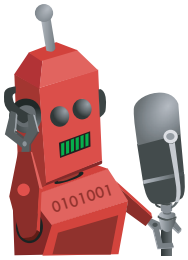
VX-323

VOICE SYNTHESIZER
GENERATEUR DE SON VOCAL
VOKALSOUNDGENERATOR



OWNER'S MANUAL
MANUEL D'UTILISATION
BEDIENUNGSANLEITUNG

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OPERATING PRECAUTIONS

Location

Avoid locations exposed to direct sunlight or other sources of heat. Also avoid locations subject to vibration, excessive dust, color, or moisture.

Cleaning

Do not attempt to clean the exterior with chemical solvents; this may damage the finish. Clean with a soft, dry cloth.

Service and Modifications

Do not open the VX-323 or attempt to make your own repairs or modifications to any part of the instrument. Such actions may not only result in electrical shock or damage, but will also void the product warranty. Refer all servicing to a qualified Bitnotic service center.

Relocation

When moving the instrument be sure to unplug the AC wall plug and all other connecting cables.

Handling

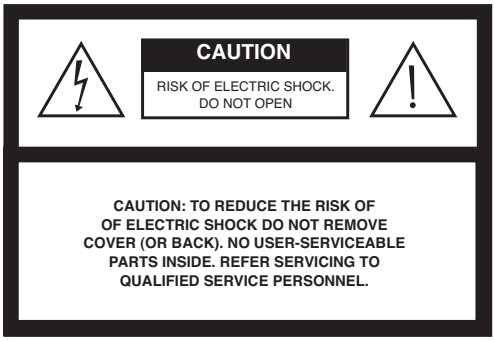
Avoid applying excessive force to switches and slide controls, dropping, or rough handling. The VX-323 is ruggedly constructed and uses reliable solid-state circuitry, but it should be treated with the same care you would give to any other fine musical instrument.

Electrical Storms

Digital circuitry, such as that used in VX-323, is sensitive to voltage spikes and surges. Be sure to remove all connecting cables during an electrical storm.

Electromagnetic Fields

Digital circuitry is also sensitive to electromagnetic fields such as those produced by television sets, radio receivers, transmitters, etc. The VX-323 should be kept several feet away from any such sources to prevent possible malfunctions.



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INTRODUCTION

Congratulations on your purchase of VX-323! We hope that you have many hours of creative enjoyment with the program.

VX-323 is a MIDI-controlled voice synthesis module. It retains the look and the feel of the original 1992 hardware module, which was released in limited numbers to professional musicians and recording studios. Users of that module will already be familiar with the capabilities of this software and its LCD menu system.

System Requirements

VX-323 is a Universal Binary Mac OS X program. It requires Mac OS X 10.4 and a PowerPC G4, G5, or Intel Macintosh. The faster your Mac and the more memory (RAM) that you have will ensure higher quality playback and recording.

MIDI sequencers and controllers are optional, although VX-323 is fully compatible with them. An audio editing or sequencer program is necessary to integrate voice recordings into your music compositions. Examples of these programs are GarageBand, Logic, Ableton Live, and Digital Performer.

Legal Notices

About

VX-323 was developed using Apple Xcode. User interface elements and application icons were created with Adobe Photoshop and the Inkscape illustration program. Documentation was created using Apple Pages, Microsoft Word, Inkscape, and Adobe Illustrator. Many music and audio programs, including GarageBand, Logic Express, Sweet MIDI X, and Sound Studio, were used for testing and compatibility purposes.

1. QUICK START

This brief tutorial introduces you to VX-323. You will learn how to install and run the program, play notes, and change instruments settings.

Installation

VX-323 ships as an installer package (.pkg) file. To run the installer, double-click the .pkg file. Follow the steps in the installer user interface. You do not need to restart your computer after installing VX-323.

The installer creates a **VX-323** folder inside of your **Applications** folder. This folder contains the VX-323 application, this manual, and sample files.

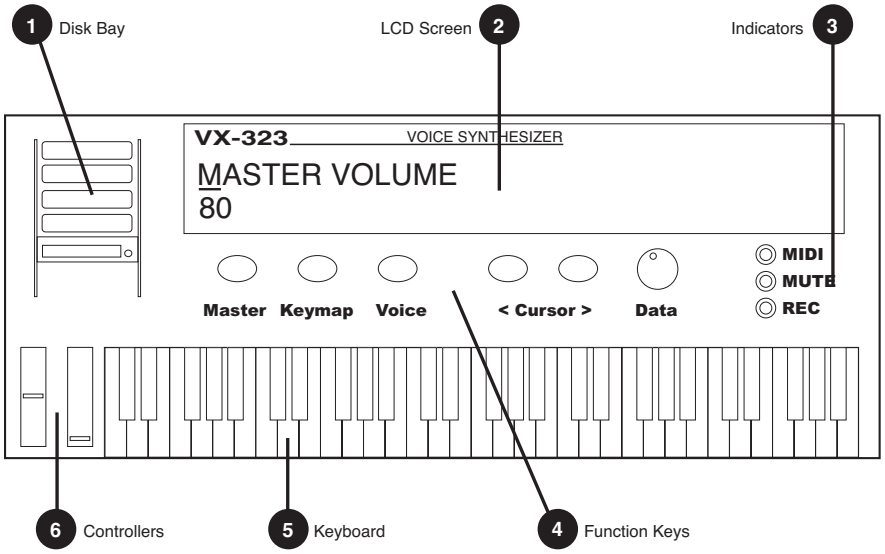
Opening The Program

1. Open the **Applications/VX-323** folder on your hard drive.
2. Double-click the application icon to launch VX-323.

Hint If you plan to use VX-323 often, click and hold down the mouse in the program's icon in the dock. When the menu appears, choose **Keep In Dock**. Then, the next time you want to launch VX-323, just click the icon in the dock.

The Instrument

When you first open the VX-323 program, a new instrument is created.



The main parts of the instrument window are, clockwise from top left:

1. **Disk Bay** For owners of the original hardware. In VX-323, this 3.5” disk drive is not functional. Instead, you save and open instrument settings using the menu commands in the **File** menu.

2. **LCD Screen** Display and edit instrument settings. The underlined letter or number indicates the current cursor position.

3. **Indicators** Show the instrument’s playback status. **MIDI** blinks when there are incoming MIDI events. **MUTE** is solid red when the instrument is muted. The **REC** indicator is solid red when recording, or blinking red when in record wait mode.

4. **Function Keys** Move through the LCD screens to view or change instrument settings. Master, Keymap, and Voice are the main menus. The underlined letter or number in the LCD indicates the current cursor position. Change the cursor position using the cursor buttons or the left and right arrow keys. To change the value, rotate the Data Wheel (or use the up and down arrow keys)

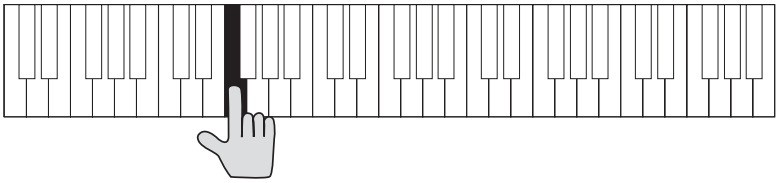
5. **Keyboard** Use the keyboard to play notes. Notes can be played from a variety of other sources, as well.

6. **Controllers** The pitch bend and mod wheels allow additional expressiveness control over notes that you play. The mod wheel can be mapped to a variety of speech and audio properties.

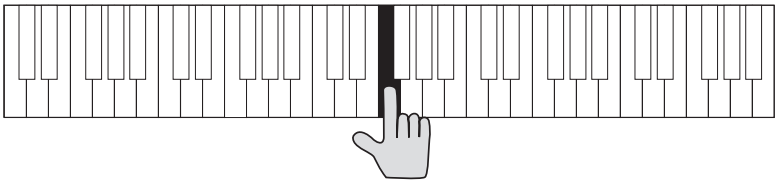
Playing A Note

The instrument is ready to play as soon as it is opened. VX-323 plays notes from a variety of sources, including MIDI controllers and sequencers, but for this quick start you will use the instrument’s keyboard.

1. Press a note on the keyboard. You should hear the phrase “Hello” spoken.



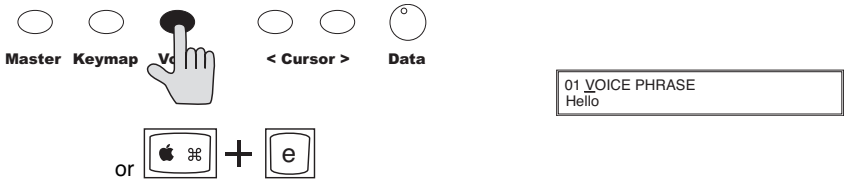
2. Press a note an octave higher or lower on the keyboard. You will hear the same phrase spoken at a different pitch.



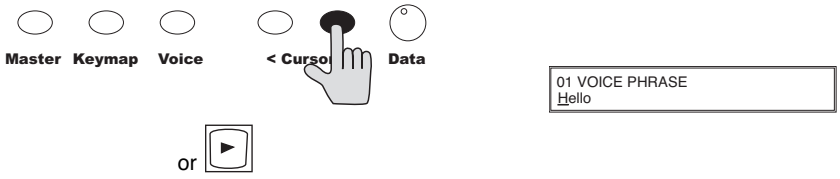
Change The Voice Phrase

The voice phrase is the words sung or spoken when you play a note. To change the phrase, you will use the function keys to go to the correct LCD menu, then change the text. There are three function menus: Master, Keymap, and Voice.

1. Click the Voice function key.

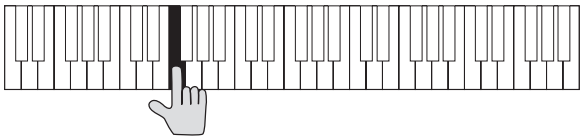


2. Click the Cursor > button



3. Type a short phrase (such as “Hot dog”) into the LCD, then press Return,

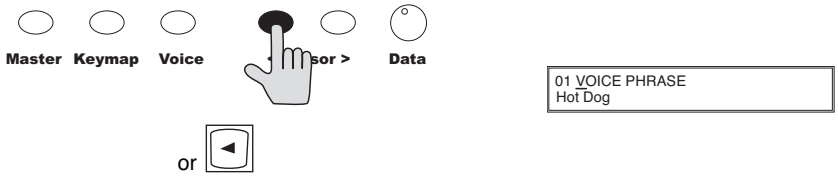
4. Press a note on the instrument’s keyboard. VX-323 will speak or sing your phrase.



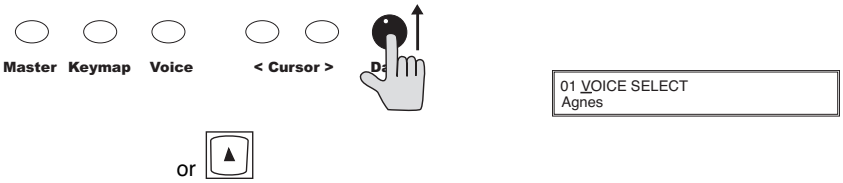
Change The Voice

VX-323 can speak or sing in any voice installed on your computer. There should be about fifteen different voices available on your Mac. The VOICE SELECT screen is the second sub menu in the VOICE menu.

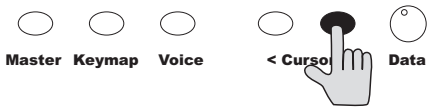
1. Move the cursor back to the sub menu select.



2. Move the Data Wheel slightly to clockwise, or press the Up arrow key. This changes the LCD menu to VOICE SELECT

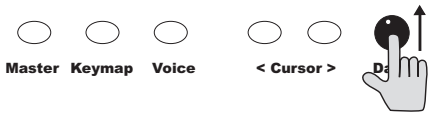


3. Click Cursor > (right arrow key) to move the cursor



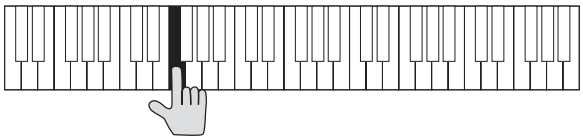
or 

4. Drag the Data Wheel clockwise (or use up arrow key) to scroll through the available voices. “Pipe Organ” is particularly musical.



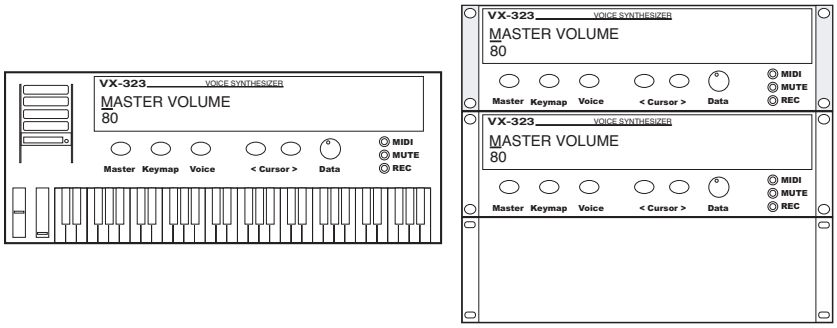
or  …

5. When you find a voice that you like, press a note on the instrument’s keyboard. The phrase that you typed in above will play in the selected voice.



2. INSTRUMENT BASICS

VX-323 features two instrument models: the 5-octave keyboard model and the 2U rack module. The keyboard and rack modules have the same menu system and sound generation capabilities. They differ only in form factor. Managing rack units and their modules is described in Chapter 7, Racks.

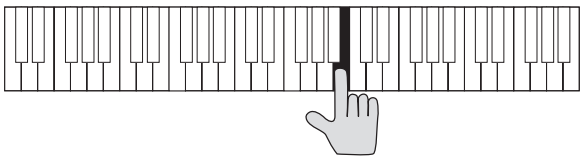


Playing Notes

You can play notes through the instrument keyboard, the computer keyboard, through a MIDI controller, or through a MIDI sequencer. VX-323 also provides a virtual MIDI keyboard, which is described in Chapter 8.

