Keystation™ Mini 32

User Guide

Documentation Feedback

We are always looking for ways to improve our documentation. If you have comments, corrections, or suggestions regarding our documentation, email us at *techpubs@avid.com*.

Chapter 1: Introduction

Congratulations on purchasing an M-Audio® Keystation ™ Mini 32 keyboard from Avid®. With features that make it suitable for music creation and educational uses, Keystation Mini 32 is a 32-note velocity-sensitive, class compliant USB keyboard designed to easily integrate with your Mac, iPad, or Windows PC.

💡 *Connecting your Keystation Mini 32 to an iPad requires the iPad Camera Connection Kit, which is available from Apple Computers.*

Product Features

Keyboard:

- 32-note velocity-sensitive keyboard
- Assignable Pitch Bend buttons
- Assignable Modulation button
- Assignable Volume/Control knob
- Assignable Octave +/- buttons
- Sustain Button
- Edit button
- USB powered

System Requirements and Compatibility

For complete system requirements and a list of qualified operating systems and recording applications, visit: www.avid.com/m-audio

About this User Guide

This User Guide covers the operation of the Keystation Mini 32 USB keyboard. Though this manual does not provide a detailed explanation of how to set up your keyboard for use with all third-party music software, we do have some examples for you to follow and apply to your music program. Our testing has found that the majority of music software applications will work seamlessly with you Keystation Mini 32 keyboard. Please consult your software application's manual for additional information.

Product Registration

Please register your product online at http://www.avid.com/US/support/register-product/. By doing so, you become eligible to receive the following:

- Technical support information
- Software update and upgrade notices
- Hardware warranty information

Conventions Used in This Guide

The following symbols are used to highlight important information:

User Tips are helpful hints for getting the most from your system.

Important Notices include information that could affect your data or the performance of your system.

Cross References point to related sections in this guide.

Chapter 2: Connecting Your Keyboard

It is recommended that you connect your Keystation keyboard to an available USB port on your computer or iPad. Keystation Mini 32 is a low power device and can be connected to devices such an iPad without issue.

💡 *Connecting your Keystation Mini 32 to an iPad requires the iPad Camera Connection Kit, which is available from Apple Computers.*

Power and Connection via USB

- Plug the USB cable provided with your Keystation Mini 32 keyboard to a free USB port on your computer.
- Plug the other end of the USB cable into the USB input on the Keystation Mini 32 keyboard.

The single USB cable not only powers the keyboard but also sends MIDI data to and from your computer system.

Using Keystation Mini 32 with a USB Hub

If you intend to use your Keystation Mini 32 with a USB Hub, make sure the USB Hub uses an external power supply. Using a passive USB Hub which does not use a power supply may not provide enough power if other devices are connected to the hub.

⚠️ *We do not recommend connecting an audio interface to the same USB Hub as the Keystation Mini 32*

Windows 7 / Vista / XP installation

The Keystation Mini 32 keyboard controller is a class-compliant device that functions on Windows XP SP3, Vista SP1 and Win 7 systems without having to install additional drivers.

To install your Keystation Mini 32 under Windows 7, Vista SP1, XP SP3

1 Connect the USB Cable from the keyboard to and available USB port on your computer.

2 Installation is automatically completed by Windows.

3 When the installation is complete, you will see a message stating "Your new hardware is installed and ready to use."

Mac OS X installation

The class-compliant drivers built into Mac OS X provide full support for all features of your Keystation keyboard. This means that additional M-Audio drivers are neither necessary (or available) when using your Keystation with Mac OS X.

To install your Keystation Mini 32:

1 Connect the controller keyboard to USB port on your Apple Computer.

2 As soon as the Sustain, Edit, and Oct/Data buttons illuminate on your Keystation Mini 32, it is ready for use with your computer.

3 Launch an application that responds to MIDI messages to start using your keyboard.

iPad installation

The class-compliant drivers built into the iPad, starting with iOS 4.2, provide full support for all Keystation Mini 32 features.

⚠ *Since the iPad does not have a native USB port, you must purchase the iPad Camera Connection Kit in order to connect your keyboard to the iPad.*

To install your Keystation Mini 32:

1 Connect the controller keyboard to the iPad Camera Connection Kit USB connector.

2 As soon as the Sustain, Edit, and Oct/Data buttons illuminate on your Keystation Mini 32, it is ready for use with your iPad.

3 Launch an application that responds to MIDI messages to start using your keyboard.

Chapter 3: Getting Started

This chapter provides an overview of Keystation Mini 32 features which are covered in greater depth in Chapter 4, "Edit Mode."

Once you have finished the installation, you will need to configure your music software for use with your Keystation keyboard. Because Keystation Mini 32 does not contain on board sound presets you will not hear any sound coming directly from the keyboard. However, pressing a key causes the keyboard to transmit MIDI data, that gives instructions on how an instrument sound should play. In order to hear that sound, you need to configure your music software to read the MIDI data it receives from your Keystation, and play the sound accordingly. This setup entails going into an Options or Device Set-Up menu in your music software and selecting the appropriate device.

💡 *For further information about configuring your software to receive MIDI data from you Keystation Mini 32, and using software instruments with the application, refer to the documentation provided with that product.*

⚠️ *In Windows XP SP3, Keystation Mini 32 will appear in your MIDI software under the name "USB Audio Device". Windows Vista, 7 and Mac OS X will recognize the device as Keystation Mini 32.*

Key Names

The white keys on the keyboard correspond to whole notes found in the musical scale of C Major. These notes are from C on the left to G on the right. Each octave is defined with a letter from the lowest key starting with C on the left to its highest key C on the right.

Keystation Mini 32 keybed has 2 1/2 playable octaves. The range of the keyboard is approximately in the middle of an 88 note keyboard. Using the Oct/Data "+" or "-" buttons, you can access the full 88 keyboard range of a large piano keyboard.

Although the black keys are not labeled, they also have names (such as "F#" or "E*b*"). If the name of a black key contains a "#" sign, it is referring to the black key to the right of the white key that shares the same letter name. For example, "F#" refers to the black key above F. If the name of a black key contains a "*b*" sign, it is referring to the black key to the left of the white key that shares the same letter name. For example, "E*b*" refers to the black key below E. The exception to this is the black key between C and D which is called either C# or D*b*.
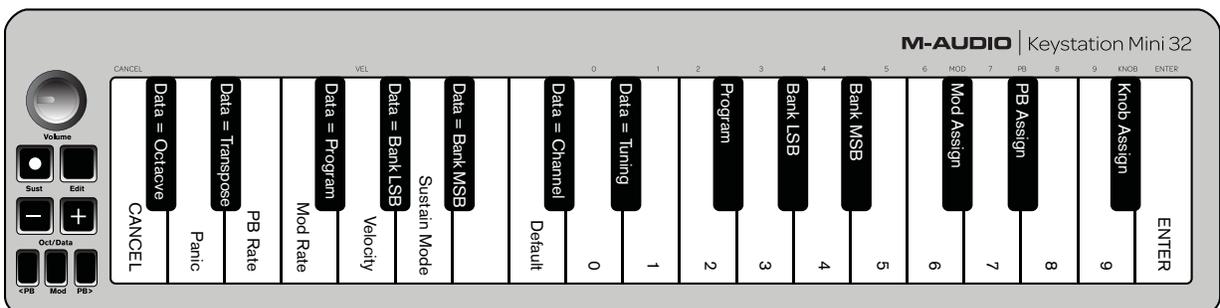
Octave/Data Buttons (Oct/Data)

The assignable Octave buttons are used to shift the keyboard up or down in one octave increments (12 semi-tones at a time). This extends the range of the keyboard up to 4 Octaves in either direction, which lets you play notes that lie outside of the 32 keys.

In their default state, such as when you first switch on your Keystation keyboard, the buttons are backlit in red. However when you press either of them the color of that button turns green indicating that the octave change is active.

If you press the octave "+" button once, the button will turn green indicating the keyboard's octave is now shifted up. If you press the octave "+" key again, you will shift one more octave up, and so on.

To shift the octave down, press the octave "-" button and notice that the button turns green. If only the octave "-" key is lit in green, the octave is shifted down and, if only the octave "+" key is lit in green, the octave is shifted up.

To return the octave shift to 0, press both the octave "+" and "-"keys together. Both LEDs will return to their normal red color at half brightness, indicating that the octave shift has returned to 0.

The Oct/Data buttons will default to Octave shift when the keyboard is powered on. However, if the Octave buttons have been assigned to a different function as described in "Reassigning the Octave/Data Buttons" on page 9, the new assignment is retained when the keyboard is switch off. The Octave buttons will only default to the factory assignment, after a full reset (see "Full Reset" on page 24), or when reassigned in Edit mode (see Chapter 4, "Edit Mode").

Pitch Bend Buttons

As the name indicates, the assignable pitch bend buttons are primarily used to bend the notes played on the keyboard up or down. Pressing and releasing these buttons while playing lets you play phrases not normally associated with keyboards, such as guitar-style phrases.

Your sound source determines if and how far you can bend the note. The usual setting is two semitones, however you should refer to the documentation provided with your sound source for information about how to change the Pitch Bend range.

Modulation Button

The modulation button takes the place of a wheel that is typically used for modulation of the sound you are playing. The depression of the button mimics the rotation of a wheel. This type of real-time controller was originally introduced on electronic keyboard instruments to give the performer options such as adding vibrato, just like players of acoustic instruments do.

Just like the pitch bend buttons, the modulation button is fully MIDI assignable, as described in Chapter 4, "Edit Mode". The default Continuous Controller number (MIDI CC) for Modulation is 1.

Volume Knob

The Volume Knob sends a MIDI message that controls the volume of the notes you are playing.

The Volume Knob which is assigned the default Continuous Controller number (MIDI CC) of 7, and it can also be assigned to different parameters, such as pan (balance), attack, reverb, chorus and many more. A list of available MIDI CC numbers can be found in Appendix D, "Standard MIDI CC Numbers" on page 30.

Refer to you MIDI hardware or software documentation to confirm that it is able to receive MIDI Volume massages.

Sustain Button

The Sustain button can be use for sustaining the sound that you are playing, without having to keep your hands on the keyboard (just like the sustain pedal on a piano). Pressing the Sustain button engages Sustain; pressing it again disengages Sustain. While the keyboard is in Edit Mode, the Sustain button can be set to either Toggle mode, or Gate mode in which it works as a momentary switch.

Refer to "Sustain Mode" on page 21 for more information about Toggle and Gate mode.

