Soft Step

Multi-Touch Foot Controller

Keith McMillen

INSTRUMENTS

SoftStep Manual

SoftStep Version 2.0 BETA
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Note about this manual: Hi there beta testers! I whipped up this manual just for you. It's not finished yet but I've tried to include as much important information as possible. There aren't as many pictures as I would like yet and some things certainly require better explanations. I regretfully have to steer you to the old manual's appendix for the source and destination descriptions (just until I get them reworded for the new manual). Definitely let me know (beta@keithmcmillen.com) if you have any questions or if anything is unclear to you. Thanks! -Sarah Howe

Keith McMillen
INSTRUMENTS

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Chapter 1 Welcome

SoftStep is a leap forward in the portability and functionality of foot-peal controllers. Whether used with an effects rack, MIDI keyboard, or popular music software, this innovative devices frees musicians from heavy foot-switch pedals while expanding their control.

Plug SoftStep into your computer or iPad (Apple Camera Connector required) via USB or control hardware via 5-pin MIDI (KMI MIDI Expander required).

In this manual you will find detailed information to help answer all of your questions about SoftStep hardware and software.

1.1 Questions or Feedback? Contact us!

If at any time you have any questions, please contact us:

Web: www.keithmcmillen.com
Forum: forum.keithmcmillen.com
Support: www.keithmcmillen.com/suppport

1.2 What's in the SoftStep Package?

When you open up the box you should find:
- (1) SoftStep
- (1) USB A-to-B cable (15ft.)
- (1) SoftStep protective sleeve
- (1) 1/8" to 1/4" expression pedal adapter
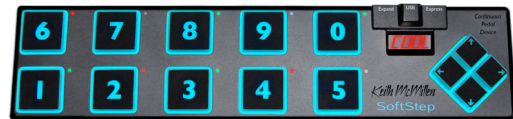
Chapter 2 SoftStep Hardware / Getting Started

SoftStep is a class compliant USB device that does not require a driver or software to function. Out of the box, SoftStep has everything needed to get started. We also provide a SoftStep editor application (for Mac and Windows), which allows further customization (discussed in Chapter 3). This chapter is a guide to getting started using SoftStep out of the box and will provide detailed information about how to use the hardware features of SoftStep.

Dimensions: 4.1" x 17.7" x 0.94" (inches)
                  105mm x 405mm x 24mm

Weight: aprox. 1.2 lbs / 566 grams

There are no user serviceable parts inside SoftStep. Attempts to open the enclosure will void the warranty.

2.1 Connecting SoftStep

These images are not to scale.

Connect SoftStep to a computer:
This image shows SoftStep set up to send MIDI data to a computer over USB. Use a USB A-to-B cable to connect the SoftStep USB port to a USB port on a computer. SoftStep will receive power from the computer.
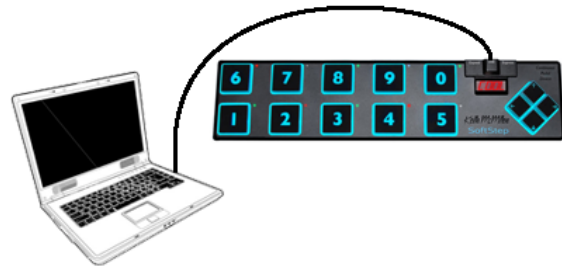
Connect SoftStep to an iPad:
This image shows SoftStep connected to an iPad via USB. You will need the iPad Camera Connection Kit (sold by Apple: http://store.apple.com/us/product/MC531ZM/A/apple-ipad-camera-connection-kit). Attach the camera connector to the iPad and then use a USB A-to-B cable to connect the USB port to the camera connector.

See the USB chapter for more information.

**Connect SoftStep to MIDI hardware
(Powered by USB power supply):**
The image shows SoftStep connected to a
hardware MIDI device via our MIDI Expander
(sold separately):
1. Connect the "Expand" port on SoftStep to
   the "to SoftStep Expand" port on the MIDI
   Expander using a USB A-to-B Mini cable.
2. Connect the MIDI Expander to the USB
   power supply using the USB A-to-B cable.
3. Connect the MIDI Out on the Expander to
   the MIDI In on your MIDI device using a 5-
   pin MIDI cable.
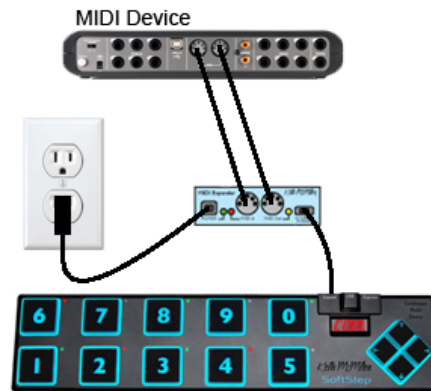
**Connect SoftStep to MIDI hardware
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2. Use a USB A-to-B cable to connect the
   SoftStep USB port to a USB port on a
   computer. SoftStep will receive power from
   the computer.
3. Connect the MIDI Out on the Expander to
   the MIDI In on your MIDI device using a 5-
   pin MIDI cable.
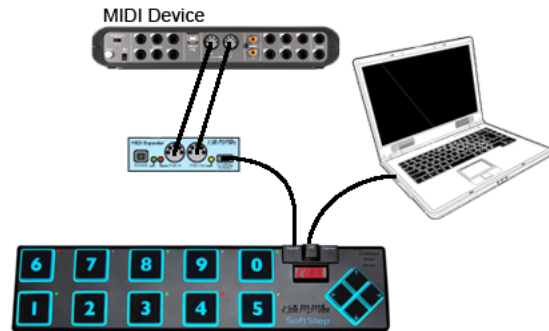
See the MIDI chapter for more information.