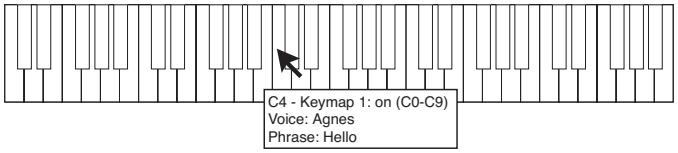
Instrument Keyboard (Keyboard Model Only)

Use the mouse to click a note on the instrument's keyboard. The note will hilight and speech will play back at that note's pitch. Release the mouse button to signal a note off. Depending on instrument options, speech will either stop then or continue until it finishes playing.



You can also click and drag the mouse cursor across the keyboard to play notes in quick succession. As the mouse moves over each note, that note will sound.

If you hold the cursor over the keyboard, after about two seconds a tooltip appears that provides information about what will be played when you click the key. The hints include the MIDI note and details of the speech that will be played.



Options that affect the instrument keyboard are:

MIDI > MIDI Out

When this item is checked, the keyboard sends MIDI commands to all VX-323 instruments, rather than to just itself. MIDI is sent out on the instrument's MIDI channel. If there are multiple instruments on the MIDI channel, they will **all** play notes.

Window > Down Octave (Command-[)

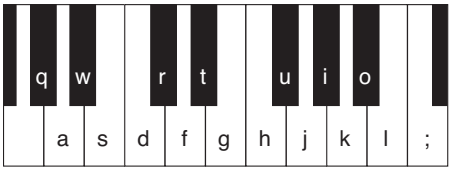
Transposes the instrument's keyboard one octave lower. The middle C in the keyboard (by default C2) will instead sound as C1 when you press it.

Window > Up Octave (Command-])

Transposes the instrument's keyboard one octave higher. The middle C in the keyboard (by default C2) will instead sound as C3 when you press it.

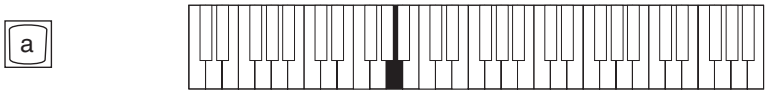
Computer Keyboard (Keyboard Model Only)

Typing keys on your QWERTY keyboard will also play notes. The following diagram illustrates the mappings:

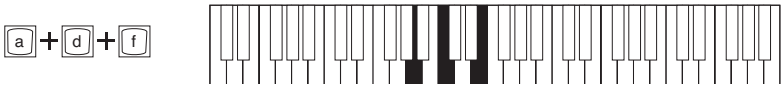


The 'a' key always plays the second A note (by default, A1) on the keyboard. If you transpose the keyboard, the notes played will also be transposed, as though you were pressing notes with the mouse. If **MIDI Out** is enabled, then notes played back through this method will be transmitted on the instrument's MIDI channel.

For example:



You can also play more than one note at a time using the QWERTY keyboard:



Note If the LCD is currently in a field with text editing, for example, the VOICE > VOICE PHRASE field, that field has priority for the typing.

MIDI Controllers

A MIDI controller is a physical instrument that plugs into your computer through a MIDI interface or USB port. Controllers include keyboards, synthesizers, samplers, workstations, and drum machines. Manufacturers include M-Audio, E-mu, Edirol, Roland, and Yamaha. They are essential tools for studio musicians and performers.

MIDI controllers transmit commands on a specific MIDI channel. In order to play notes, both the VX-323 instrument and the MIDI controller **must** be set to the same MIDI channel. Otherwise, either no notes will sound, or notes from the wrong instrument will sound.

When an instrument receives MIDI commands from a controller, its MIDI indicator blinks. If the VX-323 instrument has a keyboard, then any notes played will also hilight on the keyboard.

In addition to playing notes, you can change the volume and other settings of VX-323 instruments through sliders and knobs on the controller. Appendix A provides a MIDI implementation chart that can be used to configure your controller.

Refer to the manufacturer's documentation for installation and configuration of your MIDI controller. VX-323 is compatible with most CoreMIDI enabled devices.

Menu items that affect MIDI controllers are:

MIDI > MIDI Input Devices >

MIDI controllers that are active on your computer are listed in this menu. VX-323 will ignore all MIDI commands from devices that you uncheck, regardless of which MIDI channel they transmit on. If you

plug in instruments while VX-323 is running, they are added to this menu and are checked by default. When you unplug an controller, it will remain in the menu, but its name will be grayed out. Note that some software instruments will be listed in this menu – their input can be disabled, as well.

MIDI > All Notes Off (Command-Period)

Silences all VX-323 notes currently playing. All pending notes are also flushed.

MIDI > Panic! (Command-Escape)

The Panic! command silences all notes and also disconnects all MIDI input devices. This prevents VX-323 from receiving additional MIDI commands. Use this command if your devices get stuck in a loop, where MIDI events are echoed endlessly. Each device must be re-activated individually using the **MIDI > MIDI Input Devices** menu.

MIDI Sequencers

MIDI sequencing programs are software recording studios on your computer. They typically feature multiple tracks where each track can be digital audio or a MIDI instrument. Many sequencers support their own internal virtual instruments as well as external instruments such as VX-323. Current Macintosh sequencers include GarageBand, Logic, and Perfomer.

In order to include VX-323 output in recordings, you must record the speech as digital audio to your hard disk and add that audio as a track in your sequencer. See Chapter 9, Sequencing and Recording, for details about recording with VX-323.

Instrument Status Indicators

Each instrument has three status indicators. Colored lights display status information about the status of the instrument.

MIDI

Green Blinks briefly when the instrument receives a MIDI command.

Yellow Indicates that there is some latency on this channel. Typically, this means that the MIDI instrument or sequencer is sending too much MIDI information for VX-323 to process. You will notice some lag between the time a note is played and when the note sounds.

Red Indicates high latency. Notes played back will sound significantly later than when they are played. The VX-323 output will not be musically useful with this much latency. Even after you stop your sequencer or keyboard, notes will still play, to catch up to the backlog.

Hint Try to avoid high latency.

Hint To stop all pending notes, stop your sequencer from playing back, then choose **MIDI > All Notes Off (Command-Period).** This will flush all pending notes.

Mute

Red When the instrument is on mute. When muted, any notes played on this instrument's channel are ignored. To mute or un-mute an instrument, choose **MIDI > Mute (Command-Shift-M)**. You can also click the Mute indicator to toggle the instrument muting.

Record

Solid Red any notes that are played are recorded to a file. To start or stop recording, choose **File > Start Recording (Command-R).**

Blinking Red Waiting for a note. When the first note plays, this changes to a solid red.

Instrument Menu Commands

There are several menu items for creating and managing instrument documents.

File > New Instrument (Command-N)

Creates a new instrument document with the default instrument settings. The default settings can be set in **VX-323 > Preferences**. Settings include:

- Default LCD
- MIDI Channel (1-16)
- Voice
- Phrase

File > Open (Command-O)

File > Open Recent

File > Close

File > Save (Command-S)

File > Save As (Command-S)

File > Revert

Use the standard Mac OS File menu operations to save instruments to disk, open them from the disk, or to revert to the last saved version. Instrument files have the extension .vox – without this extension, VX-323 will not open an instrument document saved to disk.

VX-323 Instrument Document Icon

File > New Rack (Command-Shift-N)

See Chapter 7, Racks, for details on creating and using rack mounted VX-323 modules.

File > Start Recording (Command-R)

Records all speech generated by the instrument into an AIFF audio disk file. See Chapter 9, Sequencing and Recording, for details on recording output from VX-323.

MIDI > Mute (Command-Shift-M)

Silences the current instrument. All currently playing notes will stop and no sound will come out of the instrument until mute is turned off. The instrument's Mute indicator will be red.

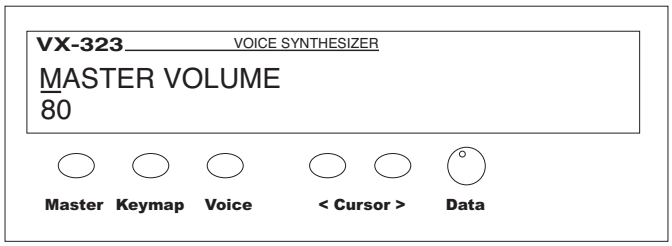
VX-323 > Preferences

In addition to several default instrument settings, you can specify which kind of document the VX-323 application should create each time you launch the program. Use the **Document Settings > Open with** menu to choose one of:

- New Instrument
- New Rack
- No Document

3. LCD PANEL

Use the LCD panel to change instrument settings. The VX-323 software reproduces the hardware unit's 32 x 2 character LCD display. The menu system will also be familiar to users of that module.

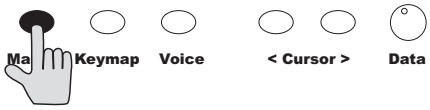


Menus

There are three main menus. Each menu is accessed using a single function key in the instrument. The menus are:

- **Master** contains functions that control the global functions of the instrument.
- **Keymap** specifies how different speech and audio settings are mapped to ranges across the keyboard.
- **Voice** settings determine the text, voice, and phrasing of speech or singing.

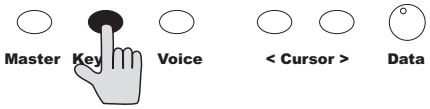
To access the Master menu:



or

Instrument > Master ⌘ + t

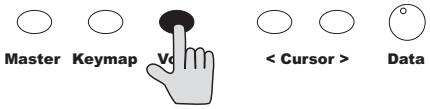
To access the Keymap menu:



or

Instrument > Keymap ⌘ + k

To access the Voice menu:



or

Instrument > Voice ⌘ + e

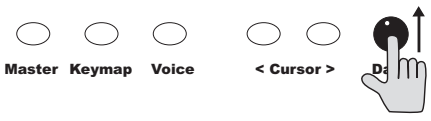
Sub-menus

Each menu is organized into sub-menus. Each sub-menu contains one or more fields that display and edit a setting in the VX-323 instrument. The sub-menus are described in great detail in Chapter 5, Instrument Settings.

The LCD screen organization is:

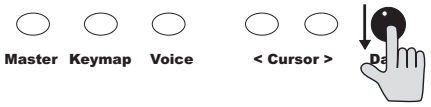
MASTER	KEYMAP	VOICE
MASTER VOLUME	KEYMAP RANGE	VOICE PHRASE
MASTER PAN	KEYMAP VOLUME	VOICE SELECT
MASTER TUNE	KEYMAP PAN	VOICE SETTINGS
MASTER BEND RANGE	KEYMAP TUNE	VOICE MODE
MASTER POLYPHONY	KEYMAP ENVELOPE	VOICE EXPRESSIVENESS
MIDI CHANNEL	KEYMAP FIXED PITCH	VOICE INFO
BANK NAME	KEYMAP MOD WHEEL	
LCD COLOR		
FACEPLATE COLOR		
VERSION		

Go to the next sub menu:



or

Go to the previous sub menu:

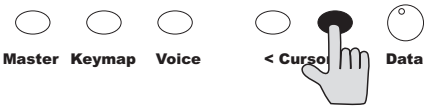


or

Cursor

The underlined letter or number indicates the **cursor position**. When you enter data, you change the value at the cursor position.

Move the cursor to the next item:



or

Move the cursor to the previous item:

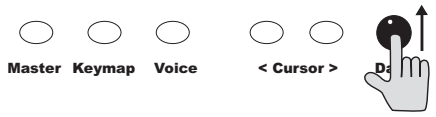
01 KEYMAP RANGE	LOW	HIGH
playback: on	C0	C9

or

Data Entry

The value at the cursor is changed using the **Data Wheel**. Depending on the field, the value might be a number, a MIDI note, a choice in a list, or a letter.

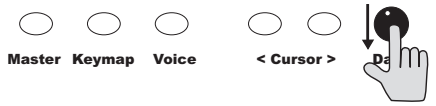
Increase a field's value:



01 KEYMAP RANGE	LOW	HIGH
playback: on	C0	C9

or

Decrease a field's value:



01 KEYMAP RANGE	LOW	HIGH
playback: on	C0	C9

or

Types of Fields

The VX-323 LCD contains the following types of fields:

Numbers Many fields are two or three-digit zero-padded numbers. The minimum and maximum values depend on the setting. For example, MASTER VOLUME ranges from 0-127, while VOICE SETTINGS RATE goes from 24-400.

On/Off The feature is enabled or disabled based on this setting. For example, the FIXED PITCH setting is an on/off field.

Lists Use list fields to choose from a short list of possible values. The VOICE SELECT field contains a list of all available speech voices.

Pan Master and Keymap pan fields range from L50 (all the way to the left channel) to R50 (right). Center position, which is the default, is CTR.

Text A text field contains zero or more characters. Fields that are text include VOICE PHRASE and BANK NAME. While it is possible to enter text using the cursor buttons and the **Data Wheel**, using the computer keyboard is more efficient.

MIDI Note Specifies a note on the keyboard. Notes are written as note/octave – C4, Bb-1, etc. The MIDI Note range is C-2 to G9. The HIGH and LOW notes of keymap range are MIDI notes, for example.

Yes/No Yes/No fields are used to confirm an action, such as duplicating a keymap. When you choose the Yes value, you then click the **Data Wheel** (or press Enter or Return on the keyboard) to confirm.

Keymap Selector This field is a two-digit number in the top left that specifies which keymap in the instrument you are editing. Each instrument has at least one keymap and may have as many as 32.

Input Methods

To change the value in a field, you can use any combination of the following methods:

Data Wheel Click and drag the **Data Wheel** down to decrease the value, and drag up to increase the value.

Arrow Keys The **Down** arrow decreases the value by one and the **Up** arrow key increases the value by one. Hold down the arrow key to change the value by more than one.

Computer Keyboard You can type directly into text fields, such as VOICE PHRASE and BANK NAME. Not all fields support all characters in all languages.

VX-323 Instrument Keyboard If the field is a MIDI note, you can click a note on the keyboard with your mouse, and the field will change to the note played.

MIDI Keyboards If the field is a MIDI note, you can play the note on a MIDI keyboard, and the field will change to the note played. The MIDI channel of the keyboard must match the instrument MIDI channel.

MIDI Controllers MIDI controllers can be configured to change LCD fields. For example, you can cycle through available voices from a knob or slider on your MIDI device, regardless of the screen in the LCD. See Appendix A, MIDI Implementation Chart, for complete details.

