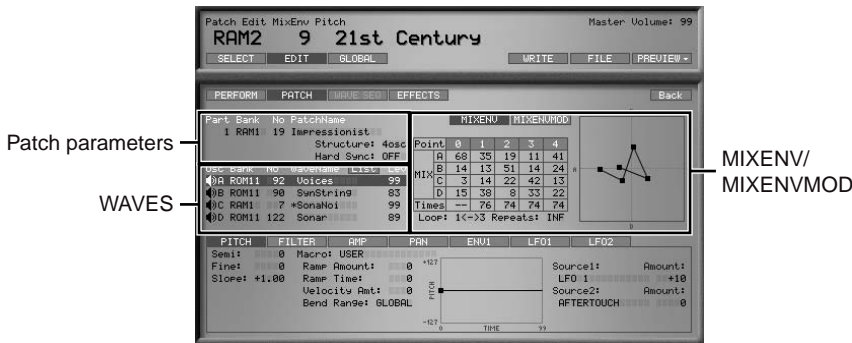
Patch Edit page

On the WAVESTATION, “patches” are one of the major units that make up the sounds you play. Up to eight patches are used to create a single “performance”. Up to 35 patches (numbered 0–34) are stored in each bank. You can store your own original or edited patches in the RAM banks.

The Patch Edit page is where you can edit patches

To access the Patch Edit page, click the [EDIT] button in the upper display, and then click the [PATCH] button in the lower display.

- You can also access the Patch Edit page by double-clicking a part number in the Patch Assign section of the Performance Edit page.
- You can't access the Patch Edit page if you've selected a part to which no patch is assigned in the Patch Assign of the Performance Edit page. You must select a part to which you've assigned a patch.



[WRITE] button – writing a patch

Here's how to write (update) an edited patch into memory.

- In the Patch Edit page, click the [WRITE] button. An [OK] button and a [CANCEL] button will appear in the lower right of the upper display. The patch list will appear in the right of the lower display.



- 2 Click one of the bank buttons shown above the patch list to select the writing-destination bank. Then click a patch in the patch list to select the writing-destination patch.
- 3 Click the [OK] button.
The patch will be overwritten onto the writing-destination you specified.
If you decide to cancel without writing, click the [CANCEL] button.
- ⚠ Even if you have updated your edited performance in this way, it will be lost if you exit the application without saving. If you want to keep your updated performances, click the [FILE] button and use [SAVE ALL] to save them.

Editing a patch

When editing a patch, remember that up to eight patches may be sounding. To listen to just the patch you are editing, click [PERFORM] in the lower display and solo the patch you wish to edit. Then click [PATCH] to return to the Patch Edit page.

Patch parameters (selecting and editing a patch)

The patch parameter area shows the part number you selected in “Patch Assign” of the Performance Edit page, and the bank, number, and name of the patch used by that part. Here you can select the patch used by the part, specify the number of oscillators in the patch, and specify how the oscillator will be synchronized.

Part	Bank	No	Patch Name
1	RAM1	19	Impressionist
			Structure: 4osc
			Hard Sync: OFF

Rename a patch

To rename a patch, double-click the patch name, use your computer keyboard to type a new name, and press the [Enter] key.

Structure [1osc, 2osc, 4osc]
Specifies how the 32 oscillators will be assigned to the patch. You can select either a 4, 2, or 1-oscillator structure.

Hard Sync [ON, OFF]
This is available if “Structure” is set to 4 or 2 oscillators.
If this is ON, oscillators B/C/D will synchronize to oscillator A. When oscillator A restarts, the other oscillators will also restart.

WAVES (assigning waveforms)

Here you can specify the waveform used by each oscillator.

Waves numbered 0–31 are wave sequences, and waves 32 and higher are looped waveforms or unlooped transient waveforms.

You can assign up to four waveforms to a patch.

Osc	Bank	No	WaveName	List	Lev
◀▶	A	ROM11	92	Voices	99
◀▶	B	ROM11	90	SynString	83
◀▶	C	RAM1	7	*SonaNoi	99
◀▶	D	ROM11	122	Sonar	89

Osc (OSC Select)

This indicates the waveform used by each oscillator. Unassigned oscillators are indicated by “-----” in the display.

Selecting an oscillator to edit

Click A, B, C, or D at the far left to select an oscillator; that line is highlighted, and the corresponding oscillator is selected for editing. The waveform assignment or macro settings you make will apply to the oscillator you select here. If a wave sequence waveform 0–31 is selected for the oscillator, you can double-click A, B, C, or D to open the Wave Seq Edit page for that waveform.

Muting/un-muting an oscillator

A “◀▶” symbol is shown at the far left to indicate that the oscillator will sound when note-on messages are received. Each time you hold down the [Ctrl] key (Mac: [Command]) of your computer and click this symbol, the oscillator will switch between muted and un-muted. When muted, the symbol will change to “◀”.

Soloing an oscillator

Each time you click the “◀▶” symbol to switch Solo on/off for that oscillator. If an oscillator is being soloed, the remaining oscillators will show the “◀” symbol and will not sound.

Assigning a wave to an oscillator

Click the [LIST] button and select a wave from the list that appears. Alternatively, click the bank of the wave displayed in “WAVES,” select a bank from the popup menu that appears, and drag the wave number up or down.

The method for assigning a wave from a list is the same as when assigning a patch to a part. (p. 19 “Assigning a patch to a part”)

Adjusting the oscillator level

Drag “Lev (Level)” (shown at the far right of each oscillator) up or down to adjust the volume level of the wave. The range is 0–99.



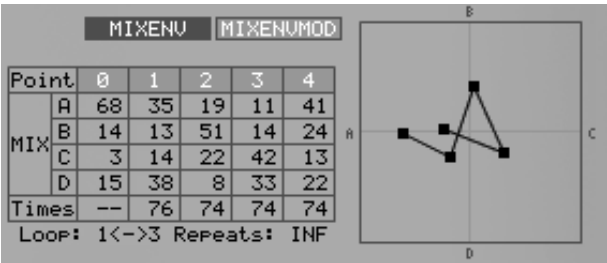
These settings apply to the patch selected in “Patch Assign” of the Patch Edit page.

MIXENV (vector synthesis settings)

Vector synthesis lets you use a mixer envelope to mix the oscillators. You can specify five points on the mix envelope (“vector envelope”) to assign the proportion at which the sound from the four oscillators will be mixed, specify the time over which the transition between each point will occur, and specify looping between points to create very complex tonal changes.

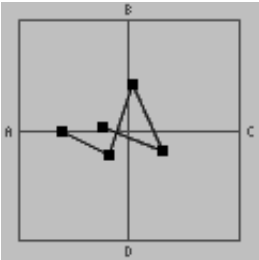
 These settings are not available for a single-oscillator patch (“Structure” = 1 osc).

To set the MIXENV parameters, click the [MIXENV] button.



Mix Envelope display

This shows the mix envelope as a graphic. You can drag the points to adjust the proportion at which the oscillators are mixed. The settings you make here are reflected in the “MIX” area shown at left.



Point..... [0...4]

Select the point for which you will set the mix proportion (“MIX”) or transition time (“Times”) within the mix envelope. Click the point whose parameters you want to set.

MIX [0...100%]

These fields specify the mix proportion of the oscillators at each point in the envelope. Use “Point” to select a point, and drag the point on the Mix Envelope display to set the mix.

Times..... [0...99]

These fields specify the transition time between each point of the mixer envelope. Drag a setting up or down to change it.

⚡ Since “Point” 0 is the starting point, its “Times” field cannot be set.

Loop.....[OFF, 0->3...2<->3]

Normally, after a note-on is received, the oscillator mix proportion will stay at the settings of point 3 until a note-off is received. By using the Loop function you can set the mix proportion to loop between point 3 and a preceding point as long as the note is held.

Repeats[OFF, 1...127, INF]

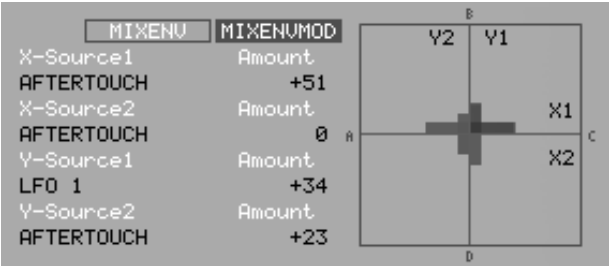
Specifies the number of times looping will occur if “Loop” is specified.

