# Keith McMillen
## INSTRUMENTS

# K-BOARD
# USER MANUAL

# K-Board

## Version 1.0

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Created by Keith McMillen, Conner Lacy, Evan Adams, Noah Ambrose, Evan Bogunia, Dave Criss, Emmett Corman, Tom Ferguson, Matt Hettich, Sarah Howe, Kyle Lobedan, Daniel McAnulty, Dustin Schultz, Jon Short, Maxime Stinnett, Nick Wang, Carson Whitley, Steve Wright, and Nathan Zorndorf.
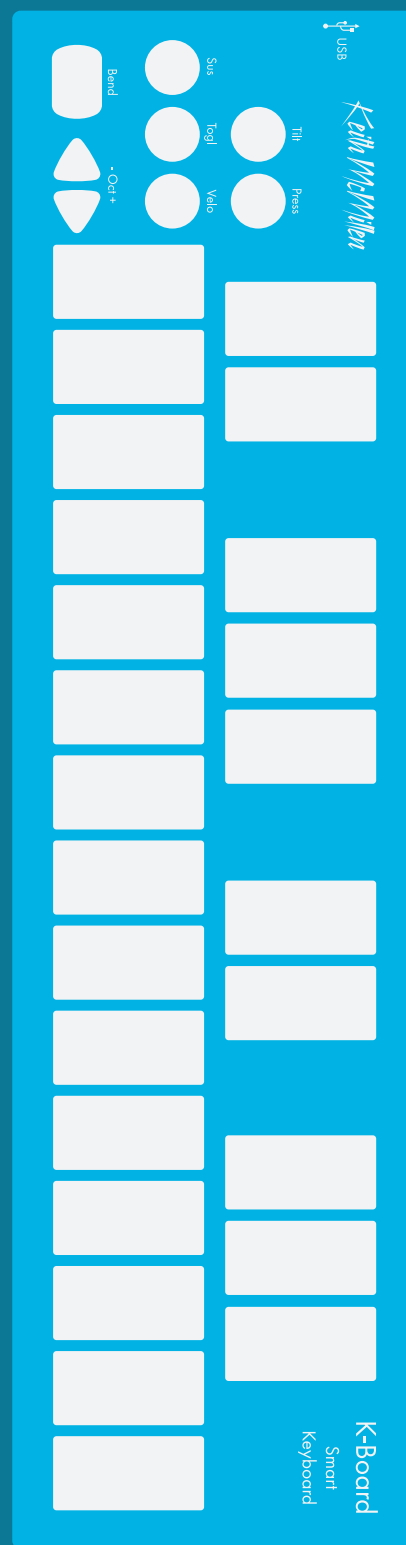
This reference manual was written and designed by Carson Whitley.

# Welcome

Hello, and welcome to the K-Board manual! Taking the time to read this document is a huge step toward K-Board mastery.

The purpose of this document is to provide a resource with helpful information regarding the use of the K-Board and K-Board software.

# Contents

# Questions? Feedback? Contact us!

Any questions or feedback that may come up regarding the K-Board or its software can be directed to us here:

- **Technical Support:** www.keithmcmillen.com/support

- **General Questions:** www.keithmcmillen.com/company/contact

- **Forum:** forum.keithmcmillen.com

# GETTING STARTED
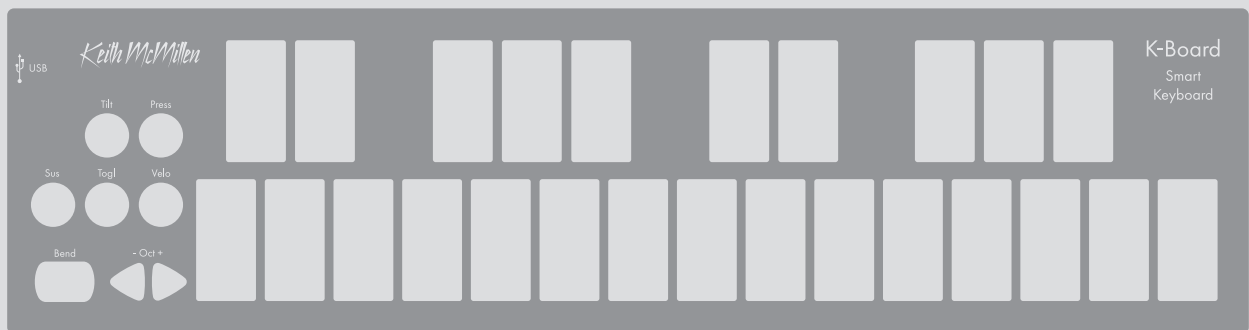
# What's in the box?

## (1) K-Board Keyboard Controller

**Keith McMillen**

USB

Tilt    Press

Sus    Togl    Velo

Bend    - Oct +

K-Board
Smart
Keyboard

## (1) Micro-USB to USB-A Cable

for connecting your K-Board to various devices

# Connecting K-Board

to a
computer

to a
tablet

to a
smart
phone

to a
USB host
device

USB

*Keith McMillen*

Tilt   Press

Sus   Togl   Velo

Bend   – Oct +
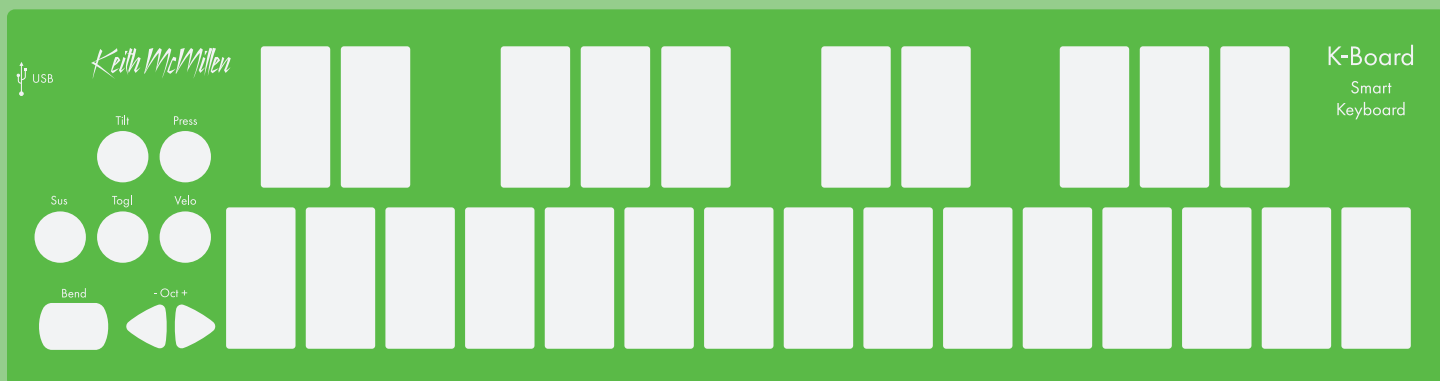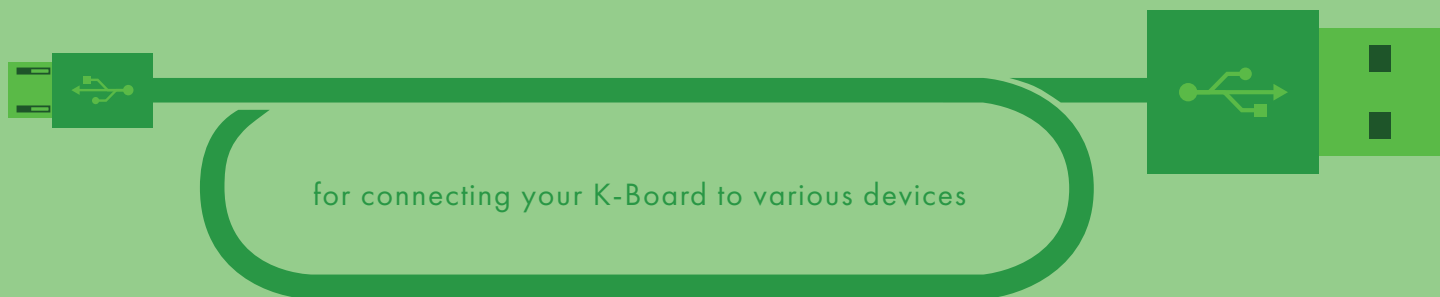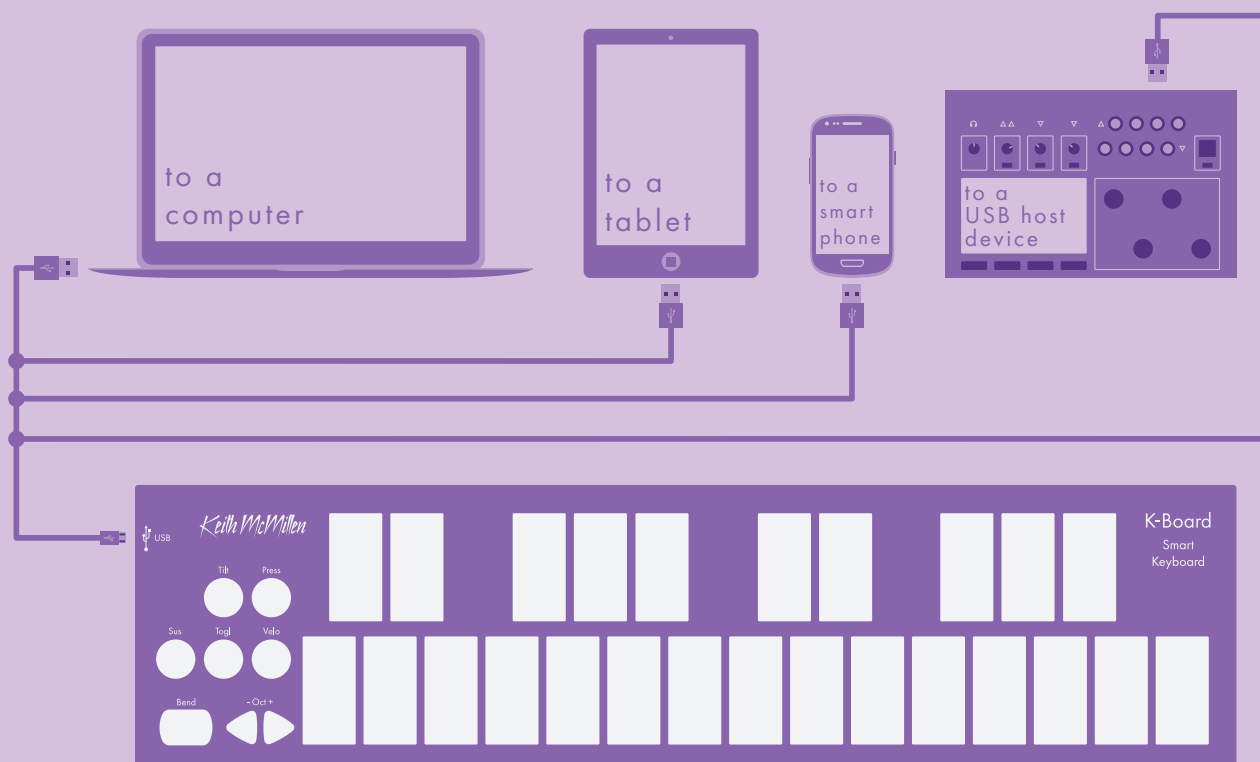
K-Board
Smart
Keyboard

## K-Board works with...

Your K-Board is a bus-powered, class-compliant USB MIDI device, which means it will work with any MIDI-capable device running Mac OS, iOS, Windows, or Android.

Use the provided Micro-USB cable to connect your K-Board to computers, tablets, phones, or other USB-host hardware. Simply plug the micro end into the K-Board's USB port, and the other end into a USB port on the desired device.

Some tablets and phones may require additional connectors/adapters in order to function properly. Please ensure these are properly configured if you are experiencing connection issues.

Most software will begin working immediately with your K-Board. If not, please consult your software's documentation as there may be specific instructions for configuring a new MIDI device.

# PRESSURE

Modulate effects and other musical parameters by applying pressure on the keyboard.

Press and hold the **Press** button for 1 second to enable or disable pressure data. The LED will turn on when pressure is enabled and will turn off when disabled.
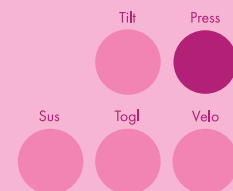
Apply **MORE** pressure on the keys to **increase** the current pressure value.

Apply **LESS** pressure on the keys to **decrease** the current pressure value.

## Advanced Info

When multiple keys are held down K-Board will output the average pressure value of all currently active keys, allowing for more precise control of your software.

