

## USER MANUAL

# \_KEYSTEP 37

**ARTURIA**  
\_The sound explorers

# Special Thanks

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## MANUAL

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**Product version: 1.0**



# Thank you for purchasing the Arturia KeyStep 37!

This manual covers the features and operation of Arturia's **KeyStep 37**, a full-featured USB MIDI keyboard controller complete with a polyphonic sequencer, arpeggiator, a robust set of MIDI and C/V connections, and outfitted with our new Slimkey keyboard for maximum playability in the minimum space.

In this package you will find:

- One KeyStep 37 controller, with a serial number and unlock code on the bottom. You will need this information in order to register your KeyStep 37.
- One USB Micro B / Type A cable
- The Quick Start Guide for KeyStep 37.

Also included in the purchase of your KeyStep 37 is a free installation of Ableton Live Lite, a remarkably full-featured recording / sequencing application. The license number will be provided to you when you register your KeyStep 37 on the Arturia website. Then you can download the installation file from [ableton.com/live-lite](http://ableton.com/live-lite).

**Be sure to register your KeyStep 37 as soon as possible!** There is a sticker on the bottom panel that contains the serial number of your unit and an unlock code. These are required during the online registration process. You may want to record these elsewhere or take a photo of the sticker in case it becomes damaged.

Registering your KeyStep 37 provides the following benefits:

- A product license key for your installation of Ableton Live Lite [see note below]
- Access to the KeyStep 37 user manual and the latest version of the MIDI Control Center software
- Special offers restricted to KeyStep 37 owners.



♪ You can download the installation file from [ableton.com/live-lite](http://ableton.com/live-lite).



# Special Message

## Specifications Subject to Change:

The information contained in this manual is believed to be correct at the time of printing. However, Arturia reserves the right to change or modify any of the specifications without notice or obligation to update the hardware that has been purchased.

## IMPORTANT:

The product and its software, when used in combination with an amplifier, headphones or speakers, may be able to produce sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high level or at a level that is uncomfortable.

If you encounter any hearing loss or ringing in the ears, you should consult an audiologist.

## NOTICE:

Service charges incurred due to a lack of knowledge relating to how a function or feature works (when the product is operating as designed) are not covered by the manufacturer's warranty, and are therefore the owner's responsibility. Please study this manual carefully and consult your dealer before requesting service.

## Precautions include, but are not limited to, the following:

1. Read and understand all the instructions.
2. Always follow the instructions on the instrument.
3. Before cleaning the instrument, always remove the USB cable. When cleaning, use a soft and dry cloth. Do not use gasoline, alcohol, acetone, turpentine or any other organic solutions; do not use a liquid cleaner, spray or cloth that's too wet.
4. Do not use the instrument near water or moisture, such as a bathtub, sink, swimming pool or similar place.
5. Do not place the instrument in an unstable position where it might accidentally fall over.
6. Do not place heavy objects on the instrument. Do not block openings or vents of the instrument; these locations are used for air circulation to prevent the instrument from overheating. Do not place the instrument near a heat vent at any location with poor air circulation.
7. Do not open or insert anything into the instrument that may cause a fire or electrical shock.
8. Do not spill any kind of liquid onto the instrument.
9. Always take the instrument to a qualified service center. You will invalidate your warranty if you open and remove the cover, and improper assembly may cause electrical shock or other malfunctions.
10. Do not use the instrument with thunder and lightning present; otherwise it may cause long distance electrical shock.
11. Do not expose the instrument to hot sunlight.
12. Do not use the instrument when there is a gas leak nearby.
13. Arturia is not responsible for any damage or data loss caused by improper operation of the instrument.

# Introduction

## **Congratulations on your purchase of the Arturia KeyStep 37!**

This unique keyboard controller gives you everything you need to make music wherever you and your portable tech will be. Its compact size is due in part to its Slimkey keyboard; these great-feeling keys are smaller than standard piano keys but still large enough to allow for maximum playability. But this is no toy; as with all Arturia products, it's built like a tank.

All the essential features of a keyboard controller are here, including aftertouch, touch-strips for pitch bend and modulation, a footswitch input and a Hold button.

The polyphonic sequencer will capture your ideas and the arpeggiator will unleash them. You can specify the exact feel of your music through the Swing and Gate parameters, which are instantly accessible from the front panel. And the chord memory feature will make you seem like even more of a musical monster than you already are.

KeyStep 37 has an unlimited number of potential uses and setup options, thanks to its simultaneous USB, MIDI, CV/Gate and synchronization capabilities. There's an additional Mod connection to complement the CV and Gate outputs, allowing for even more creative options with external devices such as modular synthesizers. And the included MIDI Control Center software allows you to configure KeyStep 37 the way that works best for your style and system.

KeyStep 37 is very easy to use, so you'll probably start experimenting with it right out of the box. But be sure to read this manual completely, because in addition to covering the basics we'll also describe several ways to integrate this little powerhouse of a controller with your system. You will find KeyStep 37 to be a great source of musical inspiration and creativity.

Be sure to visit [www.arturia.com](http://www.arturia.com). That's the place to go for the latest firmware and to download the MIDI Control Center. You'll also find links to our tutorials and FAQs.

We will leave the two of you alone now. You have a lot of great music to make!

**The Arturia team**

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# 1. INTRODUCTION AND OVERVIEW

The Arturia KeyStep 37 is an advanced third-generation controller and sequencing station. It is both compact and versatile, with unique features that will spark your imagination and creativity in a new way. It enables you to connect to all your studio and performance gear and control it in ways you never thought possible.

Controllers have come a long way. The first generation of controllers could transmit MIDI pitch and velocity over the 16 MIDI channels, but not much more. The second generation added complex step- and real-time sequencing features and was capable of connecting to your DAW in special ways, allowing you to control multiple parameters of VSTis (virtual instruments, including synths).

This third-generation controller adds control options for modular systems. KeyStep 37 lets you play, record, edit and add to your sequences on the fly, with a clear and easy-to-understand workflow that encourages your creativity. Each pattern can be up to 64 steps long. Couple this with the advanced chord strumming options and scale quantisation and you'll begin to understand why it will soon become your favourite controller.

## 1.1. A fascinating adventure

As soon as you start experimenting with KeyStep 37, you'll be faced with many questions: How do I make connections? What are the differences between Real-time and Step recording?

The answers to these questions come slowly: you'll find many of them in this manual and many others by reading online forums, sharing and comparing user experiences and, most importantly, by diving in and experimenting. Whatever you do, take the time to get to know your KeyStep 37 inside out.

To sustain the fascination you feel, learn the functions of KeyStep 37 one by one and test your knowledge continuously. KeyStep 37 is an advanced controller with many levels of understanding. It offers a unique way to experience the reward that comes with being able to create the sounds as you imagine them.

## 1.2. About Reading Manuals

Reading manuals can mean much more than familiarizing yourself with an instrument. Yes, it is excellent for learning, but it serves another purpose that is much less understood: creating the basis for inspiration.

Inspiration can flourish when you have many little pieces of knowledge 'online' in your mind, so that you can interconnect and crosslink them; it widens the scope of your creativity. It also helps to look at the current state of your knowledge as something that needs to be maintained and expanded. Reading a manual, again and again, causes a quantum shift in what you absorb from it. You are building a living model of the controller in your brain.

Reading a manual for the first time helps you get acquainted with the parameters of an instrument; what does a knob do and how does it affect the sound of external modules or synths? Second and third readings will give you a better understanding of the structure of your KeyStep 37. Beyond that, reading becomes a source of creative input that inspires you to think of new ways to use this unique controller and sequencing station.

## 1.3. Installation

### 1.3.1. Warning

Do not put this product in a place or position where anyone might walk on, trip over, or roll anything over power cords or connecting cables. The use of an extension cord is not recommended. However, if you must use one, make sure that the cord can handle the maximum current needed by this product. Please consult a local electrician for more information on your power requirements. This product should be used only with accessories supplied or recommended by Arturia. When used with any such products, please observe all the safety markings and instructions that accompany them.

Always power-off all audio gear before making any connection. Failing to do so may damage your speakers, the KeyStep 37, or any other audio equipment. After completing all connections, set all volume levels to zero. Power-on the various devices, with your audio amplifier or monitoring system last, then raise the volumes to a comfortable listening level.

### 1.3.2. Register your Instrument

Registering your instrument establishes your legal ownership of it, which entitles you to access the Arturia Technical Support service and to be informed of updates. Additionally, you can subscribe to the Arturia newsletter to be informed of Arturia-related news as well as promotional offers. Connect to your [Arturia account](#), go to My Registered Products, then add the KeyStep 37 by entering its serial number, as printed on the sticker located under the controller.