MIXENVMOD (vector synthesis modulation settings)

Vector synthesis can be controlled by multiple modulation sources in addition to the mix envelope.

⚡ These settings are not available for a single-oscillator patch (“Structure” = 1 osc).

To access the MIXENVMOD parameters, click the [MIXENVMOD] button.



X-SOURCE1/2 [LINEAR KEYBOARD...MOD PEDAL]

Amount[-127...+127]

These parameters specify the sources and depth of the modulation applied to the X-axis.

Higher settings of “Amount” allow more modulation to be applied.

Y-SOURCE1/2..... [LINEAR KEYBOARD...MOD PEDAL]

Amount[-127...+127]

These parameters specify the sources and depth of the modulation applied to the Y-axis.

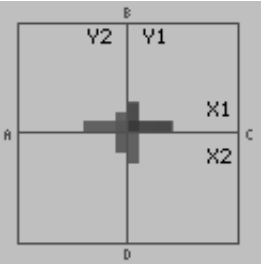
Higher settings of “Amount” allow more modulation to be applied.

ENVMOD display

This area graphically displays the “Amount” settings for each modulation source.

You can also set the “Amount” of each modulation source by dragging the bars up/down or left/right.

note If no bar is displayed (“Amount” is 0), you can click the modulation source indication (the text “X1,” “X2,” “Y1,” “Y2”) in the display to make the bar appear. Drag the bar to adjust the “Amount” value.



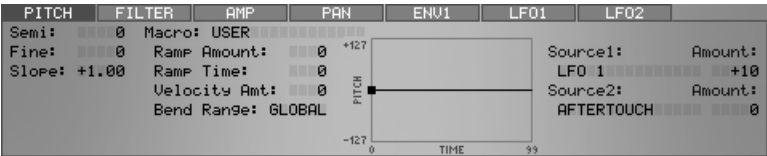
Editing with macros

Applying a “macro” to a synthesis module (one of the four parameter groups Pitch, Filter, Amp, Pan) is a quick way to make settings for multiple parameters. To see the parameters that each macro contains, click the button of one of the four modules [PITCH], [FILTER], [AMP], [PAN]. The parameters in that module are displayed with their current values. In the case of the amp envelope, the current envelope is shown graphically.

When you edit the macro by changing the parameter values, the macro name for that module will change to USER.

PITCH (pitch settings)

In the PITCH module you can specify the pitch of the waveform used by the patch, and specify how frequency modulation will be applied to that waveform. In the Patch Edit page, click the [PITCH] button to access the pitch settings. The settings you make here apply to the oscillator you selected in “WAVES.”



Semi (Semitone)[–24...+24]
Adjusts the pitch of the oscillator in steps of one semitone.

Fine[–99...+99]
Adjusts the pitch of the oscillator in steps of one cent (1/100th of a semitone).

Slope[–2.00...+2.00]
Specifies the key slope.

A setting of +1.00 is the normal setting.
With a setting of +2.00, the pitch will change two octaves over a one-octave span of note messages.
With a setting of 0.00, all note messages will sound at C4.

Negative (-) settings invert the direction in which pitch change corresponds to note messages.

Macro [DEFAULT...AFT+MIDI BEND]

Here you can select a macro.
By selecting a macro, you can set multiple parameters automatically.
If you then edit individual parameters, the Macro indication will change to USER.

Ramp Amount.....[-127...+127]

Specifies the difference between the pitch at the beginning of the note and the “normal” pitch to which it comes to rest as the note is held.

Ramp Time [0...99, ON]

Specifies the time over which the pitch will change from the beginning of the note until it comes to rest at the “normal” pitch.

Velocity Amt [-127...+127]

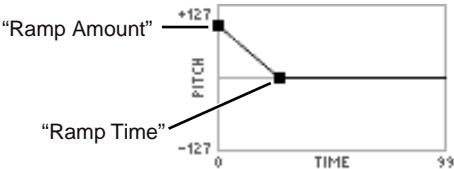
Specifies the sensitivity of the pitch ramp to velocity.
With a setting of **0**, velocity will not affect the pitch ramp. With **positive (+)** settings, the pitch will return to its normal pitch more quickly when you play strongly (i.e., with higher velocities). With **negative (-)** settings, the pitch will return to its normal pitch more slowly when you play strongly.

Bend Range [GLOBAL, OFF, 1...12]

Specifies the pitch bend range.

Ramp Setting display

This area shows the “Ramp Time” and “Ramp Amount” settings as a graph. You can also set “Ramp Time” and “Ramp Amount” by dragging the points in the graph.



Source1/Source2 [LINEAR KEYBOARD...MOD PEDAL]

Amount [-127...+127]

These parameters specify the sources and depth of the modulation applied to the pitch.
“Amount” settings further away from zero allow more modulation to be applied.

FILTER (filter settings)

This is a standard -24 dB/octave low pass filter.
You can use a variety of modulation sources to modulate the filter.
In the Patch Edit page, click the [FILTER] button to access the filter settings. The settings you make here apply to the oscillator you selected in "WAVES."

PITCH	FILTER	AMP	PAN	ENV1	LF01	LF02
Macro: USER						
Cutoff:	99	Source1:	Amount:			
KBD Tracking:	0	ENV 1	0			
Exciter:	0	Source2:	Amount:			
		AFTERTOUCH	0			

Macro..... [BYPASS...AFTERTOUCH SWEEP]

Here you can select a macro.
By selecting a macro, you can set multiple parameters automatically.
If you then edit individual parameters, the Macro indication will change to USER.

Cutoff [0...99]

Specifies the cutoff frequency. Higher settings will make the sound brighter.

KBD Tracking[-127...+127]

Specifies how the incoming note data (note pitch) will control the cutoff frequency.
With **positive** (+) settings, the sound will be brighter as you play higher on the keyboard.
With **negative** (-) settings, the sound will be brighter as you play lower on the keyboard.

Exciter [0...99]

Adjusts the high-frequency region.
Higher settings will give the high-frequency region more sparkle and clarity.

Source1 /Source2 [LINEAR KEYBOARD...MOD PEDAL]

These parameters specify the sources that will modulate the cutoff frequency.

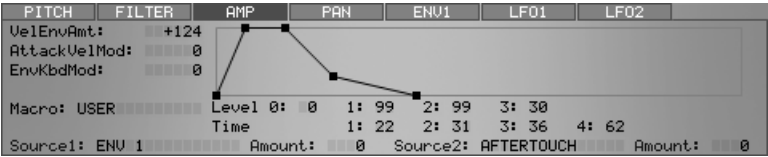
Amount[-127...+127]

These parameters specify the depth of the modulation. A setting of 0 produces no effect. Higher (and lower "-") settings allow more modulation to be applied.

AMP (amp settings)

The AMP module is where you make settings related to the volume, such as envelope and modulation.

In the Patch Edit page, click the [AMP] button to access the amp settings. The settings you make here apply to the oscillator you selected in “WAVES.”



Envelope display

This area shows a graphic of the envelope specified by “Macro” or “Level 0–3” and “Time 1–4.” You can also edit the envelope by dragging the points.

Macro [DEFAULT...OFF]

You can click this field and choose a macro from the popup menu that appears. By selecting a macro, you can set multiple parameters automatically. If you then edit individual parameters, the Macro indication will change to USER.

Level 0–3.....[0...99]

These parameters specify the levels of the amp EG.

Level 0: volume level at note-on

Level 1: attack level

Level 2: decay level

Level 3: sustain level

Time 1–4 [0...99]

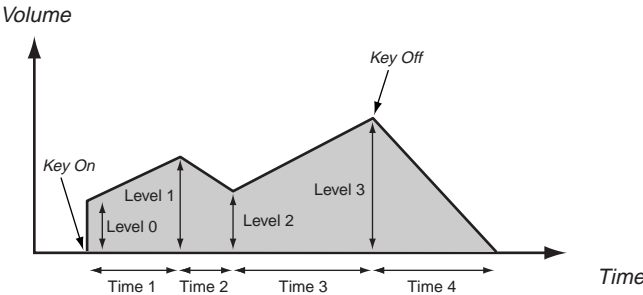
These parameters specify the times of the amp EG.