By default, pressure data will be output on MIDI CC #1 (Mod Wheel). If necessary, this can be changed to Channel Pressure messages, or any CC number by using the K-Board software editor.
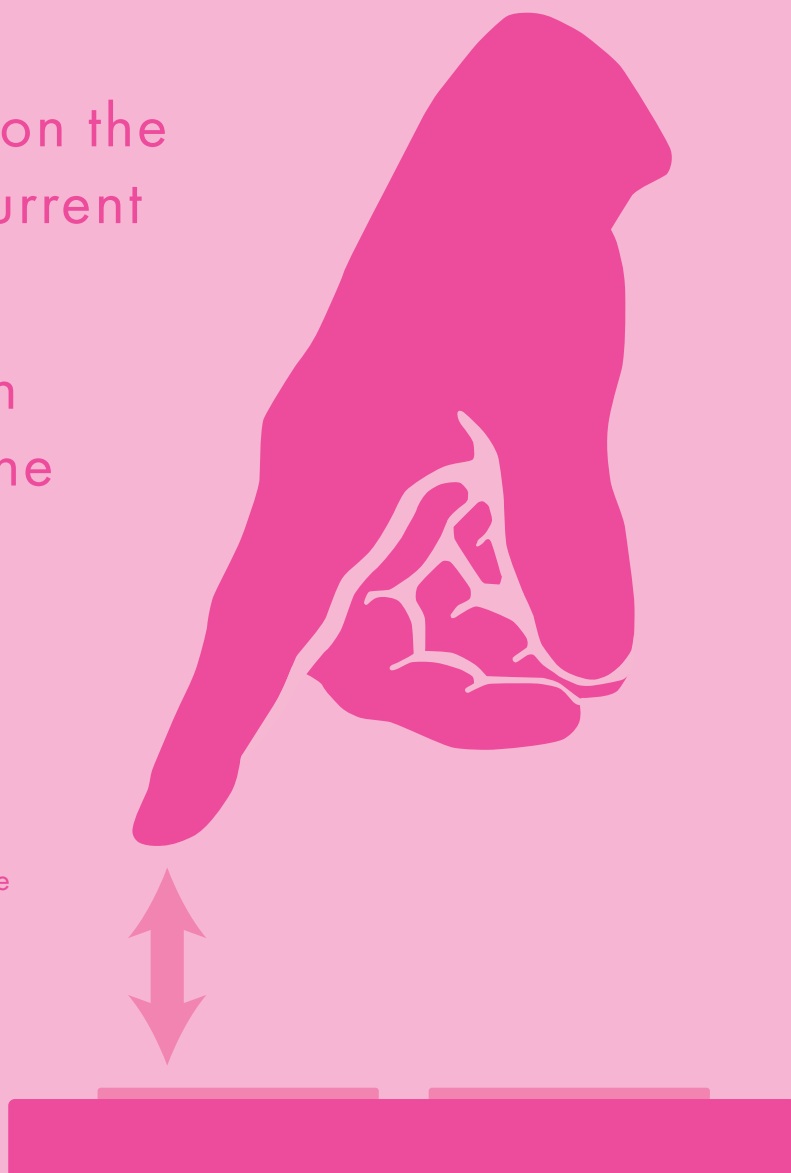
# TILT

Bend pitch and modulate effects by tilting your fingers up and down on the keyboard.
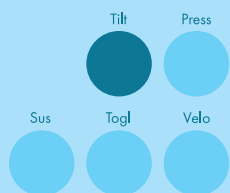
Press and hold the **Tilt** button for 1 second to enable or disable tilt data. The LED will turn on when tilt is enabled and will turn off when disabled.

## TILT UP

Tilt fingers **UP** toward the top of the keys to **increase** the current tilt value.

Tilt fingers **DOWN** toward the bottom of the keys to **decrease** the current tilt value.
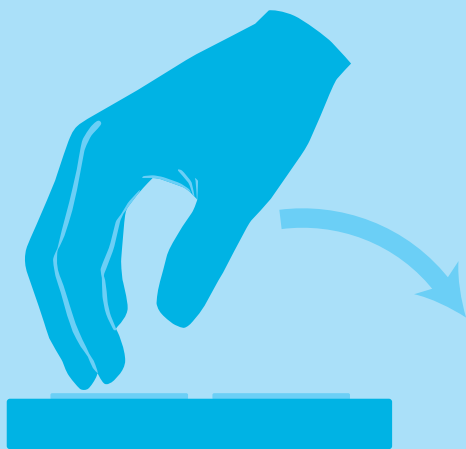
## Advanced Info

When multiple keys are held down the K-Board will output the average tilt value of all currently active keys, allowing for more precise control of your software.

By default, tilt data will be output as pitch bend messages. If necessary, this can be changed to any CC number by using the K-Board software editor.

## TILT DOWN

# VELOCITY

Make your K-Board keys sensitive to how hard you hit them.
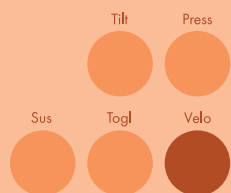
Press and hold the **Velo** button for 1 second to enable or disable velocity response. The LED will turn on when velocity is enabled and turn off when velocity is disabled.

Hitting a key with **MORE** force will result in a **higher** velocity value. Hitting a key with **LESS** force will result in a **lower** velocity value.

MORE

LESS

# TOGGLE

Make each key act as a toggleable switch.

Tilt  Press

Sus  Togl  Velo

Press and hold the **Togl** button for 1 second to enable/disable key toggling. The LED will turn on when toggling is enabled and will turn off when disabled.

**Tap** a key once to turn it on.

**Tap** it again to turn it off.

TOGGLE ON

TOGGLE OFF

**Tap** the Togl button to turn off all currently active notes.

TAP
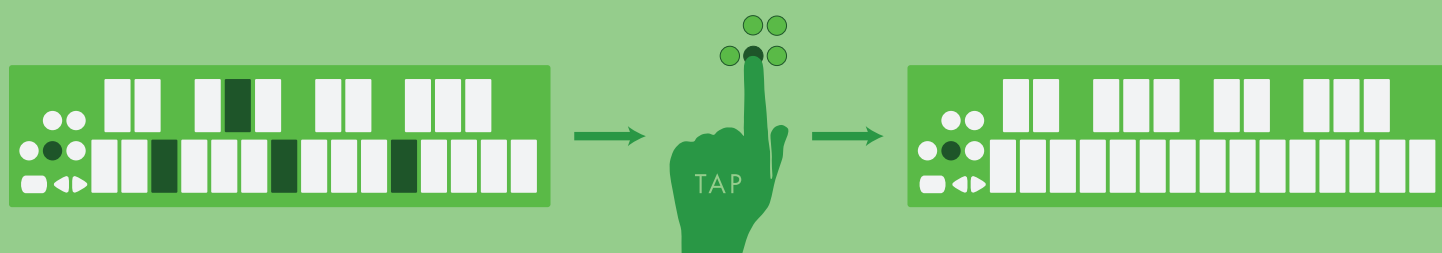
# SUSTAIN

Temporarily sustain notes.
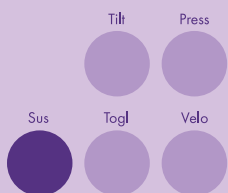
Press and hold the **Sus** button to temporarily sustain notes on the keyboard. The button's LED will light up when pressed and turn off when released.

## All notes will stay on while the sustain button is pressed.

With sustain

Without sustain
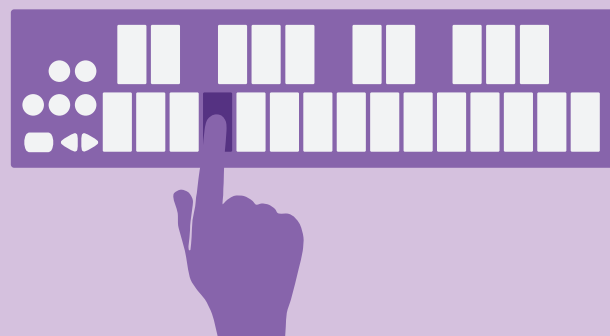
## Any sustained notes will turn off when the sustain button is released.