2.1.1 USB
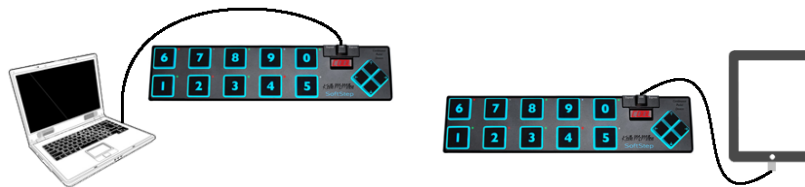
SoftStep is connected and powered using the USB port located above the alphanumeric display. It is a
class compliant USB device and does not require a driver. This allows for maximum compatibility with
an extremely wide range of other devices.

2.1.2 MIDI
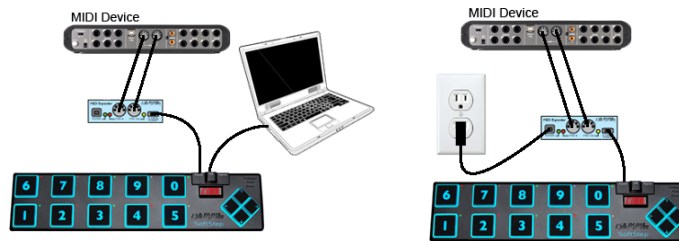
The KMI MIDI Expander is required to send and receive MIDI data via 5-pin MIDI devices. The MIDI Expander can be used with or without a computer or iPad connected. Power is supplied to SoftStep from the MIDI Expander's power port when the MIDI Expander is plugged into a power outlet. If connected to a computer (or iPad) and a MIDI Expander, power is supplied to the SoftStep from the Micro USB port instead of the Expander.

2.1.2.1 The KMI MIDI Expander

The KMI MIDI Expander is an optional accessory, which enables use of SoftStep with hardware MIDI devices. Plug the receiving MIDI device into the MIDI Out port and SoftStep will send MIDI data through a regular 5-pin MIDI cable.

Dimensions: 4" x 1.25" x 1.25" (inches)
Weight: 2.5 oz.

To use SoftStep with the KMI MIDI Expander follow these steps:

1. Connect a SoftStep to the KMI MIDI Expander (see Connecting SoftStep for instructions).
2. Plug MIDI devices into the MIDI Expander using 5-pin MIDI cables. The SoftStep will now send and receive MIDI messages through the MIDI Expander.

2.2 Nav Pad

The diamond-shaped pad on the right side of SoftStep is called the Nav Pad. It has four directional corners which we refer to as North, South, East, and West. Use the East and West corners of the Nav Pad to scroll through the presets. When scrolling through them, you will see the preset name appear on the alphanumeric display to the left of the Nav Pad. A preset encompasses 1 set of MIDI mappings for all the keys.

The North and South corners can be used differently in each preset. SoftStep comes with 7 Factory Presets. For information about each 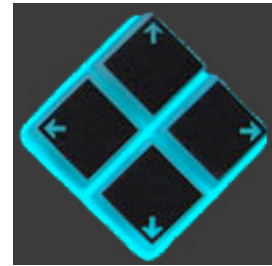of them see the Factory Preset chapter below. The Factory Presets can be customized and new presets can be created using the SoftStep Basic or Advanced Editors.

2.3 Factory Presets

PRGM (Program Change) - Select Programs 0 - 127 on MIDI Channel 1. The North and South corners of the Nav Pad let you scroll through decades (10's). After choosing a decade, step on one of the 10 keys to determine the last digit (0-9) – this sends out the program change message.