4. KEYMAPS

Keymaps provide you with the flexibility to have a single instrument play more than one phrase or to speak in different voices. Each keymap can have different volume, pan, tuning, and other audio and speech settings.

Every sub-menu in the KEYMAP and VOICE LCD menus has a KEYMAP SELECTOR as its first field (a two-digit number). Since each keymap has independent settings, any changes made to LCD settings affect only the current keymap.

A new instrument has one keymap that spans the entire 128 note MIDI range. There are two ways to change the keymap configuration:

- Manually, using the LCD panel to create and edit keymap ranges.
- Using menu items in the **Instrument >** menu, such as **Distribute Keymaps**, which configure keymaps in several common configurations.

Both techniques are described in this chapter.

About Keymaps

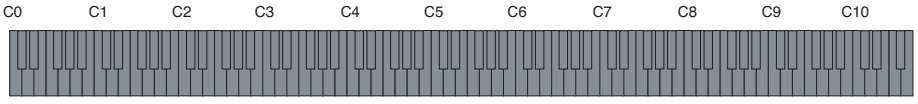
Keymap setup is performed using the KEYMAP function key and the various sub menus in the LCD screen. Additional options for keymap setup are in the **Instrument** menu. All options in the KEYMAP and VOICE menus operate on the current keymap.

Keymaps can span between one note and all 128 MIDI notes. Keymaps can overlap and there can be dead zones on the keyboard where there are no keymaps at all.

The following are examples of typical keymap layouts:

Keymap Example 1

This is the default instrument keymap setup. There is one keymap that spans the entire note range. Each note will speak the same phrase in the same voice.



Keymap 1 (on)

Note Keys in this manual's keymap charts are shaded to indicate keymap ranges. Any keys in the original black and white are NOT included in any keymaps (dead zones). Light gray and dark gray areas alternate to indicate adjacent keymaps. Hatched areas indicated overlapping keymaps.

Editing Keymaps with the LCD

The VX-323 LCD can be used to edit, duplicate, and delete keymaps.

Changing the Current Keymap

Use the KEYMAP SELECTOR to set the current keymap. The current keymap is a two-digit number that is the first field in the top line of every screen in the KEYMAP and VOICE menus. When you edit the settings in either of these menus, you are editing the settings of the current keymap.

1. Move the cursor to the KEYMAP SELECTOR. Every screen in KEYMAP and VOICE submenu has this field.

01 KEYMAP RANGE	LOW	HIGH
playback: on	C0	B4

2. **Cursor <** to underline the KEYMAP SELECTOR.

3. Use **Data Wheel** to change value.

Editing Keymaps

A keymap is defined by its range of notes in the MIDI keyboard. When VX-323 plays notes in that range, the KEYMAP and VOICE settings of that note are sounded.

Individual screens in the KEYMAP and VOICE menus are described in the chapter INSTRUMENT SETTINGS.

Duplicating Keymaps

The DUPLICATE KEYMAP? screen creates a new keymap with the identical KEYMAP and VOICE settings as the source keymap. The newly created keymap is always the last keymap in the instrument. If there are six keymaps and keymap 02 is duplicated, the new keymap will have index 07.

1. Navigate to the KEYMAP > KEYMAP DUPLICATE? screen.

2. Move the cursor to the KEYMAP SELECTOR field

3. Move the cursor to the value field (No).

4. Use **Data Wheel** to change to Yes.

5. Click **Data Wheel** once to duplicate.

6. Use **Data Wheel** to change KEYMAP RANGE. If you do not change the range, both the source and the duplicate keymaps will play the same note at the same time.

Note MIDI note ranges for keymaps can be set by playing notes on a MIDI keyboard. Move the cursor to the LOW or HIGH fields and play a note on the keyboard. That note becomes the range value.

Deleting Keymaps

Use the KEYMAP DELETE? menu to delete a specific keymap. The keymaps after the deleted keymap are moved up in order. If you delete keymap 02, keymap 03 becomes keymap 02, and so forth. There always must be at least one keymap in an instrument.

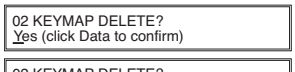
1. Navigate to the KEYMAP > KEYMAP DELETE? screen.

2. Move the cursor to the KEYMAP SELECTOR field.

3. Change the keymap to the keymap that is to be deleted.

4. Move the cursor to the value field (No).

5. Use **Data Wheel** to change to Yes.



6. Click **Data Wheel** once to delete.

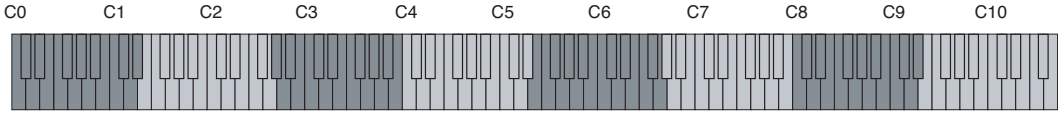
Keymap Menu Commands

Several menu commands provide shortcuts to common keymap arrangements.

Instrument > Distribute Keymaps

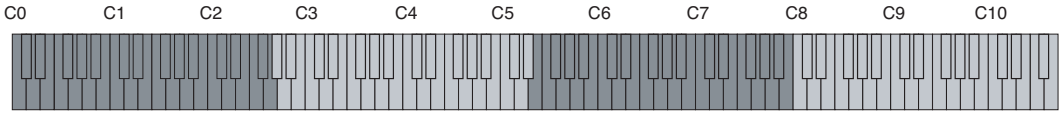
Distribute creates between 1 and 32 keymaps with equal numbers of notes. They are distributed evenly across the keyboard, with no overlapping notes or keyboard dead zones.

The following illustration shows eight keymaps distributed across the keyboard. Each keymap has a range of 16 MIDI notes.

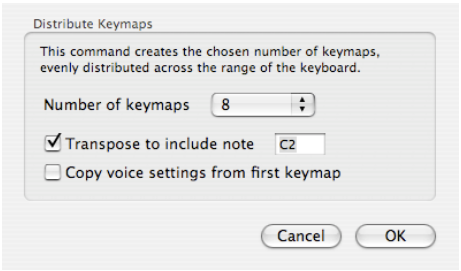


Keymaps 1-8 (on)

This illustration shows four keymaps distributed across the keyboard. Each keymap has a range of 32 MIDI notes.



Keymaps 1-4 (on)



Number of keymaps Choose 1, 2, 4, 8, 16, or 32 keymaps. The number of notes in each keymap depends on this setting.

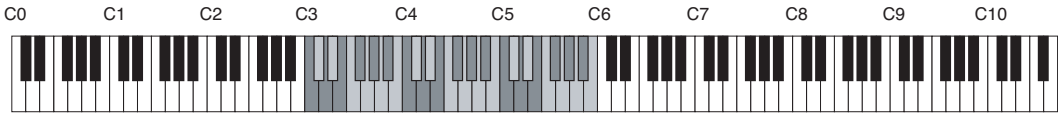
Keymaps	Notes Per Keymap
1	128
2	64
4	32
8	16
16	8
32	4

Transpose to include note Enter a MIDI note (C-2 - G9) and each KEYMAP TUNE will be transposed to include the specified note. Only the octave is transposed, so the keymap might not contain the actual note specified if the note range is too small. If this option is unchecked, notes play at their actual pitch on the keyboard.

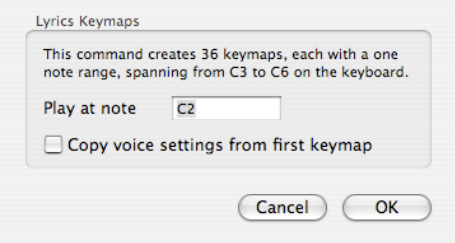
Copy voice settings from first keymap VOICE PHRASE, VOICE SELECT, and other VOICE settings of keymap 1 will be copied to each of the new keymaps created.

Instrument > Lyrics Keymaps

Lyrics creates 36 keymaps of one note each, especially useful when a variety of voice phrases are desired, but the pitch at which they are played is less important.



Keymaps 1-36 (on)

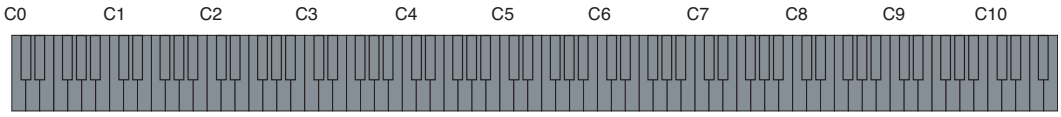


Play at note Each keymap's KEYMAP FIXED PITCH settings are set so that all notes play at this pitch. You can later use MASTER TUNE to adjust the tuning of all keymaps at once.

Copy voice settings from first keymap VOICE PHRASE, VOICE SELECT, and other VOICE settings of keymap 1 will be copied to each of the new keymaps created.

Instrument > Reset Keymaps

Restores keymap to default state: one keymap of 128 notes. The VOICE settings of the first keymap are unchanged. Any keymaps beyond the first keymap are deleted.



Keymap 1 (on)

5. INSTRUMENT SETTINGS

The settings that control how VX-323 plays sounds in response to MIDI commands are all changed using the menus in the LCD screen. Options that affect the whole instrument are in the MASTER menu. The KEYMAP menu contains functions that control how the MIDI note range is split between different voices. Use sub menus in the VOICE menu to control the speech properties of a keymap.

The following table shows the menu organization:

MASTER	KEYMAP	VOICE
MASTER VOLUME	KEYMAP RANGE	VOICE PHRASE
MASTER PAN	KEYMAP VOLUME	VOICE SELECT
MASTER TUNE	KEYMAP PAN	VOICE SETTINGS
MASTER BEND RANGE	KEYMAP TUNE	VOICE MODE
MASTER POLYPHONY	KEYMAP ENVELOPE	VOICE EXPRESSIVENESS
MIDI CHANNEL	KEYMAP FIXED PITCH	VOICE INFO
BANK NAME	KEYMAP MOD WHEEL	
LCD COLOR		
FACEPLATE COLOR		
VERSION		

The previous section described how to navigate through the menu system and to enter data using the function keys. For users of the VX-323 software, the Macintosh keyboard can also be used to move through the menus.

Keyboard	Function Key
⌘ + t	MASTER Menu
⌘ + k	KEYMAP Menu
⌘ + e	VOICE Menu
◄	Cursor <
►	Cursor >
▼	Data Entry – (Counter clockwise)
▲	Data Entry + (Clockwise)
q w e r t y	Text

MASTER

MASTER settings affect all notes played back on the instrument. Some settings can be adjusted by KEYMAP options.

MASTER VOLUME

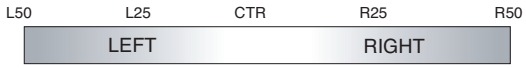
MASTER VOLUME
080

Sets the output level of the notes played. The minimum volume is 0 (silent) and the maximum volume is 127. MASTER VOLUME is effectively the **maximum** volume at which any note in the instrument can sound, since note velocity and keymap volume also affect a note's volume, Loudness of the sound played is also affected by the instrument's Mute setting and your Macintosh computer's volume level.

MASTER PAN

MASTER PAN
CTR

Selects the location of the audio in the stereo field. VX-323 uses a range of L50 for audio entirely in the left channel, CTR in the middle, and R50 entirely in the right channel.



VX-323 STEREO FIELD

MASTER TUNE

MASTER TUNE	octaves: ±00
semitones: ±00	cents: ±00

The MASTER TUNE setting changes the pitch at which notes sound. There are three fields in this sub menu: octaves (±4), semitones (±24), and cents (±99). For example, playing note C4 can sound as C5, C3, B2, or even partially between D4 and Eb4 (if tuning with cents). MASTER TUNE affects **all** notes played.

Playing C4 with	**Sounds as**
+1 octaves	C5
-1 octaves	C3
+1 semitone	C#5
-1 semitone	C5
+1 cent	1% between C5 and C#5
-1 cent	1% between B5 and C5

MASTER BEND RANGE

MASTER BEND RANGE
±03 semitones

Specifies how much a note's pitch will change when responding to the Pitch Bend MIDI controller. When pitch bend rests at the center position, the note's pitch is as played. At the bottom position, the pitch is lowered by the bend range. At the top, the pitch is higher by this amount. Positions in between are scaled proportionately. The maximum bend range is plus or minus 12 semitones (one octave).

MASTER POLYPHONY

MASTER POLYPHONY
03

Determines the maximum number of simultaneous notes that can be sounded on this instrument. If more notes are played than the polyphony limit, the oldest notes still playing are stopped to allow the new notes to be played.

MIDI CHANNEL

MIDI CHANNEL
01

Sets the MIDI channel on which this instrument accepts note, controller, and other MIDI commands. Commands on any other MIDI channel are ignored. When the instrument receives MIDI commands, its MIDI indicator light blinks. There may be more than one instrument with the same MIDI channel.

The instrument's keyboard sends notes out on this MIDI channel when the **Instrument > MIDI Out** menu item is checked. Any other instruments on the same channel will also sound notes.

The default MIDI channel for a new instrument is 1. You can change the default in **VX-323 > Preferences > New Instrument Settings > MIDI Channel**.

> **Note** VX-323 refers to the MIDI channels as 1 through 16. Other devices might use the range 0 through 15.

BANK NAME

```
BANK NAME
```

The instrument's bank name is used in **Export Sampler Instrument > SoundFont 2** and **File > Print** commands. This feature is generally useful to identify modules within a rack. If no bank name is specified, the instrument's file name is used.

LCD COLOR

```
LCD COLOR
ice*baby
```

Selects an LCD color scheme for the instrument. Different color combinations offer readability, aesthetics, or significance. Choose the default LCD scheme for new instruments in **VX-323 > Preferences > Interface Settings > Default LCD**.

FACEPLATE COLOR

```
FACEPLATE COLOR
R : 028 G : 124 B : 181
```

The faceplate color of each instrument (or each module within a rack) can be customized using this screen. Edit the Red, Green, and Blue color components individually. The default faceplate color for new instruments is specified in **VX-323 > Preferences > Faceplate Color**.

VERSION

```
VERSION: VX-323 v1.0
(c) 2001-2007 Scott Burgess
```

Displays the ROM version number of the VX-323 instrument.