## 1.4. KeyStep and KeyStep 37

KeyStep 37 has many new fascinating features. When upgrading from a KeyStep, the first thing you'll notice is a new function strip with four knobs (more about these later) and a row of 37 LEDs above the keyboard.

The Keyboard LEDs will help you check the status of the notes you are playing on the keyboard and those the Sequencer and the Arpeggiator are currently playing. They will also be helpful when you are editing the notes of a chord in chord mode or when you create an Arpeggio pattern. Two LEDs at the keyboard's edges inform you that there is activity (notes playing) outside the keyboard boundaries.

What else has changed? The Tempo option is more refined; Tempo speed can now be set in 0.01 BPM increments. There are fewer swing settings but they have changed to be more musically relevant.

### 1.4.1. Sequencer and Arpeggiator

The Shift+ Key combination switches the Sequencer to Mono mode: if your sequence was polyphonic, only the lowest note in a chord will be played.

On KeyStep 37, there's an easy way to set the length of a sequence; just hold Record and tap one of the first 16 keys to define a length. Repeatedly pressing a key while still holding the Record button will add its number to the length of the sequence.

In addition, the sequencer has an overdub mode which can be activated with a Shift function. When ON, new notes will be added to the existing sequence.

Two new Arpeggio modes replace the old Up x2 and Down x2 modes, they are Walk and Pattern. In Walk mode, the sequencer digitally 'throws a dice' to decide whether to go forward or backwards at the end of each step: there's a 50% chance it will play the next step, a 25% chance it will play the current step and a 25% chance it will play the previous step.

In Pattern arpeggio mode, a repeated pattern of up to 64 notes is randomized each time a key is pressed. You can change the length of the pattern the same way you can change the length of a sequence, by holding the Record button and pressing one of the first 16 keys.

### 1.4.2. Scale and Root

A new Scale option allows you to play notes in an existing sequence in one of five different scales: Chromatic, Major, Minor, Blues, and User

The scale root feature enables you to define a new root for each of these scales. As a user, you can create and recall a fifth scale.

### 1.4.3. The Chord / CC unit

To the right of the transport buttons, you'll find a Chord / CC unit with a status screen, a full colour backlit LED button and four 270° knobs.

The Chord button on the Chord / CC unit enables you to create a chord that will play when pressing a single key. Chord mode on KeyStep 37 is more flexible than on KeyStep; you can use the four knobs to create various chord types and strum patterns.

First of the mighty four is the Type knob. Turn it to cycle through a list of 11 predefined chords. The twelfth entry is yours to define: you can store your own magic chord there.

Second is the Notes knob. You can stack a huge eight note chord and the Notes knob will allow you to control how many notes of the chord will sound.

The Vel>Notes knob lets you control how many notes of the chord will sound dynamically! It works in tandem with the Notes knob: the number of notes that will sound is dependent on the velocity you have programmed or recorded in a step or played on the keyboard. When playing with low velocity, only the root and the lowest notes in the chord will play. With increased velocity more notes will sound.

With the Strum knob, you spread the notes of the generated chord over time. In the central position, all the notes of a chord will sound simultaneously. When turning the knob clockwise, the lowest notes of the chord will sound first and the higher notes in the chord will be delayed. Turning the knob counter-clockwise will have the reverse effect: the highest notes in the Chord will sound first. The knob has four zones: in the upper two zones the strum speed is defined in absolute time in milliseconds. In the lower two zones the strum is quantized to the current tempo. For more details please refer to [Chapter 3: selecting strum type \[p.26\]](#).

The Chord button takes on a completely different role when you press it while holding down the Shift button. It will turn the four knobs into CC controllers you can use to control parameters on external devices. Four banks can hold a total of 16 CC codes.

### 1.4.4. The Back Panel

The back panel of KeyStep 37 is nearly identical to that of the Keystep with one exception: the Micro-USB input has been replaced with a standard USB type B connector.

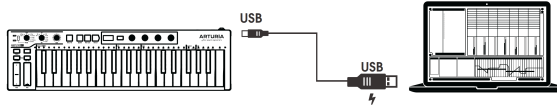


## 1.5. Overview

### 1.5.1. Making the connections

There are quite a few ways to connect KeyStep 37 with other types of equipment, from vintage to modern. Below are some examples of potential setups:

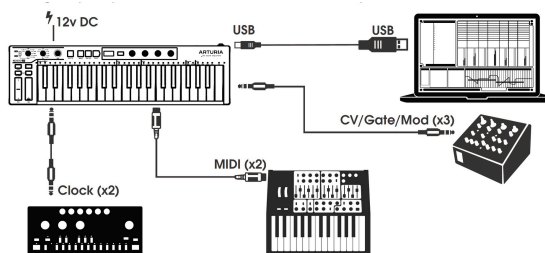
#### 1.5.1.1. ....with a Computer



KeyStep 37 is a USB class-compliant controller, so at its most basic level it can be connected to any computer with a USB port and used as an input device for various applications. The included MIDI Control Center software lets you choose which MIDI messages will be sent by the mod strip and pedal, and also enables you to specify the global KeyStep 37 parameters.

However, KeyStep 37 can also be used without a computer attached! In this case, simply use a 12V DC 1.5A center positive power supply (not included) or a standard USB mobile phone charger to power the unit. Then connect everything else as shown in the following diagrams.

#### 1.5.1.2. ....with external devices



As you can see, KeyStep 37 can be at the center of some amazing systems.

## CV/Mod/Gate

KeyStep 37 will send control voltages to non-MIDI devices through its Pitch, Mod and Gate connectors. It also can send data to those devices from the USB port of your computer or from an external MIDI device.

## MIDI devices

Many mid-vintage devices have MIDI jacks but don't have CV/Gate connectors or USB ports. KeyStep 37 can plug directly into them and also serve as a USB MIDI converter.

## Sync sources/destinations

The Sync input and output connectors allow KeyStep 37 to synchronize with lots of different clock types: a single pulse per step, two pulses per step, 24 pulses per quarter note (ppqn), and 48 ppqn. Between these four options, you are ready to connect with almost any imaginable music technology.

See [section 6.2.2 \[p.54\]](#) for specific information about what cables to use for the various sync connections and formats.

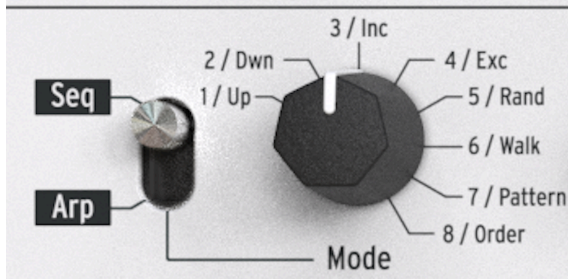
### 1.6. Front panel overview



1. Sequencer / Arpeggiator section
2. Tap Tempo / Rest / Tie
3. Transport section
4. Hold / Chord (with Shift)
5. Shift button
6. Oct - / Transpose (with Shift)
7. Oct + / Kbd Play (with Shift)
8. Pitch Touch Strip
9. Mod Touch Strip
10. Chord/CC Bank (with Shift)
11. Chord/CC knobs
12. Keyboard functions (with Shift)

### 1.6.1. Sequencer/Arpeggiator

KeyStep 37 provides a sequencer and an arpeggiator. You can record eight different sequences, each with up to 64 steps. The arpeggiator generates notes based on the keys you have pressed and plays them back according to the Arp Mode setting.



The sequencer and arpeggiator have unique features, so be sure to read chapter 4 and chapter 5 to learn more.

#### 1.6.1.1. The Seq/Arp toggle switch

When this switch is set to Seq a sequence can be played or recorded. The controls in this section select which sequence is active and the time division at which it will be played back.

When the switch is set to Arp, the controls select the pattern and the time division for the arpeggiator.

#### 1.6.1.2. Seq /Arp modes

The function of the Seq / Arp Mode switch changes depending on which mode is selected. In sequencer mode it selects which of the eight sequences are active. In arpeggiator mode it selects which pattern will be used to play back the notes you are holding on the keyboard.

For a full explanation of these features, see [Chapter 5 \[p.46\]](#) and [Chapter 9 \[p.64\]](#).

#### 1.6.1.3. The time Division

The Time Div encoder determines the rhythmic value of the active sequence or arpeggio. Eight different settings are available.

We'll go into this in greater detail in [Chapter 2 \[p.15\]](#).