Time 1: attack time

Time 2: decay time

Time 3: slope time

Time 4: release time



VelEnvAmt (Velocity Envelope Amount)[-127...+127]

Specifies how velocity will affect the envelope levels.
With **positive (+)** settings, the volume will become louder as you play more strongly (i.e., with higher velocities).
With **negative (-)** settings, the volume will become softer as you play more strongly.

AttackVelMod (Attack Velocity Modulation).....[-127...+127]

Specifies how velocity will affect the attack time (Time 1).
With **positive (+)** settings, the attack time will become shorter as you play more strongly (i.e., with higher velocities).
With **negative (-)** settings, the attack time will become longer as you play more strongly.

EnvKbdMod (Envelope Keyboard Modulation)[-127...+127]

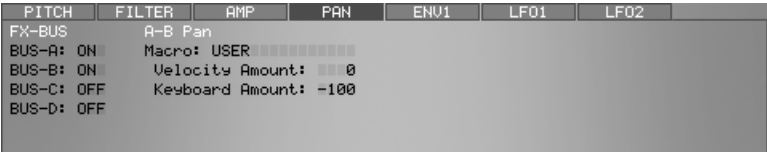
Specifies how the pitch of the incoming note messages will affect decay time (Time 2) and release time (Time 4).
With **positive (+)** settings, these times will become shorter as you play higher on the keyboard.
With **negative (-)** settings, these times will become longer as you play higher on the keyboard.

Source1 / Source2[LINEAR KEYBOARD...MOD PEDAL]

Amount[-127...+127]
These parameters specify the sources and depth of the modulation applied to the amp EG.

PAN (pan settings)

In the PAN module you can specify how the sound of the patch is routed through the effects, and specify how the pan setting of Performance Edit, DETAILS “FX Bus” will be modulated.
In the Patch Edit page, click the [PAN] button to access the PAN module editing screen.
The settings you make here apply to the oscillator you selected in “WAVES.”



FX-BUS

Here you can specify how the sound of the patch is routed to the effects.

note You can double-click on the “FX Bus” parameter to display the Effect Edit page.

BUS-A/BUS-B/BUS-C/BUS-D[ON, OFF]

If a setting is On, the corresponding bus is connected to the effect input.

A-B Pan

Macro[OFF...KEY + VELOCITY]

You can click this area and select a macro from the popup menu that appears. Three types of preset setting are provided as macros. Simply by selecting a macro, you can set multiple parameters automatically. If you then edit individual parameters, the indication will change to USER.

Velocity Amount.....[-127...+127]

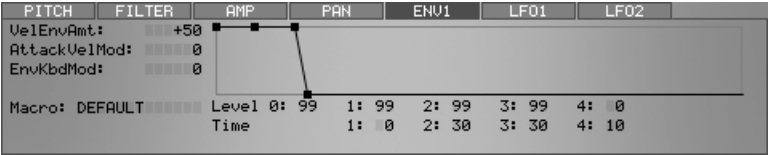
Specifies the depth and direction in which velocity will affect panning. With **positive** (+) settings, the pan setting of Performance Edit, DETAIL “FX Bus” will be used (i.e., without change) if the velocity value is low. As the velocity value increases, the sound output will move toward bus B (BUS-B). With **negative** (–) settings, the opposite will occur. With a setting of **0**, velocity will not affect panning.

Keyboard Amount[-127...+127]

Specifies the depth and direction in which the note number (keyboard position) will affect panning. With **positive** (+) settings, higher note numbers will be output further toward the left and lower note numbers will be output further toward the right.

ENV1 (envelope 1 settings)

Envelope 1 can be used as a modulation source in other synthesis modules of the patch. It can be selected whenever you have a choice of modulation source (“Source1” or “Source2”). This envelope is identical to the amp EG with the exception that the level of the fourth point is adjustable. In the Patch Edit page, click the [ENV1] button to access the envelope 1 settings.



Envelope display

This area shows a graphic of the envelope specified by “Macro” or “Level 0–4” and “Time 1–4.” You can also edit the envelope by dragging the points.

Level 0–4.....[0...99]

- These parameters specify the levels of envelope 1.
- Level 0: level at note-on
- Level 1: attack level
- Level 2: decay level
- Level 3: sustain level
- Level 4: release level

Time 1–4 [0...99]

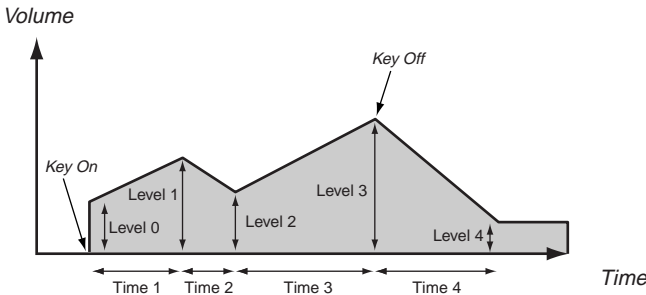
These parameters specify the times of envelope 1.

Time 1: attack time

Time 2: decay time

Time 3: slope time

Time 4: release time



VelEnvAmt (Velocity Envelope Amount)[-127...+127]

Specifies how velocity will affect the envelope levels.

With **positive (+)** settings, the levels will become higher as you play more strongly (i.e., with higher velocities).

With **negative (-)** settings, the levels will become lower as you play more strongly.

AttackVelMod (Attack Velocity Modulation).....[-127...+127]

Specifies how velocity will affect the attack time (Time 1).

With **positive (+)** settings, the attack time will become shorter as you play more strongly (i.e., with higher velocities).

With **negative (-)** settings, the attack time will become longer as you play more strongly.

EnvKbdMod (Envelope Keyboard Modulation)[-127...+127]

Specifies how the pitch of the incoming note messages will affect decay time (Time 2) and release time (Time 4).

With **positive (+)** settings, these times will become shorter as you play higher on the keyboard.

With **negative (-)** settings, these times will become longer as you play higher on the keyboard.

Macro [DEFAULT...OFF]

You can click this field and choose a macro from the popup menu that appears.

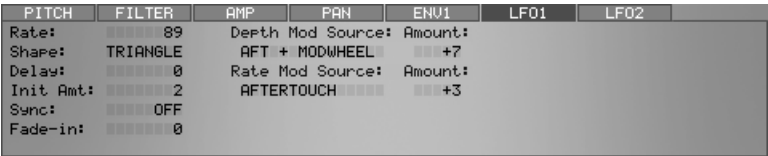
By selecting a macro, you can set multiple parameters automatically.

If you then edit individual parameters, the Macro indication will change to USER.

LFO1, LFO2 (LFO settings)

LFO1 and LFO2 can be used as modulation sources in other synthesis modules of the patch. They can be selected whenever you have a choice of modulation source (“Source1” or “Source2”).

In the Patch Edit page, click the [LFO1] or [LFO2] button to access the settings for the corresponding LFO.



Rate[0...99]

Specifies the LFO speed.

Shape.....[TRIANGLE...RANDOM]

Selects the LFO waveform.

Delay[0...99]

Specifies the time from the note-on message until the LFO begins to fade-in.

Init Amt (Initial Amount)[0...127]

Specifies the depth of the effect produced by the LFO.

Sync.....[OFF, ON]

If this is ON, the LFO will start in synchronization with the note-on. Modulation always begins with the positive phase of the LFO waveform.

Fade-in.....[0...99]

Specifies the time from when the LFO begins to fade-in until it reaches the specified depth.

Depth Mod Source [LINEAR KEYBOARD...MOD PEDAL]

Amount[-127...+127]

These parameters specify the sources and depth of the modulation applied to the LFO output.

Rate Mod Source..... [LINEAR KEYBOARD...MOD PEDAL]

Amount[-127...+127]

These parameters specify the sources and depth of the modulation applied to the LFO speed (“Rate”).

Wave sequences

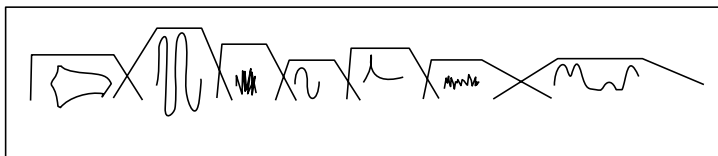
A brief introduction to wave sequences

The greatest difference between the WAVESTATION and conventional synthesizers is its ability to use wave sequences. This chapter provides a brief explanation of wave sequences and how to edit them.

