

K - B O A R D USER MANUAL

K-Board-C

Version 1.0

Edited: October 23, 2022



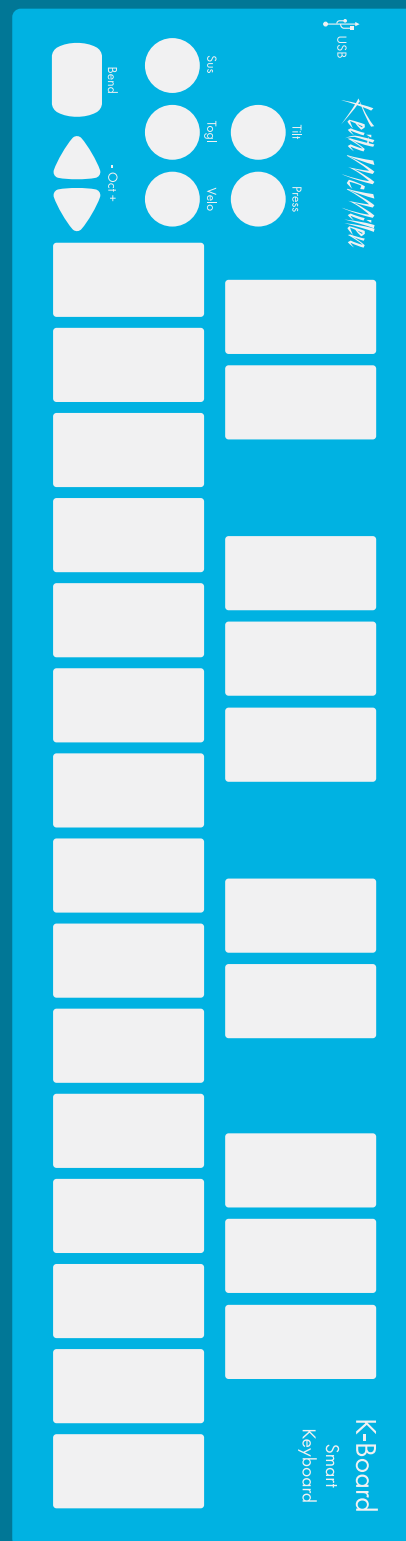
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Welcome

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

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

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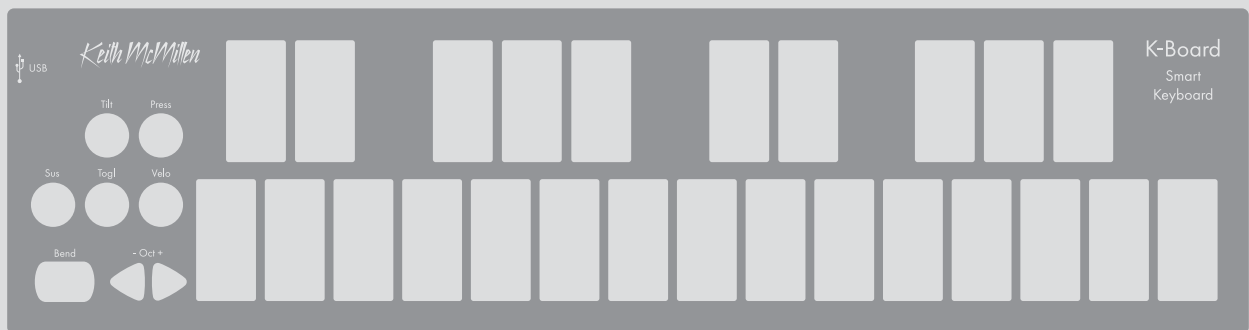
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Questions? Feedback? Contact us!

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

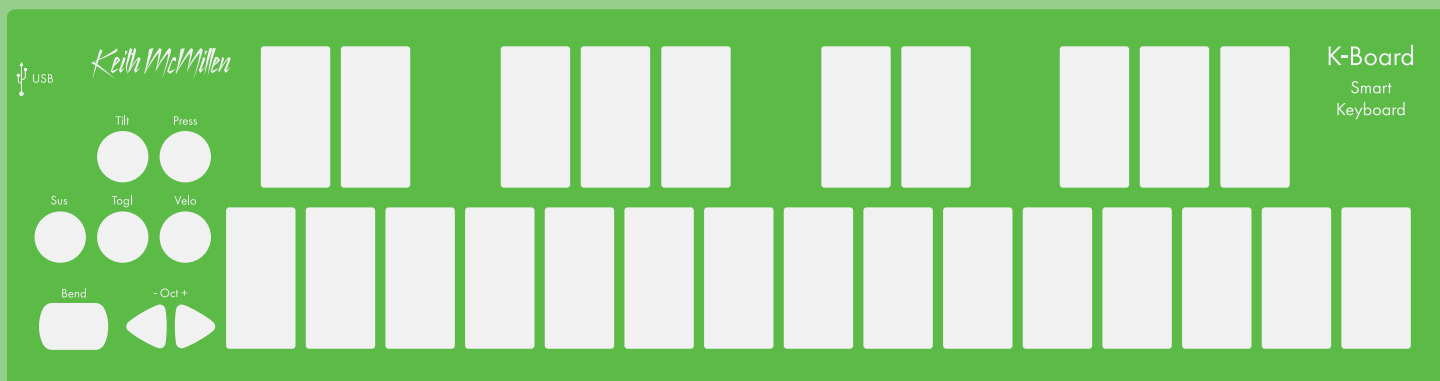
- **Technical Support:** support.keithmcmillen.com
- **General Questions:** contact@keithmcmillen.com