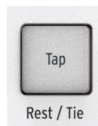
#### 1.6.1.4. Rate

Use the Rate knob to control the tempo of the sequence or arpeggio. The Tap button can also be used. The tempo can be set between 30-240 bpm (beats per minute). If you need finer control, hold Shift: the decimal part of the current BPM appears on the display. After a period of inactivity, the display will show the BPM again.

The MIDI Control Center allows you to choose how the Rate knob responds, either immediately (Jump mode), after you pass through the current value (Pick-up mode) or progressively, reaching the current value as you turn the knob (Scale mode). Please refer to [Chapter 9 \[p.64\]](#) to learn about the MIDI Control Center.

#### 1.6.2. Tap Tempo/Rest/Tie

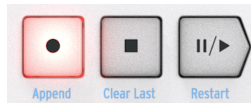
The **Tap** button allows you to set the tempo of the active sequence or arpeggio 'on the fly'. All you have to do is tap it in time with the music. The number of taps it takes to adjust the tempo can be defined in the MIDI Control Center.



This button is also used to enter rests or to tie two notes together when creating a sequence. See [Chapter 4 \[p.37\]](#) for information about this.

#### 1.6.3. The transport section

The Transport buttons control the sequencer, the arpeggiator, and external MIDI devices using MIDI Machine Control. But they can also send other MIDI messages if your DAW does not respond to MMC commands. Use the MIDI Control Center to make changes.



All three buttons are active in sequencer mode, while only Play/Pause and Stop are used with the arpeggiator.

Each button has a secondary function when creating a sequence (Append, Clear Last, and Restart). These features will be described in detail in [section 4.2 \[p.37\]](#).

##### 1.6.3.1. All Notes Off

The Stop button has an additional function. If for some reason you end up with a stuck note, just press the Stop button quickly three times in a row. KeyStep 37 will then send an All Notes Off command over MIDI.

### 1.6.4. LED display, Chord button and knobs

The four knobs have two functions; they enable you to create chords and strum patterns in various forms and double up as bank and CC controllers.

The LED display shows the data you dial in with the knobs and the Chord button gives access to both the Chord and the CC functions.

### 1.6.5. Hold/Chord button

The Hold button enables you to add more notes to the arpeggiator while it is running (up to 32!). It is also used with the Shift button to toggle Chord mode on and off.



There's more information about the Hold and Chord modes in [Chapter 2 \[p.15\]](#) and [Chapter 3 \[p.22\]](#)

### 1.6.6. Shift button

The Shift button allows access to secondary functions such as Chord mode, access to the CC banks and the MIDI channel settings for the keyboard. It also can be used to modify the feel of the sequence 'on the fly' by changing the Swing and Gate time settings. All of these features involve holding the Shift button and pressing another button or a key.



For a complete chart of Shift functions, see [section 3.6.6 \[p.36\]](#).

### 1.6.7. Oct +/-, Transpose, Kbd Play

These buttons are a quick way to shift the keyboard in octave increments. The further you shift from the center, the faster they flash. Maximum transposition is +/- 4 octaves. Press both buttons at the same time to reset the keyboard to its center octave.

When pressing Oct+ or Oct- while an arpeggio is running, notes you add will be added in higher or lower octaves depending on the Oct button you pressed.



The blue letters under the buttons tell you that the Shift and Oct-/Oct+ buttons are used together to change the way the keyboard behaves while a sequence is running:

**Shift + Oct Minus -> Transpose mode:** the keys will transpose the sequence while it is running.

**Shift + Oct Plus -> Kbd Play mode:** The keys are able to play independently in addition to the part the sequencer is playing. It is possible to specify a separate MIDI channel for Kbd Play mode.

**i** Transpose and Kbd Play modes are mutually exclusive. Pressing the Shift button will light up either the Oct Minus or Oct Plus button to indicate which of the two modes is active.

More about these features in [section 3.2.O.2 \[p.28\]](#).

### 1.6.8. Pitch & Mod touch strips

These innovative controls take the place of the standard 'wheels' found on traditional controllers.



## 1.7. Rear panel overview




### 1.7.1. USB/DC IN

This jack provides the power and data connections to a computer. It can also be used with a standard USB mobile phone charger, allowing you to use KeyStep 37 even without a computer present.

### 1.7.2. 12V DC IN [with optional adapter]

KeyStep 37 can be used as a stand-alone device without a computer. Simply connect an optional power adapter to your KeyStep 37 (12V DC, 1.5A, center positive).

 If your mobile device does not supply enough power, you will need to connect a power adapter as described above (not included).

### 1.7.3. Pitch/Gate/Mod outputs

These are normally used to send electrical signals to an external device such as Arturia's popular analog synthesizers (MiniBrute/SE, MicroBrute/SE, MatrixBrute) or to a modular analog synthesizer.

The Pitch output is often referred to as Control Voltage or CV. The Gate output is sometimes known as a Trigger. The Mod output is a second type of Control Voltage output that can be routed to any number of destinations on the target device.

The MIDI Control Center allows you to configure the type of electrical signals sent by each output. See [section 7.3 \[p.56\]](#) for information about the signal types that are supported.

### 1.7.4. Sustain pedal input

Connect a momentary footswitch (optional) to this input. It is best to connect the pedal before supplying power to the KeyStep 37 so it can sense the pedal's polarity. Be sure to keep your foot off the pedal when first making the connection or it could work backward. If this happens, power off the KeyStep 37, plug the sustain pedal, and turn the KeyStep 37 back on.

### 1.7.5. Sync input/output

These jacks allow KeyStep 37 to interface with pre-MIDI technology that was capable of synchronization, such as early drum machines. See [section 6.2.1 \[p.54\]](#) for information about the types of sync signals KeyStep 37 can send and receive.

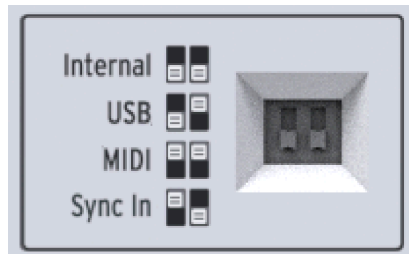
### 1.7.6. MIDI input/output

Connect standard MIDI cables, and KeyStep 37 can send MIDI data to external MIDI-compatible devices. It will also send MIDI data to those devices from your computer.

In addition to MIDI note data from the keys, KeyStep 37 can send and receive MIDI sync. It's also possible to configure some of KeyStep 37's controls to send specific MIDI data using the MIDI Control Center.

### 1.7.7. Sync source selector switches

There are four synchronization options which are accessed on the rear panel. Use the small slider switches as shown in the diagram to select the option you want.



This picture has both switches down. It corresponds to the Internal sync option.

For descriptions of the various sync settings see [Chapter 6 \[p.53\]](#).

### 1.7.8. Kensington lock port



KeyStep 37 is highly portable, and it should be carried only where you want it to go. So we've included a Kensington lock slot on the far right edge of the rear panel so you can secure it to the surface of your choice.



## 2. BASIC OPERATIONS

### 2.1. Plug and play

Connect KeyStep 37 to your computer or an external device as shown in [this section \[p.7\]](#) and you're ready to go! Here are a few pointers to make the most of your first session.

#### 2.1.1. Slimkey keyboard

The Slimkey keyboard is both velocity and pressure sensitive. You can specify the velocity curve and aftertouch response using the MIDI Control Center. See [Chapter 9 \[p.64\]](#) for details.

#### 2.1.2. Keyboard MIDI channel selection

If you need to match the KeyStep 37 MIDI channel to an external device, simply hold the Shift button and press the key that corresponds to the desired MIDI channel."



When the MIDI channel is changed, the Kbd Play MIDI channel will change to match it. To select an independent MIDI channel for Kbd Play mode, see the [Keyboard Play section \[p.28\]](#).

### 2.1.3. Pitch and Mod touch strips

The Pitch and Mod touch strips work the same as standard wheels, except that you slide your finger along the track instead of moving a wheel.



#### 2.1.3.1. The Pitch strip

The Pitch strip has a center zone which equals no change. Moving your finger forward bends the pitch upward, and moving backward bends the pitch downward.

When you release your finger, the Pitch strip will snap back to zero.

#### 2.1.3.2. The Mod strip

The Mod strip works like a mod wheel: from minimum to maximum. Placing your finger at the bottom of the Mod strip (the side closest to you) equals no modulation, and moving your finger all the way up causes maximum modulation. But when you lift your finger, the Mod strip does not snap back to zero.

### 2.1.4. The Hold button

The Hold button enables the arpeggiator to keep playing after you take your fingers off the keys. But there's another way to use it, too: when Hold mode is active, you can keep adding notes to an arpeggio as long as you continue holding down at least one key.