KEYMAP

A keymap assigns playback and voice settings to a range of notes on the MIDI keyboard. For example, you can set up keymaps so that notes played in octaves 0 through 4 play "Hello" while octaves 5 through 10 say "Goodbye." See Chapter 4, Keymaps, for more conceptual information and details on creating and managing keymaps.

> **Note** All of the KEYMAP screens operate on the current keymap. The current keymap is indicated by the two digit number to the left of the screen name.

KEYMAP RANGE

```
01 KEYMAP RANGE     LOW   HIGH
playback: on         C0    C9
```

Determines which span of the keyboard or MIDI note range that this keymap covers. Any notes played within this range will sound with the KEYMAP and VOICE settings of the keymap. VX-323 allows both overlapping keymaps (two or more voices will sound) and dead zones (no voices will sound).

Playback When the value is on, notes within the range will sound when played. When off, notes within the range will **not** sound.

LOW The low note in the range.

HIGH The high note in the range.

KEYMAP VOLUME

```
01 KEYMAP VOLUME
127
```

Sets the maximum volume of a note played in this keymap. Values range from 0 (silent) to 127 (maximum loudness). The actual loudness of a note played is also determined by the note velocity and MASTER VOLUME.

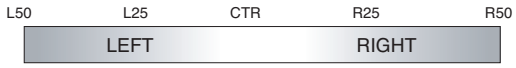
This setting is an **adjustment** to MASTER VOLUME, not an override. For example, if MASTER VOLUME = 63 (≈50%) and KEYMAP VOLUME = 63 (≈50%), the loudest an instrument will sound is about 31 (≈25%). Only when MASTER VOLUME is at 127 (100%) can a note in the keymap sound at the full KEYMAP VOLUME.

Since the available speech voices have different natural volume levels, KEYMAP VOLUME is a good way to mix the output levels of an instrument that uses multiple speech voices.

KEYMAP PAN

```
01 KEYMAP PAN
CTR
```

Sets the location of the audio in the stereo field. VX-323 uses a range of L50 for audio entirely in the left channel, CTR in the middle, and R50 entirely in the right channel.



VX-323 STEREO FIELD

KEYMAP PAN is an **adjustment** to MASTER PAN, not an override. For example, if MASTER PAN is L50 and KEYMAP PAN is R50, audio sounds at CTR (-50 + 50 = 0).

KEYMAP TUNE

```
01 KEYMAP TUNE   octaves: ±00
semitones: ±00   cents: ±00
```

The KEYMAP TUNE setting changes the pitch at which notes in the keymap sound. There are three fields in this sub menu: octaves (±4), semitones (±24), and cents (±99). For example, playing note C4 can sound as C5, C3, B2, or even partially between D4 and Eb4 (if tuning with cents).

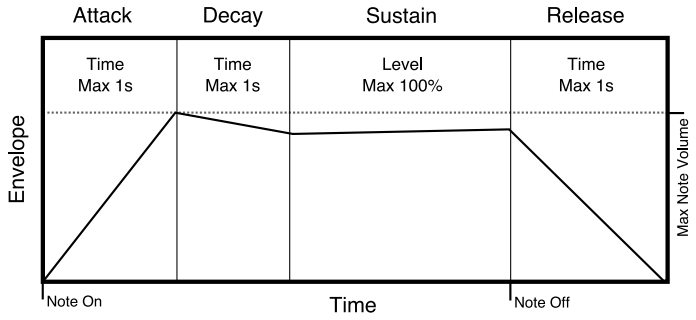
A common use for this setting is to allow a keymap to be located anywhere in the MIDI note range, yet speak in a voice's natural range. For example, the voice "Agnes" sounds most natural between notes C4 and C6. If the keymap's range is C0 to C2, you would tune it +4 octaves so that C0 sounds as C4 and C2 sounds as C6.

KEYMAP TUNE is an **adjustment** to MASTER TUNE, not an override. For example, if MASTER TUNE is +1 octave and KEYMAP TUNE is –1 octave, the note sounds as played.

KEYMAP ENVELOPE

```
01 KEYMAP ENVELOPE
A: 000   D: 000   S 127   R: 000
```

The KEYMAP ENVELOPE specifies an ADSR envelope for note volume. Use this envelope to create additional speech effects. For example, using an envelope, speech can trail off at the end of a phrase, rather than abruptly stopping.



The stages are:

Attack Length of time the audio takes to go from note on to the full speech volume. The full volume is MASTER + KEYMAP + note velocity. Maximum attack time is 1 second (127 LCD value).

Decay Amount of time between reaching full volume and settling into the sustain level. Maximum decay time is 1 second (LCD value of 127).

Sustain The volume level once the decay stage is over. Sustain level is expressed as a percent of MASTER + KEYMAP + note velocity. LCD value of 127 represents 100% level.

Release The amount of time between the note off (or key up) and silence. Max LCD value of 127 represents a 1 second release time. The VOICE RELEASE setting (either STOP or CONTINUE) affects the Release stage. If VOICE RELEASE is STOP, then Release stage is effectively 0

KEYMAP FIXED PITCH

```
01 KEYMAP FIXED PITCH: off
Note: A4
```

A fixed pitch keymap sounds all notes at a single, selectable pitch, regardless of the keyboard position or MIDI note of the note played. Many users will find this feature useful when creating an instrument that will speak, rather than sing, many different phrases.

FIXED PITCH Set to on to enable fixed pitch for this keymap.

Note Selects the pitch at which the notes will sound. MASTER TUNE and KEYMAP TUNE will modify the actual pitch heard.

KEYMAP MOD WHEEL

```
01 KEYMAP MOD WHEEL
Speech Rate
```

Selects which KEYMAP or VOICE setting the MOD WHEEL MIDI controller changes. Options are: **None**, **Speech Rate**, **Speech Mod**, **Keymap Volume**, **Keymap Pan**, and **Keymap Env Release**. The note will play with the adjusted setting when sounded.

When the MOD WHEEL is in the down position, the minimum value of the setting is used. In the top position, the maximum value is used. Positions in between are interpolated across the setting's range. For example, when mapped to Keymap Volume, the volume is 0 at the bottom, 63 in the center, and 127 at the top.

KEYMAP DUPLICATE

```
01 KEYMAP DUPLICATE?
No
```

Duplicates the current keymap. The new keymap has the exact same KEYMAP and VOICE settings as the duplicated one. It appears as the highest-numbered keymap and is made current so that any settings changes are applied to it.

Note If you do not change properties such as KEYMAP RANGE, playing a note will sound two identical notes, which degrades VX-323 performance and reduces audio quality.

KEYMAP DELETE

```
01 KEYMAP DELETE?
No
```

Deletes the current keymap. If you delete keymap 01, keymap 02 becomes 01, and so on. There must always be at least one keymap in each instrument.

VOICE

Voice settings determine the words spoken and the voice they are spoken in. Each keymap has its own, independent voice settings. The two main options are the phrase and the speech voice. Other options help to determine the “personality” of the voice.

> **Note** All of the VOICE screens operate on the current keymap. The current keymap is indicated by the two digit number to the left of the screen name.

VOICE PHRASE

```
01 VOICE PHRASE
Hello
```

Enter the text phrase that the keymap sings or speaks. You can enter English or other supported languages, although how the phrase is pronounced depends on the voice. Use the function keys to change the text:

> **Left/Right Cursor** Moves the cursor one position to the left or right. Moving left from the first position returns to sub menu select, and right from last position to keymap selector.
>
> **Data Wheel** Changes the character at the cursor position. The order is: upper case letters, lower case letters, numbers, then punctuation and special characters.

If the Keymap uses a phonetic phrase, this field displays (Phonetic Phrase). If you try to edit it, the Phonetic Phrase Editor appears. See Chapter 6, Phonetic Phrase Editor for complete details.

You can also use the Macintosh keyboard to enter text. Text is inserted at the cursor position. Other characters are moved to the right. This is similar to insert mode in a word processor. Characters that extend beyond the limit (31 characters) are lost. Valid keyboard characters are:

> **Alphanumeric** (A-Z, a-z, 0-9) Numbers and letters are inserted as typed. Text after the cursor moves to the right.
>
> **Punctuation** The following characters are also valid: space, comma, plus sign, minus sign, period, colon, question mark, exclamation point, apostrophe, quotation marks, percent sign, open and close parentheses, and open and close brackets. These symbols are either pronounced (like the percent sign) or they affect the intonation of the speech playback.
>
> **Accented Letters** Common accented letters are included for compatibility with foreign language voices, such as French, German, and Spanish. Use keyboard sequences, such as Option-e, then E, or the **Edit > Special Characters** menu item. Note that all characters appear as lower case in the LCD.
>
> **Return** Clears the text from the underline to the end of the line, then moves the cursor back to the first position.
>
> **Delete** Deletes the character to the left of the cursor and moves the cursor one position to the left.
>
> **Left/Right Arrow** Moves the cursor one position to the left or right. Moving left from the first position returns to sub menu select, and right from last position to keymap selector.

Choose a default phrase for new instruments in **VX-323 > Preferences > New Instrument Settings > Phrase**.

VOICE SELECT

```
01 VOICE SELECT
Agnes
```

Choose the voice used to speak or sing the phrase of this keymap. Available voices differ in gender, age, and personality. They may vary not only in those obvious properties, but also in volume, pitch range, and other characteristics.

VX-323 supports Macintalk voices installed on your Macintosh computer. Voices from Apple and some third-parties are supported. Third-party voices, such as those from Cepstral, support non-English languages.

Cepstral voices have been tested with VX-323. Some real-time audio effects, such as pan and volume envelopes, do not work with Cepstral voices, however. Only properly licensed Cepstral voices appear in the VOICE SELECT list. Contact the vendors for licensing, installation, and support issues for such voices.

Select a default voice for new instruments in **VX-323 > Preferences > New Instrument Settings > Voice**.

VOICE SETTINGS

```
01 VOICE SETTINGS MOD   RATE
                  045   180
```

Set additional speech characteristics. You can customize the personality or “emotional” state of the speaker with these options.

MOD Amount of modulation (pitch variance) over the duration of a word or sentence. The lower the modulation, the more robotic and less natural the speech sounds.

RATE Words per minute of the speech. Range is 24-400 wpm.

VOICE MODE

```
01 VOICE MODE     SPELL  COUNT
                  off    off
```

Determines whether the VOICE PHRASE is interpreted as words and numbers or as individual characters.

SPELL When on, pronounce each letter. “Hello” will be spelled out as “H-e-l-l-o.” When off (default), interpret the phrase as English words. This setting also forces COUNT to be one.

COUNT When on, speak each number individually, for example, “1000” sounds as “one-zero-zero-zero.” When off (default), “1000” plays as “one thousand.”

VOICE EXPRESSIVENESS

```
01 VOICE EXPRESSIVENESS
PROSODY: on
```

Choose additional options that determine how realistic (or human) the speech sounds. PROSODY is the intonation and stress that indicates the end of a sentence or phrase. If you set this option to off, the speech synthesizer will not attempt prosody.

VOICE INFO

```
01 VOICE INFO
female, 35 yrs, English
```

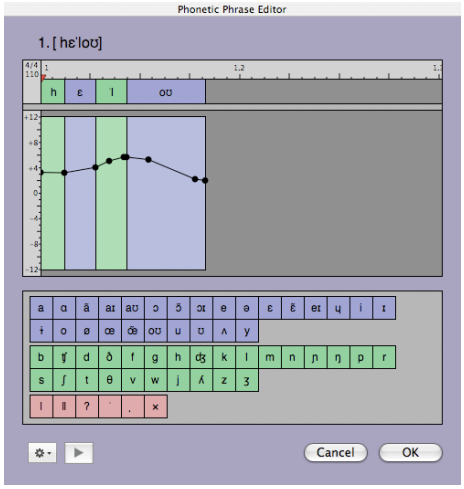
Displays details about the currently chosen voice, as determined by the VOICE SELECT menu. This information includes the gender, approximate age, and language of the speaker.

6. PHONETIC PHRASE EDITOR

VX-323 features a software implementation of the VX Phonetics Editor Module. This module was originally shipped in a small metal box and enabled users of the VX-323 hardware to edit speech sounds using a keyboard-like interface. It controlled the VX-323 via oscillating control pulses.

VX-323's Phonetic Phrase Editor provides users with the tools to finely control the pronunciation of spoken phrases. Aspects such as the duration of phonemes and their pitch can be finely tuned. Phonetic editing can be used to speak foreign languages and to fine tune the pronunciation of English phrases.

> **NOTE** Not all speech voices are compatible with the phonetics editor. Specifically, Cepstral voices do not support phonetic editing. Each voice might pronounce phonetic phrases differently, as well, such as by ignoring specified pitches.



VX-323 describes phonetics using the International Phonetic Alphabet (IPA). For example the pronunciation of the word "synthesizer" written in IPA is:

ˌsɪn θ əˈsaɪzər

Many dictionaries and encyclopedias express pronunciation in IPA. You should be able to consult any IPA dictionary, enter the IPA using the Phonetic Phrase Editor, and have VX-323 speak the word accurately. Then you can refine the pronunciation by changing the duration of phonemes or add expressiveness by changing their pitch.

You can enter the IPA of non-English words. Because the majority of the Apple voices are English, some phonemes are approximations – VX-323 will speak foreign languages with an English accent.

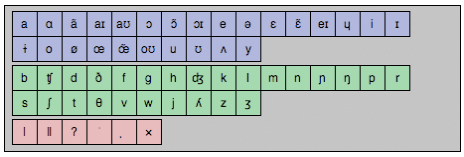
Showing the Phonetic Phrase Editor

The Phonetic Phrase Editor is a dialog window that appears above the instrument. You can edit only one keymap's phrase at a time. The background color of the window matches the instrument.

1. Enter **KEYMAP** or **VOICE** edit mode in the instrument LCD. When the LCD is in MASTER mode, the menu item is grayed out.
2. Set the keymap selector to the keymap you want to edit.
3. Choose **Instrument > Phonetic Phrase Editor** (Command-B).

Editing Phonetic Phrases

The Phonetic Phrase Editor window is divided into two parts: the phrase editor and the phoneme input keyboard. Use the phrase editor to change the duration and pitch keyframes of phonemes. The input keyboard lets you add new characters to the phrase.