GETTING STARTED

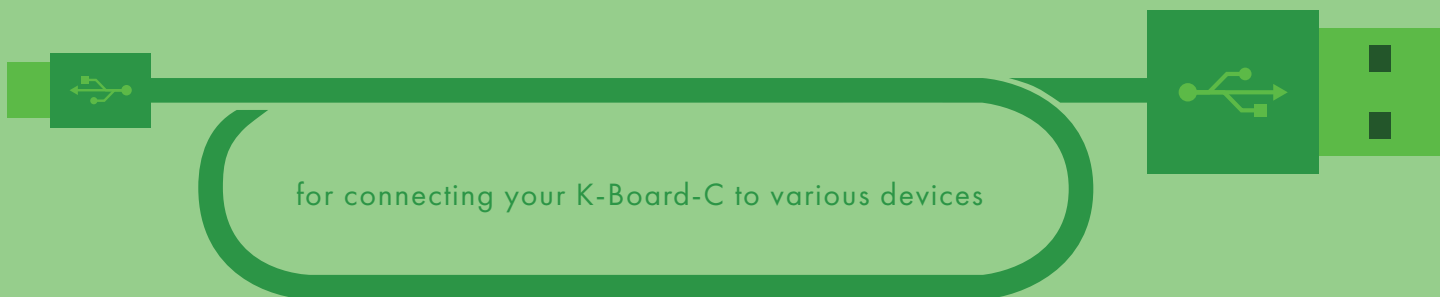


What's in the box?

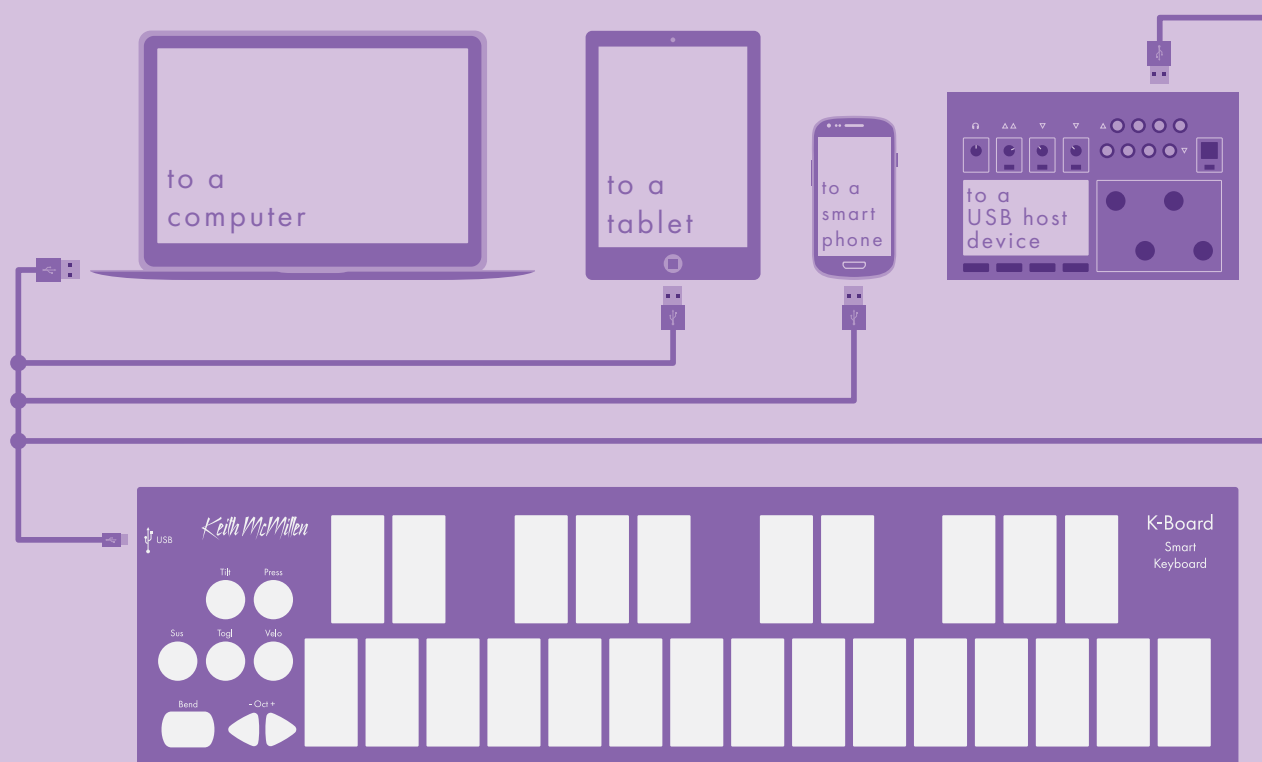
(1) K-Board-C Keyboard Controller



(1) USB-C Cable



Connecting K-Board-C



K-Board works with...