On a drum machine, you can create the drum part for a song by chaining basic rhythm patterns together. Similarly, a wave sequence on the WAVESTATION is comparable to a song consisting of waveforms played in succession. A wave sequence lets you program an extremely complex succession of waveforms. The result is one continuously evolving waveshape that can produce rich, sophisticated textures.

The illustration below shows a wave sequence consisting of seven steps. For each step, you can specify a different sound (waveform), plus the level, attack time, and release time. You can also crossfade overlapping areas between steps to create continuity between waveforms.

A wave sequence consisting of seven steps



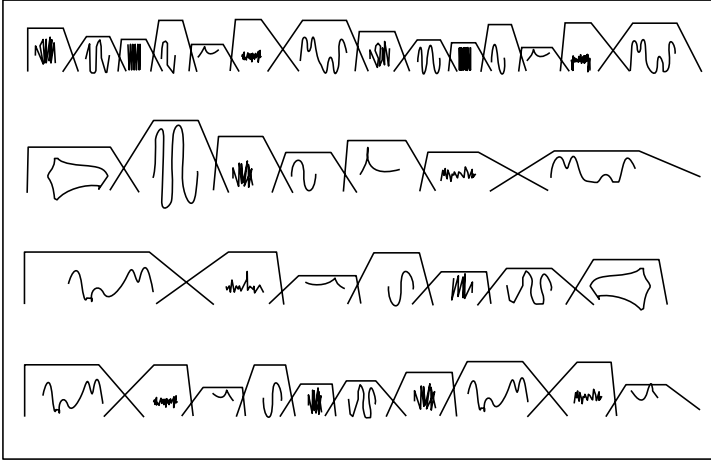
The illustration above shows the overall amplitude envelope of the wave sequence – not the waveforms themselves. A wave sequence is normally programmed with smoothly overlapping transitions between steps, as shown in this illustration.

When creating a patch on the WAVESTATION, you can assign a wave sequence to each oscillator. This means that by pressing a single key, you can cause up to four such wave sequences to play simultaneously.

The following illustration is an example of four different wave sequences played simultaneously.

In the example shown here, nearly forty different timbres are mixed together and played in the time it takes to play a brief single note on the keyboard.

Playing four different wave sequences simultaneously



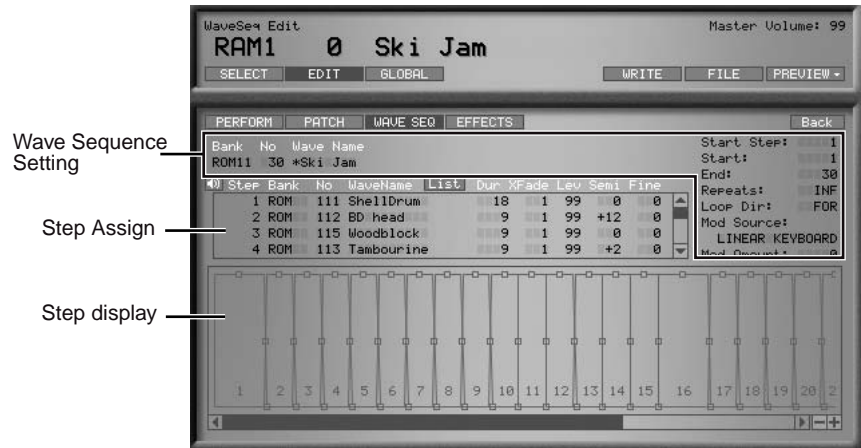
On the WAVESTATION, each bank contains 32 wave sequences (00–31). Each wave sequence can consist of up to 255 steps. You can also take advantage of a wide range of creative possibilities by making a range of steps loop up to 126 times (one repetition – 126 repetitions) or continue to loop indefinitely, or by freely controlling the start point within the wave sequence. A wave sequence can be used in the same way as a conventional waveform, so if the patch contains four wave sequences, you can use vector synthesis to mix two-dimensionally between the four wave sequences.

When you layer patches in Performance mode, up to thirty-two wave sequences can be playing simultaneously. (The actual polyphony will depend on the amount of overlap between waveforms)

WaveSeq Edit page

In the WaveSeq Edit page you can select a waveform for each step of a wave sequence. For each selected waveform you can also make settings such as pitch, duration and crossfade.

⚠ If the oscillator is using a wave other than 0–31, [WAVE SEQ] button will appear in this page.




[WRITE] button – Writing a wavesequence

Here's how to write (update) an edited wavesequence into memory. The WAVESTATION software synthesizer lets you edit the wave sequences of the ROM bank. An edited wave sequence can be written to a RAM bank memory.

- 1 In the WaveSeq Edit page, click the [WRITE] button. An [OK] button and a [CANCEL] button will appear in the lower right of the upper display. The wave list will appear in the lower display.



- 2 Click one of the bank buttons shown above the wave list to select the writing-destination bank. Then click a wave in the wave list to select the writing-destination wave.
- 3 Click the [OK] button.
The wavesequence will be overwritten onto the writing-destination you specified.
If you decide to cancel without writing, click the [CANCEL] button.
-  Even if you have updated your edited performance in this way, it will be lost if you exit the application without saving. If you want to keep your updated performances, click the [FILE] button and use [SAVE ALL] to save them.

Wave Sequence Setting

In this area you can specify the starting step of the wave sequence, the direction in which the steps will play, and the loop settings.

Wave Sequence

This area shows the bank, number, and name of the current wave sequence.

Rename a wavesequence

To rename a wavesequence, double-click the wavesequence name, use your computer keyboard to type a new name, and press the [Enter] key.

Mod Source [LINEAR KEYBOARD...MOD PEDAL]
Mod Amount [-127...+127]

These parameters specify the source and depth of the modulation that can be applied to the wave sequence.

The way in which the wave sequence is modulated will depend on the modulation source you select.

If “Mod Source” is set to **LINEAR KEYBOARD-EXPONENTIAL VELOCITY**, and you (for example) play the keyboard of an external MIDI device connected to your computer, the wave sequence will start from a different step depending on the key position or velocity of the note-on message. The distance from the Start step will depend on the “Mod Amount.” Once the wave sequence starts, it will play normally until you release the note or the sequence ends.

If “Mod Source” is set to **LFO1-MOD PEDAL**, the wave sequence will not play according to the durations specified for each step. Instead, it will play from the Start step according to the speed and direction at which you move the modulation source.

For example, suppose that you set “Start Step” to **13** and set “Mod Source” to **MOD WHEEL**. If you play a note-on while the modulation wheel is in the downward position (toward yourself), the waveform assigned to step 13 will continue playing. (If it’s a transient waveform, it will play only once.) If you then move the modulation wheel upward (away from yourself), successive steps of the wave sequence will begin sounding.

If the “Loop Direction” is **B/F**, you can operate the modulation wheel to move forward or backward through the steps.

Start Step..... [1...]
The Wave Sequence step on which playback will normally start.

Loop Dir (Loop Direction) [**FORWARD**, **B/F**]
Specifies the way in which steps will loop.
With the **FORWARD** setting, the steps between “Start” and “End” will loop for the number of times you specify in “Repeat.”
With the **B/F** setting, the wave sequence will play to the “End” step, and then loop in the reverse direction from “End” toward “Start.”

Start..... [1...]
Specifies the step at which looping will start. This can’t be set to a step later than “End”.

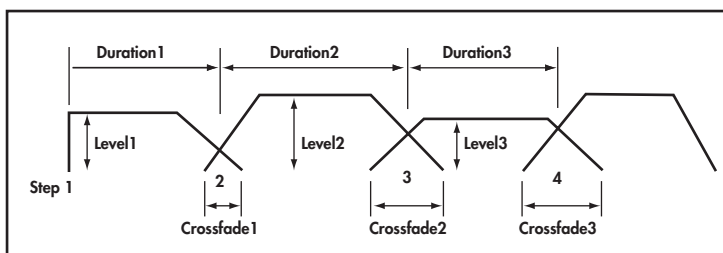
End..... [1...]
Specifies the step at which looping will end. This can’t be set to a step higher than the number of steps in the wave sequence.