Edit Button

The Edit button is used to access the advanced Keystation Mini 32 functions located on the keybed.

Pressing the Edit button switches your keyboard into "Edit Mode." The Edit button turns blue, and you can use the keys to select various advanced functions and enter data.

Depending on the function, your keyboard will exit Edit Mode as soon as a function is selected, or the CAN-CEL or ENTER keys are pressed. At this point, the Edit button light will turn off, and the keyboard can be used for playing notes again.

Refer to Chapter 4, "Edit Mode" for more information about using the keys in Edit mode.

Chapter 4: Edit Mode

This chapter explains how to use Edit Mode which lets you perform tasks such as assigning the buttons (Octave/Data, Pitch Bend and Modulation) or Volume knob to other functions within your music software.

Octave/Data Buttons

By default the Octave/Data "+" and "-" buttons are used for shifting the Keystation Mini 32 keybed up or down one octave at a time. Whenever you power up the keyboard, the octave setting will be at the default value of "0," and the buttons will be red in color at half-brightness.

When the "+" button is used for raising the octave its it will either illuminate or flash at full-brightness based on the octave chosen, and the "-" remains at half-brightness. Pressing the "-" button has the opposite affect, such that it will illuminate or flash at full-brightness based on the octave chosen, while the "+" button remains at half-brightness. The following table lists the colors used to identify each octave:

OFF	GREEN	ORANGE	RED	RED Flashing
0	+1	+2	+3	+4
0	-1	-2	-3	-4

If the Octave/Data buttons have been assigned to one of the 6 additional functions as described in "Reassigning the Octave/Data Buttons" on page 9, you can reassign and use them for their default function (Octave) using the method described below.
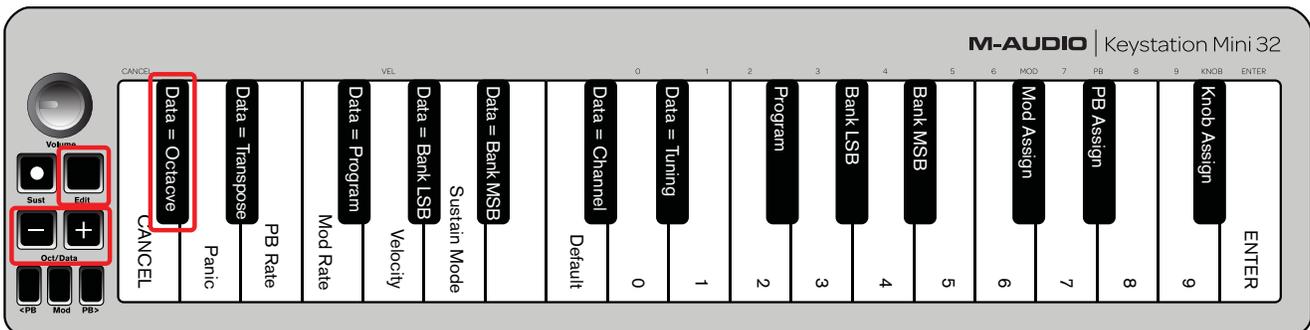
To reassign the "+" and "-" buttons to the Octave function and choose a new octave setting:

1 Press the Edit button. The Edit button light will illuminate to full brightness indicating that the keyboard is in Edit mode.

2 Press the "DATA = OCTAVE" key (C#, first black key on the left).

The keyboard exits Edit mode as soon as the "DATA = OCTAVE" key is pressed and both Octave buttons "+" and "-" will be red at half-brightness

3 Press either the "+" or "-" button to raise or lower the octave.

To return to the default octave setting:

Simultaneously press the "+" and "-" buttons.Both buttons will return to red at half-brightness.

⚠ *The Data=Octave assignment is retained when the keyboard is turned off.*

Reassigning the Octave/Data Buttons

In addition to setting an octave shift, the Octave/Data "+" and "-" buttons can also be assigned to control any one of the six additional MIDI functions described in this section.

In the diagram below, you will see that the first 7 black keys are labeled "DATA = _____." These keys are used when selecting a newly assigned function for the Octave/Data buttons. When assigned to these functions, both buttons will remain lit, regardless of the current setting of that function.

💡 *Refer to Appendix A, "Edit Mode Functions" on page 27, for a full-page illustration showing all Keystation Mini 32 advanced functions. The page can be printed and used as a quick visual reference while using your keyboard in Edit mode.*
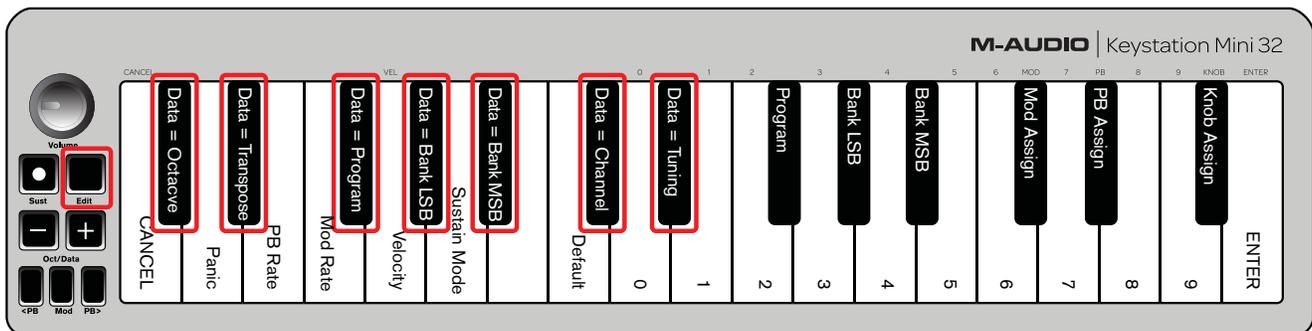
The six additional function that you can assigned the Octave/Data button to are:

Transpose

In some cases it may be useful to raise or lower the pitch by a number of semitones (half-steps) as opposed to an entire octave. For example, if you are playing a song with a singer that is having difficulty singing the top notes, you may want to reduce the pitch by one or two semitones. This is achieved using the Transpose function. When assigned to this parameter, the keyboard can be transposed a maximum of two octave in either direction.
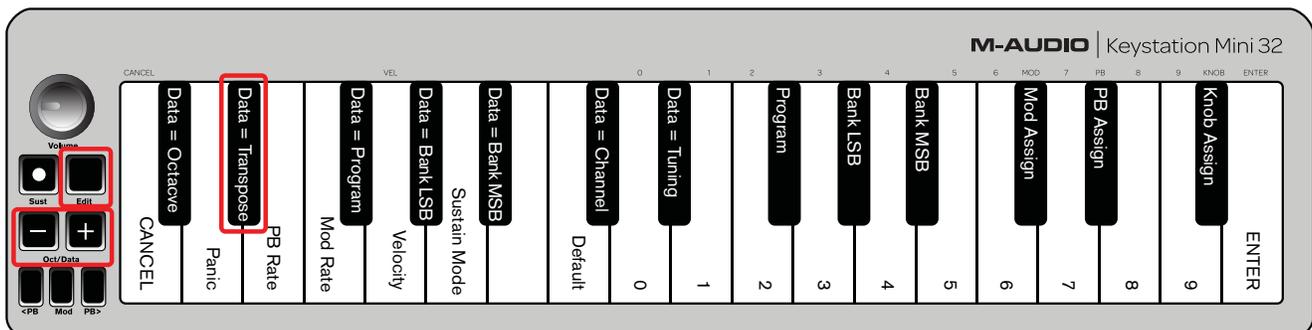
To assign the Octave "+" and "-" buttons to the Transpose function:

1 Press the Edit button. The Edit button light will illuminate to full brightness.

2 Press the "DATA = TRANSPOSE" key, (D#, 2nd black key from the left).

The keyboard exits Edit Mode as soon as the "DATA = TRANSPOSE" key is pressed, and the Edit light will return to half brightness.

3 Press the "+" key and you will hear the pitch of the note you get higher. Press the "-" key and you will hear the pitch get lower.

4 Press both "+" and "-" together to cancel Transpose and return Transpose to zero.

⚠ *The DATA=TRANSPOSE assignment is retained when the keyboard is turned off.*

Program Change

Program Changes are used to change the instrument or voice you are using. For example, you could use this function to change the instrument to a bass sound. To do this, you need to send a program change message of 32, which selects an acoustic bass sound from the General MIDI Instruments list in Appendix B, "General MIDI instruments" on page 28.

You can send a program change by:

• Sending and Incremental or Decremental program change using the Octave/Data buttons in conjunction with the "Data=Program" key, which lets you step through each program number in either direction. If your MIDI hardware or software can receive MIDI Program changes, the buttons will increment or decrement between 0 and 127

– or –

• Entering the program number using the numerical keys (0 - 9) in conjunction with the "PROGRAM" key on your Keystation Mini 32.

Both methods are explained below:
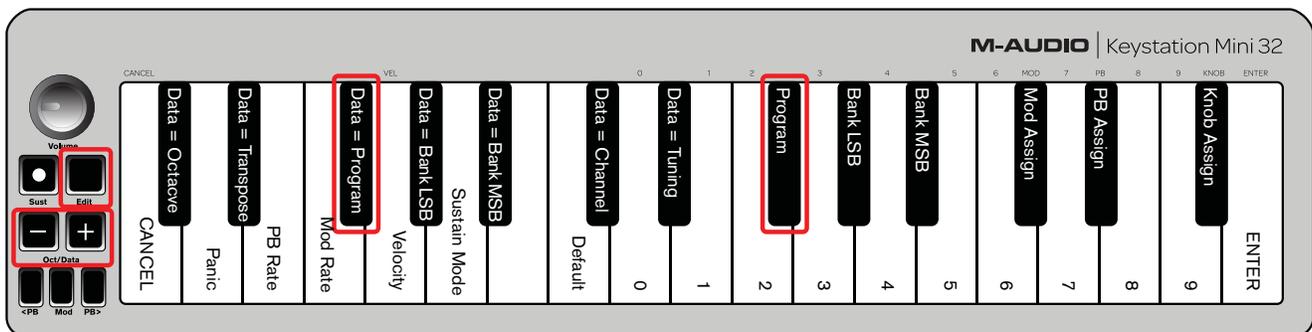
To send Incremental or Decremental Program Change messages:

1 Press the Edit button to engage Edit Mode. The Edit button light will illuminate to full brightness.

2 Press the "Data=Program" key, which is the black key above F (F#, 3rd black key from the left).

3 The Edit Mode button will return to half brightness as soon as the "Data=Program" key has been pressed.

4 Press the Octave/Data "+" or "-" button to step upwards or downwards through the sounds while continuing to play notes, until you find the instrument you want to use.