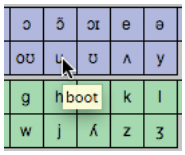


Vowel sounds are light blue

Consonant sounds are light green

Pauses, stress, **and other expressive symbols** are light red. Not all of these symbols correspond exactly to IPA.

Moving the mouse over the input keyboard and holding it there shows a tooltip with an example or description of the phoneme.



VX-323 uses some phonetic approximations for symbols in foreign languages. These are indicated by an asterisk (*) after the example. The language of the example is indicated by an abbreviation such as “Fr.” for French.

Basic Phonetic Editing

To insert a phoneme:

1. Move the insertion point **before**
2. Move the mouse over the IPA symbol you wish to insert.
3. Click the mouse button.

To replace a phoneme:

You can replace a phoneme while preserving its duration, stress, and pitch keyframes.

1. Move the insertion point **before** the symbol you wish to replace.
2. Hold down the **Option** key on your computer’s keyboard
3. Click the replacement symbol on the phoneme input keyboard.

To move the insertion point:

Do any of the following:

- Press the Left or Right arrow keys to move one phoneme in either direction.
- Click the phoneme in the phrase editor. Clicking in the left half moves the insertion point before the phoneme, and clicking in the right half sets the insertion point after the phoneme.
- Enter a phoneme. This moves the insertion point past the new phoneme.

To delete a phoneme:

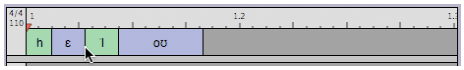
1. Move the insertion point **after** the phoneme you wish to delete
2. Click the **Delete** key

Phoneme Duration

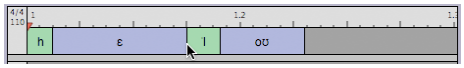
You can change the length of any phoneme in the phrase editor. Extend the duration of vowel sounds to create singing effects or of breaks to create drama.

To change the duration of a phoneme:

1. Move the mouse arrow over the bar at the end of the phoneme.



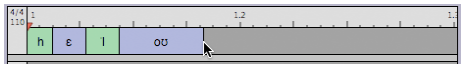
2. Click the mouse button and drag. The size of the phoneme bar expands or decreases as you move the mouse.



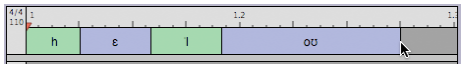
3. Release the mouse button when the phoneme is the desired duration.
4. Preview the phrase with the new phoneme duration using the **Speak** button (Command-/).

To change the duration of the entire phrase:

1. Move the mouse arrow over the bar at the end of the **last** phoneme.



2. Hold down the **Option** key on your computer's keyboard
3. Click and drag to adjust the duration of the phrase. The duration of each phoneme in the phrase will be scaled proportionately to fit the new phrase length.



4. Preview the phrase with the new phoneme duration using the **Speak** button (Command-/).

IPA Duration Symbols

IPA has symbols that indicate the duration of speech sounds, usually of vowels. These symbols follow the phonemes they modify. The Phonetic Phrase Editor does not have input keys for these symbols. If you encounter them in a dictionary, follow these guidelines:

- ˑ **Half Long** The phoneme **before** the half-colon should be "half long," which is about the default. If you want, you can extend the duration a little.
- ː **Long** Extend the duration bar of the phoneme **before** the colon so that it is about double the original duration.
- ˘ **Extra-short** Reduce the duration of the phoneme **before** the breve symbol until it is about half of the default duration.

Syllable Stress

A syllable's stress determines its emphasis or accent. While there is no formal concept of a syllable in the Phonetic Phrase Editor, placing the stress at the first phoneme of the "syllable" effectively defines one.

To set the syllable stress:

1. Move the insert point **before** the first phoneme in the syllable.
2. In the phoneme input keyboard, click one of the three stress symbols:
   - ˈ Primary Stress
   - ˌ Secondary Stress

× Remove Stress (this is not a real IPA symbol)

3. The phoneme's stress is set and the insertion point moves to the next phoneme.

Viewing Phonetic Phrases

If your phrase is long or contains many symbols, scrolling and zooming the phrase become important tools. The Phonetic Phrase Editor has two interactive tools for changing the view. A phonetic phrase retains its scroll and zoom settings when you close and re-open the editor.

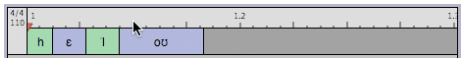
To scroll the phonetic phrase:

1. Move the mouse over the timeline.

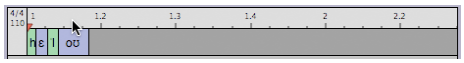
2. Click and drag to scroll the view.

To zoom the phonetic phrase:

1. Move the mouse over the timeline.



2. Option-click and drag to the left to zoom out.



3. Option-click and drag to the right to zoom in.

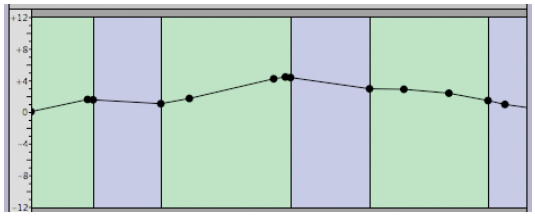
To restore the view:

1. Click the Actions button and choose Reset View.

Editing Pitch

The variations in pitch across a phrase determine help determine its meaning, for example, a question rises in pitch towards the end. Variations in pitch within a word add emotion, while flat pitch removes emotions, making the speaker sound robotic.

The Phonetic Phrase Editor contains tools to make both subtle and grand pitch changes to your phrase. Each phoneme can have one or more pitch keyframes. The pitch will rise or fall depending on where the keyframes are relative to the 0. In the editor, pitch is expressed as plus/minus semitones from the root note of the speech.



To move a keyframe:

1. Move the mouse over the keyframe.

2. Click and drag to move the keyframe. If the keyframe is at the beginning of a phoneme, you can only change the pitch, not the time.

To duplicate a keyframe:

1. Move the mouse over the keyframe
2. Option-click and drag to duplicate the keyframe

To delete a keyframe:

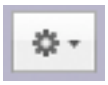
1. Move the mouse over the keyframe
2. Command-click to delete the keyframe

Actions Button

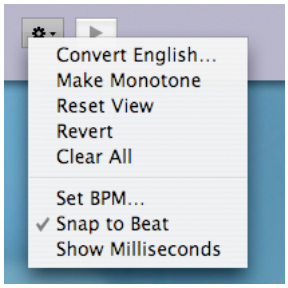
The Actions menu contains many useful commands for editing phonetic phrases.

To choose phonetic actions:

1. Click and hold down the Action gear icon.



2. Choose an item from the Actions menu.



Convert English

Use the Convert English action to enter a text phrase in English and use the automatic phonetic generation to create a phonetic phrase. Current VOICE settings, such as RATE, are used during the conversion. Once converted, you can then modify the phonemes however you like.

The non-phonetic VOICE PHRASE is also set, so that if you clear the phonetic phrase or try to speak using a voice that does not support phonemes, this English phrase will be used.

Make Monotone

Removes all of the pitch keyframes, so that the phrase is spoken without pitch changes, in other words, in monotone.

Reset View

Reset the zoom and the scrolling of the editor to its initial settings.

Revert

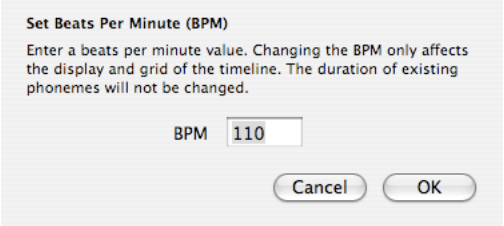
Sets both the phonetic phrase and English text back to the VOICE PHRASE before any edits were made in the current editing session.

Clear All

Deletes all of the phonemes in the Phonetic Phrase Editor.

Set BPM

Use the Set BPM command to change the instrument's beats per minute (BPM). BPM affects only the display of the timeline and the Snap to Beat function. Setting the BPM does not change the timing of any existing phonetic phrases.



Snap to Beat

Check this option to snap to the nearest grid tick when dragging phoneme duration or pitch keyframes. This option only works when displaying beats in the timeline.

Show Milliseconds

Toggles between displaying the timeline in milliseconds or beats. Switching the timeline view does not affect the timing of the phonemes.

Other Commands

Speak Button (Command-/)

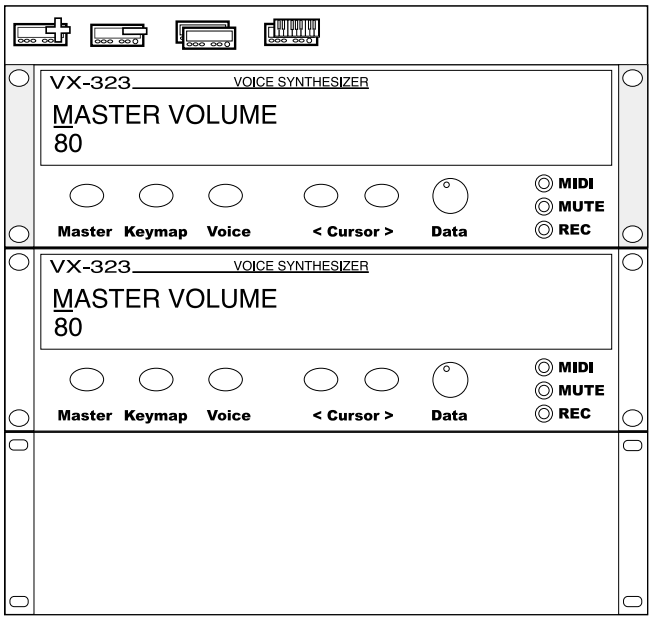
Speaks the current phonetic phrase in the current keymap's voice. The pitch is fixed at A2 (220 hz).

Instrument > Clear Phonetic Phrase

This command removes the phonetic phrase associated with the current keymap. Instead, the VOICE PHRASE text is used for speaking.

7. RACKS

The VX-323 hardware on which this software is based shipped in two form factors: the five octave keyboard model and the 2U rack module. The rack module served many studios that had the need for multiple speech synthesis modules. Each module has the same sound generation capabilities as the keyboard version of the instrument, but takes considerably less studio space.



Rack with two modules

You can create new modules, remove modules, and add modules from other racks or instruments. A rack can have zero or more modules in it.

Once you create modules, you edit their settings to provide the speech generation required for your performance or composition. The MASTER, KEYMAP, and VOICE settings of each module function independently.

> **Note** In a new rack, the first module is assigned MIID channel 1 and each subsequent module is assigned the next channel - 2, 3, 4, and so on. When you add new modules, they default to the channel in the VX-323 Preferences. If you have multiple modules set to the same channel, **all of them** will play at the same time.

Since there is no keyboard attached to a rack, to play notes, you must use the VX-323 MIDI Keyboard, a MIDI controller, or MIDI sequencer.

Current Rack Module

Keyboard controls and instrument-specific menu commands apply to the current module. The current module within the rack is indicated by darker mounting brackets (where the screws are).

To switch the current module

- Click on the module in the rack.

  or

- Press the Tab key to switch to the next module in the rack. Shift-Tab selects the previous module.

Rack Menu Commands

There are several menu items for creating and managing rack documents.

File > New Rack (Command-Shift-N)

Creates a new rack document with the default instrument settings. The default settings can be set in **VX-323 > Preferences**. Settings include:

- Default LCD
- Modules in new rack (from 1 to 4)
- MIDI Channel (1-16)
- Voice
- Phrase

The first unit in the new rack is current by default. Modules can be added or removed using menu commands or by dragging and dropping them between open documents.

File > Open

File > Close

File > Save

File > Save As

File > Revert

Use the standard Mac OS File menu operations to save racks to disk, open them from the disk, or to revert to the last saved version. Rack files have the extension .vrck – without this extension, VX-323 will not open a rack document saved to disk.

VX-323 Rack Document Icon

File > Start Recording (Command-R)

Records all speech generated by the modules in the rack into an AIFF audio disk file. See Chapter 9, Sequencing and Recording, for details on recording output from VX-323.

Instrument > New Module (Command-U)

Adds a new module with the default instrument settings to the rack. This new module appears as the last unit in the rack window. The module is selected, so that all menu items and keyboard shortcuts control this unit. If a rack document is not the top-most window, the **New Module** menu item is grayed out.

Instrument > Duplicate Module

Makes a copy of the current rack module and places it at the bottom of the rack window. The new module contains all of the settings of the original – including all MASTER, KEYMAP, and VOICE menus options.

Instrument > Delete Module

Removes the current module from the rack. The previous module in the rack becomes the current module.

> **Hint** If you don't want to permanently lose the module, use the **Add Keyboard** command (described below), and save it as a separate instrument. You can then add the module back later if you wish.

Instrument > Add Keyboard

Takes the current rack module out of the rack and creates a new keyboard instrument with the module settings.

> **Hint** When assigning keymap ranges, keyboard tooltips are useful tools – they display which voice and phrase are used to play each note on the keyboard. You can temporarily add a keyboard to a module, set up the keymaps, and then add the module back to the rack using drag and drop.

VX-323 > Preferences

In addition to several default instrument settings, you can specify which kind of document the VX-323 application should create each time you launch the program. Use the **Document Settings > Open with** menu to choose one of:

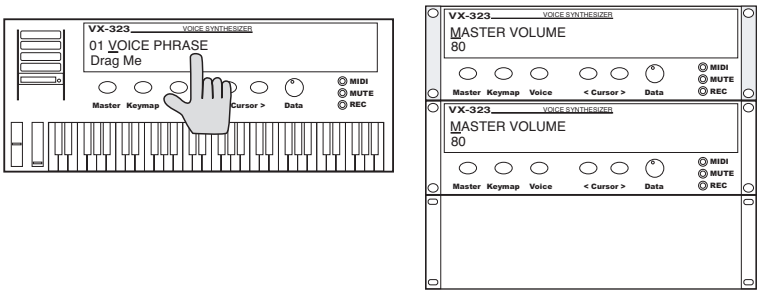
- New Instrument
- New Rack
- No Document

Adding Instruments To A Rack

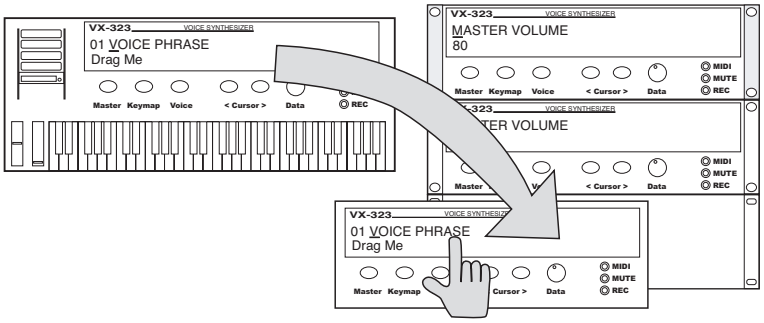
Any keyboard instrument or rack module can be moved or copied into a rack.