We'll provide step-by-step instructions in [chapter 5: The arpeggiator \[p.46\]](#).

### 2.1.5. Sustain pedal

If you have a momentary footswitch, plug it into the Sustain jack on the rear panel. If it works backward, turn the KeyStep37 off then on again. KeyStep 37 will now sense the polarity of the pedal and it should work fine after that.

There are several configuration options for the Sustain pedal in the MIDI Control Center. See [Chapter 9 \[p.64\]](#) for information.

### 2.1.6. Oct - / Oct +

Pushing one of these buttons can transpose the keyboard by as much as four octaves up or down. The farther from center the keyboard has been transposed, the faster the buttons will flash.



After pressing one of the Octave buttons, the transposition will not occur until the next note is played.

To reset the keyboard octave range back to center, press both buttons at the same time.

### 2.1.7. Factory reset

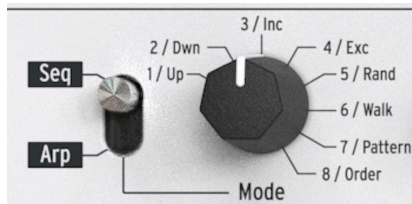
The Octave buttons are also used to reset your KeyStep 37 back to the factory specifications. To do this:

- Turn off KeyStep 37
- Press the Oct- and Oct+ buttons and keep them down
- Turn the KeyStep 37 back on and watch it display 'rST'

## 2.2. Select and play a sequence



**Important:** The sequencer will not run if the sync selection switches are set to something other than Internal and no external clock is present. **Note:** Chord mode has limited functionality in Seq mode. We'll describe how the two work together in [section 3.1 \[p.22\]](#).



### 2.2.1. Sequencer / Arpeggiator toggle switch

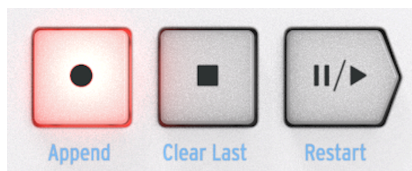
To use the sequencer you must first set the Seq/Arp toggle switch to Seq. The position marked Arp selects the arpeggiator, which is covered in [section 2.3 \[p.20\]](#)

### 2.2.2. Sequencer / Arpeggiator Mode encoder

Use the Seq/Arp Mode encoder to select one of the eight available sequences. If the sequencer is already running, the MIDI Control Center allows you to specify when the next sequence should start. See chapter 10 for a description. You can record your own music into any one of the eight sequences; we'll learn how to do this in [Chapter 4 \[p.37\]](#).

### 2.2.3. Transport control

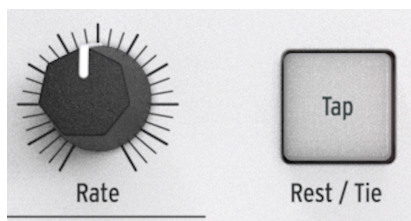
Press the Play/Pause button and the sequence will start. Press it again to pause the sequence, and a second time to resume playback from where you stopped. You can also restart the sequence while it's still running by holding Shift and pressing Play/Pause.



To start a sequence from the beginning, press the Stop button and then press Play again.

### 2.2.4. Rate knob [set tempo]

Use the Rate knob or the Tap button to adjust the playback tempo. You can also set the exact tempo of the sequence before starting the sequencer by pressing the Tap button a few times.



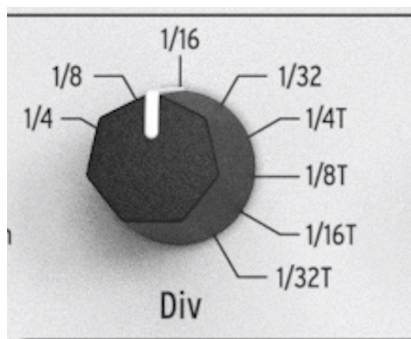
With the MIDI Control Center you can specify how many taps of the Tap button it takes to adjust the tempo, and also how the Rate knob will respond when it is turned. See [Chapter 9 \[p.64\]](#) for more information.

**i** You can make fine adjustments to tempo in decimal increments by holding the Shift button while turning the Rate knob.

### 2.2.5. Time Division encoder

The Time Division encoder allows you to change the rhythmic relationship of the sequence relative to the tempo: quarter notes (one step per beat), eighth notes (two steps per beat), and so on. Triplet values are offered as well (1/4T, 1/8T, etc.).

**i** If you hold Shift then turn the Div knob, the time division does not change immediately, but only after you release the Shift button. This allows smooth transitions between different time divisions.



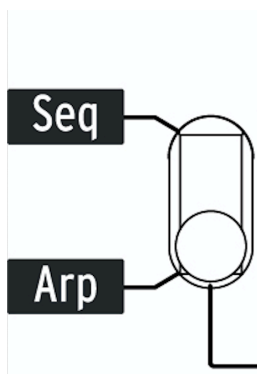
## 2.3. Using the arpeggiator

An arpeggio is a chord of which you repeatedly play the individual notes. It's what you hear when you hold a chord on a guitar and pluck the strings from top to bottom or the other way around. A major part of learning to play the guitar is figuring out how to play different fingerpicking/arpeggio styles. The arpeggiator on the KeyStep 37 does all these things for you.

**i** The arpeggiator will not run if the sync selection switches are set to something other than internal and no external clock is present.

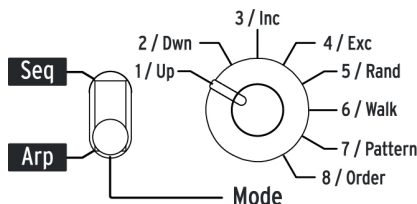
### 2.3.1. Seq / Arp toggle switch

To use the arpeggiator you must first set the Seq/Arp toggle switch to Arp. The Seq position selects the sequencer, which is covered in [section 2.2 \[p.18\]](#).



### 2.3.2. Seq / Arp Mode encoder

Use the Seq/Arp Mode encoder to select one of the eight arpeggiator Modes: Up, Down, Inclusive, Exclusive, Random, Walk, Pattern, Order.



The Modes are described in more detail in [Chapter 5 \[p.46\]](#)

### 2.3.3. Transport section

Press the Play/Pause button, hold down some keys and the arpeggiator will start. You can add up to 32 notes to an arpeggio. Please read [Chapter 5 \[p.46\]](#) to learn how to do this.

Press the Play/Pause button again to pause the arpeggio pattern, and a second time to resume playback from where you stopped. You can also restart the arpeggio while it's still running by holding Shift and pressing Play/Pause.

To start a new arpeggio pattern press the Stop button, press Play and hold down some keys.



It will be more obvious what the different Arp Modes do when you are holding down three or more keys.

### 2.3.4. Hold button

When the Hold button is lit, you can lift your fingers off the keys and the arpeggio will keep playing. It will keep running until you play another note or chord, at which point the new note(s) will become a new arpeggio.

You may add as many as 32 notes to your arpeggio as long as you continue to hold down at least one key. The notes you play will be added to the arpeggio at the nearest time division increment.

The same rule applies with large arpeggios: once you release all of the keys, the arpeggio you have constructed will continue to run until you play another note or chord.

For even more in-depth coverage of the arpeggiator see [Chapter 5 \[p.46\]](#).

## 2.4. Scales & Chords

Some of the most interesting features of the KeyStep 37 are its scale and chord options, which we'll cover in more detail in [Chapter 3 \[p.22\]](#), but to get an idea of the impact that changing scale has on your sequences and arpeggios, try this neat trick while your sequence or arpeggio is running.

- Hold Shift + (Scale)-minor. The Scale selectors are located just above the keyboard. For example, you activate the minor scale with Shift + C4 (the third 'C' from the left.) Try some of the other Scale selectors to hear the different types of scales.

Creating strums in Chord mode is equally fascinating:

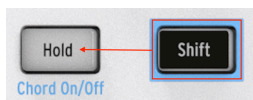
- Stop everything that's playing by pressing the 'Stop' button
- Hold Shift + HOLD/Chord. The Chord button will come alive and change from dimmed orange to bright orange.
- Set the Type knob to 5, the Notes knob to its maximum position-
- Set the Vel>Notes knob to its minimum position, and the Strum knob to 40
- Play any key on the keyboard and hear how a strum is formed.

Experiment with the Type and Notes knobs to form strums of different lengths and chord types. There are many other options to discover here such as browsing through a list of chords, chord editing and strum editing. We'll cover these options in detail in [Chapter 3 \[p.22\]](#).