# K-Board Editor
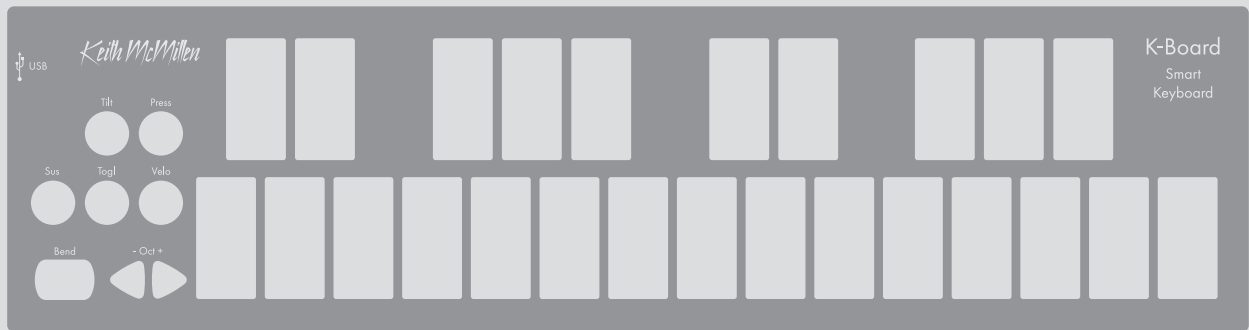
# K-Board Editor

## What is it for?

The K-Board Editor allows more adventurous users to customize the behavior of their K-Boards beyond the factory defaults.

Different types of MIDI messages, CC values, and the keyboard's sensitivity can be changed via the editor's interface.

Open the editor, plug in a K-Board, and start changing parameters — the editor will automatically sync any changes with the attached keyboard.

## Where do I get it?

The K-Board Editor software (for Mac and Windows) is available as a free download on the KMI website at this link:

http://www.keithmcmillen.com/k-board/downloads

**K-BOARD**

| | |
|---|---|
| MIDI CHANNEL | 7 |
| PRESSURE CC | 24 |
| TILT CC | 99 |
| BEND RANGE (PAD) | ±12 |
| BEND RANGE (TILT) | ±12 |
| VELOCITY SENSITIVITY | |
| PRESSURE SENSITIVITY | |
| TILT SENSITIVITY | |

CONNECTED                 *Keith McMillen*

## How do I install it?

**Mac OS (10.5 - 10.10)**

1. Download the editor (see above).

2. Locate the downloaded .DMG file in Finder.

3. Double-click the .DMG file to mount it. A new window showing its contents should appear.

4. Drag the K-Board Editor application onto the Applications shortcut to copy it to your Applications folder.

5. Installation complete.

**Windows 7, Windows 8**

1. Download the editor (see above).

2. Locate the downloaded file in Explorer.

3. Unzip the contents by right-clicking the .zip file and selecting "Extract All"

4. Place the resulting folder anywhere on your hard drive.

5. Installation complete.

⚠ **Note**: the editor application *must* remain in the folder it comes in. *Do not move it out of the folder* — the editor will not work properly.
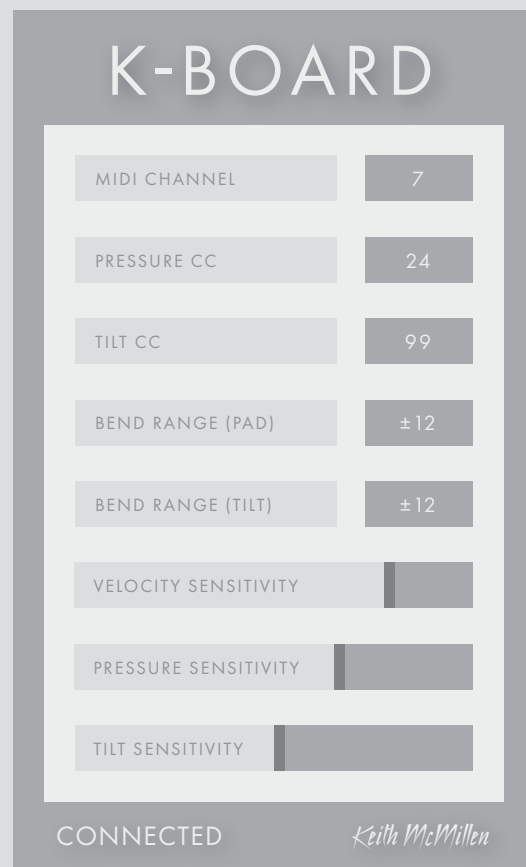
# MAIN WINDOW OVERVIEW

Most K-Board parameters are adjusted in the main window.

A connected K-Board will automatically sync with the current editor settings whenever a parameter is changed.

The editor's main window is comprised of nine main elements...

## K-BOARD

| | | |
|---|---|---|
| 1 | MIDI CHANNEL | 7 |
| 2 | PRESSURE CC | 24 |
| 3 | TILT CC | 99 |
| 4 | BEND RANGE (PAD) | ±12 |
| 5 | BEND RANGE (TILT) | ±12 |
| 6 | VELOCITY SENSITIVITY | |
| 7 | PRESSURE SENSITIVITY | |
| 8 | TILT SENSITIVITY | |

CONNECTED (9)   *Keith McMillen*

(1) **MIDI CHANNEL:** Sets the global MIDI channel for all parameters.

(2) **PRESSURE CC:** Sets the CC number to output pressure data on.

(3) **TILT CC:** Sets the CC number to output tilt data on.

(4) **BEND RANGE (PAD):** Sets the pitch bend range (in semitones) for the bend pad.

(5) **BEND RANGE (TILT):** Sets the pitch bend range (in semitones) for the K-Board's tilt motion.

(6) **VELOCITY SENSITIVITY:** Adjusts how sensitive the K-Board is to velocity. Move the slider to the **right** to **increase** sensitivity, move the slider to the **left** to **decrease** sensitivity.
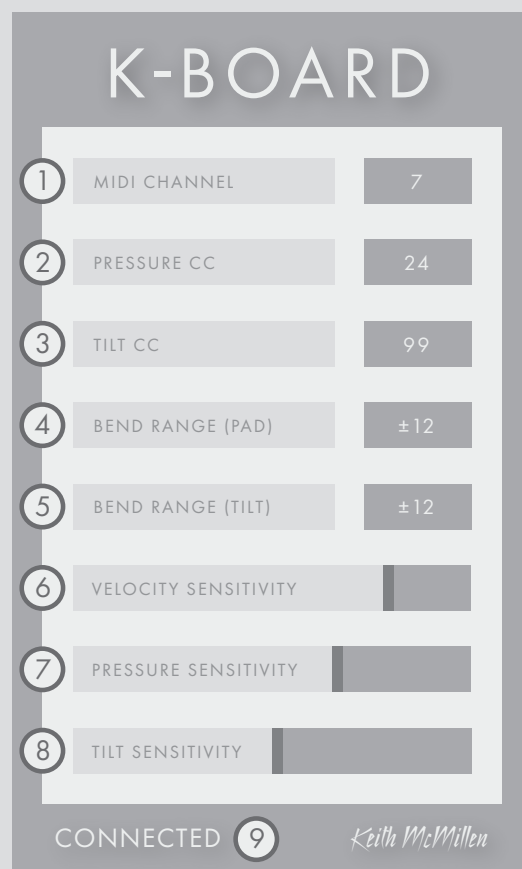
(7) **PRESSURE SENSITIVITY:** Adjusts how sensitive the K-Board is to key pressure. Move the slider to the **right** to **increase** sensitivity. Move the slider to the **left** to **decrease** sensitivity.