iOS



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 USB-C cable to connect your K-Board-C to computers, tablets, phones, or other USB-host hardware. Simply plug the USB-C end into the K-Board-C'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.

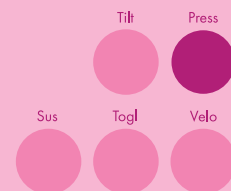
Most software will begin working immediately with your K-Board-C. If not, please consult your software's documentation as there may be specific instructions for configuring a new MIDI device.



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.



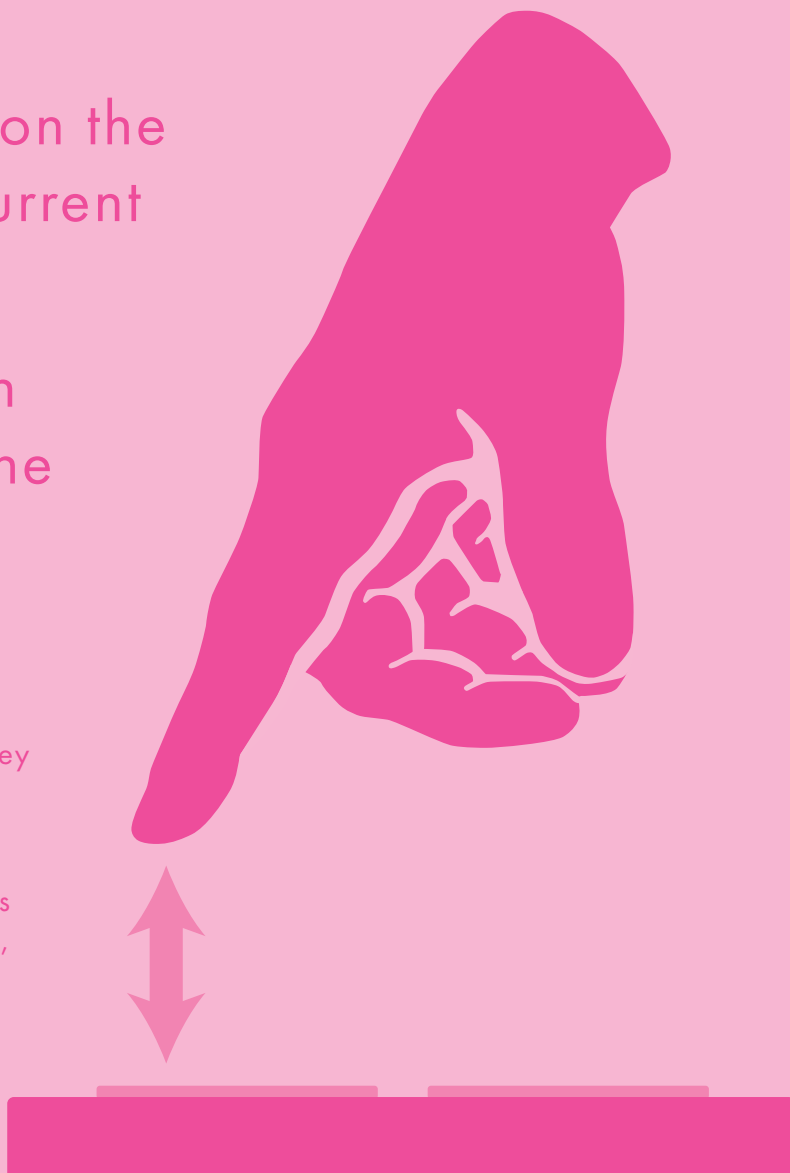
Apply **MORE** pressure on the keys to **increase** the current pressure value.

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

Advanced Info

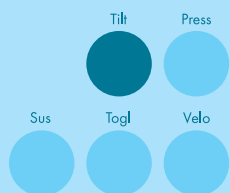
If MPE is enabled, automatically maps to per key Channel Pressure.

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



TILT

Bend pitch and modulate effects by tilting your fingers up and down on the keyboard.