Repeat..... [**OFF**, 1...126, **INF**]
Specifies the number of times that the looped area will be repeated.
With a setting of **1–126**, the wave sequence will loop for the specified number of times even after the note-off message is received, and will then sound as specified by the program.
With a setting of **OFF**, the wave sequence will sound as specified by the program.
With a setting of **INF**, the wave sequence will continue looping until the amplitude envelope finishes its release segment.

Step Assign

For each step, this area displays the waveform, waveform level, duration, and crossfade etc. You can use the scroll bar at the right to view steps that are not currently shown.

Step	Bank	No	WaveName	List	Dur	XFade	Lev	Semi	Fine
1	ROM	111	ShellDrum		18	1	99	0	0
2	ROM	112	BD head		9	1	99	+12	0
3	ROM	115	Woodblock		9	1	99	0	0
4	ROM	113	Tambourine		9	1	99	+2	0



Step


This indicates the order of the wave within the wave sequence. The last step is displayed as “End”.

A sequence can have up to 255 steps (a maximum total of 500 steps within a bank).

Bank No. Wave Name (Wave Select)

This selects the waveform that is played by this step.

Soloing a step

When you click the [Solo] button “” and then select a step in the step assignments or the step display, the wave assigned to that step will play once.

Assigning a wave to a step

Click the [LIST] button and select a wave from the list that appears. Alternatively, drag the number of the displayed wave up or down.

The method for assigning a wave from a list is the same as when assigning a patch to a part. (See p. 19 “Assigning a patch to a part”)

Inserting a step

Here’s how to insert a step in front of the step that’s currently selected in Step Assign.

Select the step in Step Assign, then right-click (Mac: Control-click) and choose **INSERT** from the popup menu that appears.

The wave assigned to the inserted step will be the wave numbered one higher than the wave assigned to the preceding step. If wave number 515 is assigned to the preceding step, wave number 516 will be assigned to the inserted step.

The “Dur,” “XFade,” “Lev,” “Semi,” and “Fine” values will be the same as those of the preceding step.

If you select step 1 and execute the Insert command, the number of the wave assigned to the inserted step will be one less than the wave number assigned to step 1. If wave number 32 was assigned to step 1, wave number 32 will be assigned. The “Dur,” “XFade,” “Lev,” “Semi,” and “Fine” values will be the same as those of step 1.

Deleting a step

Here’s how to delete the step that’s currently selected in Step Assign.

Select the step in Step Assign, then right-click (Mac: Control-click) and choose **DELETE** from the popup menu that appears.


Alternatively, you can delete several steps at once by holding down the [Shift] key of your computer and clicking to select the steps you want to delete, and then executing the Delete command.

Dur (Duration) [1...499, Gate]

Specifies the duration that this step will sound.

The range is 1–499 or Gate (= Gate; the time from when the note-on is received until the note-off is received).

If the Global page “Wave Sequence Sync” (p. 64) is **ON**, wave sequences will play according to the tempo setting of a MIDI device connected to your computer or the tempo setting of the host application (if the WAVESTATION is running as a plug-in). In this case, “Dur” specifies the number of MIDI clocks per step. A quarter note is 24 steps, an 8th note is 12 steps, and a 16th note is 6 steps, and so on. If “Wave Sequence Sync” is **OFF**, the WAVESTATION will play wave sequences according to its own internal clock. Each unit of “Dur” is approximately 24 msec. A rhythm wave sequence that uses 24 units of duration per quarter note will correspond to a tempo of approximately 105 beats per minute.

 If the value specified here exceeds the actual length of the waveform, no sound will be heard during the portion that falls beyond the length of the waveform. Also, if this is set to Gate, the sequence will not proceed to the next step until the note-off message is received.

Xfade (Crossfade) [0...998]

Specifies the amount by which the end of the current step will overlap with the beginning of the next step.

The amount of actual overlap depends on the settings of both “Duration” and “Xfade.”

Lev (Level) [0...99]

Specifies the volume level of the waveform assigned to this step.

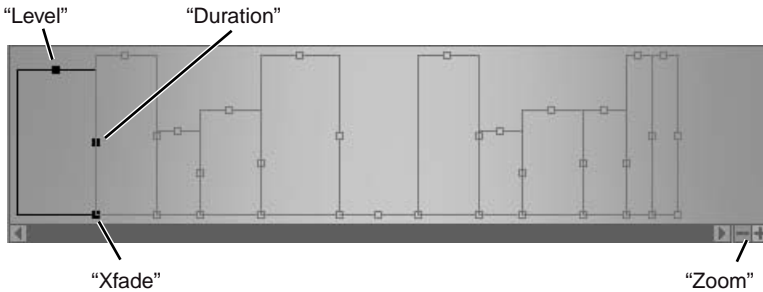
Semi (Semitone) [–24...+24]

Adjusts the pitch of the waveform assigned to this step in units of a semitone (100 cents).

Fine [-99...+99]
 Adjusts the pitch of the waveform assigned to this step in units of one cent.

Step display

This area shows the waveform selected for each step and the Step Assign parameters in graphical form. The square points (handles) shown on the frame for each waveform represent the Step Assign parameters.



Level

This is the Step Assign “Lev.” (p. 48)
 Drag the square point up/down to set it.

Duration

This is the Step Assign “Dur.” (p. 48)
 Drag the square point left/right to set it.

Xfade

This is the Step Assign “Xfade.” (p. 48)
 Drag the square point left/right to set it.

Zoom

These buttons enlarge or shrink the display.
 Click the [+] button to enlarge (zoom in) the display.
 Click the [-] button to shrink (zoom out) the display.

Effects

Effect system

The WAVESTATION contains two completely independent stereo multi-effect units, Effect 1 (FX1) and Effect 2 (FX2). Each provides fifty-five different effects such as reverb, delay, and distortion.

The WAVESTATION lets you route FX1 and FX2 either in parallel or in series. In addition, you can edit the effect settings for each part, or make settings for a specific part to bypass FX1 and FX2 and apply an external effect. You can also assign effects to different sounds, and mix the result for output.

Effect settings are made in two stages. First, specify the effect types for FX1 and FX2, and specify either series or parallel placement.

Then you can edit the parameters of each effect. The effect parameters differ depending on the effect you selected. For details on the effect types, refer to the “WAVESTATION Reference Guide” and “Expanded Effects” provided on the CD-ROM.

The combination of effects can be specified independently for each performance.

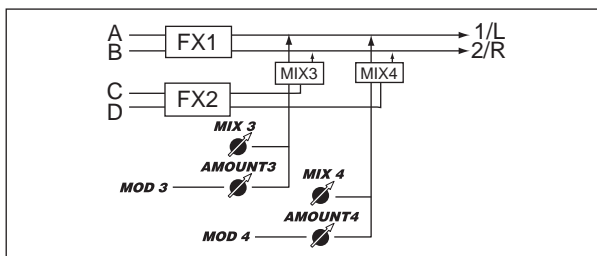
Effect structure

The effect system consists of four inputs (A, B, C, D), two effect units (FX1, FX2), and two mixers (MIX3, MIX4). Two effect outputs (1/L, 2/R) are provided in stand-alone operation, and four effect outputs (1/L, 2/R, 3, 4) are provided when running within a host application as a plug-in. To route patches to the effects, use the “FX Bus” settings in the Performance Edit page. Input settings, settings for each effect, and output settings are made in the Effect Edit page. The inputs and outputs of the two effect units can be connected in either parallel or series.

Parallel mode

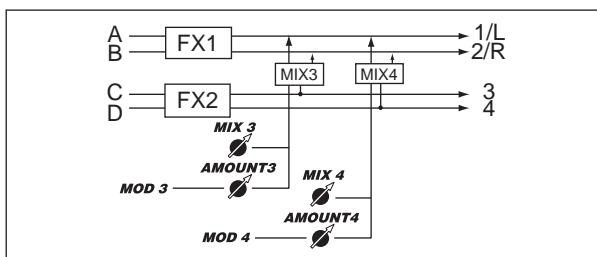
In parallel mode you can apply separate effects to inputs A and B and inputs C and D.