To *move* an instrument into a rack:

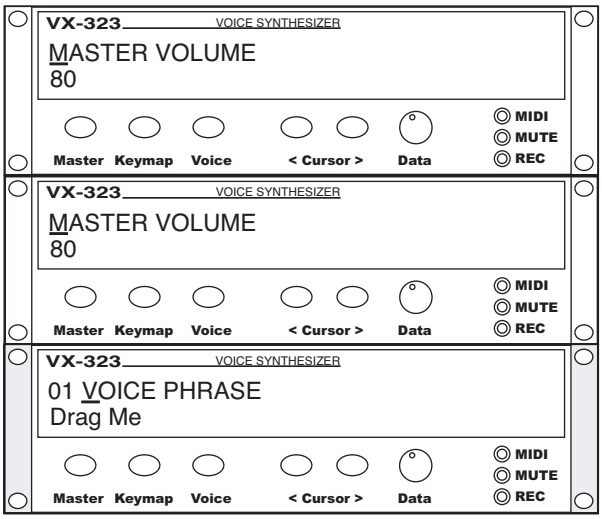
1. Click the LCD of the instrument or module.



2. Drag the mouse until the LCD is over the destination rack.



3. Release the mouse button. The instrument will disappear from the source and appear in the destination rack.



To move a *copy* of an instrument into a rack:

1. Click the LCD of the instrument or module
2. Hold down the Option key.
3. Drag the mouse until the LCD is over the destination. When over the destination, the cursor switches to a + symbol.
4. Release the mouse button. A copy of the instrument is added to the rack. The source is unchanged.

Rack Buttons

The top of a rack window contains four buttons which provide one-click access to many common rack instrument commands.

Add Module Creates a new module at the bottom of the rack. Same as **Instrument > New Module**.

Delete Module Deletes the current module. Same as **Instrument > Delete Module**.

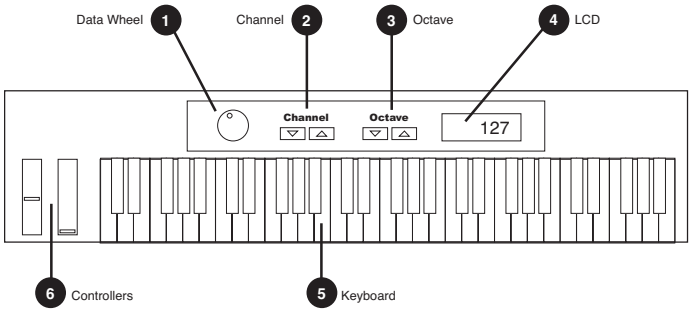
Duplicate Module Creates an identical copy of the current instrument and adds it to the bottom of the rack. Same as **Instrument > Duplicate Module**.

Add Keyboard Removes the current module from the rack and adds a keyboard to it, turning it into a instrument. Same as **Instrument > Add Keyboard**.

8. VX-323 MIDI KEYBOARD WINDOW

The VX-323 software features a multi-function MIDI keyboard that can be used to play notes on VX-323 instruments or rack units. This keyboard is especially useful when working with VX-323 racks.

The keyboard window transmits MIDI commands on a single MIDI channel. Notes played will sound on all open instruments or modules set to the same MIDI channel as the keyboard. To change an instrument's MIDI channel, use the MASTER > MIDI CHANNEL screen.



1 **Data Wheel** Changes the MASTER VOLUME of all instruments on the same MIDI channel as the keyboard.

2 **Channel** The up and down buttons increase or decrease the keyboard's MIDI channel. MIDI channels range from 1 to 16.

3 **Octave** Transposes the notes played on the keyboard. The down button lowers the notes by one octave (12 semitones) and the up button raises the notes by an octave. At the default setting of 00, the first key on the keyboard is C2. At –01 transpose, this key plays C1. At +01 transpose, this key plays C3.

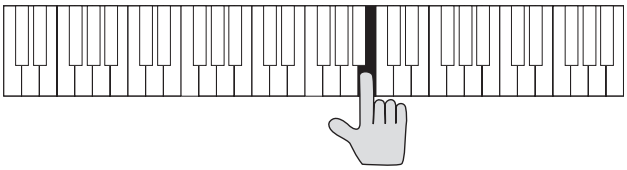
4 **LCD** This five-character LCD displays the value of the last control changed, including volume, MIDI channel, and octave.

5 **Keyboard** Click to play notes. If VX-323 receives MIDI note commands on the keyboard's MIDI channel, they will hilight here, as well.

6 **Controllers** Real-time pitch bend and mod wheel. Pitch bend allows additional expressiveness control over notes that you play. The mod wheel can be mapped to a variety of speech and audio properties on a per-instrument basis using the KEYMAP > KEYMAP MOD WHEEL setting.

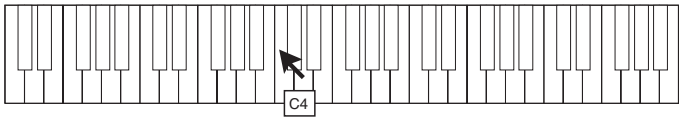
Playing Notes

Use the mouse to click a note on the keyboard. The note will hilight. If there are any instruments set to the keyboard window's MIDI channel, their speech will play. Release the mouse button to signal a note off. Depending on instrument options, the speech either stops or continues until it finishes playing.



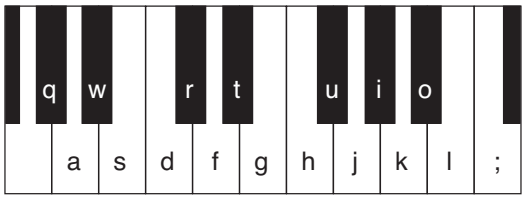
You can also click and drag the mouse cursor across the keyboard to play notes in quick succession. As the mouse moves over each note, notes will sound.

If you hold the cursor over the keyboard, after about two seconds a tooltip appears that provides information about what will be played when you click the key. The tip includes the actual MIDI note (after transposition).



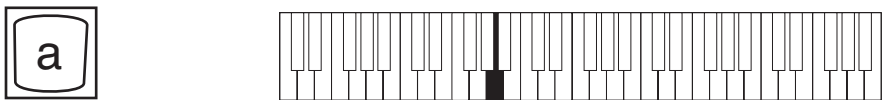
Computer Keyboard

Typing keys on your QWERTY keyboard will also play notes. The following diagram illustrates the mappings:

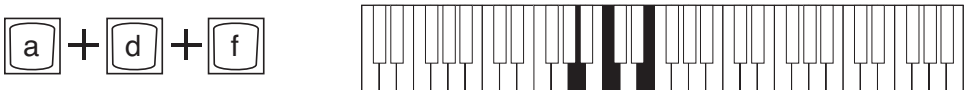


The ‘a’ key always plays the second A note (A1 without keyboard transposition) on the keyboard. If you transpose the keyboard, the notes played will also be transposed, as though you were pressing notes with the mouse.

For example:



You can also play more than one note at a time using the QWERTY keyboard:



If the LCD is currently in a field with text editing, like the VOICE PHRASE field, that field has priority for the typing.

> **Note** This function works for US keyboard mappings only. If you want to use this feature in the meantime, use System Preferences > International to configure your keyboard for US QWERTY.

Keyboard Window Menu Commands

There are several menu commands that control the MIDI keyboard window.

Window > Show Keyboard / Hide Keyboard (Command-Y)

Makes the keyboard window visible if not, or hides it if already visible. VX-323 remembers the settings and last screen position of the keyboard, even if you quit the program.

Window > Down Octave (Command-[)

Transposes the keyboard down one octave (12 semitones). For example, if the first note on the keyboard is C2, it will play C1 transposed down.

> **Note** The Down Octave menu command only affects the keyboard window when there are no VX-323 instruments that have keyboards. In that case, use the Octave Down button to transpose.

Window > Up Octave (Command-])

Transposes the keyboard up one octave (12 semitones). For example, if the first note on the keyboard is C2, it will play C3 transposed up.

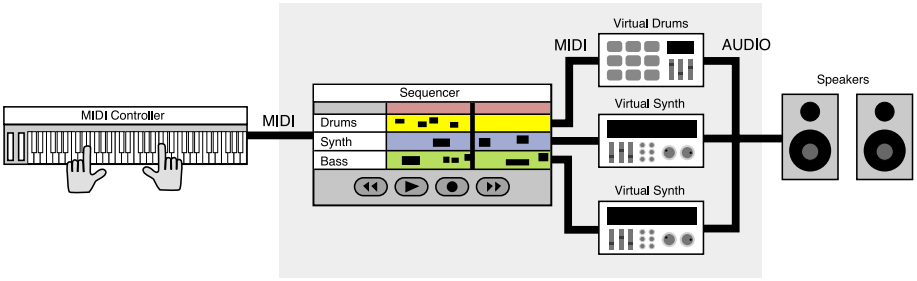
> **Note** The Up Octave menu command only affects the keyboard window when there are no VX-323 instruments that have keyboards. In that case, use the Octave Up button to transpose.

MIDI > MIDI Input Devices > VX-323 MIDI Keyboard

If you uncheck this item, VX-323 instruments will ignore MIDI commands from the built-in keyboard.

9. SEQUENCING AND RECORDING

VX-323 can be an integral part of a digital recording studio when combined with other music software. This chapter explains how to use VX-323 with the other software in your studio. The two main parts of this integration are sequencing, where you compose music (or “lay down tracks”), and recording, where you assemble digital audio into a final composition, like an MP3 file or CD track.

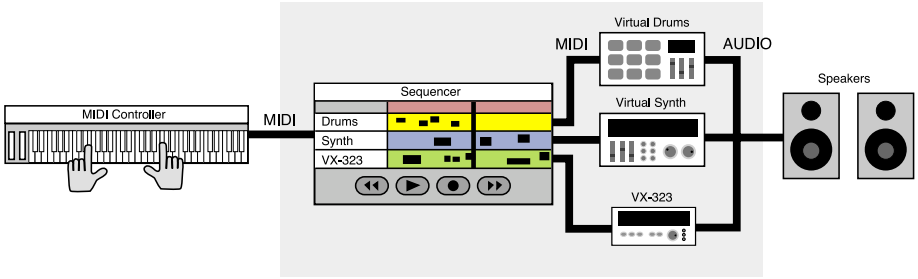


Typical Studio Setup

The control center of a digital studio is the sequencer, such as GarageBand, Logic, or Cubase. You create tracks in the sequencer, where each track corresponds to a different virtual instrument, like drums, bass, or synth. You record performances on a MIDI controller or enter notes with editing tools provided by the sequencer. Each track consists of a series of MIDI commands – when you press the Play button, the sequencer sends the MIDI commands it recorded to the track’s virtual instrument to recreate the performance.

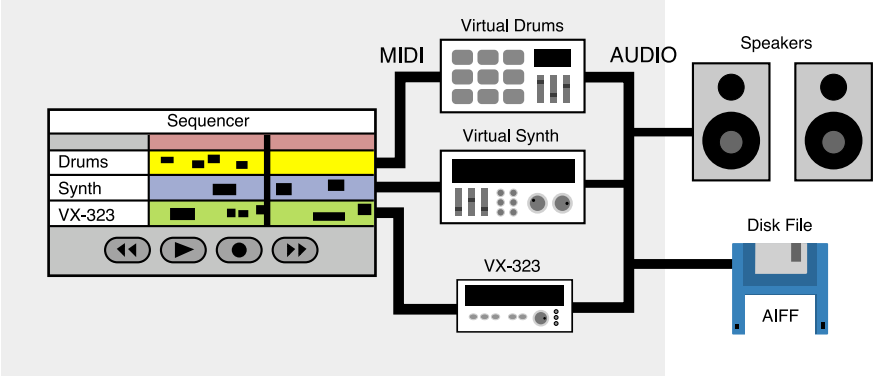
> **NOTE** MIDI (Musical Instrument Digital Interface) defines standards for sending musical commands from one MIDI device to another. There are commands for playing notes, changing volume, and controlling expression. Each MIDI device listens to commands on one or more of 16 available MIDI channels. When you press a key on a MIDI keyboard, the keyboard sends a MIDI command to play the note on a specific channel; all MIDI devices that are listening to that channel will then sound the note.

VX-323 is a virtual instrument that your sequencer can control. VX-323 listens to MIDI commands and responds by speaking text according to the instrument settings.



Studio With VX-323

VX-323 records speech to AIFF digital audio files on your hard drive. Recording in VX-323 works similarly to a tape recorder: you start recording, play some notes, then stop recording. Instead of a tape, however, VX-323 saves the recording to an AIFF file. You can play back this file and import it into a digital audio workstation (DAW) to use as part of a composition.



NOTE AIFF (Audio Interchange File Format) is an industry standard file format for saving digital audio data. VX-323 saves 16-bit, uncompressed audio at either 22.05 Khz or 44.10 Khz, depending on user options.

Sequencing Basics

Regardless of your specific sequencer/DAW, working with VX-323 involves the following steps:

1. Create a MIDI track in your sequencer.
2. Set the track's MIDI destination to VX-323 and make sure the MIDI channel matches the desired VX-323 instrument.
3. If you are using a MIDI controller to perform, uncheck it in VX-323's **MIDI > MIDI Input Devices >** menu. This prevents notes from playing twice (once through the sequencer and once directly from the controller).
4. Click the Record button in your sequencer.
5. Play notes on your MIDI controller. You can also enter notes using your sequencer's editing tools.
6. Stop recording.
7. Rewind your sequencer.
8. Click the Play button. The notes you recorded will play back in VX-323.