## 3. SHIFT FUNCTIONS

For a complete chart of all the Shift functions, refer to [the end of this chapter \[p.36\]](#).

### 3.1. Chord mode



In Chord mode, KeyStep 37 takes a single note and builds a chord from it. It will do so with every note, whether that note is part of a sequence or part of an arpeggio or played in keyboard mode or even when you play notes on an external keyboard or feed the KeyStep 37 notes from a DAW! In the following paragraph, we'll have a look at the different ways to activate chord mode and the options you have for creating chord forms and strum patterns.

#### 3.1.1. Activating chord mode

On startup, the Chord button is lit in a dimmed orange color: Chord Mode is Off.

To activate Chord Mode, hold Shift and press Hold. The Chord button will light up in bright orange and the Hold button will start to blink. To disable Chord Mode, press Shift+Hold again.

A second way to activate Chord mode is to turn the Type knob. This is a fast way to access Chord Mode when the Chord button is dimmed orange. To disable Chord Mode, press Shift+Hold.

The third way to activate Chord Mode is to hold the Chord button and play a chord on the keyboard. This instantly switches the KeyStep 37 to User Chord Mode. In this mode, a chord is generated based on the notes you provide. You can alter the tonality of the chords being generated with the scale option.

The chord button acts as a toggle between Chord Mode and CC mode; pressing the Chord button while in Chord Mode will make KeyStep 37 switch to CC mode: the knobs will now enable you to send CC data. Pressing it a second time turns its colour back to orange and changes the function of the knobs back to chord editing.

**Note:** pressing the Chord button will only change the function of the knobs. To turn Chord Mode ON or Off you must use the Shift + Hold buttons.



3.1.2. Playing single notes

We'll first have a look at how chords are formed in Keyboard mode. In this mode, KeyStep 37 will take the note you play as root note and add the notes of the chord type that you've selected with the Type knob.



If for example you've selected Oct as Type and you play a C on the keyboard, the Chord generator will add a "C" one octave above it, two octaves above it and three octaves above it. Turned fully counter-clockwise the Type knob is off. To hear the full string of notes that are added in chord mode set the Notes knob fully clockwise, the Vel>Notes knob fully counter-clockwise and the Strum knob to 64.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C	C#	D	D#	E	F	F#	G	G#	A	A#	B
Oct																								
5																								
sus																								
min																								
m7																								
m9																								
m11																								
M																								
M7																								
M9																								
M11																								

Set the Type knob to USr and play a single note on the keyboard. Slowly turning this knob clockwise reveals twelve chords options. You'll hear the note retrigger whenever a new chord appears on the LED display. The chords you'll hear are:

USr, Oct, 5th, sus(pended), min(or), m(inor)7, m(inor)9, m(inor)11, M(ajor), M(ajor)7, M(ajor)9 and M(ajor)11.

### 3.1.3. Setting Chord span with Notes

The Notes knob sets the number of notes in your chord, from 2 to 16. It takes the root note you play on the keyboard and adds notes in the currently selected chord type, over a maximum of 4 octaves. The chord notes added in the first two octaves are replicated in the upper octaves. When turned fully counter-clockwise, only two notes will play: the root note and the second note of the currently selected Chord type. Turning the Notes knob clockwise will add more notes until, at the full-clockwise position the chord is extended to 16 notes. The number in the display will show how many notes are currently added to the root note.



If for example, you have set chord type to '-', which is short for minor, and play a 'C3' on the keyboard, the chord generator will add an Eb3 and a G3 to it and replicate these notes in the octaves above adding C4, Eb4, G4, C5, Eb5, G5, C6, Eb6, G6, C7, Eb7 and G7.

**Note:** When selecting the Oct type a maximum of three notes can be added.

### 3.1.4. Setting the Velocity to Notes ratio

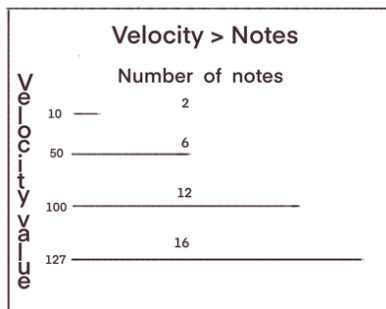
When you press a key on the keyboard, KeyStep 37 captures the speed and force with which you hit the key and stores it in a value range from 1 to 127. This value (called velocity) can then be used to control parameters on external synths.



KeyStep 37 uses this velocity value in a unique way: it is applied to the note span! The extent to which Velocity will affect the note span can be set from 0% to 100%.

With the Vel>Notes knob set to:

- minimum (0%) all notes sound, regardless of the velocity played by the keyboard
- medium (50%), about half the notes will sound when playing at low velocity, and all notes when you play at full velocity
- maximum (99%) only the root note will sound when you play at low velocity and all notes when you play at maximum velocity



### 3.1.5. Selecting Strum type

The Strum knob emulates the effect of strumming notes on a guitar. When you move a pick or your finger across the strings from low to high with a downstroke, the strings will sound with a fixed delay. The lowest, 6th string will sound first, followed by the 5th to 1st string. When you strum faster, the distance between the notes becomes shorter.

The Strum knob can emulate both a downstroke strum where the lowest notes in the chord sound first (by turning the knob right from the neutral position) and an upstroke strum where the highest notes sound first (by turning the knob left from the neutral position).

In the neutral twelve o'clock position, all notes will sound simultaneously. When moving the knob to the right, more and more delay is added to the strum until at 3 o'clock the strum reaches its maximum delay with value 50. When turning the knob beyond '50', the speed of the strum becomes tempo dependent. To achieve the slowest possible strum set the tempo rate to 30 (the minimum rate) and the strum delay to maximum (4).

When turning the knob to the left from its center position a chord will be played as an upstroke strum. More and more delay is added to the strum until at 9 o'clock the strum reaches its maximum delay with value -50.

When turning the knob beyond '-50', again the speed of the strum becomes tempo dependent. To achieve the slowest possible strum set the tempo rate to 30 (the minimum rate) and the strum delay to maximum (-4).



In the lowest quadrants (with values greater than 50 and -50), the distance between the notes is quantized to the following values: 1/64, 1/32t, 1/64d, 1/32, 1/16t, 1/32d, 1/16, 1/8t, 1/16d, 1/8, 1/4t, 1/8d, 1/4. In the above line values with 'd' attached to them are dotted values; a dotted note is 1.5 times the base note value. If the 1/4th note has a duration of 1 second, a dotted 1/4th will have a length of 1.5 seconds. Values with 't' attached to them are triplet values; a triplet quarter note is 2/3rd the length of a quarter note.

### 3.1.6. Sequences and arpeggios

When playing a sequence, the notes in the sequence can be strummed. Just activate chord mode and hear how the individual notes of the sequence are extended to strummed chords. When gates in a sequence overlap, the chord generator will restart when a new gate is detected. The actual notes you hear will depend on the current settings of the Chord knobs and the current Scale.

There's another thing worth knowing: when a sequence is playing with chord mode active and you play the keyboard, the notes of the sequence will be chorded but the notes you play on the keyboard will not. When you stop the sequence, KeyStep 37 will switch from chordifying the notes of the sequencer to chordifying the notes you play on the keyboard.

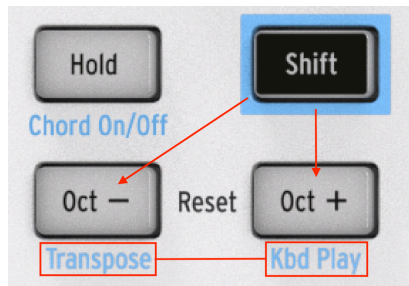
The LEDs above the keyboard will help you distinguish notes played by the sequencer (green) from those played on the keyboard (yellow).

In Arpeggio mode, each note you play becomes the root the chord generator will add its notes to. This makes it very worthwhile to try different arpeggio patterns and hear their effect on chord generation.

## 3.2. Transpose / Kbd Play in Seq mode

These two modes are mutually exclusive so we'll cover both in this section. You can switch from one to the other by holding the Shift button and pressing the appropriate Octave shift button (Oct- or Oct+).

### 3.2.1. Transpose



To activate Transpose mode, hold the Shift button and press the Oct- button. The Oct- button will light up and the Kbd Play button will go dark. When this mode is active you can use the keys to transpose a sequence while it is running.

The MIDI Control Center lets you specify whether the transposition will latch or return to center when the key is released. See [chapter 9 \[p.64\]](#) for details.