When running as a stand-alone application



In stand-alone operation, inputs A and B are processed by FX1, and inputs C and D are processed by FX2. Both effects are output to 1/L and 2/R. The FX2 effect output is panned by MIX3 and MIX4, and mixed into 1/L and 2/R.

When running as a plug-in

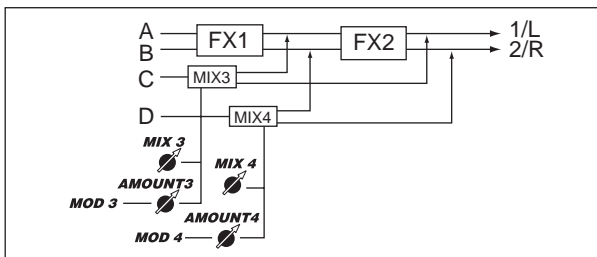


When running as a plug-in within a host application, inputs A and B are processed by FX1 and output to 1/L and 2/R. Inputs C and D are processed by FX2 and output to 3 and 4. Outputs 3 and 4 (processed by FX2) can also be panned by MIX3 and MIX4 and mixed into 1/L and 2/R.

Series mode

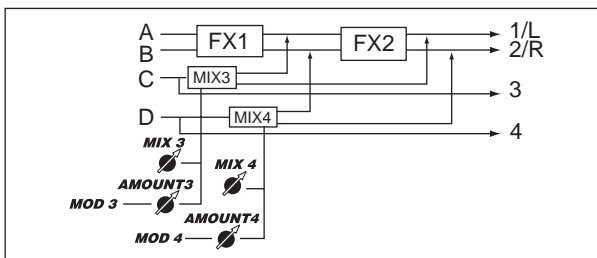
In series mode you can use both effects to process the A and B inputs.

When running as a stand-alone application



In stand-alone operation, inputs A and B are processed by FX1 and FX2 and output from 1/L and 2/R. Inputs C and D are assigned by MIX3 and MIX4 into two streams; signals that are sent to the 1/L and 2/R outputs without further processing, and signals that are processed by FX2 and then sent to the 1/L and 2/R outputs.

When running as a plug-in



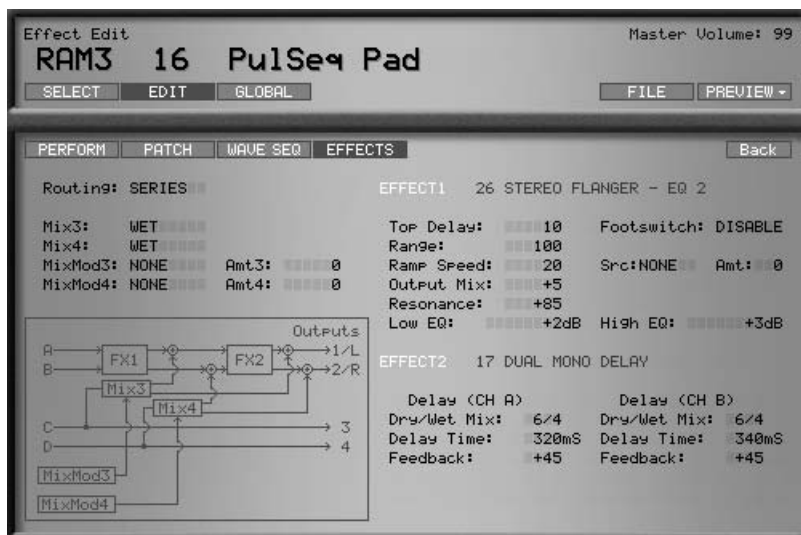
When running as a plug-in within a host application, inputs A and B are processed by FX1 and FX2 and output from 1/L and 2/R. Inputs C and D are assigned by MIX3 and MIX4 into two streams; signals that are output from 3 and 4 without processing, and signals that are processed by FX2 and then sent to the 1/L and 2/R outputs.

Effect Edit page

The Effect Edit page lets you make settings for the two effect units (FX1, FX2), as well as the effect inputs and outputs.

To access the Effect Edit page, click the [EDIT] button in the upper display and then click the [EFFECTS] button in the lower display.

note You can also access the Effect Edit page by double-clicking the text “FX Bus” in the DETAILS area of the Performance Edit page.



Effect routing

Routing.....[PARALLEL, SERIES]

Specifies the placement of the effects.

The connection diagram in the lower left of the display changes according to the placement you select.

⚡ The connection diagram for plug-in mode is displayed regardless of whether the software is actually running in plug-in or stand-alone mode; however, outputs 3 and 4 are not available in stand-alone mode.

Mix3, Mix4.....[OFF, DRY, 9/1...1/9, WET]

When “Routing” is **PARALLEL**, the MIX3 and MIX4 parameters adjust the stereo position of the FX2.

When “Routing” is **SERIES**, the MIX3 and MIX4 parameters adjust the wet/dry ratio of the C/D inputs.

MixMod3, MixMod4 [NONE, WHEEL...JOY-Y]

These select the sources that will control (modulate) the Mix3 and Mix4 settings. For example, you can control the effect depth of a reverb or flanger etc. by using an external MIDI device connected to your computer to control the effect mix. The following sources can be selected to control the Mix3 and Mix 4 settings.

NONE: No source.

WHEEL: The modulation wheel of the WAVESTATION software or the wheel of an external MIDI device connected to your computer.

AT: Channel pressure (aftertouch) received from an external MIDI device.

VEL: The velocity of the note-on message most recently received from an external MIDI device.

KEY: The highest note number of the note-on messages received from an external MIDI device. If there are no note-on messages from an external device, the last-received note number is used.

ENV: The total value of the amp envelope.

KEYDN: Key-down gate. When you stop playing on an external MIDI device connected to your computer, the reverb or delay effect will immediately be attenuated or boosted.

FSW (CC#12): The foot switch (alternate) of an external MIDI device connected to your computer, or CC#12. The control target will be on while you hold down the foot switch, and off when you release it.

FSWTOG (CC#12) The foot switch (toggle) of an external MIDI device connected to your computer, or CC#12. The control target will alternate between on and off each time you press and release the foot switch.

PEDAL (CC#4): The foot pedal of an external MIDI device connected to your computer, or CC#4.

MIDI1: The CC# assigned to "MIDI Controller 1" in the Global page. (⌘p.62)

MIDI2: The CC# assigned to "MIDI Controller 2" in the Global page. (⌘p.62)

WH+AT: The total value of modulation wheel and channel pressure (aftertouch).

JOY-X: The X-axis of the joystick of an external MIDI device connected to your computer, or the CC# assigned to "Joystick X" in the Global page. By default this is CC#16. (⌘p.63)

JOY-Y: The Y-axis of the joystick of an external MIDI device connected to your computer, or the CC# assigned to "Joystick Y" in the Global page. By default this is CC#17. (⌘p.63)

Amount3, 4 [-15...+15]

These adjust the amount of modulation produced by the sources you selected in MixMod3 and MixMod4.

With **positive (+)** settings, the mixing will change from left to right, or from dry to wet.

With **negative (-)** settings, the mixing will change from right to left, or from wet to dry.

Effect settings

EFFECT1, EFFECT2

The WAVESTATION provides 55 different effect patches. You can edit the effect parameters of each one.

The first step in making effect settings for a performance is to select the effect patches for Effect 1 (FX1) and Effect 2 (FX2). If you click, a popup menu will appear, letting you choose the effect. Some effects may not be suitable for the particular sound you are using, so edit the effect parameters and/or patch parameters to get the result you want.

For example if applying deep reverb makes the sound muddy, you might shorten the envelope times of the patch.

For the available effects, refer to the Effect List.

For details on the parameters of each list, refer to “WAVESTATION Reference Guide” and “Expanded Effects” on the CD-ROM.

Connecting the performance parts to the effects

The DETAILS “FX Bus” setting in the Performance Edit page specifies how each of the eight parts is being routed to the various effects.

The following routings are available for each patch.

- BUS-A** Connect only to bus A.
- 99/1...1/99** Connect to bus A and bus B, and specify the proportion of signal sent to each bus.
- BUS-B** Connect only to bus B.
- BUS-C** Connect only to bus C.
- C+D** Connect to bus C and D.
- BUS-D** Connect only to bus D.
- ALL** Connect to all buses.
- PATCH** Connect to the bus(es) specified by the Patch Edit page PAN “FX-BUS” setting.