Pressing the "+" and "-" buttons simultaneously will recall Program 0, which selects a grand piano sound if you are playing a General MIDI (GM) Instrument. A full list of General MIDI instrument sounds that can be accessed via Program Change messages is listed in Appendix B, "General MIDI instruments" on page 28.

⚠ *The Data=Program assignment is retained when the keyboard is turned off. However the setting is not.*

To send a Program Change message using the numerical keys:

1 Press the Edit button to enter Edit Mode. The Edit button will illuminate to full brightness.

2 Press the "PROGRAM" key (F#, 6th black key from the right).

3 Use the numerical keys (0 - 9) to enter the program number for the instrument you wish to play.

4 Press the "ENTER" key (G, last white key on the right) to exit Edit Mode. The Edit button will return to half brightness indicating that programming is complete.

If you have made an error while entering the numerical data value, press the CANCEL key (C, first white key on the left). This exits Edit Mode without sending a program change message.

To return Program function to the default setting (Program 0):

1 Press the Edit button to enter Edit Mode. The Edit button will illuminate to full brightness.

2 Press the "PROGRAM" key (F#, 6th black key from the right as indicated in the graphic above).

3 Press the "DEFAULT" key (C, 8th white key from the left). The Edit light will dim to half brightness indicating that programming is complete.

The program change message has been sent, selecting the default value of General MIDI Instrument "0" (Grand Piano).

Bank LSB and Bank MSB

Program Changes are most commonly used to change instruments and voices. However, the number of instruments accessible via Program Changes is limited to 128. However, some devices have more than 128 patches and require a different method of accessing these extra sounds. Most modern hardware synthesizers and many software synthesizer programs have hundreds of patches that are organized in banks of sounds.

Generally, these devices use Bank LSB and Bank MSB messages to access the banks, then use program changes within the banks to access specific patches. Most devices only accept MSB messages, but you should check refer to the documentation for your device or software to confirm which bank message must be sent first, as this is determined by each manufacturer.

You can send either message type by:

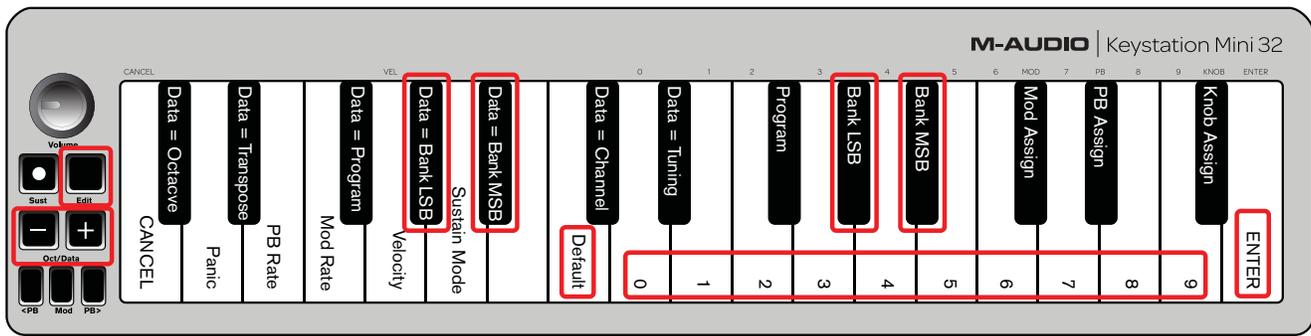• Sending and Incremental or Decremental change using the Octave/Data buttons, which lets you step through each bank number in either direction.

– or –

• Entering the bank number using the numerical keys (0 - 9) on your Keystation Mini 32.

📖 *For more information about Bank LSB and Bank MSB messages, refer to Appendix H, "MIDI Messages In-Depth" on page 34.*

Both methods are explained below for each message type:

To send Incremental/Decremental Bank LSB changes using the "Oct/Data" buttons:

1 Press the Edit button to enter Edit Mode. The Edit button will illuminate to full brightness.

2 Press the "DATA = BANK LSB" key (G#, 4th black key from the left).

3 Press the Octave/Data "+" or "-" button to step upwards or downwards through the Bank LSB values. This takes you through each bank of sounds.

4 Use the "DATA = PROGRAM" or "PROGRAM" function, as described in "Program Change" on page 10, to access individual sounds within the bank you've chosen.

5 Press "+" or "-" while continuing to play notes until you find the patch or preset you want. The keyboard will exit Edit mode as soon as you have made your selection.

To send Incremental/Decremental Bank MSB changes using the "Oct/Data" buttons:

1 Press the Edit button to enter Edit Mode. The Edit button will illuminate to full brightness.

2 Press the "Data = Bank MSB" key (A#, 5th black key from the left).

3 Press the Octave/Data "+" or "-" button to step upwards or downwards through the Bank MSB values. This takes you through each bank of sounds.

4 Use the "DATA = Program" or "PROGRAM" function, as described in "Program Change" on page 10, to access individual sounds within the bank you've chosen.

5 Press "+" or "-" while continuing to play notes until you find the patch or preset you want. The keyboard will exit Edit mode as soon as you have made your selection.

To send Bank LSB Changes using the numerical keys:

1 Press the Edit button to enter Edit Mode. The Edit button will illuminate to full brightness.

2 Press the "BANK LSB" key (G#, 5th black key from the right).

3 Use the numerical keys (0 - 9) to enter the Bank LSB number for the bank of sounds you wish to access.

4 Press the "ENTER" key (G, last white key on the right). The Edit button will return to half brightness indicating that programming is complete.

5 Use the "DATA = Program" or "PROGRAM" function, as described in "Program Change" on page 10, to access individual sounds within the bank you've chosen.

If you have made an error while entering the numerical data value, press the CANCEL key (C, first white key on the left). This exits Edit Mode without changing the Bank LSB value.

To send Bank MSB Changes using the numerical keys:

1 Press the Edit button to enter Edit Mode. The Edit button will illuminate to full brightness.

2 Press the "DATA = BANK MSB" key (A#, 5th black key from the right).

3 Use the numerical keys (0 - 9) to enter the Bank MSB number for the bank of sounds you wish to access.

4 Press the "ENTER" key (G, last white key on the right). The Edit button will return to half brightness in-dicating that programming is complete

5 Use the "DATA = Program" or "PROGRAM" function, as described in "Program Change" on page 10, to ac-cess individual sounds within the bank you've chosen.

💡 *If you have made an error while entering the numerical data value, press the CANCEL key (C, first white key on the left). This exits Edit Mode without changing the Bank LSB value.*

⚠ *The Data=Bank LSB, Data=MSB value or any data assigned to LSB or MSB is not retained when the keyboard is turned off. However, the assignment data keys will be.*

To recall the default bank number (0):

Simultaneously press the "+" and "-" buttons.

Channel

MIDI data from the keyboard can be sent on any of 16 MIDI Channels. However, certain MIDI devices and software require transmission of MIDI data on a specific channel number. If this is the case, you can change the MIDI channel number as described below.
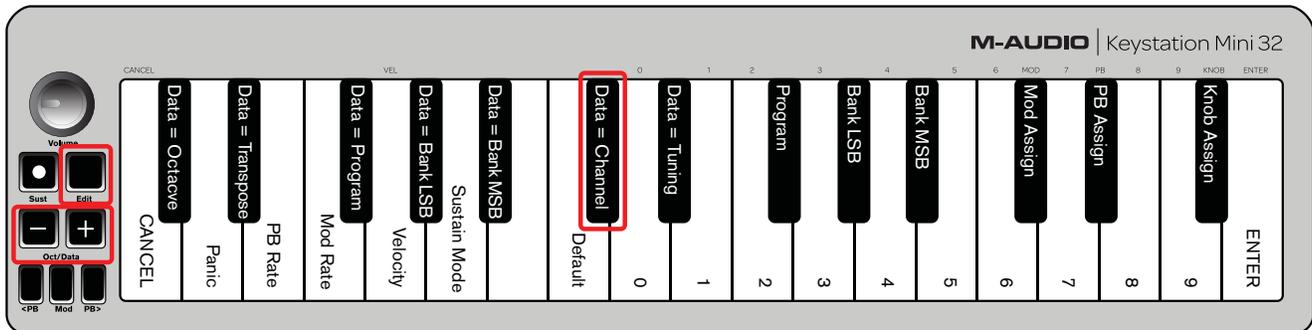
To change the MIDI Channel number:

1 Press the Edit button to enter Edit Mode. The Edit button will illuminate to full brightness.

2 Press the "DATA = CHANNEL" (named C#, 6th black key from the left). The Edit button light will return to half-brightness.

3 Press the Octave/Data "+" or "-" button to step upwards or downwards through the MIDI Channel numbers.

Pressing both the "+" and "-" buttons together will recall Channel 1.

When Channel 16 is reached and "+" is pressed, Channel 1 will be selected. The lights above the buttons will not change, since it is not possible to have a Channel with a negative value. For example, if a device specifies that you need to send data on Channel 10, press the + button nine times to change from the channel 1 to select Channel 10.

⚠ *The Data=Channel value is retained when the keyboard is turned off.*

Tuning

The Tuning function can be used to alter the instrument being controlled to have its pitch shifted to be slightly sharp or slightly flat. The default Tuning value is 64, and it can be raised to 128 or lowered to 0 as described below.

⚠ *Check your third party hardware or software documentation to confirm that your sound source responds to "MIDI Master Tune."*
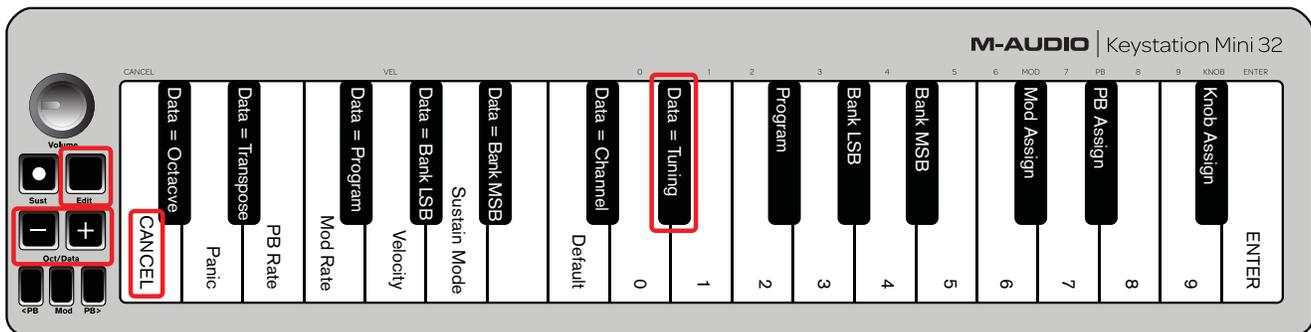
To assign the "+" and "-" keys to control the Tuning function:

1 Press the Edit button to enter into Edit Mode. The Edit button light will illuminate to full brightness.

2 Press the "DATA = TUNING" key (D#, seventh black key from the right). The Edit button will return to half-brightness. The Oct/Data "+" button will illuminate green, and the "-" button will be red.