Program Change _6	Program Change _7	Program Change _8	Program Change _9	Program Change _0	PRGM
					LIVE + decade < - scenes - > decade - TOGL
Program Change _1	Program Change _2	Program Change _3	Program Change _4	Program Change _5	
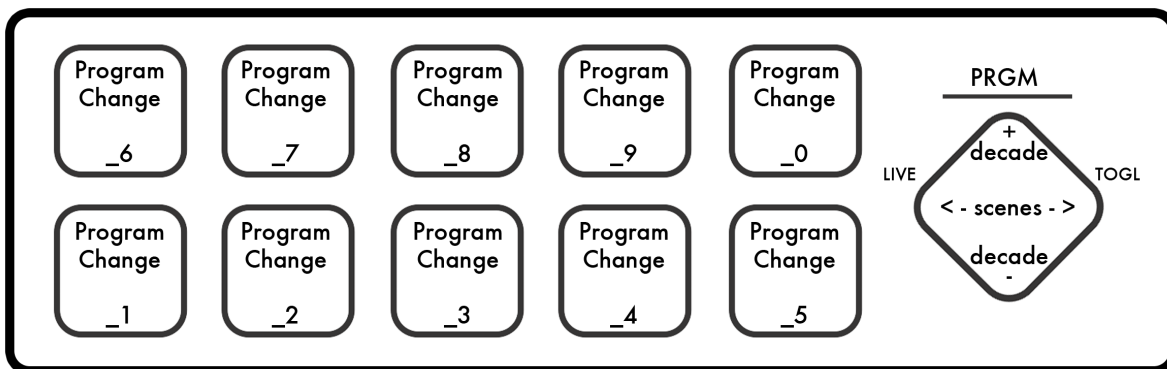
TOGL (Toggles) - The keys toggle CC #s 20-29 on MIDI Channel 1. Step once to go to 127 (on), step again to go back to 0 (off), etc. The LEDs indicate whether the toggle is on or off.

Toggle CC# 26 0/127	Toggle CC# 27 0/127	Toggle CC# 28 0/127	Toggle CC# 29 0/127	Toggle CC# 20 0/127	TOGL
					PRGM < - scenes - > NOTE
Toggle CC# 21 0/127	Toggle CC# 22 0/127	Toggle CC# 23 0/127	Toggle CC# 24 0/127	Toggle CC# 25 0/127	
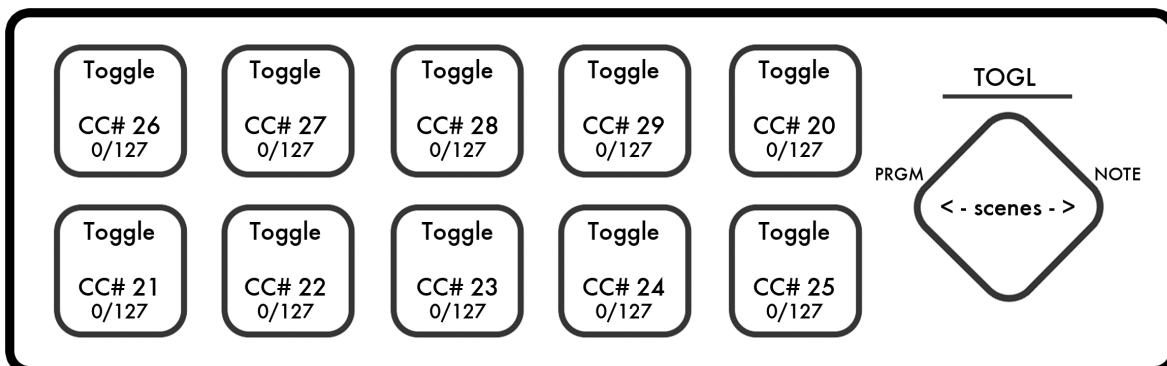
NOTE (Notes) - Trigger MIDI notes 60 - 69 (C3 - A3) on MIDI Channel 1. The note on message is triggered when you step and the note off message is triggered when you release your foot. Velocity is 127.

| Note 65 Velocity 127 | Note 66 Velocity 127 | Note 67 Velocity 127 | Note 68 Velocity 127 | Note 69 Velocity 127 | NOTE |
| Note 60 Velocity 127 | Note 61 Velocity 127 | Note 62 Velocity 127 | Note 63 Velocity 127 | Note 64 Velocity 127 | TOGL < - scenes - > PRES |
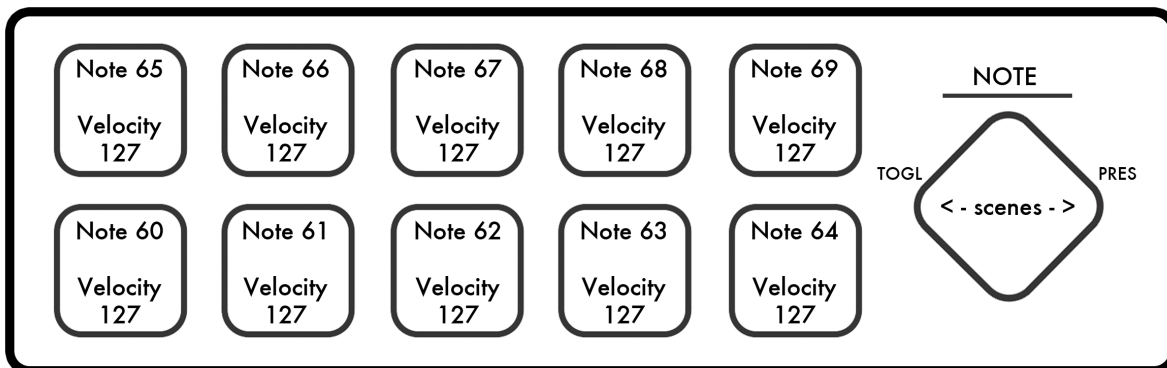
PRES (Pressure Live) - Each key to sends out continuous pressure values for CC #s 110 - 119 on MIDI Channel 1.