(8) **TILT SENSITIVITY:** Adjusts how sensitive the K-Board is to the tilt motion. Move the slider to the right to increase sensitivity (easier to engage). Move the slider to the left to decrease sensitivity (difficult to engage).

(9) **CONNECTED INDICATOR:** Indicates whether or not a K-Board is currently connected to the editor. A valid connection is required in order to adjust a K-Board's settings.

# PREFERENCES OVERVIEW

The preferences  section of the editor offers a few deeper, more advanced options for customizing your K-Board's behavior...

**PREFERENCES**

① VELOCITY CURVE                Linear ⏶⏷

② PRESSURE DISABLED RETURN VALUE          off

③ TILT DISABLED RETURN VALUE          off

④ ON THRESHOLD          1

⑤ CLOSE

---

① **VELOCITY CURVE:**  Applies a curve to the velocity data. This can be used to adjust the velocity response of the keys. The following options are available:

- Linear
- Logarithmic
- Sine
- Cosine
- Exponential
- Invert

② **PRESSURE DISABLED RETURN VALUE:** The value entered here will be output as a pressure message anytime the **Press** button is used to disable pressure on the K-Board.

Enter a value of -1 to disable this feature.

③ **TILT DISABLED RETURN VALUE:**  The value entered here will be output as a tilt message anytime the **Tilt** button is used to disable the tilt gesture on the K-Board.

Enter a value of -1 to disable this feature.

⚠ **Note**: This feature will not function when tilt is set to output pitch bend messages. It will only work when set to output CC messages.
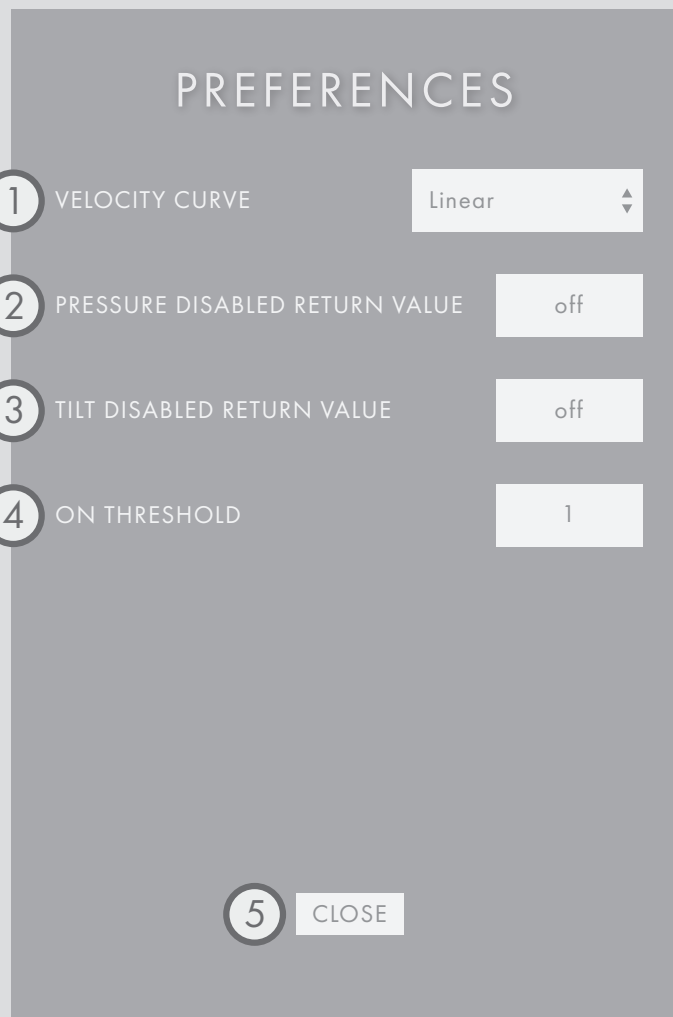
④ **ON THRESHOLD:**  Sets the amount of pressure required for a key to be activated.

⑤ **CLOSE PREFERENCES:**  Clicking this button will exit the preferences window and return to the editor's main window.

# MENU BAR OVERVIEW

There are a number of useful functions and settings that can be accessed via the menu bar at the top of the screen (Mac OS) or at the top of the application window (Windows).

| K-Board Editor | |
| --- | --- |
| About K-Board Editor | |
| Preferences... | ⌘, |
| Services | ▶ |
| Hide K-Board Editor | ⌘H |
| Hide Others | ⌥⌘H |
| Show All | |
| Quit K-Board Editor | ⌘Q |

| Edit |
| --- |
| Revert to Factory Defaults |
| Revert Sensitivities to Default |
| Revert Preferences to Default |
| Start Dictation... |
| Special Characters...  ^⌘Space |

| Hardware |
| --- |
| Load/Reload Firmware... |
| Update K-Board |

| Help |
| --- |
| Documentation... |
| Hide Tool Tips |
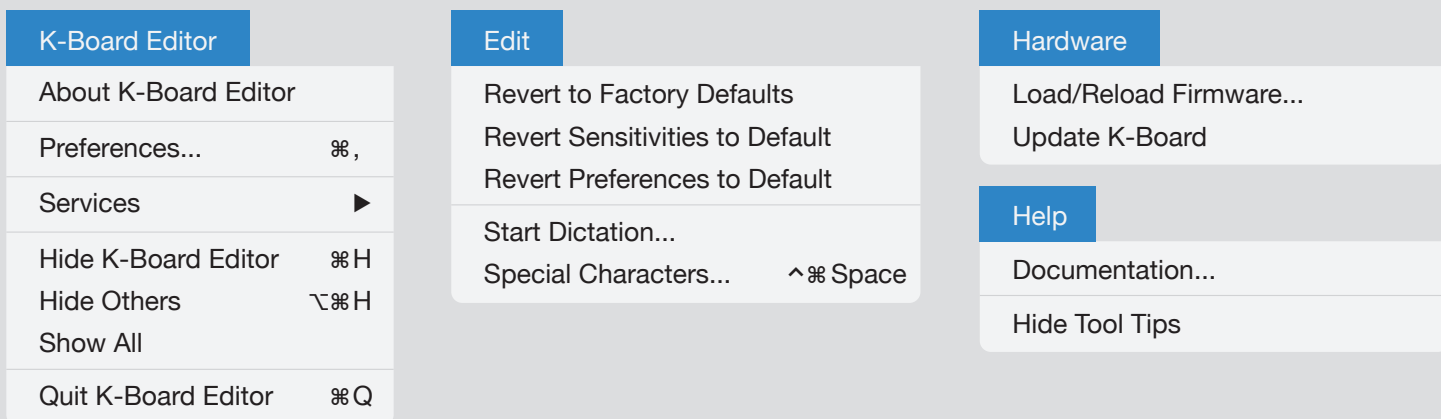
## K-BOARD EDITOR

**ABOUT K-BOARD EDITOR:** Displays version information about the editor and connected K-Board.

**PREFERENCES:** Displays the Preferences window.

⚠ **Note**: The K-Board Editor menu is only available on Mac. Windows users will find the above options under the **Help** menu.