3 Press "+" or "-" while continuing to play notes until the instrument is tuned to the pitch that you want.

Selecting a value below the default setting of 64, changes the Oct/Data "-" button from Red to Green. Selecting a value greater than 64, changes the "Oct/Data" "+" button to Red.

To return the turning to the default setting (concert pitch):

Press the "Oct/Data" "-" and "+" buttons simultaneously. Both buttons will return to their default value of Red at half-brightness.

Modulation Button

It is possible to assign other MIDI controls to the Modulation button, such as:

- 01 Modulation
- 07 Volume
- 10 Pan (balance)
- 05 Portamento

There are 131 parameters in total including the 128 standard MIDI Control Change messages (MIDI CC's). However, for these parameters to have any effect on the sound, the receiving MIDI device or software must be able to read and respond to these MIDI effect messages. Most devices will at least respond to volume, modulation, and pan data.

The process of assigning an effect to the Modulation button, and reverting to the default setting is explained below.

📖 *For a full list of MIDI effects, refer to Appendix D, "Standard MIDI CC Numbers" on page 30.*
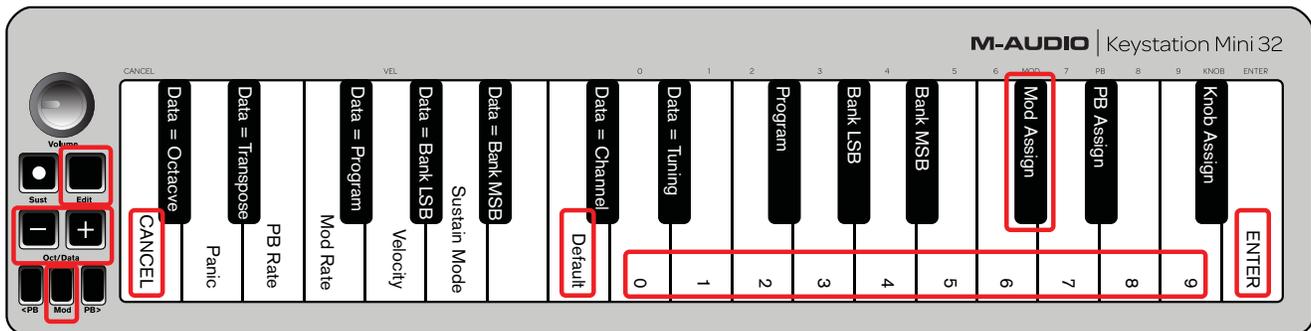
To assign an parameter to the Modulation button using the numerical keys on your Keystation Keyboard:

These instructions use the example of assigning the parameter number 131 (Channel Aftertouch) to the Modulation button, but the concept also applies when assigning other parameters.

1 Press the Edit button. The Edit button light will illuminate to full brightness.

2 Press the "MOD ASSIGN" key (C#, 3rd black key from the left).

3 Press E (10th white key from the right) to enter "1."

4 Press G (8th white key from the right) to enter "3."

5 Press E (10th white key from the right) to enter "1."

6 Press the "ENTER" key (G, last white key on the right). The Edit button will dim to half brightness indicating that programming is complete.

💡 *If you have made an error while entering the numerical data value, you can press the CANCEL key (C, first white key on the left) to exit Edit Mode without changing the effect assigned to the Modulation button.*

⚠️ *The Modulation button assignment is retained when the keyboard is turned off.*

To return the Modulation button to the default settings:

1 Press the Edit button to engage Edit Mode and the Edit button light will illuminate to full brightness.

2 Press the "MOD ASSIGN" key (C#, 3rd black key from the left).

3 Press the "DEFAULT" key (C, 8th white key from the left). The Edit light will dim to half brightness indicating that programming is complete.

Modulation Ramp Rate

It is possible to alter the sensitivity of the Modulation button effects using the "Mod Rate" function. This lets you adjust the ramp up time for effects assigned to the Modulation button. The range for Modulation Ramp Rate is 0 - 127, with a default setting of 64. The lower the value, the slower the rate and vice versa.
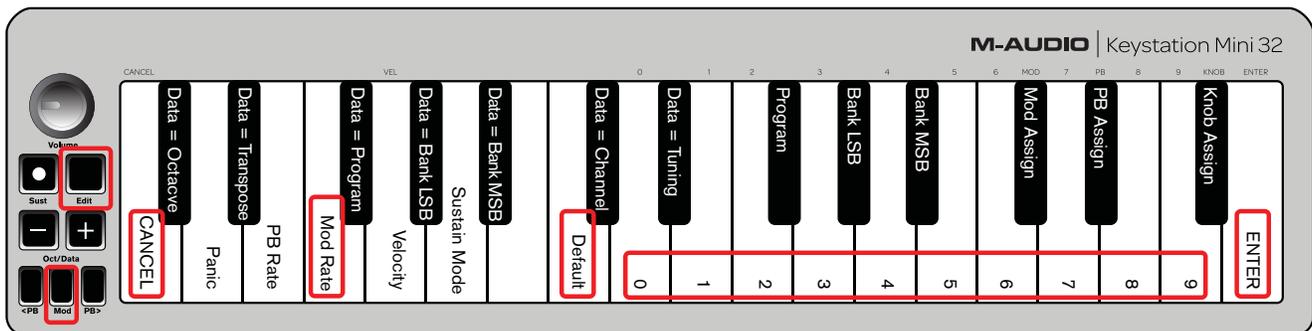
As an example, the following set of instructions and accompanying table of values explains how to use the "Mod Rate" function when changing the ramp time from the default value of 64 to 127.

Value	Rate
0	Ramp occurs slowly
64 [default]	Ramp occurs relatively quickly
126	Ramp occurs very quickly
127	No ramp. Only one value is sent – min. or max

To adjust the Modulation Bend Rate:

1 Press the Edit button. The Edit button light will illuminate to full brightness.

2 Press the "MOD RATE" key (F, 4th white key from the left).

3 Press E (10th white key from the right) to enter "1."

4 Press F (9th white key from the right) to enter "2."

5 Press D (4th white key from the right) to enter "7."

💡 *If you have made an error while entering the numerical data value, you can press the "CANCEL" key (C, first white key on the left) to exit Edit Mode without making any changes.*

As an alternative to steps 3 through 5, you can use the "+" and "-" buttons to change the value.

6 Press the "ENTER." key (G, last white key on the right.

7 Press the "Mod" button to hear change in the effect rate.

⚠ *The Mod Rate value is retained when the keyboard is turned off.*

To return the Modulation Rate to the default settings:

1 Press the Edit button. The Edit button light will illuminate to full brightness.

2 Press the "MOD RATE" key (F, 4th white key from the left).

3 Press the "DEFAULT" key (C, 8th white key from the left). The Edit light will dim to half brightness indicating that programming is complete.

Pitch Bend Buttons

The Pitch Bend buttons are also assignable to any of the 131 parameters listed in Appendix D, "Standard MIDI CC Numbers" on page 30.
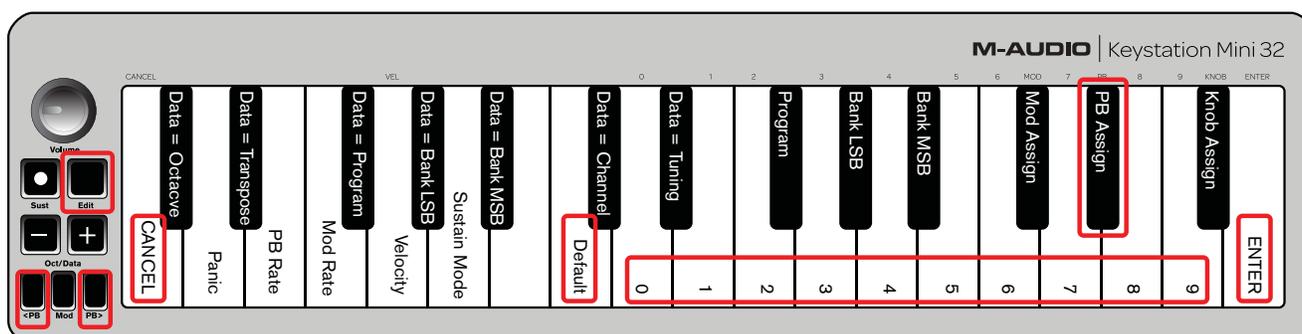
To assign the Pitch Bend buttons to a parameter:

1 Press the Edit. The Edit button light will illuminate to full brightness.

2 Press the "PB ASSIGN" key (D#, 2nd black key from the right).

3 Use the Numerical Data Entry keys (0 -9) to enter the number of the effect.

💡 *If you make an error while entering the number, press the "CANCEL" key to exit Edit Mode without making any changes.*

As an alternative to steps 3 through 5, you can use the "+" and "-" buttons to change the value.

4 Press the "ENTER" key (G, last white key on the right), the Edit light will dim to half brightness indicating that programming is complete.

5 Press the Pitch Bend ">" button to increase the value of the effect.

⚠ *The Pitch Bend buttons assignment are retained when the keyboard is turned off.*

To return the Pitch Bend buttons to the default parameter:

1 Press the Edit button. The Edit button light will illuminate to full brightness.

2 Press the "PB ASSIGN" key (D#, 2nd black key from the right).

3 Press the "DEFAULT" key (C, 8th white key from the left). The Edit light will dim to half brightness indicating that programming is complete.

Pitch Bend Rate

It is possible to alter the sensitivity of the Pitch Bend buttons using the Pitch Bend Rate function. This lets you adjust the pitch bend ramp up time. The default setting is 80, with a range of 0 - 127. As the shown in the following table, the lower the value, the slower the Pitch Bend Rate and vice versa.