| Pressure CC# 116 | Pressure CC# 117 | Pressure CC# 118 | Pressure CC# 119 | Pressure CC# 110 | PRES |
| Pressure CC # 111 | Pressure CC# 112 | Pressure CC# 113 | Pressure CC# 114 | Pressure CC# 115 | NOTE < - scenes - > 11RK |
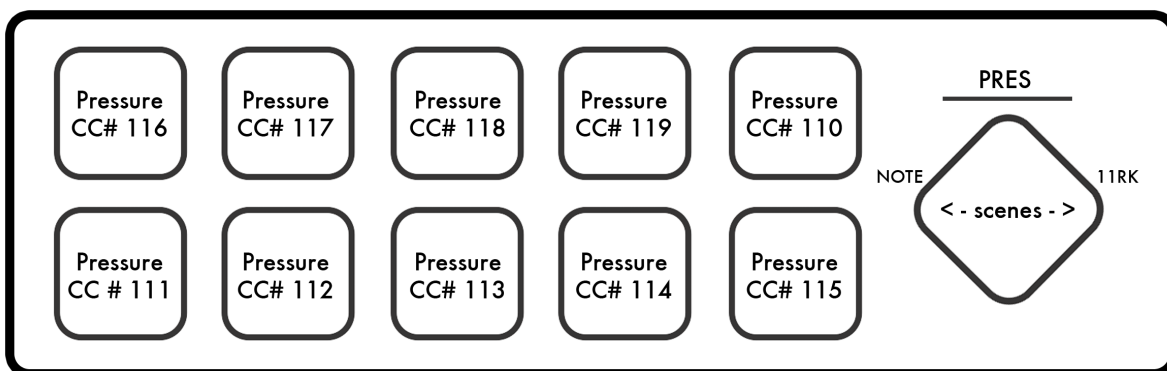
11RK (ElevenRack Control) - This preset works with an Avid Eleven Rack Processor. You will need the MIDI Expander in order to connect to the Eleven Rack. The top row toggles on and off effects and the bottom row modulates the effects' parameters. For keys 1 and 3 tilt the pressure of your foot towards the top of the key to increase the value and tilt towards the bottom of the key to decrease the value. For instant gratification, try this preset with the Eleven Rack's factory preset program #3 - "A4 Subway God".