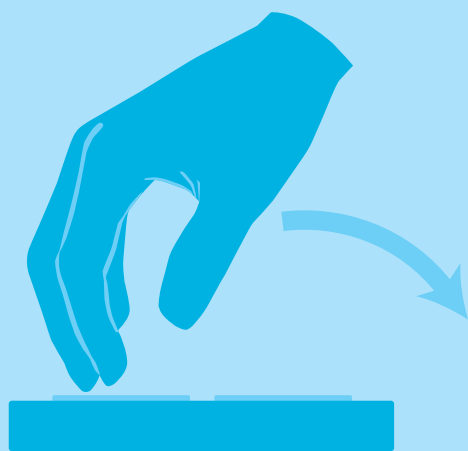
Press and hold the **Tilt** button for 1 second to enable or disable tilt data. The LED will turn on when tilt is enabled and will turn off when disabled.



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.



TILT DOWN

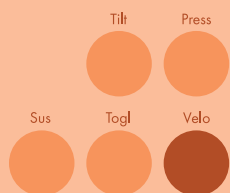
Advanced Info

If MPE is enabled, Tilt sends either Pitch Bend or CC74 per key.

If MPE is disabled, 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. 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.

VELOCITY

Make your K-Board keys sensitive to how hard you hit them.



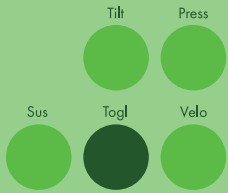
Press and hold the **Velo** button for 1 second to enable or disable velocity response. The LED will turn on when velocity is enabled and turn off when velocity is disabled.

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.



TOGGLE

Make each key act as a toggleable switch.



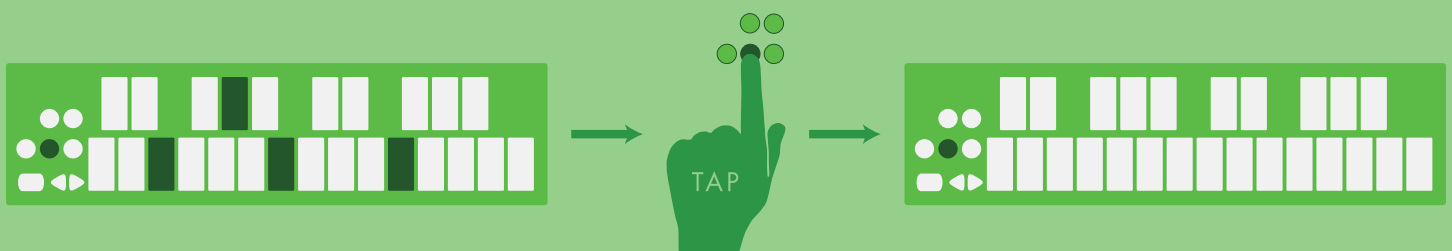
Press and hold the **Togl** button for 1 second to enable/disable key toggling. The LED will turn on when toggling is enabled and will turn off when disabled.

Tap a key once to turn it on.

Tap it again to turn it off.

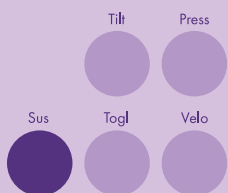


Tap the Togl button to turn off all currently active notes.



SUSTAIN

Temporarily sustain notes.



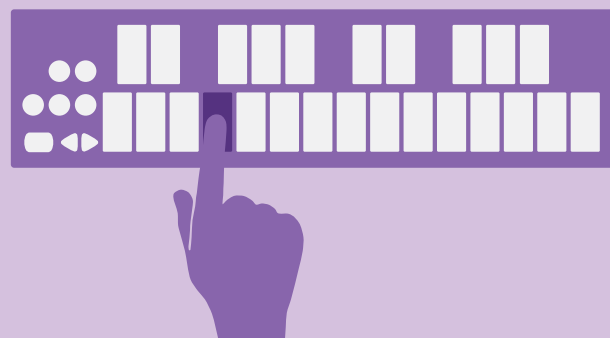
Press and hold the **Sus** button to temporarily sustain notes on the keyboard. The button's LED will light up when pressed and turn off when released.

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.

BEND PAD

Pitch bend sensor

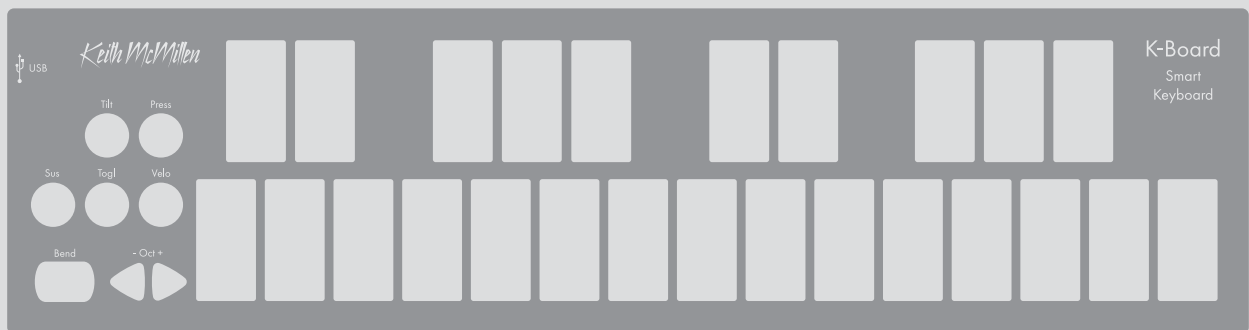
The pitch bend pad sends a MIDI pitchbend message with 14 bit resolution.