Value	Rate
0	Ramp occurs slowly
80 [default]	Ramp occurs relatively quickly
126	Ramp occurs very quickly
127	No ramp. Only one value is sent – min. or max

The Pitch Bend Rate can be adjusted using the "PB RATE" key in conjunction with the numerical keys. The following instructions use the example of changing the Pitch Bend Rate to 127.

To adjust the Pitch Bend Rate:

1 Press the Edit button to engage Edit Mode and the Edit button light will illuminate to full brightness.

2 Press the "PB RATE" key (E, 3rd white key from the left).

3 Press E (10th white key from the right) to enter "1."

4 Press F (9th white key from the right) to enter "2."

5 Press D (4th white key from the right) to enter "7."

If you make an error while entering the value, press the "CANCEL" key to exit Edit Mode without making any changes.

As an alternative to steps 3 through 5, you can use the "+" and "-" buttons to change the value.

6 Press the "ENTER" key (G, last white key on the right), the Edit light will dim to half brightness indicating that programming is complete.

7 Press the "PB>" button while playing to hear how the Pitch Bend will occur faster than before.

⚠ *The PB Rate setting is retained when the keyboard is turned off.*

To return the Pitch Bend Rate to the default setting:

1 Press the Edit button. The Edit button light will illuminate to full brightness.

2 Press the "PB RATE" key (E, 3rd white key from the left).

3 Press the "DEFAULT" key (C, 8th white key from the left). The Edit light will dim to half brightness indicating that programming is complete.

Volume Knob

The Volume Knob can is also assignable to any of the 131 parameters listed in Appendix D, "Standard MIDI CC Numbers" on page 30.
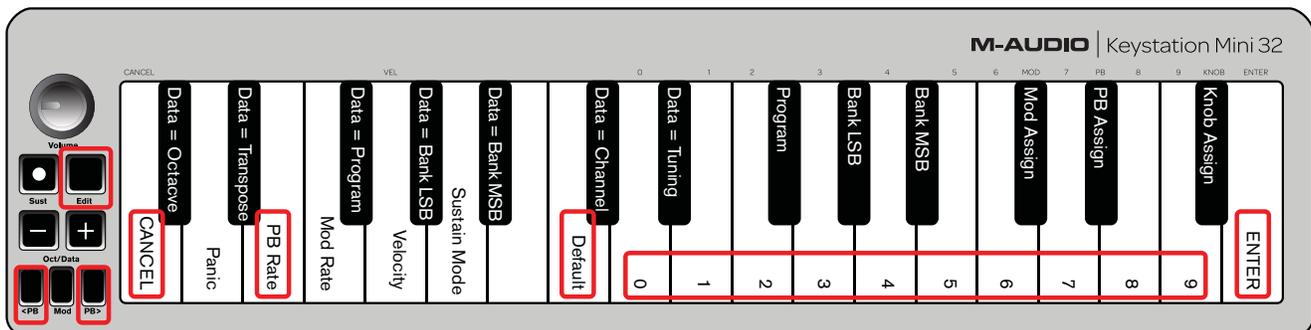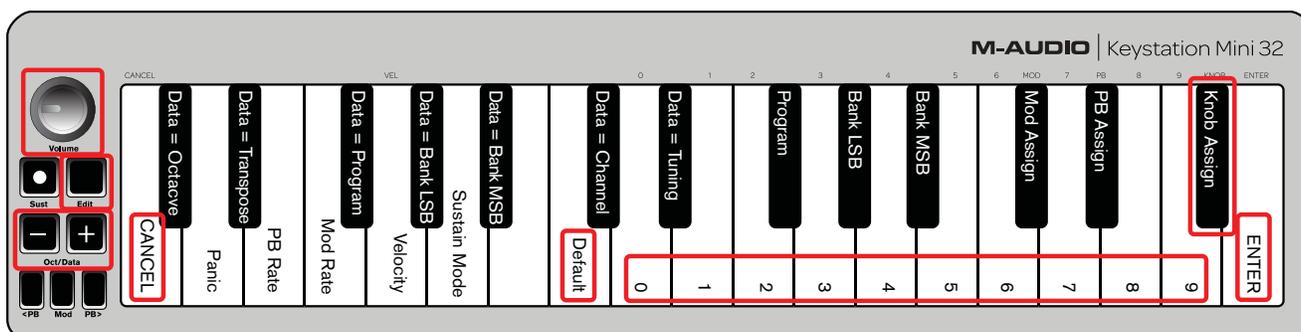

To assign the Volume Knob to an effect:

1 Press the Edit button. The Edit button light will illuminate to full brightness.

2 Press the "KNOB ASSIGN" key (F#, 1st black key from the right).

3 Use the Numerical Data Entry keys (0 - 9) to enter the number of the parameter you want to assign to the Volume Knob.

If you have made an error while entering the parameter number, you can press the "CANCEL" key (C, first white key on the left) to exit Edit Mode without making any changes.

As an alternative to step 3, you can use the "+" and "-" buttons to change the parameter.

4 Press the "ENTER" key (G, last white key on the right), the Edit light will dim to half brightness indicating that program-ming is complete.

5 Move the Volume knob clockwise to increase the parameter value.

⚠️ *The Volume Knob assignment is retained when the keyboard is turned off.*

To return the Volume Knob to its default parameter (07 - Volume):

1 Press the Edit button. The Edit button light will illuminate to full brightness.

2 Press the "KNOB ASSIGN" key (F#, 1st black key from the right).

3 Press the "DEFAULT" key (C, 8th white key from the left). The Edit light will dim to half brightness indicating that programming is complete.

Velocity

When you play your Keystation Mini 32, the sound you hear will be affected by how hard you press the key. Pressing the key very lightly will result in the sound from your software being heard very softly, while pressing the key very hard will result in it being heard very loudly. Normal playing will result in the sound from your software to be heard somewhere in between.

Your Keystation Mini 32 offers the velocity settings described in the table below, called Velocity Curves. While the keyboard is in Edit mode, you can follow the instructions below to choose a Velocity Curve that either suits your playing style or the kind of "feel" or dynamics you want an instrument part to have.

Value entered	Curve	Notes
0	Low	The curve generates lower velocities for the same force, making it easier to play softly.
1 [default setting]	Normal	This curve is mid-way between the other two.
2	High	The curve generates higher velocities for the same force, making it easier to play loudly.
3	Stepped	This curve outputs velocity values of 100 and 127 only. As used in some drum machines.
From 4 to 127	Fixed	Velocity is fixed at the selected value. All notes will play at the specified velocity.

To select a new Velocity Curve:

1 Press the Edit button to engage Edit Mode and the Edit button light will illuminate to full brightness.

2 Press the "VELOCITY" key (G, 5th white key from the left).

3 Use the Numerical Data Entry keys (0 - 9) to enter the number of the Velocity Curve you want to use.

💡 *If you have made an error while entering the Effect number, you can press the "CANCEL" key (C, first white key on the left) to exit Edit Mode without making any changes.*

As an alternative to step 3, you can use the "+" and "-" buttons to change the value.

4 Press the "Enter" key G (last white key on the right) to commit the change. The Edit button dim to normal half brightness indicating that programming is complete.

⚠ *The Velocity Curve setting is retained when the keyboard is turned off.*

To return the Velocity Curve to the default setting perform the following steps:

1 Press the Edit button to engage Edit Mode. The Edit button light will illuminate to full brightness.

2 Press G (5th white key from the left), representing "Velocity."

3 Press C (8th white key from the left), representing "Default", the Edit light will dim to half brightness indicating that programming is complete.

Sustain Mode

The Sustain button can work in two different modes called Toggle and Gate. Toggle mode is the default setting in which momentarily pressing the Sustain button and playing a note causes it to sustain after it has been played without keeping your hands on the keyboard. However, the sound will not stop until the button is pressed again.

Gate mode works in the same manner as a traditional sustain pedal, such that holding the Sustain button down and playing a note causes it to sustain until the button is released.
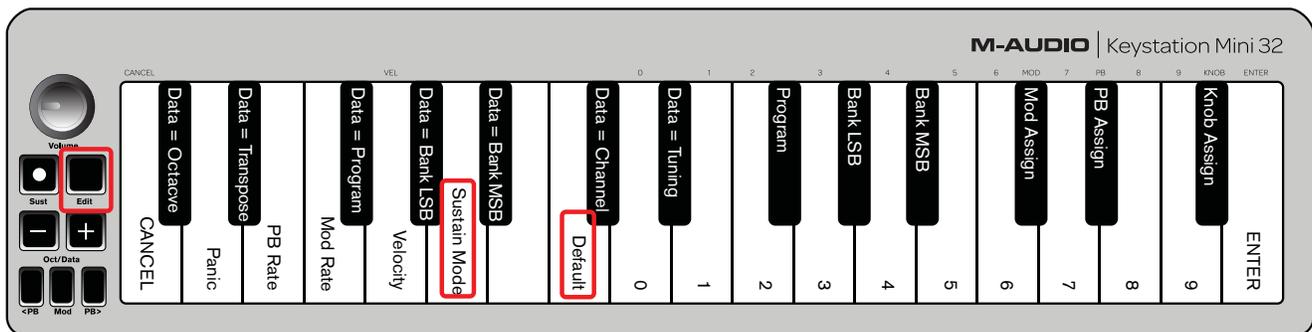
To change the Sustain mode from Toggle to Gate:

1 Press the Edit button. The Edit button light will illuminate to full brightness.

2 Press the "SUSTAIN MODE" key (A, 6th white key from the left). The Edit mode button will dim to half brightness indicating that programming is complete.

Now pressing the Sustain button and playing a note will cause it the sustain until the button is pressed a second time.

⚠ *The Sustain Mode setting is retained when the keyboard is turned off.*

To return the Sustain button to Toggle mode (default):

1 Press the Edit button. The Edit button light will illuminate to full brightness.

2 Press the "SUSTAIN MODE" key (A, 6th white key from the left). The Edit mode button will dim to half brightness indicating that programming is complete.

Now holding the Sustain button down and playing a note will cause it the sustain until the button is pressed again.

Chapter 5: Troubleshooting

Troubleshooting MIDI Functionality

Keystation Mini 32 has been designed to make working with MIDI on your computer as simple as possible. However, you may experience some difficulties. In many cases, the keyboard is not at fault, as the problem lies with the receiving device or software. To counter this the Panic and Full Reset functions are available to assist you.

Panic Button (All Notes Off + Reset All Controllers)

If there are that will not stop playing, or if you find there is an effect on a voice that you do not want, you can send a Reset All Controllers MIDI message.