| Distortion on/off | Mod on/off | Delay on/off | Reverb on/off | Wah Wah on/off | 11RK |
| ▲ Distortion Tone ▼ | Mod Params (pressure) | ▲ Delay Mix ▼ | Tap Tempo | Wah Wah Freq (pressure) | PRES < - scenes - > POD |
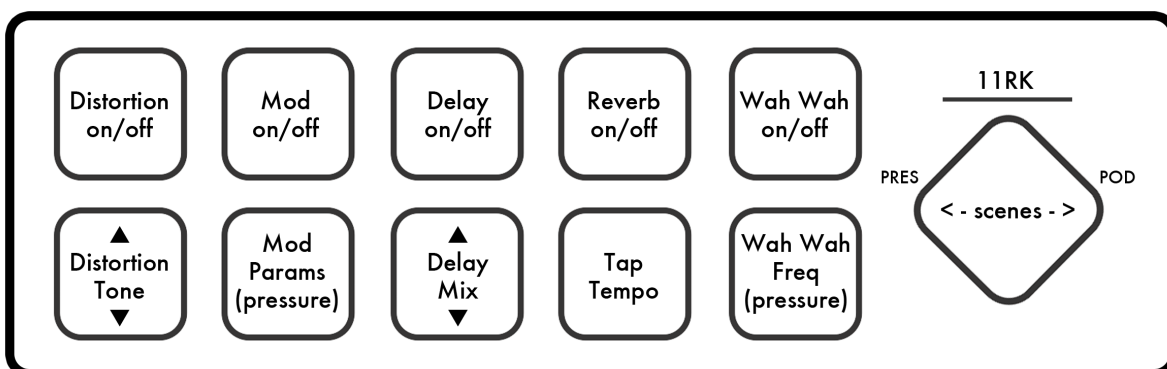
POD (Line6 Pod Control) - This scene works with most Line6 processors including the Pod. You will need the MIDI Expander in order to connect to the Pod. The top row toggles on and off effects and the bottom row modulates the effects' parameters. For keys 1 and 3 tilt the pressure of your foot towards the top of the key to increase the value and tilt towards the bottom of the key to decrease the value. For instant gratification, try this preset with the Line6 Pod's factory preset program #30 - "8C Vibro Blues".
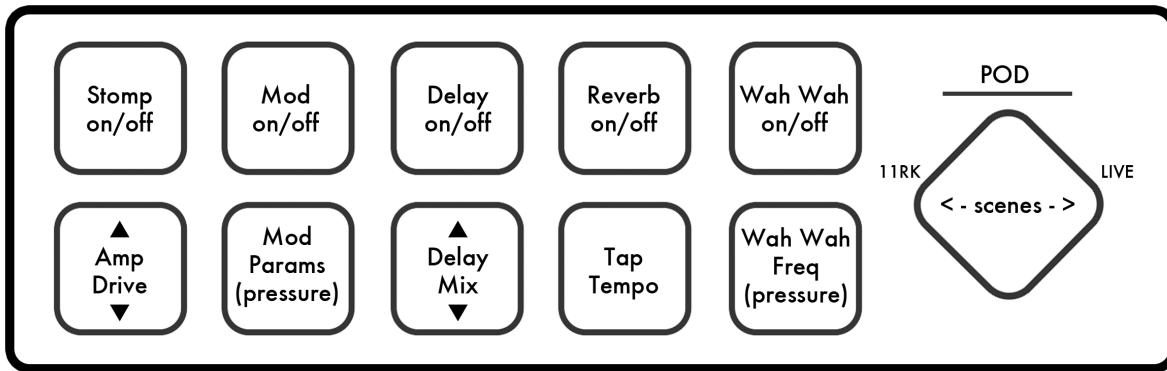
LIVE (Ableton Live Control) - This scene works with our custom Ableton Live script. You can find this script and instructions for installing in the SoftStep 2.0 software package. It will be in a folder called "Extras". If used with this script this scene will automatically perform transport functions and control volume faders for tracks. If you have an expression pedal plugged in this will automatically control send volumes for tracks.
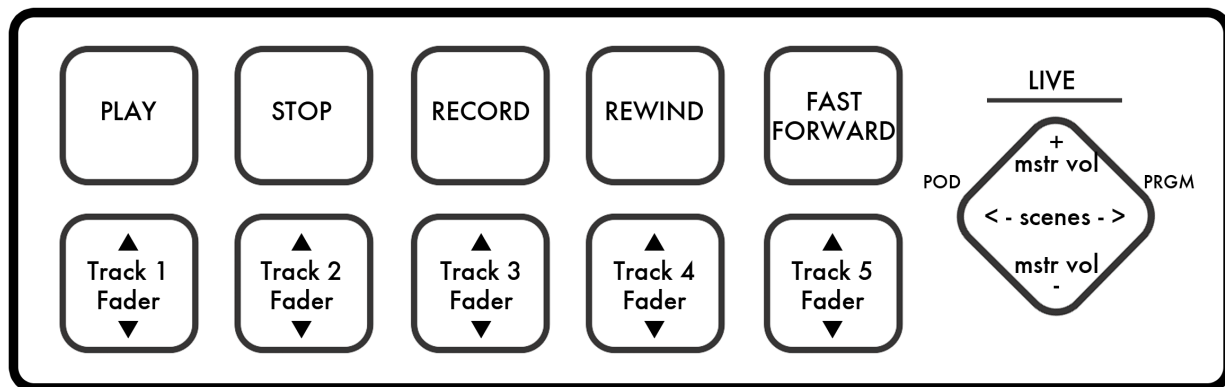
2.4 External Control of SoftStep LEDs & Display

The LEDs and alphanumeric display on SoftStep can be controlled from an external source (Ableton Live, another MIDI controller, etc.) using simple CC messages. All you need to do is send MIDI to SSCOM Port 1 and the SoftStep will respond.

SoftStep Display Control

The four characters on the alphanumeric display are addressed using four CC messages:

- First character = CC 50
- Second character = CC 51
- Third character = CC 52
- Fourth character = CC 53

Each CC should be sent with a value between 48 and 122. These values correspond to the following:

- 48-57 = Numbers 0-9
- 65-90 = Capital letters A-Z
- 97-122 = Lowercase letters a-z

So, for example, to make the third character on the display show the number "3", send CC 52 with a value of 51.