The BEND Pad is found in the bottom left corner of the K-Board. It acts similarly to a pitch bend wheel. Pressing the Bend Pad will send MIDI Pitch Bend data to bend the pitch of the note. Shift pressure on the Bend Pad from side to side to bend up and down. Press the Bend Pad left and right to bend the pitch up and down.

Tip: The Bend Pad Sensor has a small footprint and using too much force makes it harder to detect the change in pressure. For the best results, we suggest using a light touch.

K-BOARD-C EDITOR



K-BOARD-C EDITOR

What is it for?

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

MPE can be turned on and off, and 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-C, and start changing parameters — the editor will automatically sync any changes with the attached keyboard.

Where do I get it?

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

<https://www.keithmcmillen.com/downloads/>

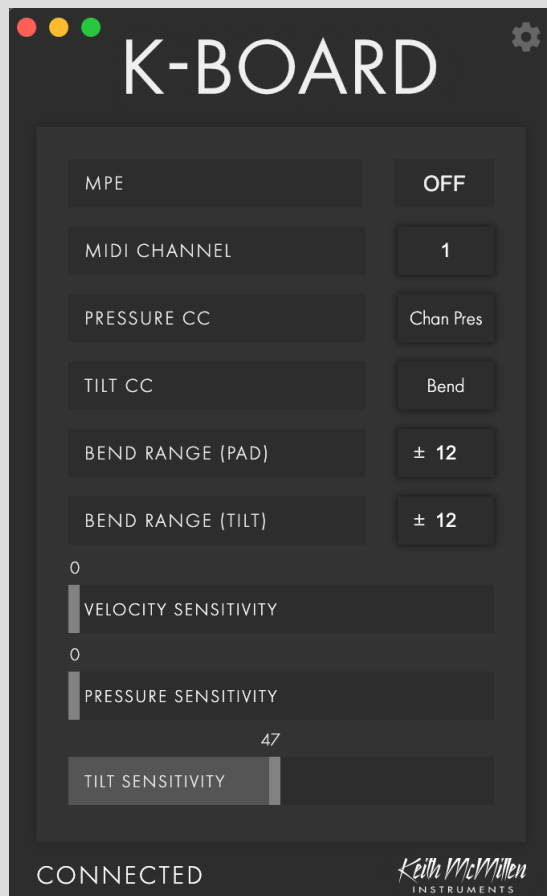
How do I install it?

Mac OS

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

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.

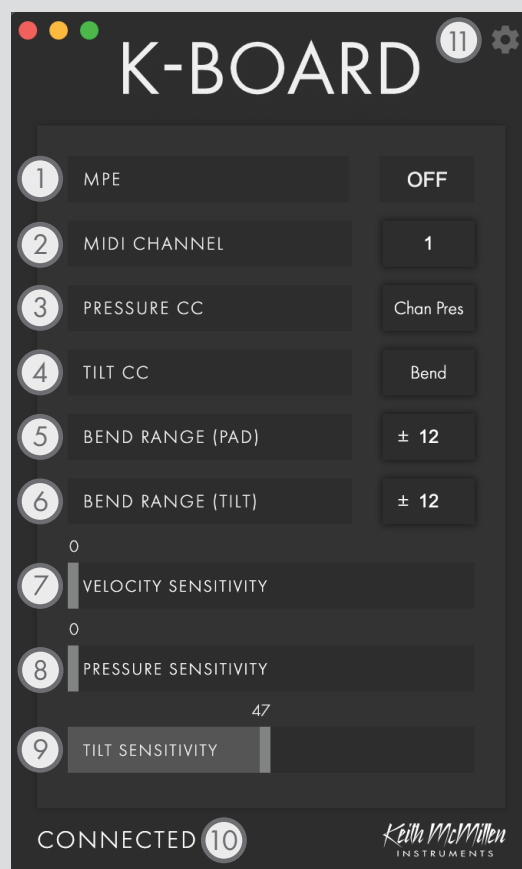


MAIN WINDOW OVERVIEW

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.