To send a Reset All Controllers message:

1 Press the Edit button to enter Edit Mode and the Edit button will illuminate to full brightness.

2 Press the "PANIC." key (D, 2nd white key from the left):

- An "All Notes off" MIDI message is sent.
- MIDI Controller 121, Value 0 and MIDI Controller 123, Value 0 is sent out on ALL MIDI Channels 1 - 16
- Edit Mode will disengage as soon as the Panic button is, the Edit light will go to half brightness indicating that programming is complete.
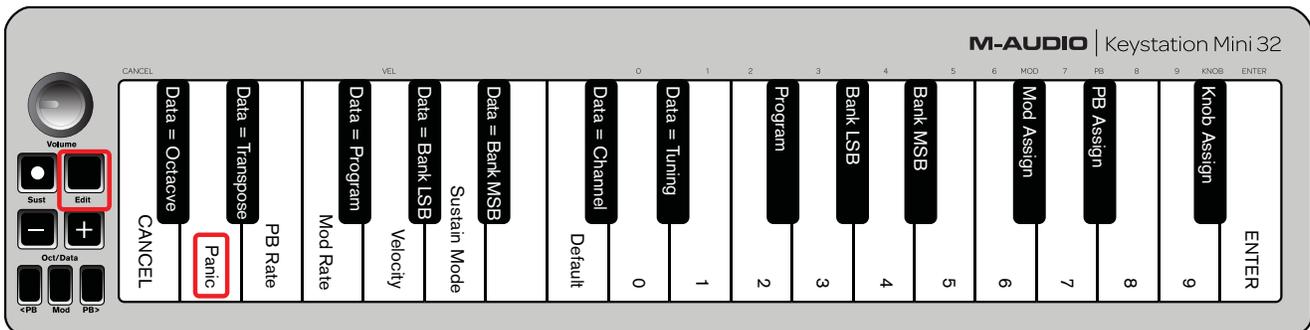
Full Reset

To send a Full Reset message:

1 Make sure your computer is running.

2 Switch on the Keystation Mini 32 by plugging in the USB Cable from your computer while simultaneously holding down the Oct/Data "+" and "-" buttons.

This will reset all Data=_____ and controller assignments to the following values:

Parameter	Factory Default
Program Number	000
Bank MSB Number	000
Bank LSB Number	000
Channel Number	00 (channel 1)
Octave shift	000
Transpose shift	000
Modulation Button MIDI CC	001
Volume Knob MIDI CC	007
Pitch Bend Buttons	Pitch Bend
Octave Buttons - Assignment	Data = Octave
Velocity Curve	1 = Normal

General Troubleshooting

Here are answers to common questions you may have while using your Keystation keyboard:

My M-Audio hardware suddenly stopped working.

If your M-Audio hardware suddenly stops working, try the following:

- Disconnect, wait 10 seconds, reconnect.

- Try connecting to different USB ports.

- Try using a different USB cable.

I have plugged the Keystation into my computer but the lights on the keyboard will not work.

Not all USB ports are powerful enough for a device such as a Keystation Mini 32. Try plugging it into another USB Port to see if that remedies the problem. You can also connect a Powered USB Hub to your computer and then plug your Keystation Mini 32 into the hub.

When I press a key, there is a delay before I hear the note.

This delay, which occurs more often on Windows systems, is known as latency. This issue is caused by the time it takes for your recording software to receive and process the MIDI data transmitted from your Keystation Mini 32, and then send the resulting audio signal to your audio interface or sound card, and out to your speakers or headphones.

⚠ *Make Sure you are using a compatible audio interface. Refer to www.m-avid.com for a selection of USB, PCI and FireWire audio interfaces.*

To reduce the amount of latency, you will need to select a new driver form the available choices listed in the audio preferences (or audio options) window within your software. If you are not sure how to access the audio preferences, refer to the documentation provided with your software for instructions about how to do so.

The following picture screenshot an example of the different settings you are likely to find in the audio preferences for your software. However, your should refer to the user guide for the program as the layout or the window may be different. Looking at the window, you will notice that the current driver being used by your software appears in one of the sections, and that the current amount of latency appears is another section.
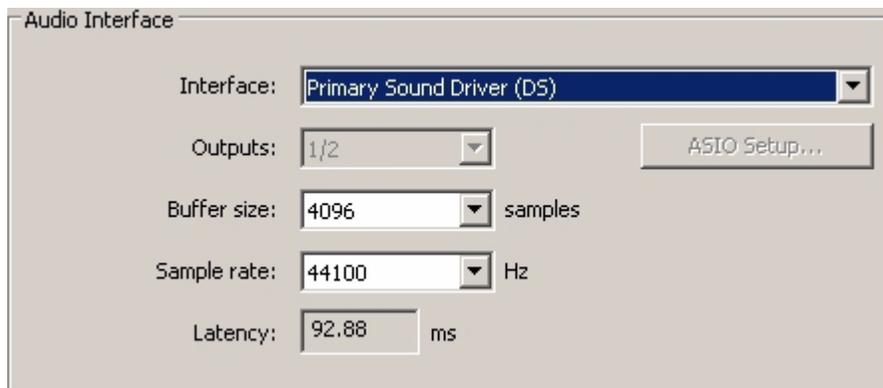
Example of a typical Audio Preferences window

Selecting a new driver

Clicking on the arrow found immediately to the right of the current driver name reveals a popup menu containing a list of additional drivers to choose from. With this in mind, Windows users should choose an ASIO (Audio Stream Input/Output) driver if available. If ASIO is not available and you are using Windows Vista or Windows 7, you may notice at least one available WASAPI (Windows Audio Session API) driver. Regardless of which operating system you're using, you should select a driver that offers the lowest latency.

� *When selected, WASAPI offers comparable low-latency performance to ASIO, if an ASIO option is not available.*

If you compare the following screenshot to the one shown above, you will notice that the amount of latency is significantly less.
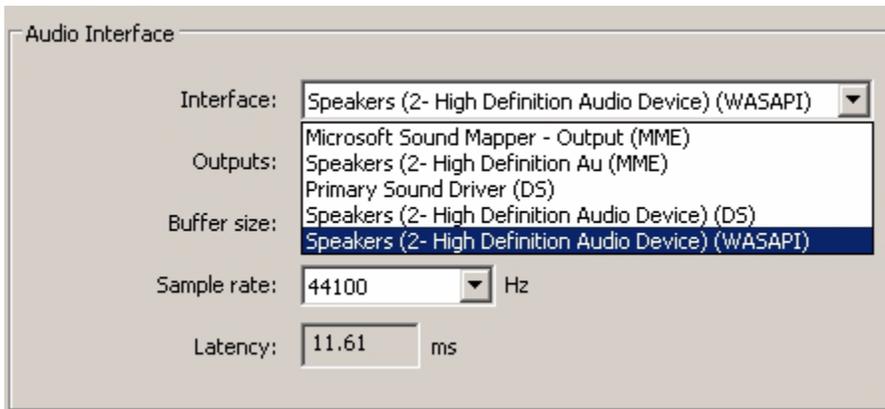
Example of Available Drivers

⚠ *Windows Vista and Windows 7 users should refer to the documentation or the manufacture's web site for their audio interface or sound card, to confirm that it is a WASAPI compatible device.*

▤ *If you are still experiencing a latency issue, you can find further troubleshooting information on our web site at: www.m-audio.com/support*

Appendix A: Edit Mode Functions

The following illustration can be printed and used as a visual reference while using your keyboard in Edit mode.
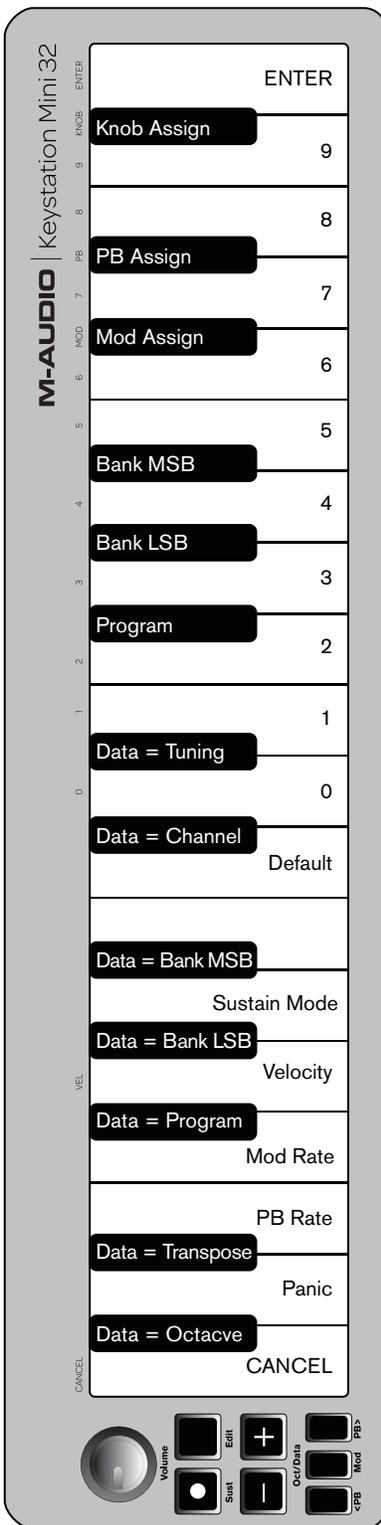
Appendix B: General MIDI instruments

⚠ *Keystation Mini 32 does not contain internal sounds. The following table is for reference when controlling General MIDI compatible software instruments or devices.*