**Note:** The current transpose position lights up in white.

**Note:** Sequences can be transposed externally by feeding KeyStep 37 notes on a transpose channel via MIDI. Select a channel to act as a transpose channel in the MCC. By default, KeyStep 37 will use channel 16 for external transposition.

### 3.2.2. Keyboard Play

To activate Kbd Play mode, hold the Shift button and press the Oct+ button. The Oct+ button will light up and the Transpose button will go dark. When this mode is active, the keyboard can be used to play notes over a running sequence, either on the same device or on an external one.

You can specify a separate MIDI channel for Kbd Play mode, so the keys will play one MIDI channel and the sequence will play another. This can be done from the front panel:

- Hold the Shift and Oct+ buttons at the same time
- Select a number between 1 and 16 using one of the Keyboard MIDI CH keys.

It's easy to see which notes are played by the sequence and which are played on the keyboard. Notes that are part of the playing sequence will light up in green. Notes played on the keyboard will light up in yellow. The current transpose position will light up in white.

### 3.3. Skip selections: Seq / Arp



It's possible to switch between non-adjacent sequences or arpeggio patterns without launching the interim selections. In other words, if sequence 1 is playing and you want to segue smoothly into sequence 3, you can jump over sequence 2 without playing it.

Here's how:

- Hold the Shift button
- Turn the Seq/Arp Mode knob until you reach the desired sequence
- When you're ready, release the Shift button and the new sequence will launch.

There's a parameter in the MIDI Control Center that controls whether a new sequence will begin immediately or at the end of the sequence. The full details are in [chapter 9 \[p.64\]](#).

### 3.4. Skip selections: Time Division



KeyStep 37 is able to jump over one or more Time Division values without having them affect the rhythm of your sequence or arpeggio. So if you'd like to switch Time Div from 1/4 to 1/16 for a few beats without hearing the 1/8 value, there's a way to do that.

- Hold the Shift button
- Turn the Time Div knob until you reach the proper value
- Release the Shift button, and the new Time Division will take effect.

### 3.5. Restart Seq / Arp from beginning

It's possible to repeat the first half of a sequence or arpeggio manually, or perhaps repeat the first few notes several times, etc., as a spontaneous performance option.

To restart a sequence or an arpeggio pattern from its beginning, hold the Shift button and press the Play/Pause button.



We will cover the Shift functions that are used during sequence creation in the next chapter.

## 3.6. Keyboard Shift Functions

Above the keyboard you'll find the names of five Shift functions:

- Keyboard MIDI channel
- Gate
- Swing
- Sequence
- Scale

When holding Shift, the currently active Shift functions will light up in blue.

In the next few paragraphs we'll have a look at how to apply these functions.

### 3.6.1. Keyboard MIDI channel

There are numbers silkscreened above the keys under the heading 'Keyboard MIDI CH'. These represent the 16 MIDI channels to which the keyboard can be assigned. To change the MIDI channel setting, hold the Shift button and press the key that corresponds to the desired MIDI channel.



**i** When the MIDI channel is changed the Kbd Play MIDI channel will change to match it. To select an independent channel for Kbd Play mode, see [section 3.2.2 \[p.28\]](#).



### 3.6.2. Gate

The Gate time of a Seq/Arp note is the percentage of time it stays 'on' before the next note happens, with 10% being the shortest time and 90% being the longest. Hold Shift and press the appropriate key to make a selection.

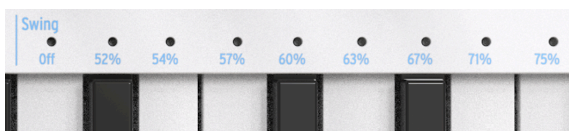


Each sequence can have its own Gate setting. Arp mode has an independent Gate setting .

When creating a sequence it is also possible to enter a value of 'Tie', which holds a note into the following step. See [section 4.2.1.2 \[p.39\]](#) for information.

### 3.6.3. Swing

Swing introduces a 'shuffle' feel to the active sequence or arpeggio. 9 different settings are available, ranging from Off (no swing, or 50%) through varying degrees of swing amount (52-75%). To make a selection, Hold Shift and press the appropriate key. The in-between steps are: Off, 52, 54, 57, 60, 63, 67, 71, 75.



What the Swing setting does is shift the timing of the notes in a sequence, making the first note of a pair longer and the second note shorter. Assuming the time division is set to 1/8, here's what will happen:

- With Swing set to Off (50%) each note gets equal time, resulting in a straight 1/8th note feel.
- As the Swing value exceeds 50%, the first 1/8th note is held longer and the second is played later and shorter. You'll notice the sequence starts to 'shuffle' a bit and perhaps sounds less mechanical to your ear.
- The maximum Swing setting is 75%, at which point the 1/8th notes sound more like a 1/16th note figure than 'shuffled' 1/8th notes.

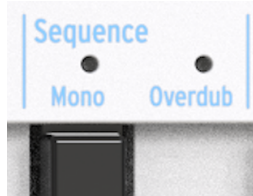


Each sequence can have its own Swing setting. Arp mode has an independent Swing setting too.

### 3.6.4. Sequence

#### 3.6.4.1. Mono

KeyStep 37 is able to playback sequences in Mono, even when they were originally recorded Polyphonically. In Mono mode, only the lowest note recorded in the step will sound. All other notes will be stripped away.



To activate MONO press Shift + Mono. To restore the sequence to poly mode press Shift + Mono again.

In Step Recording mode, the sequencer records only one note in each step.

- Playing Legato fills the next step, and creates a tie between the two notes.

In Real-Time Recording mode, the sequencer only records one note in each step; only the last played note is recorded.

- When playing a sequence recorded in poly mode, only the last recorded note in a step will be heard.

**Note:** If a sequence was recorded Poly, then setting to Mono only modifies playback, it doesn't delete any notes

#### 3.6.4.2. Overdub

Next to the Mono Sequence key you'll find the overdub key. To activate Overdub, press Shift + Overdub. This is a toggle function. Pressing Shift + Overdub again will deactivate overdub mode.

When Overdub is active, notes you play/record will be added to the notes currently stored in a step. Overdub is only active in Real-Time recording mode.



When overdub is active, and you play long notes in Real-Time recording mode over existing steps, the current notes in the step are set to Tie.

When playing short notes on top of an existing sequence, the Tie status of steps remains unchanged.

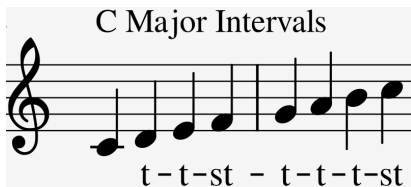
### 3.6.5. Scales

Scales express emotion in music. A single melodic line can evoke many emotions, but when you add chord notes from the scale to that melodic line, the feeling will become much stronger. When you add notes of a major scale, the result sounds forceful and happy, whereas adding notes of a minor scale can make the same melodic line seem sad. At least, that might be your response if you were born in a culture dominated by western music. In other cultures, the response to major and minor scales may be different.



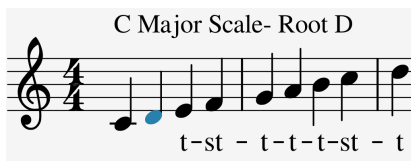
A standard (chromatic) scale consists of twelve notes: C-C#-D-D#-E-F-F#-G-G#-A-A#-B. Every scale is a selection from these twelve notes. By leaving out certain notes, each scale evokes a very specific emotional effect.

The most widely used scale in western music is the C major or C Ionian scale: play the white keys on a piano ascending from C to C' and what you hear is the C major scale. Of the twelve notes of the chromatic scale, C major uses: C D E F G A B (C'). Leaving out certain notes creates gaps. Some of these gaps, known in musical terminology as *intervals*, are whole-tone gaps; the others are semitone gaps. The interval from C to D is a whole tone; from E to F a semitone.



C major has a specific series of intervals: tone, tone, semitone, tone, tone, tone, semitone. This is known as the Ionian mode.

However, if you play the white keys on the keyboard ascending from D to D', you get a different series of intervals: tone, semitone, tone, tone, tone, semitone, tone. This is known as the Dorian mode.



If you now start on C and play a scale using this new series of intervals, you play a C Dorian scale.

## C Dorian Scale



When you play a scale only on white keys, ascending from the 5th step of the C major scale, G to G', you get another series of intervals: tone, tone, semitone, tone, tone, semitone, tone. This is known as the Mixolydian mode.

Creating different scales in this way, each with its own special emotional feeling, is an age-old trick. Scales created this way are sometimes referred to as 'church modes', which were largely unused for centuries but rediscovered by jazz musicians in the 1950s and 1960s. They are now widely used in western music.