- ① **MPE:** Turn MIDI Polyphonic Expression on or off.
- ② **MIDI CHANNEL:** Sets the global MIDI channel for all parameters. (If MPE enabled, selects # of MPE Member Channels.)
- ③ **PRESSURE CC:** Sets the CC number to output pressure data on. (If MPE enabled, automatically maps to Channel Pressure.)
- ④ **TILT CC:** Sets the CC number to output tilt data on. (If MPE enabled, Tilt can be mapped to Pitch Bend or CC74.)
- ⑤ **BEND RANGE (PAD):** Sets the pitch bend range (in semitones) for the bend pad.
- ⑥ **BEND RANGE (TILT):** Sets the pitch bend range (in semitones) for the K-Board's tilt motion.
- ⑦ **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.
- ⑧ **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.
- ⑨ **TILT SENSITIVITY:** Adjusts how sensitive the K-Board is to the tilt motion. Move the slider to the right to increase sensitivity, move the slider to the left to decrease sensitivity.



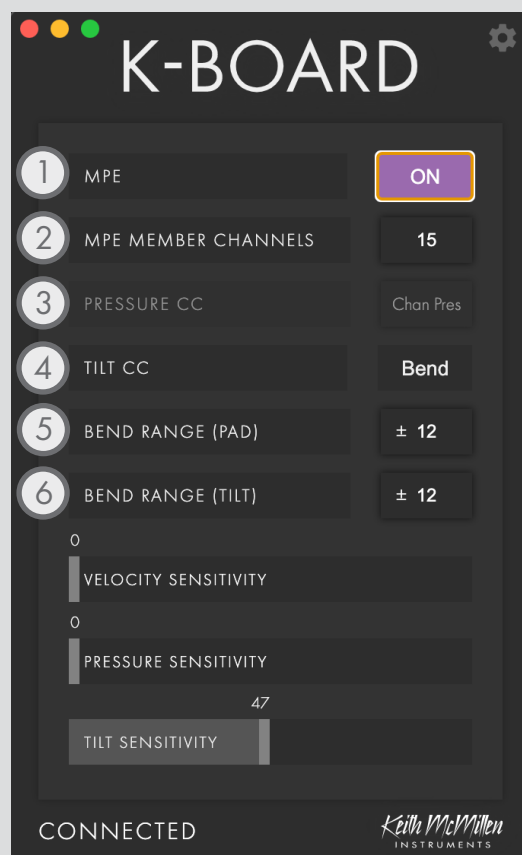
- ⑩ **CONNECTED INDICATOR:** Indicates whether or not a K-Board is currently connected to the editor. A valid connection is required in order to adjust a K-Board's settings.
- ⑪ **PREFERENCES:** Click to access the K-Board Preferences menu.

WHAT IS MPE?

MPE stands for MIDI Polyphonic Expression.

MPE is a MIDI standard that makes it easy to map expressive per-note gestures to synthesizers and other sound generators.

- ① **MPE:** Turn MIDI Polyphonic Expression on or off.
- ② **MPE MEMBER CHANNELS:** This sets the number of per-note MIDI channels that will be used to send MPE MIDI data. Global messages, like the Bend Pad, are sent on MIDI Channel 1, while per-note messages are sent starting on Channel 2. In most cases you can use the default setting of 15 member channels (16 channels total), but you should verify that this setting matches the number of member channels supported by the device that the K-Board-C is controlling.
- ③ **PRESSURE CC:** When MPE is enabled, the Pressure sensor sends Channel Pressure.
- ④ **TILT CC:** The “Tilt” gesture is when you either tilt the key up and down using the full pad of your finger, or when you move the tip of your finger up and down the length of the key. When MPE is enabled, Tilt can send either Pitch Bend MIDI messages or MIDI CC#74 (aka “Slide” or “Y-Axis”). When “Bend” is selected, Tilt modulates the pitch of the note (as if each key has its own pitch bend wheel). When “74” is selected, Tilt controls the “Slide” parameter of the synth (as if each key has its own modulation wheel).



- ⑤ **BEND RANGE (PAD):** When MPE is enabled, the bend pad will bend all of the active notes equally. If Tilt is assigned to “Bend”, then your receiving device should combine the bend pad value with the per-note bend value for each key. Adjusting this setting should have the same effect whether MPE is enabled or disabled.
- ⑥ **BEND RANGE (TILT):** When MPE is enabled, this setting has no effect.

PREFERENCES OVERVIEW

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

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.