## EDIT

**REVERT TO FACTORY DEFAULTS:** Reverts all main window options to their factory defaults.

**REVERT SENSITIVITIES TO DEFAULT:** Reverts *only* the sensitivity parameters to their factory defaults.

**REVERT PREFERENCES TO DEFAULT:** Reverts all options in the Preferences window to their factory defaults.

## HARDWARE

**LOAD/RELOAD FIRMWARE:** Initiates the firmware update/reinstall process. Use this if a manual firmware update is required or desired.

**UPDATE K-BOARD:** Manually syncs the editor and connected K-Board. All settings on the K-Board will be updated with whatever is currently set in the editor.

## HELP

**DOCUMENTATION:** Link to the user manual online in PDF format.

**SHOW/HIDE TOOL TIPS:** Enables or disables the informational tool tip pop-ups that appear when hovering the mouse over an item.

# K-Board Troubleshooting

# TROUBLESHOOTING INFO

If you're having troubles with connectivity and your K-Board there are a number of things to try before contacting tech support...
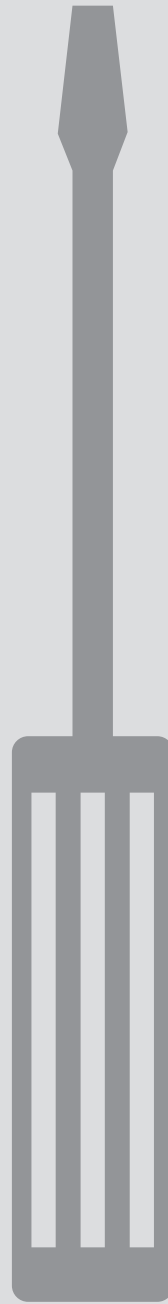
## Try a new USB cable

One of the first (yet most often overlooked) things to try is a different USB cable, preferably one that is known to work well. When a cable goes bad it can lead to all sorts of odd behavior (flaky connections), or no behavior at all (won't even power on).

## Try plugging into a different USB port

It's possible that trying a different USB port on the computer may lead to a proper connection. While extremely rare, we have come across USB ports that just don't seem to like some USB devices.

## Do not use an unpowered USB hub

Unpowered USB hubs may not be able to provide enough power to the K-Board, leading to connectivity issues. Unpowered hubs typically divide the power coming from the computer's USB port and split it up between all of the hub's ports —providing less power than if the K-Board were to be directly connected to the computer's USB port.

If a USB hub is absolutely necessary, it is recommended to *always* use a powered hub.

## Try with or without a USB hub

If experiencing connectivity issues while using a USB hub, try without the hub and plug directly into the computer's USB port. The reverse holds true as well — if experiencing connectivity issues while not using a USB hub, try with a hub (if one is available to you).

## Be aware of bugs native to the operating system being used

While it is indeed possible the K-Board may be the source of issues, sometimes the cause is actually due to the operating system itself. Always be aware of these issues, like the **Mac OS CoreMIDI bug** or the **Windows class-compliant device limitation**.

## Connect to a different computer

If the K-Board is not making a connection to the computer at all (and all other troubleshooting issues have been exhausted), it is recommended to try connecting it do a different computer. If it works on the new computer, try the original one again. In some circumstances we have seen this solve connection issues.

## Mac CoreMIDI Bug

There is an interesting (potential) bug in CoreMIDI on Mac OS that can lead to some connectivity issues — not just with the K-Board, but with any class-compliant MIDI device.

Upon connecting the K-Board (or any class-compliant MIDI device) for the first time since powering up the computer, the K-Board will make a proper connection to the computer but will not refresh/update the MIDI device list.

The effect of this is that any audio/MIDI applications that are already open (like the K-Board Editor, Ableton Live, Logic Pro, etc.) will not detect the K-Board, even though it's properly connected to the computer. The only way to get the MIDI device list to refresh is to unplug then reconnect the controller, or to manually refresh the MIDI devices by rescanning MIDI in Apple's Audio MIDI Setup application (located in /Applications/Utilities).

What's interesting is that this behavior does not occur if it is the first time the controller has ever been connected to the computer. It seems that when the MIDI device is created in Audio MIDI Setup the device list gets refreshed, but if the device already exists in Audio MIDI Setup the list does not refresh.

Whether or not this behavior is intentional and expected, it is something to be aware of. We have noticed it on Mac OS 10.6 through 10.9. The one thing to do to minimize the chances of running into this "bug" is…

> *After powering up the computer, always connect the K-Board to the computer before opening any applications.*

"Okay, so how do I fix it if this does happen?" Well, if you do run into this problem, there are a number of ways to fix it:

- Unplug the K-Board and plug it back in.
- Open Audio MIDI Setup and click the "Rescan MIDI" button in the MIDI window.
- Open another audio/MIDI application.

All three of the above methods refresh the MIDI device list, which should lead to proper "in-app" connections.
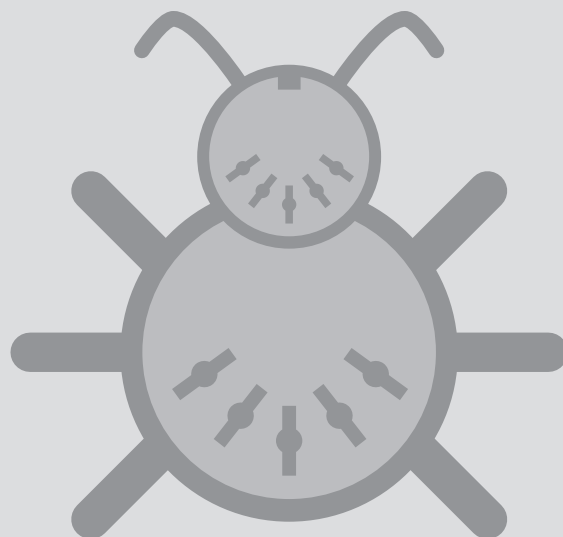
## Windows Class-Compliant Device Limitation

All versions of Windows do not allow a class-compliant MIDI device to be connected to more than a single person at a time. As a class-compliant MIDI controller, this applies to the K-Board.