### 3.6.5.1. Selecting Scales

In KeyStep 37, if you select a scale using the Shift + Scale key feature, everything – what you play on the keyboard, a running arpeggio, the currently selected sequence – will play in that scale.

The Scale option works as a filter, selecting notes from the chromatic scale. For each scale, it's a different set of notes. In technical terminology, it *quantizes* the default chromatic scale (C, Db, D, Eb, E, F, Gb, G, Ab, A, B, B) to either the:

- Major scale (C, D, E, F, G, A, B)
- Minor scale (C, D, Eb, F, G, Ab, Bb)
- Blues scale (C, Eb, F, Gb, G, Bb)

To hear (and see) the effect of selecting a scale on your KeyStep 37, switch it ON and select a preset on your external synth with a fairly simple sound.

Press Shift + Scale/Major (Key A4) to select the Major scale. When you now play the white keys you'll hear the major scale. The odd thing is that the black keys also play the major scale! The black key that normally plays C# now plays C natural. All black keys are 'stripped' of their normal pitch and have been lowered a semitone to fit in the C major scale. Whatever chord you play on the keyboard, it will always be a chord of the major scale!

Let's explore these scales. Select Arpergiator mode and press play to activate the Arpeggiator and, starting from C, hold down the first, third and fifth steps of the major scale; you're now playing a C major chord. Press Shift + a Scale key to select other scales. You'll hear the third step changing when you select the Minor scale, or the Blues scale



! A nifty trick is to start an arpeggio or sequence in a certain scale, then select another scale with the Shift + Scale key option. You'll hear your arpeggio or sequence change scale on the fly. If in Arpeggio mode, press Hold to be able to lift your fingers from the keyboard once the arpeggio is playing.



! You can also use the Pitchbend strip to change the pitch of your arpeggio.

When Scale mode is active, this can have a peculiar effect on your arpeggio or sequence: because all notes will be forced to play in the currently selected scale, there may be duplicate notes. For example, if you've set the scale to C major and you hold down an E and an Eb, because the Eb is 'foreign' to the C major scale, the Arpeggiator will play E twice, which causes a ratcheting effect.

### 3.6.5.2. Changing the Scale Root

For Major, Minor, and Blues scales, you can select a new root note by pressing Shift and holding down the Scale key and then selecting a new root in the first octave of the keyboard. As long as you keep holding down the Scale key, pressing a key will update the root note. The currently active root note will be shown with its LED lit up continuously in blue.

Starting a scale on a different note will drastically change the mood or feeling. For example, if we play the notes that make up the C major scale not from C to C' but from D to D', the intervals will now be heard in a different order.

- C major starting on C: tone, tone, semitone, tone, tone, tone, semitone (T-T-s-T-T-T-s).
- C major starting on D: tone, semitone, tone, tone, tone, semitone, tone (T-s-T-T-T-s-T = Dorian mode).

When you take this second series of intervals and start on, say, G as the root note, you get:

- G, A, Bb, C, D, E, F, G' (known as G Dorian)

It's an age-old principle that was widely used in ancient music and medieval church music. It was rediscovered by jazz musicians in the 1950s and 1960s. And when the western world opened up to other music cultures, especially in the 1980s and 1990s, musicians explored the exotic-sounding scales of Indian ragas and Arabic maqams, which used scales that were quite different from the standard major and minor scales that had been used for centuries in western classical music.

Changing the root note is a form of 'intelligent' transpose – intelligent because the interval structure of the scale remains intact. This, as opposed to normal or 'dumb' transpose, which simply lowers or raises all the pitches by the same interval.



ⓘ If you want to know more about this fascinating subject, search 'music theory' on a search engine or YouTube.

### 3.6.5.3. User Scales

KeyStep 37 comes complete with three predefined scales, but you can create your own custom scales and store them as User Scale.

In the example below, we'll add Bhairavi, a well-known and popular scale in Indian music. Bhairavi has lowered second, third, sixth and seventh steps. So, based on C, it plays as C, Db, Eb, F, G, Ab, Bb (C').

To create this scale, we have to eliminate notes that are not part of it. This is how you do it:

Hold down Shift and press Scale>User (C in the upper octave of the keyboard).

Now focus on the 12 keys in the lower octave of the keyboard. The LEDs above all those keys have lit up in purple, meaning that all keys will play. You can now let go of the Shift button. The 12 keys will remain lit as long as you keep the user key depressed. We have to eliminate D, E, F#, A and B so that only the keys of the Bhairavi scale will play. Press those keys to deactivate them.



⚠: If you haven't yet made any changes to the User scale, it will default to the chromatic scale.

### 3.6.6. Shift function chart

Here's a list of all Shift button features:

Combination	Effect
Shift + Key (1 to 16)	Select user channel and reset Kbd Play Midi channel
Shift + Key (17 to 21)	Select a global gate value for the current sequence or the arpeggiator
Shift + Key (22 to 32)	Select a swing value for the current sequence or the arpeggiator
Shift + Key 40	Switch between Poly and Mono sequencer mode
Shift + Key 41	Toggle overdub On or OFF
Shift + Key (42 to 45)	Scale Select (Chrom, Major, Minor, Blues)
Shift + Key (46)	Scale Select (User)
Shift + Oct Minus	In Seq mode: enter Transpose mode
Shift + Oct Plus	In Seq mode: enter Kbd Play mode.
Shift + Oct Minus	In Arp mode: Arp plays 1 or more octaves below
Shift + Oct Plus	In Arp mode: Arp plays 1 or more octaves above
Shift + Oct Plus + Key (1-16)	Selects Midi channel for Kbd play mode
Shift + HOLD	Enter/Exit chord mode
Shift + REC	Enter Record-append mode
Shift + STOP	Clear last step of the sequence (only in Seq mode)
Shift + Play	Restart the playback to the first step of the Seq/Arp
Shift + Mode or Time Div	The new position of the knob will become active when the Shift button is released
Shift + Rate	Fine tune of the BPM in cents. Note that KeyStep 37 sync must be set to internal for this to work.
Shift + Chord	Switch to Control mode. Knobs can be used to transmit CC values. Press repeatedly to select any of four CC banks.

## 4. CREATING SEQUENCES

KeyStep 37 holds a total of 8 sequences, and each sequence can be up to 64 steps in length. The sequencer is polyphonic, capable of stacking up to 8 notes per step.

In this chapter we will cover the front panel features, but there are more parameters available in the MIDI Control Center. You can also save and swap sequences using the MIDI Control Center, so you'll want to read [Chapter 9 \[p.64\]](#) for more information.

### 4.1. What is a step sequencer?

KeyStep 37 can record and play back music data with its step sequencer. Originally popular in the 1960's and 70's, step sequencers have become popular again due to the increased interest in modular synthesizers.

A step sequencer is usually *monophonic*; i.e., it will output only one note at a time. But the KeyStep 37 sequencer is capable of stacking up to 8 notes per sequence step.

Another way the KeyStep 37 sequencer is more advanced than a traditional step sequencer is that it lets you transpose the sequence by playing a key on the keyboard. Most early step sequencers did not do this; the pitch of each note was set with a knob or a slider.

But as with any sequencer, a step sequencer can free the performer's hands to adjust other parameters such as filters, envelope settings or pitch on the target device while the sequencer keeps looping.

KeyStep 37 allows you to create and carry up to eight unique sequences wherever you go. And in spite of its streamlined appearance, there are lots of ways to modify your sequences during a performance. We'll cover those in this chapter.

### 4.2. Creating a sequence



The sequencer will not run if the sync selection switches are set to something other than Internal and no external clock is present.



There are three things you must do when you want to create a sequence:

- Move the Seq / Arp toggle switch to the Seq position, as shown
- Select a sequence location with the Seq / Arp Mode encoder
- If a sequence is already running, press the Stop button.

We have already covered selecting and playing sequences in [section 2.2 \[p.18\]](#), so we'll only discuss how to create and edit a sequence in this chapter.

KeyStep 37 provides two ways to input notes into your sequences: a step at a time or in real time. We'll go through those options next.

### 4.2.1. Step recording

This may be the best place to start while you are learning to work with the sequencer. At the most basic level, all you have to do to create a sequence is:

- Press the Record button



**Caution:** the next step will erase the existing sequence.

- Play one or more keys at the same time
- Lift all fingers to advance the step
- Repeat the last two items
- When you're done, press the Stop button.



You must lift all fingers between each step in order for the sequence steps to advance. If you do not lift every finger first, you will keep adding notes to the same sequence step.