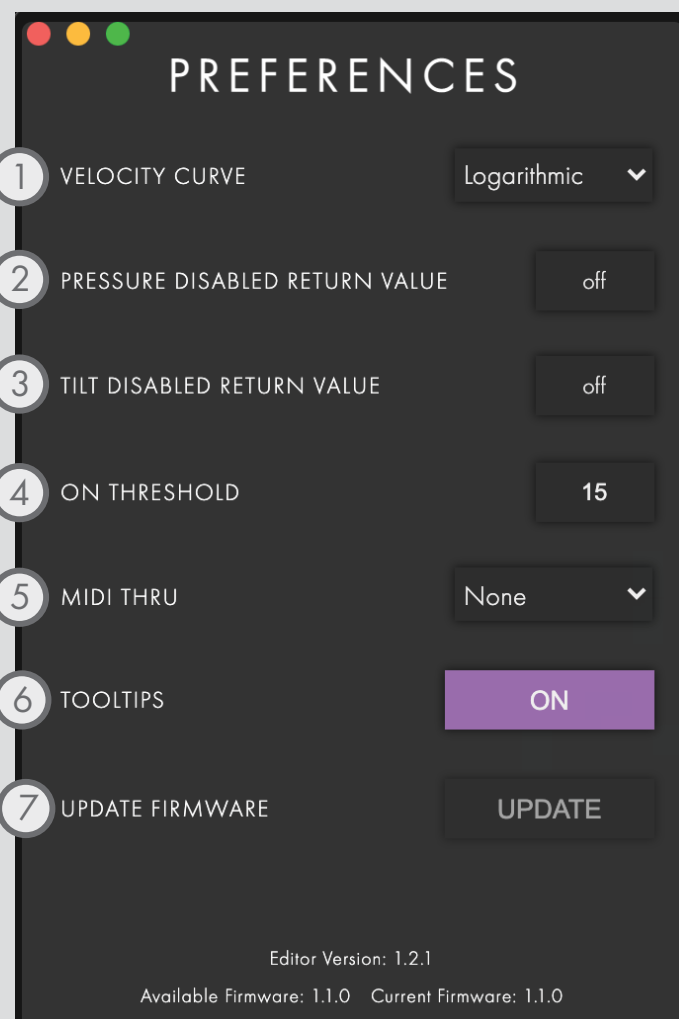
Enter a value of -1 to disable this feature.

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.

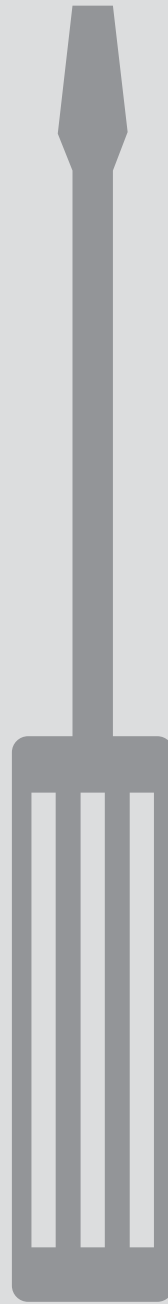


⑤ **MIDI THRU:** This dropdown lets you route the incoming K-Board MIDI messages to another MIDI device connected to your computer. This makes it easy to audition changes to the K-Board settings without having to load a DAW or other MIDI routing software.

⑥ **TOOL TIPS:** Turn helpful tooltips on or off.

⑦ **UPDATE FIRMWARE:** Click to upgrade the connected K-Board to the latest firmware.

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.

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 to 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.

Windows Class-Compliant Device Limitation and MIDI Thru

The Windows operating system does not allow a class-compliant MIDI device to be connected to more than one application at a time. As a class-compliant MIDI controller, this applies to the K-Board-C.

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.

To get around this device limitation, the K-Board Editor software has a MIDI Thru option available in the Preferences window. If you select a virtual MIDI port from the MIDI Thru drop down menu, you can then use that virtual MIDI port as an input in another application (such as Ableton Live.) You can install virtual MIDI ports using 3rd party tools like LoopMIDI (<https://www.tobias-erichsen.de/software/loopmidi.html>).