Instrument MIDI Settings

Several instrument settings affect your VX-323's integration into a MIDI studio. See Chapter 4, Instrument Settings, for a complete description. These settings include:

MASTER > MIDI CHANNEL

Specifies the MIDI channel that the instrument receives MIDI commands on. Each instrument in a rack may have a different MIDI channel.

KEYMAP > KEYMAP RANGE

Specifies which MIDI note range the keymap responds to. If VX-323 receives a MIDI note that falls outside this range, unless another keymap contains the note, no note will play.

VX-323 > Preferences > New Instrument Settings > MIDI Channel

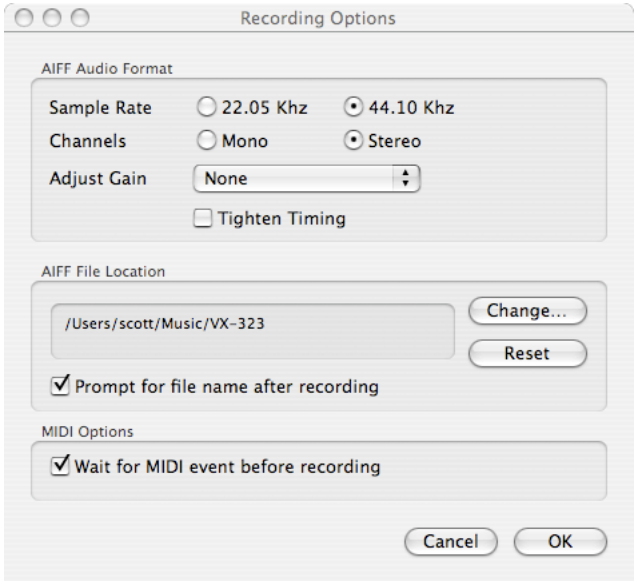
Sets the default MIDI channel for new instruments or each new rack unit.

NOTE If you play notes on a MIDI device but do not hear the expected sound from VX-323, two of the most common issues are 1) your controller is set to a different MIDI channel than your instrument and 2) there is no active keymap at the MIDI note you played.

Recording Basics

The process of recording output from VX-323

1. Choose **File > Recording Options** (Command-Shift-R) to set the recording preferences. This step is only necessary if you need to change these settings – the defaults should be correct for almost all situations.



Sample Rate Select 22.05 Khz or 44.10 Khz audio output. Use 44.10 Khz unless you have a specific reason not to. This sample rate creates CD quality audio files with the most compatibility with other digital audio software.

Channels Choose Mono (center channel only) or Stereo (left and right channels) output. In Mono, any panning effects will merged into the center channel.

Adjust Gain Select decibel adjustment to the recorded AIFF file, creating headroom in the audio data (-dB) or boosting audio levels (+dB).

Tighten Timing Slightly adjusts the timing of recorded speech audio to account for speech processing delay. Depending on your CPU and the voice you are recording, this delay may or may not be noticeable.

Change Sets the folder where recorded audio files will be saved. All recorded AIFF files are saved into this folder.

Reset Restores the recorded audio folder to the default setting, which is the directory "VX-323" in your "Music" folder.

Prompt for file name after recording When checked, you are prompted to enter a file name each time you stop recording. Otherwise, the audio is automatically saved into a file with the same name as your instrument, but with the extension ".aiff."

Wait for MIDI event before recording When checked, the digital audio starts once the first note is played – creating smaller audio files that are easier to sync in a DAW. When unchecked, there will be silence between the time you start recording and the first note played.

2. Choose **File > Start Recording** (Command-R). The instrument REC indicator blinks red if Wait for MIDI event is chosen. Once recording has started, the REC light will show solid red.
3. Play notes. These notes can originate from VX-323's controls, a MIDI controller, or a sequencer or other audio software.

NOTE VX-323 will only record speech sounds that it generates. Audio from other applications, the System beep, or internal microphones **will not** be saved into your recorded AIFF file.

4. Choose **File > Stop Recording** (Command-R) when you have finished with your composition.

5. Enter the file name for the saved audio recording.

6. Click the Save button. Depending on the duration and complexity of the recording, VX-323 may need to some time to process the audio.
7. The AIFF file is in the location specified in the Recording Options dialog. From there, you can listen to the audio or add the audio to your DAW for additional processing.

Playing Back Recorded Audio

Once you have finished recording with VX-323, an AIFF audio file is saved onto your hard drive. To play back your recording:

1. In the Finder, navigate to the VX-323 audio output folder. Unless you have changed this folder, you can find the file inside of “VX-323” in your Music folder.
2. Double-click the audio file to open it in your Mac’s default audio program. This will typically be QuickTime Player or iTunes.

   or

3. Open the file in a program such as Sound Studio, Audacity, or Peak to view the sound waves, apply effects, or save the audio in a different format.

Recording with Sequencers

The process of recording with digital audio sequencers, such as Logic, Cubase, and Metro, etc. is similar to that of GarageBand. Providing instructions for each program is beyond the scope of this owner's guide. In general, you will:

1. Create a MIDI track in your sequencer.
2. Set the track’s MIDI destination to VX-323 and make sure the MIDI channel matches the desired VX-323 instrument.
2. Enter notes into the track in your sequencer.
3. In VX-323, choose **File > Start Recording**.
4. In your sequencer, click the Play button to begin playback. When the part of the song that contains the VX-323 notes has finished playing, stop playback.
5. In VX-323, choose **File > Stop Recording**. When prompted, enter the file name and click the Save button.
6. Create a new audio track in your sequencer. Mute the corresponding MIDI track.
7. Import the saved AIFF audio file into the track.

Additional Sequencing and Recording Commands

MIDI > MIDI Input Devices >

The sub-menu lists all recognized MIDI input devices, such as MIDI controllers and some MIDI software applications. When a device in this menu is checked, VX-323 accepts MIDI commands from it. If unchecked, VX-323 will ignore all MIDI commands on all MIDI channels from the device. This setting affects all VX-323 instruments, not just the front most window.

NOTE This command is important when you have both a sequencer and a MIDI controller in your studio. For example, if you have a sequencer track that sends MIDI events to VX-323 on channel 1, when you play notes on your controller, the sequencer transmits the events thru to VX-323. But the controller also sends MIDI events directly to VX-323 on channel 1. This results in two identical notes sounding at almost the same time. This creates audio chorusing and unnecessary CPU load. When you uncheck the controller, VX-323 ignores the MIDI send directly by the controller but continues to accept those from the sequencer.

MIDI > All Notes Off (Command-Period)

Stops all current playing and queued notes in all instruments.

MIDI > Panic! (Command-Escape)

Disconnects all input sources and stops all notes from playing. This is useful if you encounter a feedback loop or other MIDI issue where you can't get it to stop sending note on events. You will have to reselect your MIDI sources after choosing this command – only the VX-323 internal keyboard will still be active.

10. PATCH EXCHANGE

VX-323 has several advanced features designed to allow you to view, save, and play your instruments in environments other than VX-323. These features include exporting instruments, saving and loading patches via MIDI System Exclusive, and printing.

Export Sampler Instrument

VX-323 supports exporting instruments and racks as sampler instruments. You can load these instruments into not only software samplers on Mac OS and Windows, but also some hardware sampler instruments. In effect, VX-323 becomes an instrument editor, rather than a performance tool. Common reasons to export a sampler instrument include:

- Use VX-323 instruments on a computer not running the VX-323 application
- Apply additional audio processing such as effects, in real-time
- Play live, when performance is crucial

SoundFont 2

SoundFont 2 banks (.sf2) are a standard file format for exchanging sampler instruments between both software and hardware samplers. These files contain audio samples and information about the instrument, such as keymaps, panning, and volume envelopes.

Many software samplers can load SoundFont 2 files. On the Mac OS, these include Logic's EXS24, Kontakt 2, Reaktor NN-XT, and even the system-provided DLSMusicDevice Audio Unit. Many Windows applications can also read SoundFont 2 files.

In general, loading SoundFont 2 files into software samplers involves putting the disk file in a specific location, or using the sampler's **Open**, **Import** or **Load** file commands to choose the instrument. Instructions for working with Logic 7/8 and GarageBand are provided below.

Sending SoundFont 2 instruments to a hardware sampler is beyond the scope of this user guide. Please consult your hardware manual or other support materials for compatibility and instructions.

General Information

VX-323 exports SoundFont 2 with as much fidelity as possible – playing the SoundFont instrument should reproduce exactly how it would sound from VX-323. Each SoundFont bank that you export contains the following data:

Speech Audio Samples The full audio data for every note in each keymap is saved into the SoundFont. Samples are mono and the sample rate depends on the voice used. Typical rates are 22 Khz and 16 Khz. The sample volume level is the instrument volume plus the keymap volume. VX-323 strips any silence at the beginning of a sample.

Keymaps The SoundFont 2 file contains every active keymap in the instrument. One sample is written out for each note in each keymap. Audio data is generated in real-time, so if you have long phrases in lots of notes across many keymaps, exporting the SoundFont might take several minutes.

Audio Settings Most instrument and keymap audio settings are preserved in the SoundFont. These include volume, pan, volume envelopes, and tunings. Additional parameters, such as loop points and modulation, can be edited once the SoundFont bank is loaded into the sampler

Racks If you export a rack, every instrument in the rack is saved into the SoundFont bank. Each rack is a discrete sub-instrument. In most sampler instruments, you can individually choose these sub-instruments.

Information SoundFonts contain textual information that describes the instrument and its creation. Some of this data, like the date and authoring tool, are provided by VX-323. Other fields are user defined, such as the sound designer (registered user name), copyright string (from VX-323 Preferences), and instrument names (MASTER > BANK NAME).

To Create SoundFonts for GarageBand:

You can play SoundFonts in GarageBand using the DLSMusicDevice. Follow these steps to create, install, and configure a track to play the SoundFont.

1. Set up your instrument in VX-323. Add keymaps, enter phrases, choose voices, and configure audio parameters. The DLSMusicDevice can only access one sound bank, so exporting Rack instruments for use with GarageBand is **not** recommended – only the top module will be playable.
2. Choose **Export Sampler Instrument > SoundFont 2**. In order for GarageBand to recognize the instrument, the .sf2 file must be saved into the folder:

   /Users/<yourname>/Library/Audio/Sounds/Banks

   You can save the file directly into this location, or copy or move it there later using the Finder.
3. Open the GarageBand application. You don't need to keep VX-323 open at this point.
4. View **Track Info** for the track that you want to play the VX-323 instrument. To open the Track Info view, you can double-click the track's icon in the Tracks listing, or you can click the Information button in the bottom right corner of the window.
5. Click the **Software Instrument** tab.
6. Click the triangle next to **Details** to open the instrument options.
7. From the **Generator** popup, choose **DLSMusicDevice**.
8. Click the Pencil button for this generator.
9. In the **Sound Bank** popup, pick the name of the instrument that you saved. If you entered a MASTER > BANK NAME, that will appear in this menu. Otherwise, the name of the SoundFont file (without .sf2) appears. Use the **reverb volume** slider to change the amount of reverb applied to the track.

To Create SoundFonts for Logic and Logic Express:

You can play SoundFonts in Logic using the the EXS24 instrument. Follow these steps to create, install, and configure a track to play the SoundFont.

1. Set up your instrument or rack in VX-323. Add keymaps, enter phrases, choose voices, and configure audio parameters.
2. Choose **Export Sampler Instrument > SoundFont 2**. In order for GarageBand to recognize the instrument, the .sf2 file must be saved into the folder:

   /Users/<yourname>/Library/Application Support/Logic/Sampler Instruments

   You can save the file directly into this location, or copy or move it there later using the Finder.
3. Open the Logic or Logic Express application. You don't need to keep VX-323 open at this point.
4. Create or select a **Software Instrument** track. In Logic 7, these are called **Audio Instrument** tracks.
5. In the track's channel strip, click and hold down the box underneath **I/O**. When the menu appears, choose **EXS24 > Stereo.** The exact location of this item varies depending on your version of Logic. The EXS24 instrument window should appear, with various knobs and sliders.
6. If Logic was already running when you saved the SoundFont file into the Sampler Instruments folder, click the **Instrument** popup (for a new track, this reads "**---**") and choose **Refresh Menu**. This reloads the list of available instruments.

7. Click and hold down the **Instrument** popup. Choose the name of your SoundFont file from the menu. When EXS24 has finished converting the file into its internal format, you can play the instrument and tweak parameters using the EXS24 controls.
8. If you exported a VX-323 rack with more than one module, the first module from the rack is automatically selected. You can access the rest by clicking the **Instrument** menu. The item for the SoundFont file contains a sub-menu that list each module, either by the MASTER > BANK NAME that you set, or by number.

System Exclusive (SysEx)

The MIDI specification includes provisions for sending additional commands and instrument-specific data through a mechanism called “System Exclusive” or SysEx. VX-323 can send and receive SysEx data that you can use to archive instruments and to automate loading and closing of instruments.

The VX-323 SysEx menu commands send out SysEx data that a sequencer or SysEx librarian save. When those programs send this SysEx data back to VX-323, VX-323 will perform a command, such as opening an instrument.

For example, if a song requires a rack with three specific modules, you can set up the rack in VX-323, then send the rack as SysEx to your MIDI sequencer. When your sequencer plays back the SysEx data, VX-323 will open the rack and it will be ready for playback. This way, you do not have to go into VX-323 and use the **File > Open** command to load it. Instead, whenever you play the song, the rack will load automatically.

File > Send SysEx > Save

Sends the current instrument or rack as SysEx data. When VX-323 receives this data, it creates a document with the saved instrument. It is not linked to the file, so any changes you make will need to be resent as SysEx. There is no requirement that the original file exists. All instrument settings are saved in the SysEx data, including voices, keymaps, and window positions.

File > Send SysEx > Module

Sends the current instrument as a rack module. When received, VX-323 adds the module to the current rack.