Effect list

00 No Effect

No effect will be used.

Reverb - EQ

01 Small hall reverb - EQ

Reverb simulating a broad space such as a hall. This effect has a relatively short reverb time, and produces a fairly bright reverberation.

02 Medium hall reverb - EQ

Reverb with more depth than Small Hall, with an emphasis on the short early reflections.

03 Large hall reverb - EQ

Reverb simulating the natural reverberation of a concert hall.

04 Small room reverb - EQ

Simulation of a small room, emphasizing the depth of the sound.

05 Large room reverb - EQ

Simulation of a large room.

06 Live Stage - EQ

Produces a somewhat broader effect than Room Reverb.

07 Wet plate reverb - EQ

Deeply applied plate reverb.

08 Dry plate reverb - EQ

Lightly applied plate reverb.

09 Spring reverb - EQ

Simulates a reverb unit that uses a spring mechanism.

Early Reflections

10 Early reflections - EQ 1

This can be used to produce a gated effect, or to add depth to the sound.

11 Early reflections - EQ 2

The level of early reflections differs from Early Reflections 1.

12 Early reflections - EQ 3

A backward envelope is applied to the early reflections.

Gate reverb - EQ

13 Forward gated reverb - EQ

These effects apply a gate to only the early reflection components. You can adjust the gate hold time.

14 Reverse gated reverb - EQ

These effects apply a reverse gate to only the early reflection components. You can adjust the gate hold time.

Stereo delay

15 Stereo delay

This is a stereo delay with feedback. The delay times of the left and right channels is determined by the left/right ratio. The input level adjusts the decay characteristics.

16 Ping-pong delay

This is a stereo delay in which two delayed channels are fed back to each other, causing the delayed sound to alternate between left and right.

Dual mono delay

17 Dual mono delay

This produces two channels of monaural delay.

Stereo multi-tap delay EQ

18 Multi-tap delay - EQ 1

The input level determines how the delay is repeated.

19 Multi-tap delay - EQ 2

Panning and repeats are adjusted by the input level.

20 Multi-tap delay - EQ 3

This produces two channels of delay that feed back to each other. The input level determines how the delay is repeated.

Stereo chorus - EQ

21 Stereo chorus - EQ

A stereo chorus in which the LFOs applied to each channel are 180° out-of-phase.

22 Quadrature chorus - EQ

A stereo chorus in which the LFOs applied to each channel are 90° out-of-phase.

23 Crossover chorus - EQ

A stereo chorus in which the two channels apply quadrature chorus to each other.

Stereo harmonic chorus

24 Stereo harmonic chorus

This is the same effect as Quadrature chorus, but a frequency splitter is used to apply chorus only to the high-frequency region.

Stereo flanger - EQ

25 Stereo flanger - EQ 1

A stereo flanger in which in-phase LFOs are applied to the two channels.

26 Stereo flanger - EQ 2

A stereo flanger in which out-of-phase LFOs are applied to the two channels.

27 Crossover flanger - EQ

Flangers with in-phase LFOs are applied, with the two channels feeding-back to each other.

Stereo enhancer/exciter - EQ

28 Stereo enhancer - EQ

This effect adds sparkle to the sound. It includes a short stereo delay.

Distortion/filter - EQ

29 Distortion - Filter - EQ

This effect causes the sound to distort. It is effective on guitar solos and similar sounds.

30 Overdrive - Filter - EQ

This simulates a guitar overdrive effect.

Stereo phaser

31 Stereo phaser 1

A phaser in which in-phase LFOs are applied to the two channels.

32 Stereo phaser 2

A phaser in which out-of-phase LFOs are applied to the two channels.

Stereo rotary speaker

33 Stereo rotary speaker

This effect simulates the rotating speaker traditionally used on “tonewheel” organs. The Slow/Fast speed can be specified by “Acceleration Mod Source.” In this case, you can use an external MIDI device connected to your computer to switch the speed of rotation.

Modulation - Pan - EQ

These effects apply panning to the input, and output it in stereo. They also allow you to mix the panned output with an equalized effect input.

34 Stereo mod - pan - EQ

In-phase LFOs are used to apply stereo panning.

35 Quadrature - pan - EQ

LFOs that are 90 degrees out-of-phase are used to apply stereo panning.

Equalizer

36 Stereo parametric equalizer

This is a three-band equalizer. You can produce a wah effect by controlling (modulating) the center frequency.

Mono chorus, flanger/delay

Effects are mono-in/stereo-out chorus and flanger effects with a stereo delay applied. These effects also provide a sample/hold function that causes the delay to continue repeating.

37 Chorus - stereo delay - EQ

The output of a mono-in/stereo-out chorus is sent through a stereo delay that provides a sample/hold function.

38 Flanger - stereo delay - EQ

The output of a mono-in/stereo-out flanger is sent through a stereo delay that provides a sample/hold function.

Mono delay/reverb

39 Delay/hall

This combines a mono delay and a mono hall reverb.

40 Delay/room

This combines a mono delay and a mono room reverb.

Mono delay/mono chorus, flanger

41 Delay/chorus

This combines a mono delay and a mono chorus.

42 Delay/flanger

This combines a mono delay and a mono flanger.

Mono delay/distortion, overdrive

43 Delay/distortion - filter

This combines a mono delay with distortion that includes a wah effect.

44 Delay/overdrive - filter

This combines a mono delay with overdrive that includes a wah effect.

Mono delay/phaser

45 Delay/phaser

This combines a mono delay and a mono phaser.

Mono delay/rotary

46 Delay/rotary

This combines a mono delay with a mono rotary speaker.

Stereo pitch shifter

47 Pitch shifter

This is a stereo pitch shifter in which the left channel is shifted up and the right channel is shifted down. Applying a slight shift can create a distinctively different chorus effect.

Modulatable pitch shifter

48 Modulatable pitch shifter/delay

This stereo pitch shifter applies modulation to the pitch-shifted sound. After the input signal is shifted up or down, a delay is applied to the pitch-shifted signal. The amount of feedback can also be adjusted.

Stereo compressor/limiter/gate

49 Stereo Compressor/Limiter gate

A compressor automatically controls the volume of the input signal. It can be used to make the input signal level more consistent (particularly effective on guitar) or to give the sound more punch (e.g., when applied to drums).

Small vocoder

A vocoder applies the spectral character of one signal (the “modulator”) to a different signal (the “carrier”). Vocoder of the past were used mainly to apply a talking or singing vocal character to a sound, but the WAVESTATION lets you create completely new types of sound.

50 Small Vocoder 1

This vocoder uses the low through mid-high frequency regions. It is particular effective on lower-pitched sounds.

51 Small Vocoder 2

This vocoder uses the low-mid through high frequency regions. It is particular effective on higher-pitched sounds.

52 Small Vocoder 3


This vocoder uses a large number of equally-spaced frequency bands that cover the low to mid-high frequency regions.

53 Small Vocoder 4

This vocoder uses a large number of equally-spaced frequency bands that cover the low-mid to high frequency regions.

Stereo vocoder/delay

The stereo vocoder/delay effects are constructed from an extremely powerful algorithm, and use both effect processors simultaneously.

 Stereo Vocoder/Delay can be selected only for FX1. Also, if you select Stereo Vocoder/Delay for FX1, no effect can be used for FX2. (The display will indicate 00: NO EFFECT.)

54 Stereo Vocoder/Delay 1

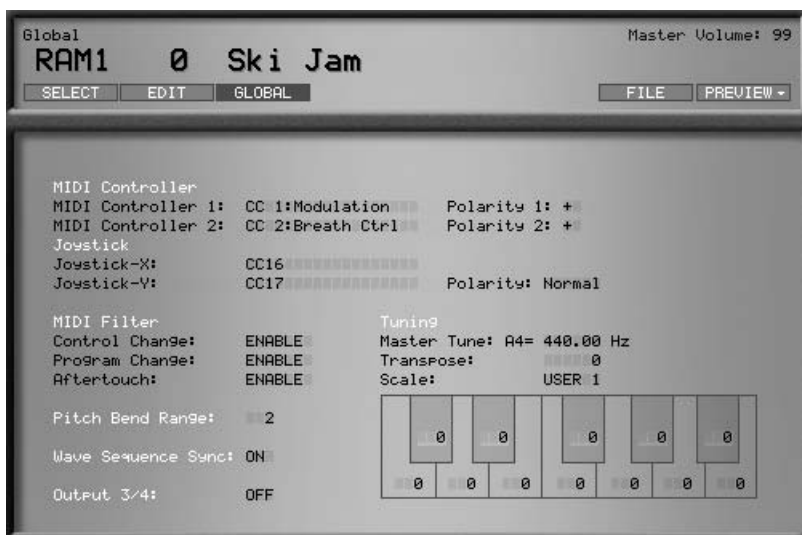
This stereo vocoder uses wide low-range and high-range frequency bands, and a large number of narrow bands that cover the mid-frequency range.