Piano	Bass	Reed	Synth Effects
0 Acoustic Grand Piano	32 Acoustic Bass	64 Soprano Sax	96 SFX Rain
1 Bright Acoustic Piano	33 Electric Fingered Bass	65 Alto Sax	97 SFX Soundtrack
2 Electric grand Piano	34 Electric Picked Bass	66 Tenor Sax	98 SFX Crystal
3 Honky Tonk Piano	35 Fretless Bass	67 Baritone Sax	99 SFX Atmosphere
4 Electric Piano 1	36 Slap Bass 1	68 Oboe	100 SFX Brightness
5 Electric Piano 2	37 Slap Bass 2	69 English Horn	101 SFX Goblins
6 Harpsichord	38 Syn Bass 1	70 Bassoon	102 SFX Echoes
7 Clavinet	39 Syn Bass 2	71 Clarinet	103 SFX Sci-Fi
Chromatic Percussion	**Strings/Orchestra**	**Pipe**	**Ethnic**
8 Celesta	40 Violin	72 Piccolo	104 Sitar
9 Glockenspiel	41 Viola	73 Flute	105 Banjo
10 Music Box	42 Cello	74 Recorder	106 Shamisen
11 Vibraphone	43 Contrabass	75 Pan Flute	107 Koto
12 Marimba	44 Tremolo Strings	76 Bottle Blow	108 Kalimba
13 Xylophone	45 Pizzicato Strings	77 Shakuhachi	109 Bag Pipe
14 Tubular bells	46 Orchestral Harp	78 Whistle	110 Fiddle
15 Dulcimer	47 Timpani	79 Ocarina	111 Shanai
Organ	**Ensemble**	**Synth Lead**	**Percussive**
16 Drawbar Organ	48 String Ensemble 1	80 Syn Square Wave	112 Tinkle Bell
17 Percussive Organ	49 String Ensemble 2 (Slow)	81 Syn Sawtooth Wave	113 Agogo
18 Rock Organ	50 Syn Strings 1	82 Syn Calliope	114 Steel Drums
19 Church Organ	51 Syn Strings 2	83 Syn Chiff	115 Woodblock
20 Reed Organ	52 Choir Aahs	84 Syn Charang	116 Taiko Drum
21 Accordion	53 Voice Oohs	85 Syn Voice	117 Melodic Tom
22 Harmonica	54 Syn Choir	86 Syn Fifths Sawtooth Wave	118 Syn Drum
23 Tango Accordion	55 Orchestral Hit	87 Syn Brass & Lead	119 Reverse Cymbal
Guitar	**Brass**	**Synth Pad**	**Sound Effects**
24 Nylon Acoustic	56 Trumpet	88 New Age Syn Pad	120 Guitar Fret Noise
25 Steel Acoustic	57 Trombone	89 Warm Syn Pad	121 Breath Noise
26 Jazz Electric	58 Tuba	90 Polysynth Syn Pad	122 Seashore
27 Clean Electric	59 Muted Trumpet	91 Choir Syn Pad	123 Bird Tweet
28 Muted Electric	60 French Horn	92 Bowed Syn Pad	124 Telephone Ring
29 Overdrive	61 Brass Section	93 Metal Syn Pad	125 Helicopter
30 Distorted	61 Syn Brass 1	94 Halo Syn Pad	126 Applause
31 Harmonics	62 Syn Brass 2	95 Sweep Syn Pad	127 Gun Shot

⚠ *Please Note: Some MIDI devices count preset sounds from 1 – 128 instead of 0-127. As a result, there may be an offset of +/-1 between the program change number sent from the keyboard and the recalled sound preset in your software.*

Appendix C: Advanced Functions

⚠️ *Numbers above 127 are not actual MIDI CC's, these numbers are given for additional functions.*

Parameter	Description	MIDI Message
0-119	Standard MIDI CC's (Appendix D)	Bn cc vv
120-127	Channel Mode Messages (Appendix D)	Bn cc vv
128	Pitch Bend Sensitivity	Bn 65 00 Bn 64 00 Bn 06 vv
129	Channel Fine Tune	Bn 65 00 Bn 64 00 Bn 06 vv
130	Channel Coarse Tune	Bn 65 00 Bn 64 00 Bn 06 vv
131	Channel Pressure	Dn vv

Appendix D: Standard MIDI CC Numbers

00 Bank Select	35 Controller 35	70 Sound Variation	105 Controller 105
01 Modulation	36 Foot Control LSB	71 Resonance	106 Controller 106
02 Breath Control	37 Portamento Time LSB	72 Release Time	107 Controller 107
03 Controller 3	38 Data Entry LSB	73 Attack Time	108 Controller 108
04 Foot Control	39 Channel Volume LSB	74 Cut-off Frequency	109 Controller 109
05 Portamento Time	40 Balance LSB	75 Controller 75	110 Controller 110
06 Data Entry	41 Controller 41	76 Controller 76	111 Controller 111
07 Channel Volume	42 Pan LSB	77 Controller 77	112 Controller 112
08 Balance	43 Expression LSB	78 Controller 78	113 Controller 113
09 Controller 9	44 Controller 44	79 Controller 79	114 Controller 114
10 Pan	45 Controller 45	80 Gen Purpose 5	115 Controller 115
11 Expression	46 Controller 46	81 Gen Purpose 6	116 Controller 116
12 Effects Controller 1	47 Controller 47	82 Gen Purpose 7	117 Controller 117
13 Effects Controller 2	48 Gen Purpose 1 LSB	83 Gen Purpose 8	118 Controller 118
14 Controller 14	49 Gen Purpose 2 LSB	84 Portamento Control	119 Controller 119
15 Controller 15	50 Gen Purpose 3 LSB	85 Controller 85	
16 Gen Purpose 1	51 Gen Purpose 4 LSB	86 Controller 86	**Channel Mode Messages:**
17 Gen Purpose 2	52 Controller 52	87 Controller 87	120 All Sound off
18 Gen Purpose 3	53 Controller 53	88 Controller 88	121 Reset All Controllers
19 Gen Purpose 4	54 Controller 54	89 Controller 89	122 Local Control
20 Controller 20	55 Controller 55	90 Controller 90	123 All Notes Off
21 Controller 21	56 Controller 56	91 Reverb Depth	124 Omni Off
22 Controller 22	57 Controller 57	92 Tremolo Depth	125 Omni On
23 Controller 23	58 Controller 58	93 Chorus Depth	126 Mono On (Poly Off)
24 Controller 24	59 Controller 59	94 Celeste (De- tune)	127 Poly On (Mono Off)
25 Controller 25	60 Controller 60	95 Phaser Depth	
26 Controller 26	61 Controller 61	96 Data Increment	**Extra RPN Messages:**
27 Controller 27	62 Controller 62	97 Data Decrement	128 Pitch Bend sensitivity
28 Controller 28	63 Controller 63	98 NRPN LSB	129 Fine Tune
29 Controller 29	64 Sustain Pedal	99 NRPN MSB	130 Coarse Tune
30 Controller 30	65 Portamento	100 RPN LSB	131 Channel Pressure
31 Controller 31	66 Sostenuto	101 RPN MSB	
32 Bank Select LSB	67 Soft Pedal	102 Controller 102	
33 Modulation LSB	68 Legato Pedal	103 Controller 103	
34 Breath Control LSB	69 Hold 2	104 Controller 104	

Appendix E: MIDI Message Definitions

Key

n	MIDI Channel	0 - F
nn	Note Number	0 - 7F
vv	Value	0 - 7F

MIDI Message	Data
Note On	9n nn vv (pressed)
Note Off	8n nn vv (released)
Pitch Bend	En 00 vv
Pitch Bend Min	En 00 00
Pitch Bend Centre	En 00 40
Pitch Bend Max	En 7F 7F
Modulation Wheel	Bn 01 vv
Channel Volume	Bn 07 vv
Master Volume	F0 7F 08 04 01 00 vv F7
Sustain	Bn 40 vv
Sustain Off	Bn 40 00
Sustain On	Bn 40 7F
Program Change	Cn vv
Bank MSB	Bn 00 vv
Bank LSB	Bn 20 vv
Reset All Controllers	Bn 79 00
All Notes Off	Bn 7B 00

Appendix F: Data Entry for Values 0 - 127

These keys are used in conjunction with a keybed function that requires a numeric value.

These functions are:

- Program Change
- Bank LSB
- Bank MSB
- Volume Knob Assign
- Modulation Button Assign
- Pitch Bend Buttons Assign
- Mod Rate
- PB Rate

After selecting one of the above functions the keyboard will remain in Edit Mode with the LED lit awaiting numeric data entry. Edit Mode will exit when CANCEL or ENTER is pressed or the Edit Mode button is pressed again.

To use the Number Keys, a value is typed in followed by pressing the ENTER key. If one of the above function keys has not been pressed prior to pressing a number key, the number key is ignored. Pressing ENTER will select the currently entered legal data value. Legal data values are 0-127 for Program, Bank Changes, and 0-131 for wheel, pedal and slider assignments. For example if the user has entered 10, 10 is accepted. If 134 is entered, 34 is accepted. The tables below define this with some examples. 'x' signifies that any data entered up to that point is irrelevant:

Data Entry for values 0-127:

Value Entered	Value Accepted
1	1
x127	127
x128	28
x131	31
x132	32
x264	64
12	12
64	64

Volume Knob, Modulation and Pitch Bend Buttons assign:

Value Entered	Value Accepted
1	1
x127	127
x128	128
x131	131
x132	32
x264	64
12	12
64	64

Appendix G: Additional RPN Messages

You may have noticed that although we have stated there are 128 MIDI controller messages (0 – 127), Appendix D, "Standard MIDI CC Number" shows 132 assignable controller messages. This is because messages 128 – 131 are a different type of MIDI message, defined in the MIDI Specification as RPN messages. M-Audio has created four messages that are sent like MIDI CCs, but actually transmit a series of RPN messages. This makes sending these complex multi-part messages as easy as sending a MIDI CC message. The RPN messages control the following:

Parameter	Message	Use
128	Pitch Bend Sensitivity	Alters the range of a pitch bend message
129	Fine Tune	Adjusts the tuning of your sound module or synthesizer in small steps
130	Coarse Tune	Adjusts the tuning of your sound module or synthesizer in large steps
131	Channel Pressure	Adds an effect such as vibrato or brightness, depending on the instrument settings and capabilities

Channel Pressure is not an RPN message. However, it is an additional effect message defined in the General MIDI specification and this is why we have included it in Appendix E, "MIDI Message Definitions."

Appendix H: MIDI Messages In-Depth

Program & Bank Changes

When the MIDI standard was first established, it enabled the user to access only 128 different sounds using program change messages (0-127). As MIDI devices grew to be more sophisticated and contain more sounds, bank change messages were included in an updated MIDI specification to allow for more than 128 sounds to be accessed.

The language MIDI uses to communicate between musical instruments only allows for program change commands 0-127, for a total of 128 possible programs (127 programs + program "0" = 128 programs total). Because of inherent limitations of the MIDI communication protocol, the number of directly accessible programs (using program change messages) cannot easily be expanded beyond 128. Thus, a system of banks, with 128 sounds in each, has been created that enables manufacturers to overcome the 128-sound MIDI limit.

128 banks with 128 sounds in each bank is the basic principle used to expand the number of accessible sounds. However, to avoid reaching the new limit of the resulting 16,384 possible sounds (128 banks x 128 programs) accessible using a bank change combined with a program change, another layer of banks was added. The result is a system of 128 banks that can contain 128 sub-banks in each of them, which, in turn, can contain 128 sounds (programs) within them.