SoftStep LED Control

In addition to the display, the red/green LEDs can be controlled from an external source. This is very similar to controlling the display — each LED responds to a CC message in the following manner:

- CCs 20-29 = Red LEDs
- CCs 110-119 = Green LEDs

These CCs should be sent with a value between 0 and 3, which will trigger the following behaviors:

- 0 = LED Off
- 1 = LED On
- 2 = Slow Blink
- 3 = Fast Blink

NOTE: This does not currently work with MIDI coming into the MIDI Expander. At the moment you can only control the SoftStep's display and LEDs over a USB connection.

Chapter 3 SoftStep Editors

The SoftStep Editors are free applications that we provide. They allows you to create customized presets and load them onto SoftStep. This chapter will guide you through everything you need to know to acquire and operate the SoftStep Basic Editor and the SoftStep Advanced Editor. We highly recommend trying out the Basic Editor first.

3.1 System Requirements

We recommend the following minimum system requirements for the SoftStep Editors:

MAC:
- An Intel Core 2 Duo 2.3GHz or greater
- Mac OS 10.5 or later
- 50MB free hard disk space

3.2 Installing the Software

This install zip for each Editor comes with the SoftStep Basic or Advanced Editor and Documentation. Just unzip the folder and place in any directory. Beta testers, please preserve any previous Editor installs that you might have.

3.3 Updating the Firmware

Make sure the editor and the firmware versions are compatible with each other. When the Editors open, they both check to make sure the firmware on SoftStep is compatible with the application. If the firmware is not compatible, an update prompt will appear. Click "update" and wait until the SoftStep display goes back to flashing "SOFT... STEP".

There is also an "Update/Reload SoftStep Firmware..." option in the Hardware Menu of the Editor.

After the firmware update, the Factory Presets will overwrite any custom presets that were previously on the board. If you wish use any custom presets you have previously created, make sure you have copies of them with the former editor so that you can revert if you need to.

Keith McMillen Instruments cannot be held liable for damage resulting from installation and operation errors or improper use.

3.4 SoftStep Basic Editor

The SoftStep Basic Editor opens with this window:

Customize the SoftStep output using the boxes labeled for each key number. To the right of the boxes, you can set the sensitivity multiplier, backlight on/off, MIDI Channel, Nav Pad CC# (for the Up/Down arrows), Pedal CC# (for an expression pedal plugged in to the "Express" port), and a Display Name for the preset. Controls for saving and recalling presets simply include a preset number box to select which preset to edit (there are a total of 10) and a "Save + Send" button to update your SoftStep with when you are done editing the preset.

All 10 presets will be sent to the SoftStep after clicking "Save + Send". For more information about how to select presets on the SoftStep, see the Nav Pad chapter.

3.4.1 Menu Bar

The SoftStep Basic Editor's Menu Bar contains several useful features.

The **Edit** Menu gives the option to use either a Custom Preset or one of the Factory Presets. The factory presets that required the use of the Advanced Editor are selectable to use instead of a custom preset. This allows you to make any additional custom presets using the Basic Editor, but still keep any of the desired Factory Presets on the SoftStep that you wish.

The **Hardware** Menu gives the option to update the SoftStep Firmware manually.

The **Help** Menu will give you a link to the website (for now, once we have a proper manual up it will link to that).

3.4.1 Available Sources for each key

MIDI Note - This source sends out a MIDI Note for the key. You are given options to select the Note number, the note on velocity, and whether or not you want the note to toggle.

Pressure - This source sends out a continuous CC# representing pressure from 0-127. You have the option to select the CC# and a smoothing/slew value.

Toggle - This source will toggle between to CC values. There are options to select the CC# and specify the low and high toggle values.

X/Y - This source sends out two continuous CC#s representing the X and Y axis. You have the option to select the X and Y CC#s and whether or not they latch. A latching X/Y axis will leave the values where they are when you remove your foot from the key. They will return to the center (63) if they are not set to latch.

Y Inc - This sends CC values that you can increment and decrement through by stepping towards the top or bottom of the key. Hold pressure at the top or bottom and the values will smoothly rise or fall. You have the option to specify which CC# this source outputs.

Program - This source sends out a specifiable program change every time the key is engaged. You can also specify the bank #.
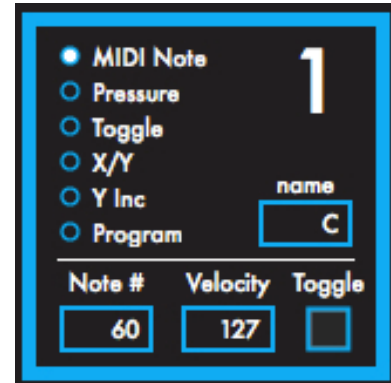
3.5 SoftStep Advanced Editor

The SoftStep Advanced Editor opens with this window:

This beta version only allows Hosted Mode so you won't be able to click the Hosted button to change modes just yet. You can open the Setlist or the Settings window just under the Hosted button. In the top

left corner are the preset saving functions. You can save, save as, revert, and delete. Once Standalone Mode is available you will be able to send your presets to the SoftStep.