The result of this is that if you have two or more audio/MIDI applications open at the same time (the K-Board Editor and Ableton Live, for example), only one of them will be able to connect to the K-Board. Because of this it is highly recommended to never edit the K-Board with other audio applications open — it could lead to connectivity issues, and a very confusing, frustrating experience.

This does not apply solely to KMI products — this will have an effect with every class-compliant MIDI device.

**ONE APP AT A TIME...**

# FREQUENTLY ASKED QUESTIONS

## Can the K-Board be bus-powered? Or does it need extra power?

Yes, the K-Board can definitely be bus-powered! No extra power sources are required.

The K-Board will only draw a maximum of 90mA, so pretty much any device with a USB port will be able to sufficiently power the K-Board (a standard USB 2.0 port should be able to output at least 500mA).
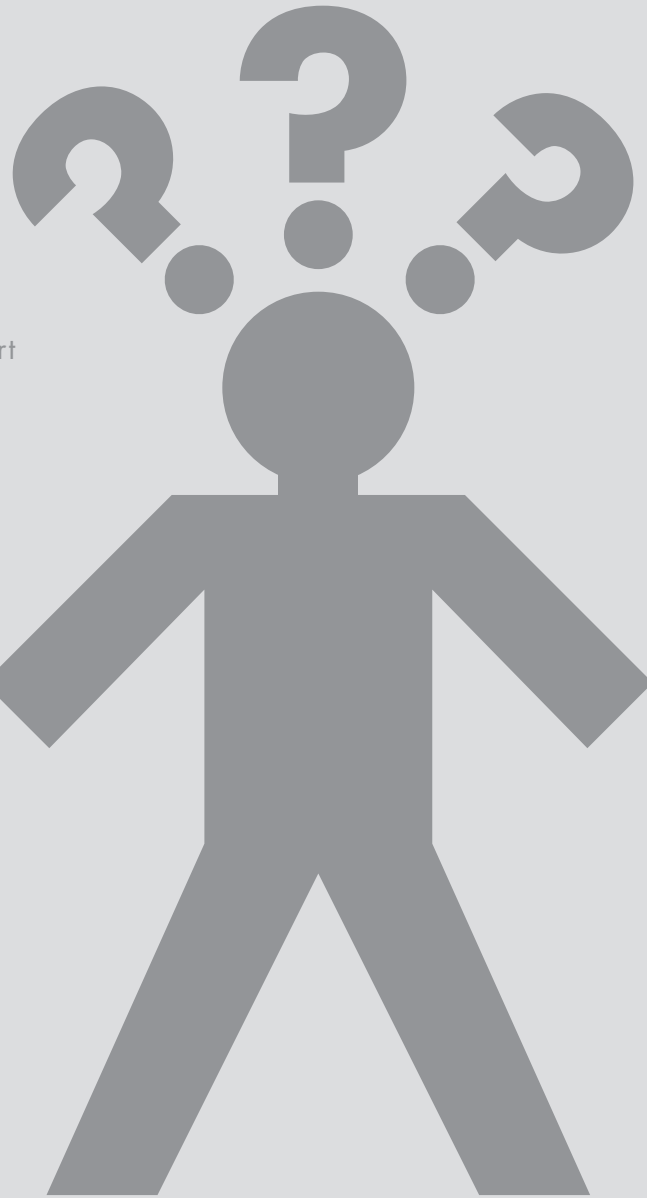
## I configured the "Tilt Disabled Return Value" to send a value but it's not sending. What's wrong?

It's possible that Tilt is currently mapped to pitch bend. The Tilt Disabled Return Value parameter will not function when Tilt is mapped to pitch bend. It will only function as expected when mapped to a CC.

It is also important to remember that the Tilt Disabled Return Value is only output when Tilt is disabled from the K-Board itself (by holding down the Tilt button for 1 second). The value will not be sent out in any other context.

## I plugged in my K-Board and it isn't making any sound. What's wrong?

It's highly likely that nothing is wrong! The K-Board is a MIDI controller, which means it doesn't actually make sound on its own. Instead, it sends "MIDI" messages, which are used to *control* other sound generating software/hardware. A seemingly minor distinction, but is actually quite important to understand.

Just open up any audio software that is able to respond to incoming MIDI messages and, depending on the software, the K-Board should start working right away. It's possible there may be more steps required to properly configure an application to respond to an attached MIDI device — please refer to the software's documentation if this is the case.

## My K-Board won't connect to my computer/tablet/etc. What do I do?

Please try out the suggestions in the **troubleshooting** area. If your K-Board is still not working, **contact KMI tech support**.

## The editor says "Not Connected" but my K-Board is plugged in and powered on. Am I doing something wrong?

If the K-Board is not connecting to the editor there are a few things to try out:

1. Try unplugging the K-Board and plugging it back in. On MacOS there can be some connectivity problems due to a **potential bug in CoreMIDI**. This can also help out on Windows machines as well.

2. If you plugged the K-Board in after opening the editor, try it the other way around. Connect the K-Board, then open the editor. If you're already doing that, try it the other way. The order of operations can sometimes affect the results.

3. Try restarting the computer. It's amazing how many infurating tech headaches can magically disappear with a computer restart.

4. If you're on Windows, make sure all other audio/MIDI applications are closed before opening the editor. See **this troubleshooting suggestion** for more information on why this works.

5. As a last resort, try **manually reinstalling the firmware** on your K-Board. This is essentially a factory "reset".

6. If none of the above options solves the problem, **contact KMI tech support**.

## Can I use two K-Boards at the same time?

Yes. A lot of K-Boards can be used simultaneously. The USB spec states "up to 127 devices, including hub devices if present, may be connected to a single host controller". As a class-compliant USB MIDI device, this applies to the K-Board.

⚠ **Note**: Only a single K-Board can be edited at a time using the editor.

# How do I update/reload my firmware?

There are a few ways firmware can be updated on a K-Board: automatically by the editor, manually with the editor, or manually without the use of the editor.

## Automatically

If a K-Board is connected to the editor and the firmware versions do not match (e.g. you just downloaded a new editor update and fired it up), the editor should automatically prompt you to update the firmware. Just click the UPDATE button to initiate the firmware installation.

## Manually (with Editor)

The K-Board editor can be used to manually initiate a firmware update/reinstall — just do the following:

1. Connect the K-Board to a computer.

2. Open the K-Board editor.

3. Go up to the Hardware menu and select "Load/Reload Firmware". This option will only be selectable if a K-Board has successfully connected to the editor.

4. In the prompt that appears, click the UPDATE button — this will initiate the firmware update process.

5. Wait for the firmware update to complete — a progress bar will show how much of the update has completed.

## Manually (without Editor)

Typically the K-Board editors will do just fine updating firmware on your board, but in some cases it may be necessary to manually update the firmware (like if the controller is not connecting to the editor).