File > Send SysEx > Close

Sends a SysEx command to close the current instrument. The instrument is identified by file name (for example, “Lyric.vox”). When VX-323 receives this SysEx command, it will close the instrument matching the name.

File > Send SysEx > New Rack

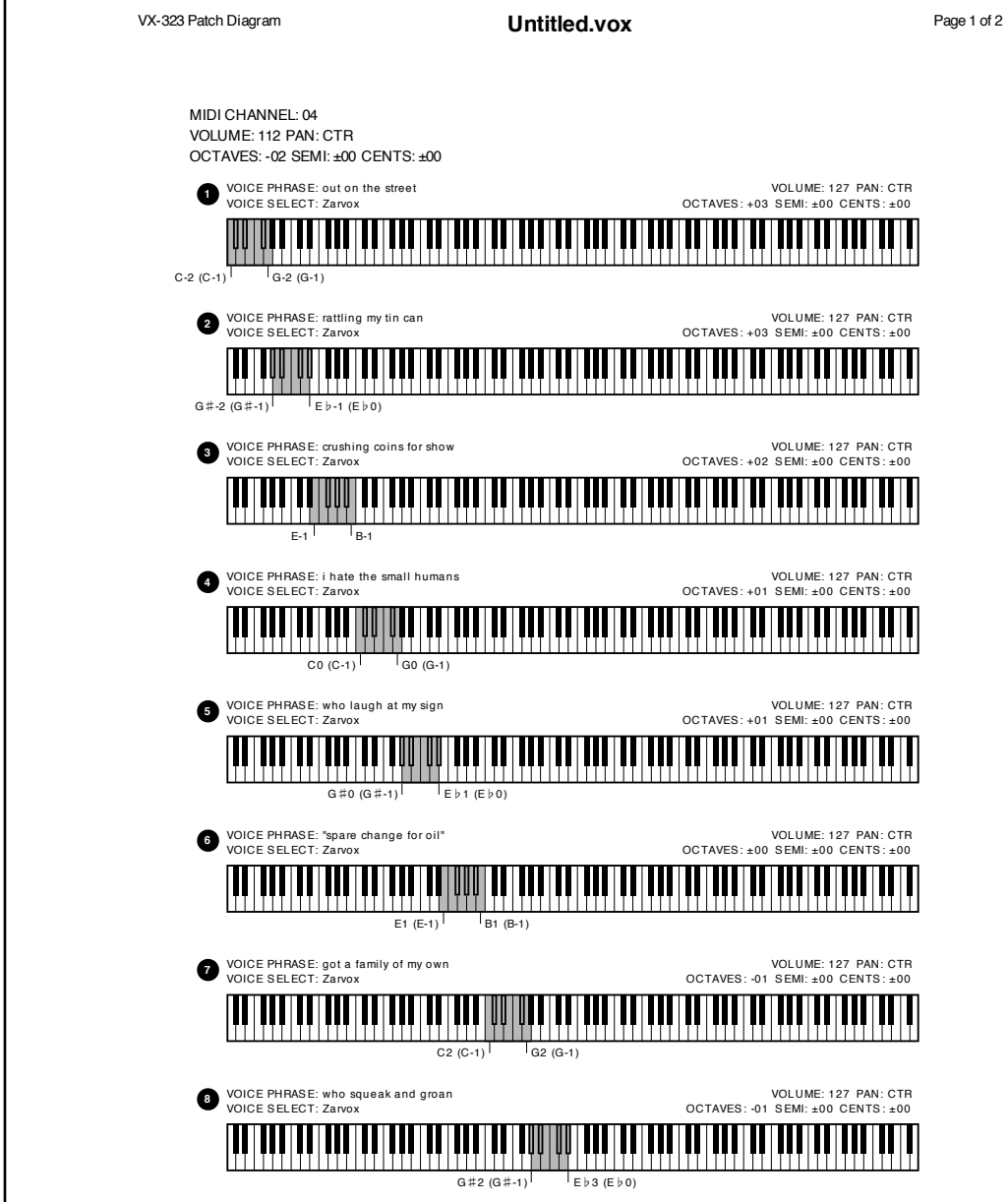
Creates a new rack with no rack modules in it. Use the Module SysEx command to save modules. When they are transmitted, they will go into the current open rack.

File > Send SysEx > Close All

The Close All command closes all open VX-323 documents. It does **not** ask confirmation of the close, or if you want to save changes to any of the open documents.

Printing

A document can be printed to a printer or PDF document. The printed output shows information about the instrument, including tuning, MIDI channel, keymap layout, and voice information. A copyright string is printed along the footer of each page. This value can be changed in the VX-323 Preferences.



First printed page of an instrument with 16 keymaps

To Print an Instrument:

1. Choose **File > Print.**
2. Select the printer, number of copies, and other options in the Print dialog.

3. Click the **Print** button
4. Gather printed pages from the printer.

To Print an Instrument to PDF:

1. Choose **File > Print.**
2. Select the printer, number of copies, and other options in the Print dialog.
3. Click and hold down the **PDF** button
4. Choose **Save As PDF**.
5. Enter a file name and click the **Save** button.

11. REGISTRATION AND PURCHASING

For the manufacturers of the original VX-323 hardware, their sales department had it easy. You buy the VX-323 unit, you can play it. You want to try it, you go to the store and give it a spin. If you were a famous recording artist, maybe they would drop by your studio to give you a demo.

However, there are different requirements for the VX-323 software emulator. The solution that Bitnotic decided on was to freely distribute trial/demo versions of the software. Some features do not work until you pay for the software. When you purchase or register VX-323, it becomes fully functional.

A working Internet connection is required to purchase, register, or deactivate VX-323. If you are not going to do any of these functions, you do not need to be connected to run VX-323.

Trial Limitations

If you have not yet purchased or registered VX-323, the program functions as trial or demo software. You can try most of the program's features, but you can't use it for real music production. Once you purchase VX-323, all of the features are enabled. You do not have to install additional software.

In the demo software, the following features are limited:

Save and Save As You cannot save your instrument files to disk.

Export Sampler Instrument VX-323 does not allow you to export your instruments for use with software and hardware samplers. If you want to test compatibility with your sampler, please visit Bitnotic's web site for sample SoundFont instruments to download.

Send SysEx Exchanging patch data with MIDI librarians is disabled.

Print You cannot print to PDF or a printer.

Start Recording You can record your performances, but all audio saved to the AIFF file has random noise inserted over it.

Purchasing VX-323

You can purchase VX-323 directly within the program or on the Web. If you purchase over the Web, you will have to manually register the software with your user name and serial number.

To Purchase VX-323 from within the Program:

1. Make sure you have an active Internet connection.
2. Launch VX-323, if it is not already running.
3. Choose **Help > Purchase VX-323**.
4. Follow the instructions on the order forms that appear. Note that VX-323 is a digitally distributed product – there is no physical boxed product that gets shipped to you.
5. Print your receipt! An order confirmation will also be emailed to you. You should always retain your user name and serial number.
6. Close the receipt window. Your registration has been entered for you and your computer is now activated for VX-323. See below for more information about **Activations**.
7. Make some killer music with VX-323 now that all of the features are enabled.

To Purchase VX-323 over the Web:

1. Visit http://www.bitnotic.com
2. Click the **Store** link in the navigation menu.

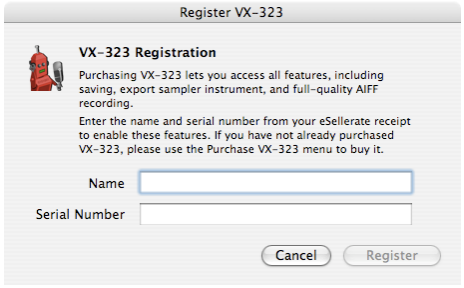
3. Click the **show now using esellerate** graphic. This takes you to the eSellerate Web store where you can purchase VX-323.
4. Complete the purchase.
5. Run VX-323 and register it according to the instructions below.

Registration

If you buy VX-323 using the Web store (not with the **Purchase VX-323** command) or if you have to re-activate a previous VX-323 purchase, you can manually register VX-323. Your license is activated *once each time* you register.

To Manually Register VX-323:

1. Find your order confirmation or receipt. You should always keep copies of these documents, in both electronic and printed form, if possible.
2. Make sure you are connected to the Internet.
3. Launch VX-323, if it is not already running.
4. Choose **Help > Register VX-323**.



5. Enter your user name and serial number *exactly* as it appears on your receipt. Make sure that the capitalization matches and that any zeros or letter Os are correct.
6. Click the **Register** button. This button is gray until you have entered valid information.
7. VX-323 verifies your registration and activates your computer. If this succeeds, you can use all of VX-323's features. If activation fails, the most common problems are that you are not connected to the Internet or that you have exceeded your activation limit.

To View your Registration Information:

1. Choose **VX-323 > About VX-323**.
2. Your user name and serial number are displayed in the dialog. **Always** keep copies of this information! This information is also in your order confirmation and receipt.

Activations

With the purchase of VX-323, you are allowed two activations. Your computer is activated when you complete a purchase with the **Purchase VX-323** command *or* when you manually register VX-323. It is deactivated only when you specifically deactivate it. Reformatting a hard drive **does not** deactivate your computer.

You should always deactivate VX-323 in the following cases:

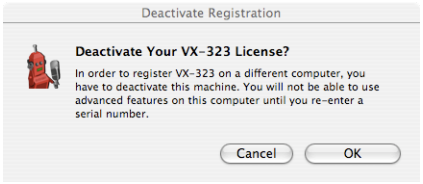
- **Before** reformatting your hard drive.
- **Before** moving your studio to a new computer.
- **Before** selling your computer.

In the event that you experience catastrophic damage to your computer and your VX-323 activation is wiped out before you are able to deactivate it, please contact Bitnotic for assistance.

To deactivate your VX-323 license:

1. Make sure that you are connected to the Internet.

2. Note your user name and serial number. You will need to re-enter this information to activate VX-323 again.
3. Choose **Help > Deactivate VX-323**.



4. Read the warning dialog, then click **OK**. Your computer is now deactivated. You will not be able to Save instruments, record full-quality AIFF, and use
5. You can now activate another computer using this serial number with the **Help > Register VX-323** command.

APPENDIX A – MIDI IMPLEMENTATION CHART

MIDI Implementation Chart

Model: VX-323
Date: October 31, 2007
Version: 1.0

Function…	Trans	Recv	Remarks
Basic Channel			
Default	X	1-16	Per instrument
Changed	X	X	
Mode	X	X	
Note Number	0 - 127	0 - 127	
Velocity			
Note ON	X	O	
Note OFF	X	X	
Aftertouch	X	X	
Pitch Bender	O	O	
Control Change	See below	See below	See controller chart below
Program Change	X	X	
System Exclusive	O	O	Patch data
System Common			
Song Pos	X	O	
Song Sel	X	X	
Tune	X	X	
System Real Time			
Clock	X	O	
Commands	X	O	
Aux Messages			
Local ON/OFF	X	X	
All Notes OFF	X	O	
Active Sense	X	X	
Reset	X	X	

O = yes

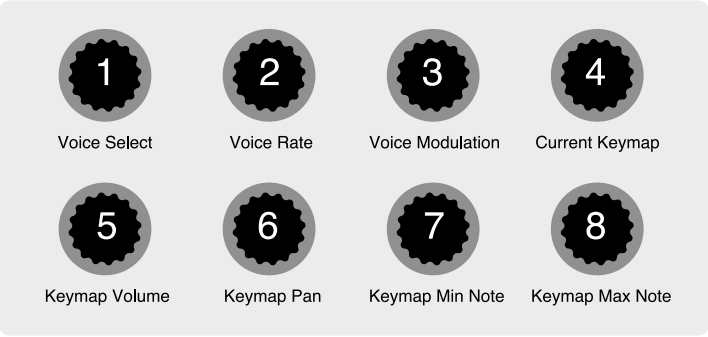
X = no

MIDI CONTROLLER CHART

Controller	Number	Values
Mod Wheel	1	v = 0 – 16383
Data Entry	6	v = variable
Main Volume	7	v = 0 – 127
Pan	10	v = 0 – 127
Voice Select	20	v = 1 – n voices
Voice Rate	21	v = 24 – 400
Voice Modulation	22	v = 0 – 127
Current Keymap	23	v = 0 – n keymaps
Keymap Volume	24	v = 0 – 127
Keymap Pan	25	v = 0 – 127
Keymap Min Note	26	v = 0 – 127
Keymap Max Note	27	v = 0 – 127
Data Entry Plus	96	v = variable
Data Entry Minus	97	v = variable
All Sound Off	120	v = n/a

M-Audio Ozone USB Controller

MIDI control numbers for some common VX-323 functions map to M-Audio Ozone preset 3. By switching to preset 3, the following knobs control the functions:



To switch to Preset 3 on an Ozone

1. Press MIDI/SELECT button
2. Press UP/DOWN until the display reads “P3”
3. Press MIDI/SELECT button to finish

If you have a different MIDI controller, please see your Owner’s Guide for instructions on how to program your controller.

APPENDIX B - TROUBLESHOOTING

This section contains solutions for common problems experienced with the VX-323 unit.

If you don't hear notes:

- Make sure that the AC power adapter of the VX-323 unit is plugged into the wall socket.
- When playing via MIDI, make sure that the MIDI channel of the controller matches that of the VX-323 instrument you are playing. If the instrument's MIDI indicator does not blink when you play a note, then the channel is probably wrong.
- Verify that the MASTER VOLUME and KEYMAP VOLUME of the VX-323 instrument are not zero.
- If the MUTE indicator of the VX-323 instrument is red, then it is muted and will not sound. To un-mute it, choose **Instrument > Mute**.
- Make sure the volume of your Macintosh is loud enough to hear. If you are using external speakers, verify that they are plugged in.
- Depending on your KEYMAP setup, there might be empty keys on your keyboard.

If the audio quality is poor

- Turn the MASTER VOLUME down.
- Playing too many notes on too many instruments can degrade the audio quality. Try recording instruments separately.
- Upgrading the CPU and RAM on your computer will help. Quit other unnecessary running applications.
- Check all cables for looseness.

For more help

- Visit the support forums at http://www.bitnotic.com, the official site of VX-323. This site contains a community of VX-323 enthusiasts who will be able to answer most questions.