Customize each key by clicking on the circled numbers (or "N" for the Nav Pad) and a Modulation window will open up:
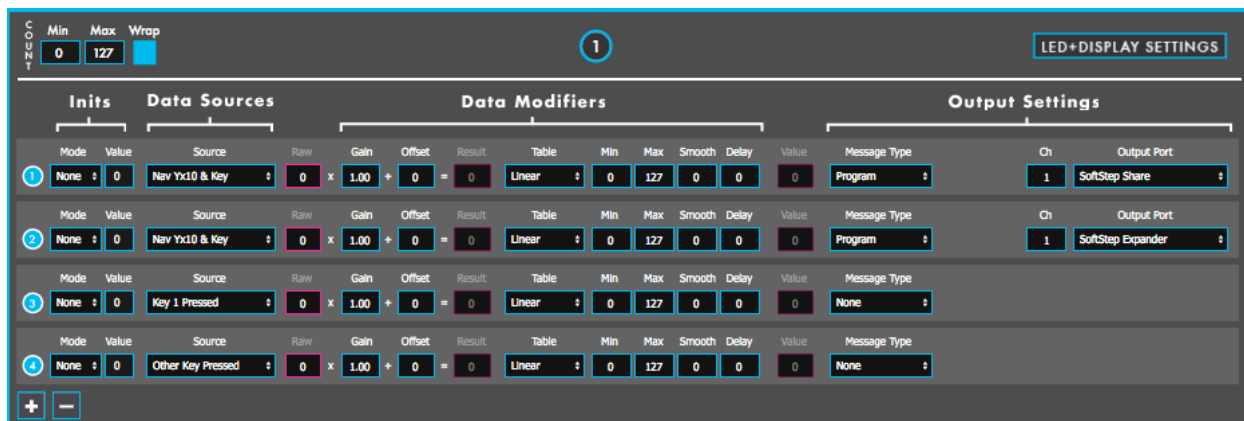
Just like in the old Editor, you can use up to 6 modlines for each key. Let's take a closer look at the options available in every modline:

Enable button - click on the circle to enable the modulation line and it will turn a light blue color.

Init Mode - this refers to the mode for the initial value which is how often you want the initial value to be sent:
   • None - the initial value is never sent out
   • Once - initial value is sent out only the first time that scene is recalled in a given session (session meaning from the time you open the application until the time you close the application). Every other time the scene is recalled it will recall whatever that modline's state was the last time you were in the scene.
   • Always - the initial value is sent out every time the scene is recalled

Init Value - This is the starting value in the absence of any raw data from the source. The Init Mode (defined above) dictates when the initial value is used.

Source - Choose what data source will control the modline. Click on the box and many sources will pop up in a scroll menu. Each source uses data differently. Some sources send values from 0-127 and some send only 0 & 127. For a complete list of sources and an explanation of the behavior each one exhibits see the SoftStep Sources in the Appendix of the **original SoftStep Manual** (apologies for not having new descriptions in this one yet).

Raw - The value coming directly from the source is displayed here.

Gain - this is the first place where you can use math to modify the data signal from the source. Whatever number is in the gain box is used to multiply the raw value coming from the source. For example if the source is X live, clicking on the gain number box and typing "2" will double whatever value is received from the controller.

Offset - set a number to add to the raw value after it has been multiplied by the gain value.

Result - the resulting value of the source modified by gain and offset.

Table - the result value is entered into the selected lookup table, and used to plot the index on a chart. There are a number of table options, each which will affect the values differently. There is also a toggle option – this will toggle between the min and max value. There are 3 counter options: Counter Inc, Counter Dec, and Counter Set.

Min / Max - These allow you to constrain the data values between a minimum and a maximum number. If the min is set to 10 and the max is set to 15, then the output cannot be less than 10 or more than 15.

Smooth - The smooth value represents the number of milliseconds that it will take to get to the target value. Use it to smooth out data when it jumps from one number to another. The larger the slew, the slower the output value will respond to the source.

Delay - This will delay the output however many milliseconds this number box is set to.

Message Type - Click on the drop-down menu to see the many options available: Note Set, Note Live, CC, Bank, Program, OSC (Open Sound Control), Pitch Bend, MMC, Aftertouch, Poly Aftertouch, Y Inc Set, and X Inc Set. These options are further customizable by selecting the the note, velocity, control change, etc…, or the channel # you wish to send the data out. For a complete explanation of the message types see the SoftStep Parameter Destinations in the Appendix of the original SoftStep Manual (apologies for not having new descriptions in this one yet).

Output Port - This is where you select the port that you want all of your MIDI messages to go out through.

Click the "**LED + Display Settings**" button to see the options to control the SoftStep display and LEDs.