55 Stereo Vocoder/Delay 2

This stereo vocoder uses a large number of equally-spaced frequency bands that cover the entire frequency spectrum.

Global

In the Global page you can make global settings such as MIDI controller, MIDI filtering, and scale. To access the Global page, click the [GLOBAL] button in the upper display.



MIDI Controller

Here you can specify MIDI control change numbers for two modulation sources that will be available for controlling the synthesis modules within the patch. The MIDI control change numbers you select here will be used when you select MIDI1 or MIDI2 as a modulation source (“Source1,” “Source2”) of a synthesis module.

MIDI Controller 1/MIDI Controller 2[CC#1...CC#95]

These parameters allow you to select the MIDI control change numbers that will be used when you select MIDI1 or MIDI2 as a modulation source (“Source1,” “Source2”) within a patch.

Polarity(1)/Polarity(2)[+, +−]

The Polarity setting specifies the polarity of the CC# (None–95) selected as the Source.

If the Polarity is set to “+” the modulation will become stronger as you operate the controller in the positive direction starting from 0. The modulation will be at its maximum when the controller value is 127 (maximum).

If the Polarity is set to “+–” the modulation can be applied in both negative and positive directions, with 64 as the center value, where no modulation is applied. The default settings are CC#001: Modulation (+) and CC#002: Breath (+).

Joystick

Joystick X/Joystick Y [CC#1...CC#95]

This assigns a CC# to the X-axis (A–C) and Y-axis (B–D) of the VECTOR POSITION joystick.

The default settings are X: CC#16 and Y: CC#17

Polarity [Normal, Invert]

This specifies the polarity when using the CC# message assigned to “Joystick Y” to control the Vector Position Y (B–D) axis from an external MIDI device.

If this is set to **Invert**, a CC# message with a value of 0 will select B, and a value of 127 will select D.

If this is set to **Normal**, a CC# message with a value of 0 will select D, and a value of 127 will select B.

The default setting is Normal.

MIDI Filter

Control Change [ENABLE, DISABLE]

Specifies whether MIDI control changes will be received.

Program Change [ENABLE, DISABLE]

Specifies whether MIDI program changes will be received.

Aftertouch [ENABLE, DISABLE]

Specifies whether aftertouch will be received via MIDI.

TUNING

Master Tune [420Hz...460Hz]

Adjusts the overall pitch in steps of 0.1 Hz, specified as the basic pitch of the A4 note (Concert A).

Key Transpose

Transpose [-24...+24]

Adjusts the overall pitch of the performance played by the WAVESTATION in units of a semitone (100 cents). The range is ± 2 octaves.

WaveSeq Tempo Sync

Wave Sequence Sync[OFF, ON]

Specifies how wave sequences will be synchronized.
If this is **ON**, wave sequences will play in sync with the tempo setting of a MIDI device connected to your computer, or with the tempo setting of the host application (if the WAVESTATION is running as a plug-in). If there is no clock input, the wave sequence will sound in synchronization with the internal clock. Normally you will leave this **ON**. The “Dur” parameter specifies the number of MIDI clocks per step.
If this **OFF**, wave sequences will play in synchronization with the WAVESTATION’s own internal clock.


Pitch Bend Range

Pitch Bend Range[OFF, 1...12]

Specifies the pitch bend range.
This setting is used only when the Patch Edit page Pitch - “Bend Range” (p.35) is set to **GLOBAL**.

Output 3/4

Output 3/4[OFF, ON]

Specifies whether sound will be sent to outputs 3 and 4. The default setting is **OFF**.
 Regardless of this setting, the stand-alone version never sends sound to outputs 3 and 4.

User Scale

Scale[USER1...USER12]

Specifies the scale type (temperament).
The temperament specified by “MICRO TUNE” will be used.
You can choose one of twelve user scales you create.

MICRO TUNE [-99...+99 (-99 cents...+99 cents)]

Here you can create a user scale. Select **USER1–12** in “Scale,” and use this area to specify the pitch of each note in the octave. These settings are saved automatically; you can recall them at any time by selecting a user scale in “Scale.”
You can adjust the pitch of each note (C–B) in the octave over a range of -99 – +99 cents relative to the equal-tempered pitch (0).
With a setting of **+99**, the pitch will be nearly a semitone higher than the equal-tempered pitch. With a setting of **-99**, the pitch will be nearly a semitone lower than the equal tempered pitch.

Appendices

Main specifications

- Maximum polyphony: 32 notes (depends on the CPU of your computer)
- 484 different PCM waveforms
- 55 types of effect
- Sounds: 550 performances, 385 patches (eight ROM banks + three RAM banks)
- Performances/patches/wave sequence data can be imported (via .syx files)
- Stand-alone operation, or as a VST/Audio Units plug-in instrument

○ Operating requirements

[Windows]

- Computer
CPU: Intel Pentium 4/1.3GHz, Pentium M(Centrino)/ 900MHz, Celeron/1.7GHz, Celeron-M/1.2GHz, AMD AthlonXP/1600+ or better
Memory: 256 MB or more, 512 MB or more is recommended
Monitor: 1024 × 768 pixels, 16-bit color or better
- Operating system
Windows XP Home Edition/Professional SP1
- Audio interface
Standalone operation: an audio interface that supports ASIO or Direct Sound/MME
Plug-in operation: an interface that meets the requirements of your host application

[Macintosh]

- Computer
CPU: Apple G4/400MHz or better
Memory: 256 MB or more, 512 MB or more is recommended
Monitor: 1024 × 768 pixels, 32,000 colors or better
- Operating system
Mac OS X 10.2.6 or later
- Audio interface
Standalone operation: an audio interface that supports Core Audio (the Macintosh's built-in sound output may also be used)
Plug-in operation: an interface that meets the requirements of your host application

Appearance and specifications of this product are subject to change without notice. (As of June 2004)

**WAVESTATION****MIDI Implementation Chart**

Function		Transmitted	Recognized	Remarks
Basic Channel	Changed	×	1 – 16	
		×	1 – 16	
Mode		×	1	*2
	Messages	×	×	
	Altered	×	×	
Note Number:	True Voice	×	0 – 127	
		*****	0 – 127	
Velocity	Note On	×	○ 9n, V=0 – 127	
	Note Off	×	×	
Aftertouch	Polyphonic (Key)	×	○	
	Monophonic (Channel)	×	○	
Pitch Bend		×	○	
Control Change	0	×	×	Bank select (MSB)
	1	×	○	Modulation wheel
	4	×	○	Foot controller
	6	×	○	Data entry (MSB)
	12	×	○	FX SW, FX TOG
	16	×	○	Joystick-X
	17	×	○	Joystick-Y
	32	×	○	Bank select (LSB) Roll-over at 0-10

	38 64 100 101 1-95 121	× × × × × ×	○ ○ ○ ○ ○ ○	Data entry (LSB) Damper pedal RPN(LSB) RPN(MSB) Assignable control Reset All controller
Program Change	Variable Range	× *****	○ 0 – 127 Roll-over at 0-49	
System Exclusive		×	×	
System Common	Song Position Song Select Tune	× × ×	× × ×	
System Real Time	Clock Command	× ×	○ ×	
Aux Messages	Local On/Off All Notes Off Active Sense Reset	× × × ×	× ○ × ×	*1
Notes *1: Ignored when in Omni mode *2: Mode messages are ignored				

Mode 1: OMNI ON, POLY
Mode 3: OMNI OFF, POLY

Mode 2: OMNI ON, MONO
Mode 4: OMNI OFF, MONO

○ : Yes
× : No

Consult your local Korg distributor for more information on MIDI IMPLEMENTATION.