The K-Board firmware can be loaded/installed manually using any application capable of sending SysEx files to connected MIDI devices. We recommend SysEx Librarian for Mac (**http://www. snoize.com/SysExLibrarian/**), and SysEx Box for Windows (**http://miostools.midibox. org/**) — though there are certainly other capable third-party options available.

To update your firmware...

### Mac

1. If you have not already, download and install SysEx Librarian from **http://www. snoize.com/SysExLibrarian/**

2. Download or locate the firmware file you would like to install. Zips of the current version and past versions can be downloaded here: **http://files.keithmcmillen.com/ downloads/kboard/sysex_files**

3. Plug in your K-Board and open SysEx Librarian.

4. Click "Add..." in the lower-left corner of the screen. When the browser window opens, navigate to the firmware file (generally named to the effect of "K-Board.syx") then click "Open".

5. Select "K-Board" from the drop down menu labeled "Destination".

6. Select the firmware file in SysEx Librarian's main window — it should highlight blue.

7. Click the "Play" button in the top-left corner of SysEx Librarian to begin the firmware installation. A progress bar will appear indicating how far along the update process is. The K-Board will look non-responsive while the update is taking place — this is okay and to be expected.

8. Once done, start using the K-Board as usual.

## Windows

1. If you have not already, download and install SysEx Box from **http://miostools.midibox.org/**

2. Download or locate the firmware file you would like to install. Zips of the current version and past versions can be downloaded here: **http://files.keithmcmillen.com/downloads/kboard/sysex_files**

3. Make sure all audio/MIDI applications are closed.

4. Plug in your K-Board and open SysEx Box.

5. Select "K-Board" in the "MIDI IN Port" and "MIDI OUT Port" drop-down menus. "K-Board" may show up as "USB Audio Device" on Windows XP.

6. Click "Open Sysex File". When the browser window opens, navigate to the firmware file you want to send to the K-Board, then click "Open".

7. Click the "Send Sysex" button. The firmware update should begin. The K-Board will look non-responsive while the update is taking place — this is okay and to be expected.

8. Once done, start using the K-Board as usual.

# K-Board Technical Specifications

| | |
|---|---|
| **Controllers** | • Keyboard: 25-key with pressure and tilt<br>• Pitch bend pad<br>• Octave up/down buttons<br>• Sustain button<br>• Velocity on/off button<br>• Pressure on/off button<br>• Tilt on/off button<br>• Toggle on/off button |
| **Dimensions** | 325mm x 84mm x 11mm<br>2.8in x 3.3in x 0.43in |
| **Weight** | 345g<br>0.76lbs |
| **Connections** | Micro-USB |
| **Power Source** | USB bus power |
| **Power Consumption** | ~90mA max draw @5V |
| **Included Accessories** | Micro-USB cable |
| **Octave Shift Range** | -2 to +3 octaves |
| **Velocity Curves** | • Linear<br>• Logarithmic<br>• Sine<br>• Cosine<br>• Exponential<br>• Inverted |
| **Data Transmitted** | Class-compliant MIDI over USB |
| **System Requirements (Mac)<br>(Software Editor)** | Mac OS 10.5 or later<br>Intel Core 2 Duo processor or greater<br>50MB free hard disk space |
| **System Requirements (Windows)<br>(Software Editor)** | Windows 7 or greater<br>Intel Core 2 Duo processor or greater<br>50MB free hard disk space |

USB

Bend · Sus

Togl · Tilt

-Oct+ · Velo · Press

Keith McMillen

K-Board
Smart
Keyboard
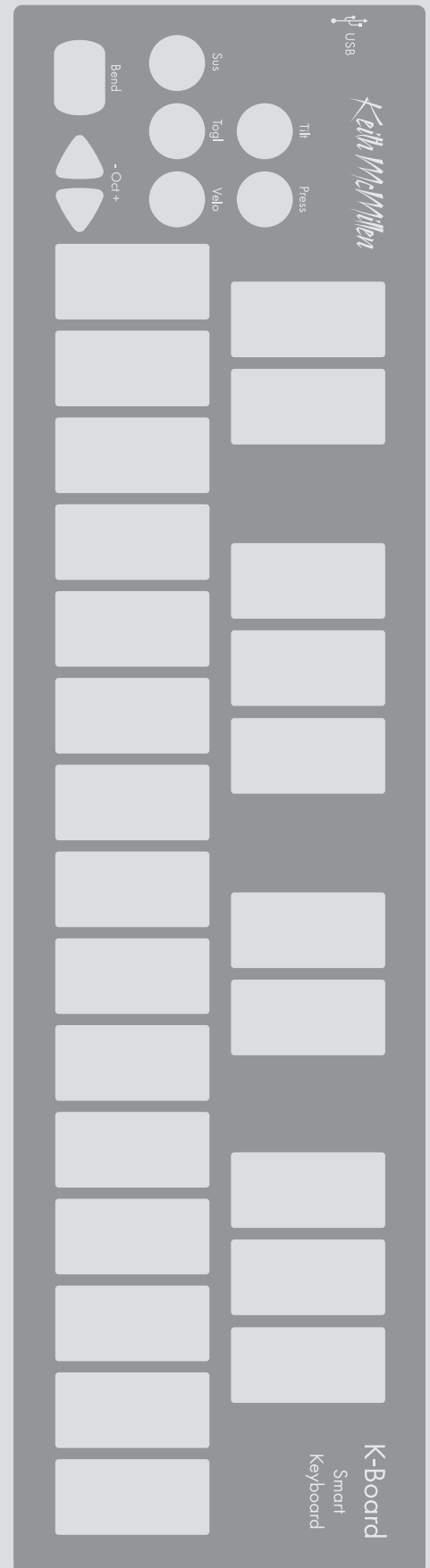
# SAFETY PRECAUTIONS

## Medical Devices

K-Board may emit electromagnetic fields. These electromagnetic fields may interfere with pacemakers or other medical devices. If you wear a pacemaker, maintain at least 6 inches (approximately 15cm) of separation between your pacemaker and K-Board. If you suspect K-Board is interfering with your pacemaker or any other medical device, stop using K-Board and consult your physician for information specific to your medical device.

## Medical Conditions

If you have any medical condition that you believe could be affected by K-Board (for example, seizures, blackouts, eyestrain, or headaches), consult with your physician prior to using K-Board.

## Explosive Atmospheres

Do not use K-Board in any area with a potentially explosive atmosphere, such as feuling area, or in areas where the air contains chemicals or particles (such as grain, dust, or metal powders). Obey all signs and instructions.

## Repetitive Motion

When you perform repetitive activities such as playing the K-Board keys, you may experience occasional discomfort in your hands, wrists, shoulders, neck, or other parts of your body. If you experience discomfort, stop using K-Board and consult a physician.

## High-Consequence Activities

K-Board is not intended for use where the failure of the device could lead to death, personal injury, or severe environmental damage.

## Choking Hazard

Some K-Board accessories may present a choking hazard to small children. Keep these accessories away from small children.