The green and red LED modes allow you to set the key to show a red or green LED in response the data that is outputting. The modes and what they do are as follows:

None - the light will not come on in this mode
True - the light will come on when the output of the key is above 0
False - the light will come on when the output of the key is 0
Flash True - the light will flash repeatedly when the output of the key is above 0
Flash False - the light will flash repeatedly when the output of the key is 0
Flash Fast True - the light will flash quickly when the output of the key is above 0
Flash Fast False - the light will flash quickly when the output of the key is 0
Blink True - the light will blink once when the output of the key goes above 0
Blink False - the light will blink once when the output of the key goes to 0
Off - turns the LED off

Key Name - These 4 letters will show up in the alphanumeric display if the display mode for that key is set to Always, Once (shows only once), or Initial Return.

Display Modes -
- None - selecting this mode will cause the 4 letter display box to show the preset's 4 letter display when using that key, instead of the key name or prefix.
- Always - selecting this mode will display the key name whenever that key is the most recently activated key.
- Once - selecting this mode will display the key name once at the moment it is activated and will then show the prefix and parameter value.
- Initial/Return - selecting this mode will display the key name when the key is selected but not active, and will display the prefix and parameter value when in use.
- Immed Param - stands for Immediate parameter. This will show the prefix and parameter value when that key is the currently activated key. The key name doesn't ever show up in this mode.

The little button at the end of the modlines are for selecting which modline's parameter will follow the prefix when you are in "Initial/Return" or "Immed Param" mode.

3.5.1 Settings

The Settings window lets you set global sensitivity parameters, alter individual key thresholds, set up MIDI Input devices and OSC, and calibrate an expression pedal.

Global settings include a backlighting switch, (scene changing on/off applies only to standalone mode – coming soon), Sensor Response (maximum or average), Key Safety Modes, and a Sensitivity slider that effects all keys.

The Sensor Response mode selects what type of key response you would like to use for your SoftStep. The SoftStep has 4 pressure sensors for each key. **Maximum** mode uses the largest of the 4 values. **Average** averages together all 4 values. The sensor response is useful for the Foot On and Pressure sources. The X and Y sources are determined differently and aren't affected by the sensor response setting.
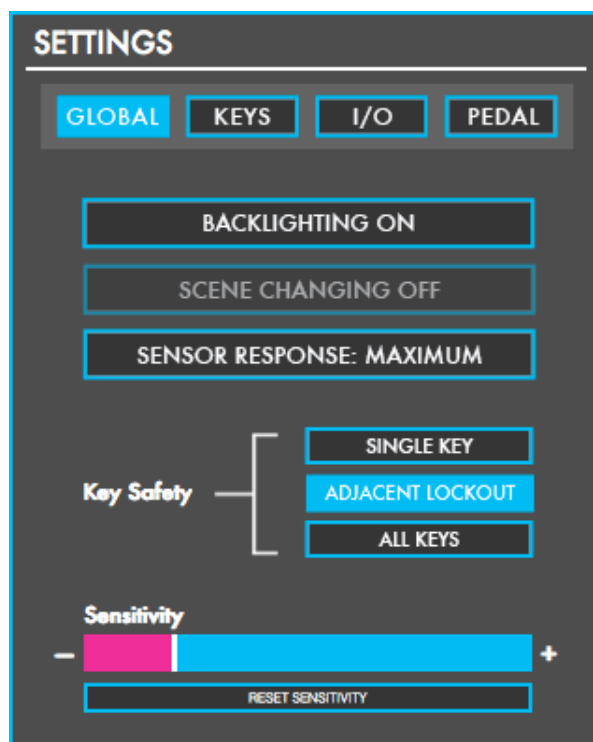
The Keys tab includes all the on/off thresholds and settings that can be applied to individual keys.

dead settings - (applies to the X and Y Increment sources) - This parameter designates the width of the horizontal or vertical dead zone, which indicates how much more weight to one side you need to be pushing down to begin incrementing or decrementing.

accel settings - applies to the X and Y Increment sources) - This is how fast the inc/dec for the X or Y increment sources move. The higher the value, the faster you'll move from one extreme to the other.

The I/O tab includes all the MIDI Input and OSC settings (not available yet).

MIDI Input:
enable - turn on or off lines that receive MIDI Input data.
device - set which MIDI port the MIDI Input data is coming from.
channel - set which channel the MIDI Input data is coming from.
message type - choose between note, controller, or program change for what type of data is coming in.
- if you chose note or controller for your parameter then you can choose which control number or note value the data is for.
value - shows the data coming in from the MIDI Input device.

You can then use the MIDI Input line (A, B, C, etc.) in a modline to effect LEDs for a key.

The Pedal tab allows you to calibrate your expression pedal. Just plug your expression pedal into the "Express" port on SoftStep, click the "Start Calibration" button, and follow the on screen instructions.