Bank change messages are useful when calling up sounds from a large library that may exist in a particular sound module or software synthesizer. For example, devices that are built according to Roland's GS specification or Yamaha's XG specification require you to specify a bank change in order to access the extra voices that these devices provide.
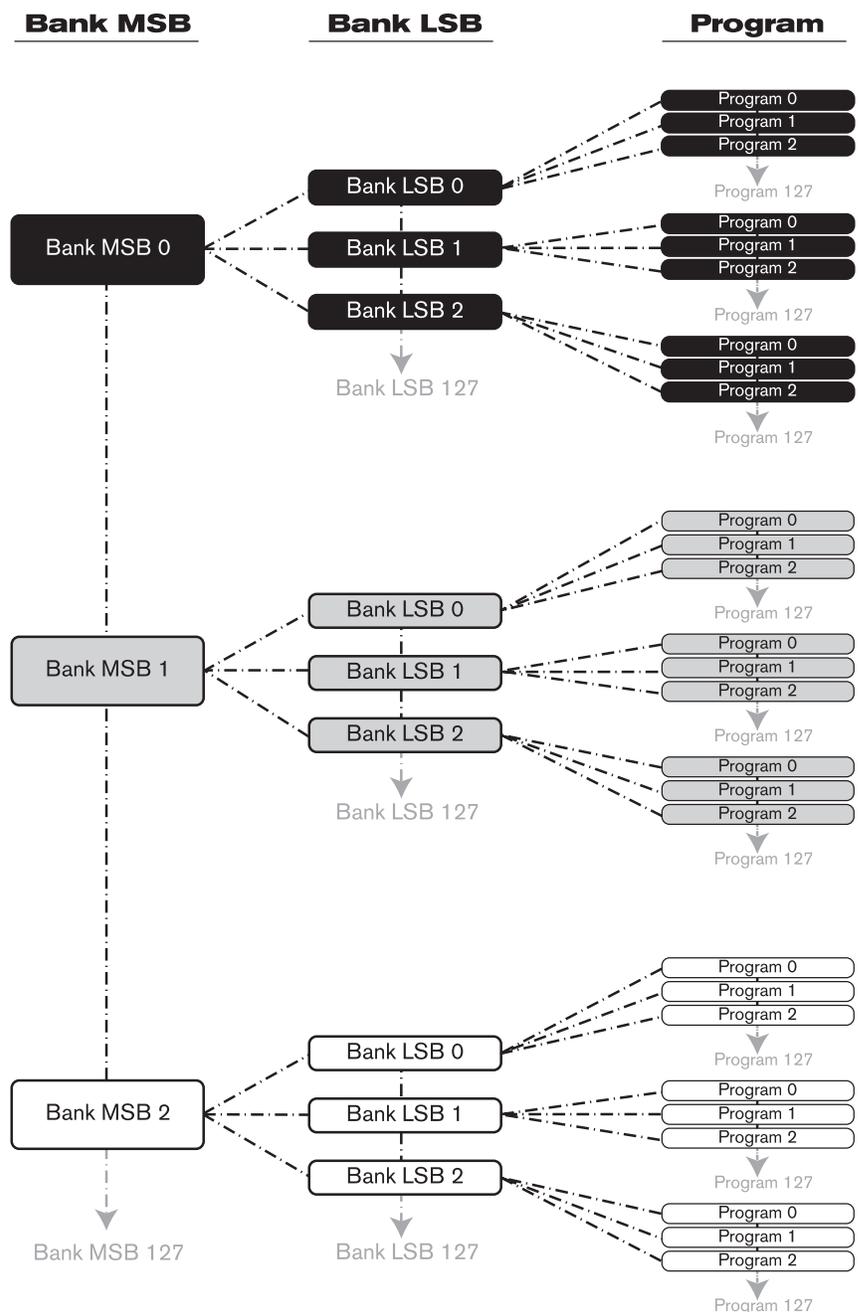
MIDI CC 0 is the bank select MSB (Most Significant Byte) message. This MIDI message is 7-bit in size and can be used to select any of 128 banks. This message can be used in conjunction with MIDI CC 32 which is bank select LSB (Least Significant Byte): a separate 7-bit message allowing additional selection of any of another 128 sub-banks. The combination of Bank MSB and LSB messages gives a 14-bit message that can select any of a possible 16,384 banks. Each bank can in turn contain 128 possible sounds selected via a separate program change MIDI message. This enables a user to theoretically recall over two million programs directly, using only MIDI commands. However, most devices only use a few different banks, and you can often ignore the LSB message.

You will find many MIDI devices respond to program change commands and many are organized according to the GM listing. In General MIDI devices, different sounds are organized in the same way from device to device. Piano sounds are in their particular place, string sounds are in their place, drum sounds are in their place, and so on. All GM devices (both hardware and software sound modules) are clearly labeled as such, so you know that their sounds are organized in the General MIDI structure. When a GM device receives a MIDI program change, it calls up a type of sound that you expect from the GM sound set. All non-GM MIDI sound modules call up unique sounds from their memory upon receiving MIDI program changes. Since the sounds in a non-GM device are not arranged in a particular order, you need to take a look at the device itself to see which sound you want and at which location in the memory it resides. Many VST instruments such as Native Instruments' FM7 or the synth modules in Propellerhead Reason are non-GM devices.

You can send Program Change, Bank LSB and Bank MSB messages directly from the keyboard. Please consult the "Advanced Edit Mode" section of this User Guide for further details.

NRPN/RPNs

Non-registered parameter numbers (NRPN's) are device-specific messages that enable you to control synthesizers and sound modules via MIDI. The MIDI specification defines open parameter numbers to allow manufacturers to specify their own controllers. The more common of these are registered by the MIDI Manufacturer's Association and are now part of the MIDI specification, hence the term Registered Parameter Numbers – RPN's (See Appendix C). Each NRPN/RPN has an associated 2-byte number. The two bytes allow for 128 values each. (An RPN or NRPN message is made up of two parts: the MSB and the LSB message. Both of these messages together constitute an RPN or NRPN command.) This allows for 16,384 values in total.

MIDI controllers 98 and 99 represent the NRPN LSB and MSB respectively, while 100 and 101 represent the RPN LSB and MSB messages (see the MIDI controllers list in Appendix C). To transmit an NRPN/RPN message, these LSB and MSB controller messages are sent along with their user-specified values. A further controller message and value needs to be sent to specify the (coarse or fine) value adjustment. This is specified by controller number 6 (data entry) for coarse adjustments or number 38 for fine adjustments.

A list of NRPN's is usually given in the user's manual of any device that receives NRPN messages. It is always necessary that the NRPN MSB and LSB be sent together. Both will be specified in the device's manual.

Appendix I: MIDI Implementation Chart

Function...		Transmitted
Basic	Default	1-16
Channel	Changed	1-16
Mode	Default	Mode 3
	Messages	O
	Altered	*****
Note		0-127
Number	True Voice	*****
Velocity	Note ON	O
	Note OFF	X
After	Key's	X
Touch	Channel	O*
Pitch Bend		O
Control	0-119	O
Change	120-127	O
Program		0-127
Change	True #	*****
System Exclusive		O*
System	Song Position Pointer	X
Common	Song Sel	X
	Tune Request	X
System	Clock	X
Real Time	Commands	X
Aux	All Sounds Off	O
Messages	Reset All Controllers	O
	Local ON/OFF	X
	All Notes OFF	O
	Active Sensing	X
	System Reset	X
Notes		O is recognized

Appendix J: Compliance Information

Environmental Compliance

Disposal of Waste Equipment by Users in the European Union

This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

Proposition 65 Warning

> ⚠ *This product contains chemicals, including lead, known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.*

Perchlorate Notice

This product may contain a lithium coin battery. The State of California requires the following disclosure statement: "Perchlorate Material – special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate."

Recycling Notice

EMC (Electromagnetic Compliance)

Avid declares that this product complies with the following standards regulating emissions and immunity:
- ・ FCC Part 15 Class B
- ・ EN 55022 Class B
- ・ EN 55024 Class B
- ・ AS/NZS CISPR 22 Class B
- ・ CISPR 22 Class B

FCC Compliance for United States

Communication Statement

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

- Reorient or locate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any modifications to the unit, unless expressly approved by Avid, could void the user's authority to operate the equipment.

Australian Compliance

N1709

Canadian Compliance

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada."

CE Compliance (EMC and Safety)

CE 97

Avid is authorized to apply the CE (Conformité Europénne) mark on this compliant equipment thereby declaring conformity to EMC Directive: 2004/108/EC and Low Voltage Directive: 2006/95/EC.

Safety Compliance

Safety Statement

This equipment has been tested to comply with USA and Canadian safety certification in accordance with the specifications of UL Standard UL60950-1, 2nd Edition/IEC60950-1, 2nd Edition and Canadian CAN/CSA C22.2 No. 60950-1-07; 2007 2nd Ed. Avid Technology, Inc. has been authorized to apply the appropriate TUV & cTUV marks on its compliant equipment.

Warning

Japan VCCI Compliance

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。　　　VCCI−B

Important Safety Instructions

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do not use this equipment near water.

6) Clean only with dry cloth.

7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8) Do not install near any heat sources such as radiators, heat registers, stoves, or other equipment (including amplifiers) that produce heat.

9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect power cords from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the equipment.

11) Only use attachments/accessories specified by the manufacturer.

12) For products that are not rack-mountable: Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the equipment. When a cart is used, use caution when moving the cart/equipment combination to avoid injury from tip-over.

13) Unplug this equipment during lightning storms or when unused for long periods of time.

14) Refer all servicing to qualified service personnel. Servicing is required when the equipment has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the equipment, the equipment has been exposed to rain or moisture, does not operate normally, or has been dropped.

15) For products that are a Mains powered device:
The equipment shall not be exposed to dripping or splashing and no objects filled with liquids (such as vases) shall be placed on the equipment.

Warning! To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.

16) For products containing a lithium battery:
CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.

17) For products with a power switch:
The main power switch is located on the front panel of the HD OMNI. It should remain accessible after installation.

18) The equipment shall be used at a maximum ambient temperature of 40° C.

Appendix K: Warranty Terms

Avid warrants products to be free from defects in materials and workmanship, under normal use and provided that the product is owned by the original, registered user. Visit www.m-audio.com/warranty for terms and limitations applying to your specific product