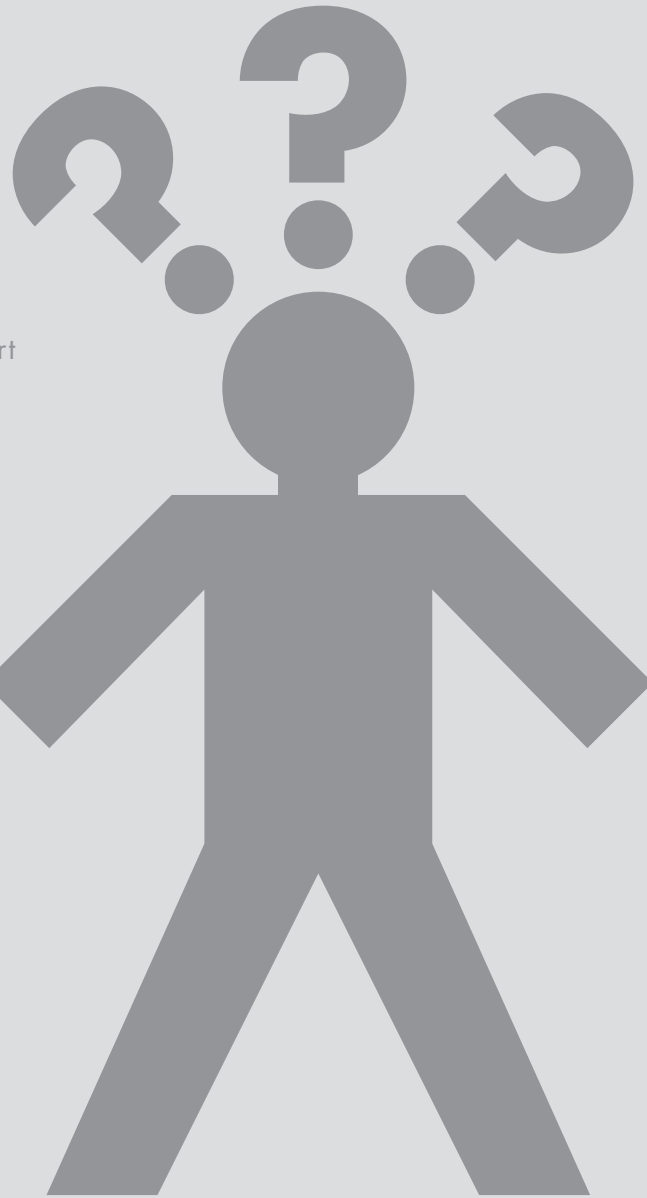


FREQUENTLY ASKED QUESTIONS

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](#).

Does K-Board work with the KMI MIDI Expander?

No, the K-Board only sends MIDI over USB and does not work with the KMI MIDI Expander.

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 infuriating 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

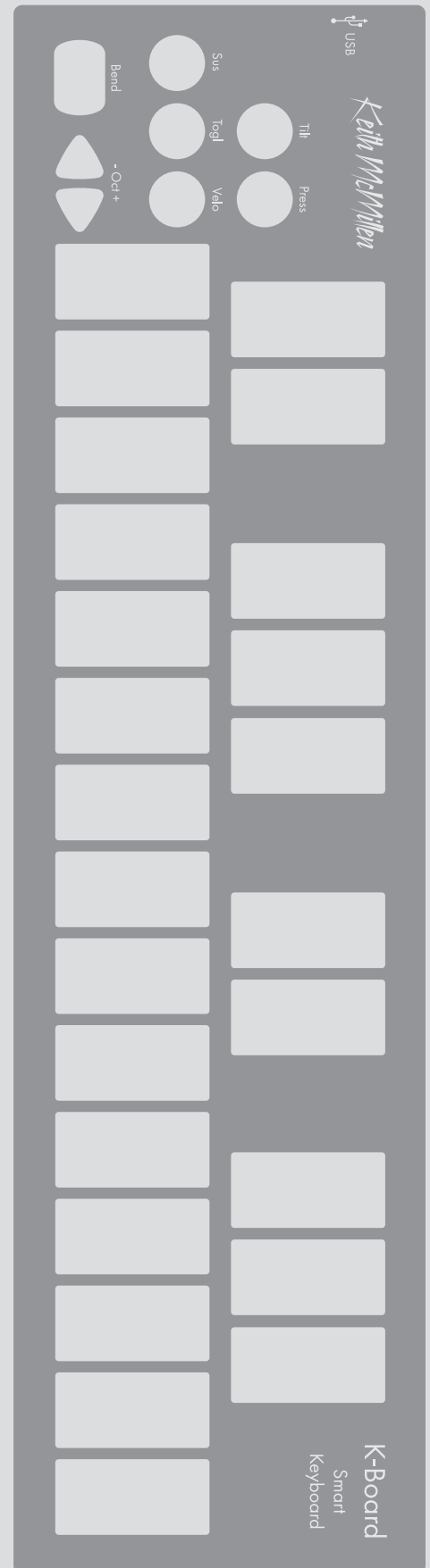
3. Plug in your K-Board and open SysEx Librarian.
4. Click “Add...” in the lower-left corner of the screen. When the browser window opens, navigate to the firmware file (generally named to the effect of “K-Board.syx”) then click “Open”.
5. Select “K-Board” from the drop down menu labeled “Destination”.
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-C Technical Specifications

Controllers	<ul style="list-style-type: none"> • Keyboard: 25-key with pressure and tilt • Pitch bend pad • Octave up/down buttons • Sustain button • Velocity on/off button • Pressure on/off button • Tilt on/off button • Toggle on/off button
Dimensions	325mm x 84mm x 11 mm 2.8in x 3.3in x 0.43in
Weight	345g 0.76lbs
Connections	USB-C
Power Source	USB bus power
Power Consumption	~90mA max draw @5V
Included Accessories	USB-C cable
Octave Shift Range	-2 to +3 octaves
Velocity Curves	<ul style="list-style-type: none"> • Linear • Logarithmic • Sine • Cosine • Exponential • Inverted
Data Transmitted	Class-compliant MIDI over USB
System Requirements (Mac) (Software Editor)	Mac OS 10.5 or later Intel Core 2 Duo processor or greater 50MB free hard disk space
System Requirements (Windows) (Software Editor)	Windows 7 or greater Intel Core 2 Duo processor or greater 50MB free hard disk space



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 fueling 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.