To hear your sequence, press the Play button. The results could be something like this:

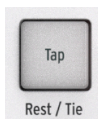


**i:** The Time Div value is ignored during step recording; it only affects sequence playback.



**i:** To create an empty sequence of up to 64 steps, first press and release the Record button to enter Rec Step mode. Next, press and hold the Record button while tapping the channel keys to select the number of steps you would like for your sequence. For example, pressing Rec + 16 + 16 + 8 + 2 will result in an empty sequence of 42 steps being created. Now you can enter notes as described above.

#### 4.2.1.1. Entering rests



The spaces that sometimes happen between notes are called 'rests'. If you want to add rests while creating a sequence, KeyStep 37 provides an easy way to do it.



Take a look at the Tap button:

You'll notice the words 'Rest / Tie' underneath the button. You will use this button to enter rests, and also to tie notes together (more about that later).

Here's what to do:

- Press the Record button



**Caution:** the next step will erase the existing sequence.

- Play one or more keys at the same time
- Release all keys to advance the step
- Press the Tap button to enter a Rest
- Repeat the last three items
- When you're done, press the Stop button.

To hear your sequence, press the Play button. The results could be something like this:



If you want the rest between two notes to be longer, press the Tap button as many times as you need.

#### 4.2.1.2. Tie notes

It's possible to make a note hold over into the next step, or even longer. So with the Record button lit:

- Play one or more keys at the same time
- Keep holding the key(s)
- Press the Tap button to tie the note into the next step
- If you want the note(s) to be held longer, press Tap as many times as you need
- Release all keys
- Repeat the process until you get the result you want.



**Note:** You can adjust the behavior of tied notes through the Tie Mode option in the MIDI Control Center. This is covered in detail in the MIDI Control Center chapter of this guide.

#### 4.2.1.3. Legato notes

The process for entering a Legato note is similar:

- Press the Record button
- Hold the Tap button until the end of the legato phrase



**Caution:** the next step will erase the existing sequence.

- Play one or more keys at the same time
- Release all keys to advance the step
- Play another key or chord
- Release the keys to advance to the next step
- When you have reached the end of the legato phrase, release the Tap button.
- Enter more notes as desired, or press the Stop button to exit Record mode.

On a mono synth, the process above will result in a 'legato' response (voltage change without any gate events between the notes).

Press Play to hear your sequence. A combination of tied notes and legato notes might sound something like this:



Here's another example. This time we'll build a chord that sustains through 3 counts:

- Set Time Div to 1/4
- Press the Record button
- Press and hold the Tap button until the end of this example
- Play a C, then release it
- Play C and E, then release the keys
- Play C, E, and G, and then release the keys
- Release the Tap button
- Press Tap another time to add a rest
- Press the Stop button.

The result will sound like this:



In the example above, for the chord to hold through the final step you would need to set the Gate time to 90% for the sequence. Otherwise the final step will not sound like a quarter note.

### 4.2.2. Real-time record/replace

KeyStep 37 also allows you to record or replace the notes in a sequence while the sequencer is looping. Here are a few things to keep in mind:

- Real-time recording won't extend a sequence; you must record within the framework of an existing sequence. So you may first want to create a sequence of the desired length using step record mode.
- It can be helpful to have an external drum machine slaved to the KeyStep 37 via MIDI or the Sync output. That will help you make sure where the downbeat is. For more information about synchronization, see [Chapter 6 \[p.53\]](#).



You can also create a sequence in the MIDI Control Center and send it to the KeyStep 37 over USB. Learn about the MIDI Control Center in [Chapter 9 \[p.64\]](#).

There are two methods you can use to record in real time.

- **Sequencer not running** (Stop mode): Hold Record and press Play. The Rec button will light up and the sequence will begin looping. The notes you play 'live' will be quantized to the nearest step.
- **Sequencer running**: If the sequence is already looping, simply press the Rec button and the same thing will happen: KeyStep 37 will begin recording and replacing notes.



When Overdub is active, the notes you play will be added to the existing notes. When OFF, newly recorded notes will replace the notes that currently exist at that step.

#### 4.2.2.1. Replacing notes

As mentioned above, the notes you play while recording in real time will be quantized to the nearest step. Any notes that exist in that step will be replaced with the notes you played.

So as the sequence loops you can replace certain notes by playing new ones within the timing range of the appropriate step.

#### 4.2.2.2. Restart

A sequence can have up to 64 steps, which can seem like a long time when you want to replace a note near the beginning of the sequence.

There's a shortcut you can take if you don't want to wait for the sequence to loop: use the Restart function.

All you have to do is hold the Shift button and press Play/Pause. You will hear the sequence jump immediately to its beginning. KeyStep 37 will remain in Record mode, so when the proper step arrives, play the notes you want and they will replace the existing notes.

#### 4.2.2.3. Time Div and recording

As mentioned in [section 4.2.1 \[p.38\]](#), the Time Division setting does not allow you to enter different step values in the middle of a sequence while recording. But you can use it to alter the relative tempo while recording.



If you are recording a difficult passage, you may want to use a different Time Division setting while recording (i.e., use 1/4 instead of 1/8).

#### 4.2.2.4. Time Div and Rate

The Rec button will blink at the rate of the Time Div selection while recording a sequence.

For example, if you set Time Div to 1/4th it will blink at the same time as the Tap button. But if you set it to 1/16th it will blink 4 times faster than the Tap button, since there are four 16th notes in every quarter note.

### 4.2.3. Adjusting the sequence length

You can adjust the length of a sequence (from 1-64 steps) by using the Record and "MIDI Channel" keys on the keyboard. To do this, hold the Record button and press any of the "MIDI Channel" keys to set the length of a sequence. The note is not triggered while Record is pressed and holding Record while pressing a note that is not a MIDI Channel note does nothing.

Note that while the Record button is held down, you can press a MIDI Channel note multiple times to add to the sequence length. For example, if you hold Record and press the MIDI Channel 4 key three times, it will set the length to 12 steps. You can also hold the Record button and press different MIDI Channel keys to set varying lengths of sequences up to 64 steps (for example: Hold Rec and press 16 + 16 + 8 + 2 to set the sequencer length to 42 steps).



⚠: "Sequence Length Update" in the MIDI Control Center determines what happens to the truncated ("leftover") notes when a sequence is shortened. Please refer to the MIDI Control Center chapter to learn more about this feature.

#### 4.2.4. What does it record?

The KeyStep 37 sequencer will record certain types of data for each sequence step:

- The note or notes played from the keyboard
- The velocity of each note (unless you tell it not to: see [section 4.2.4.1 \[p.43\]](#))
- Rests entered by pressing the Tap button or holding it for one or more steps
- Notes entering through the MIDI port and their velocity



If a key is held for two or more steps a tied note will be recorded.



**Note:** The maximum number of notes in a chord is 16 notes, which exceeds the limit of 8 notes per step in a sequence. In this case only the bottom 8 notes of the chord will be entered.

##### 4.2.4.1. A note about velocity

By default, KeyStep 37 will capture the velocity of each note the way it was played. But there's an option in the MIDI Control Center to make sure every recorded note has the same velocity value. You can also specify exactly what that value will be.

Also, if a note in a sequence is too loud or soft you can edit its velocity using the MIDI Control Center.

See [Chapter 9 \[p.64\]](#) for more information about these features.

#### 4.2.5. What is not recorded?

Here are the types of data not captured by the KeyStep 37 sequencer:

- The duration (gate time) of the note. However, a note will be tied into the next step if you hold it down long enough.
- Time division changes
- Swing percentage (saved with preset)
- Controller data
- Data that arrives via USB
- Mono/Poly status
- Overdub/Overwrite status
- Scale selection

## 4.3. Modifying a sequence

Now let's focus on ways to modify an existing sequence.

### 4.3.1. Append

You can extend your sequence by adding (appending) notes, tied notes and rests to the end of the sequence.



**Caution:** This process will not erase the sequence or replace existing notes.

To use the Append function:

- Make sure the proper sequence is selected
- Press Play/Pause to start the sequence.



**Important:** the sequence must be playing or else the note data will be erased in the following steps.

- Hold the Shift button
- Press the Record button (Append). The Record button will light up solid.
- To add a note or chord to the end of the sequence, play the appropriate keys
- To add a tied note or chord to the end of the sequence, hold Tap and play the desired key(s). All notes in the previous step will be lengthened, and
  - New notes that match the previous step will be tied (no new attack)
  - New notes that do not match the previous step will be legato
- To add a rest to the end of the sequence, press the Tap button (Rest / Tie).

Each time you perform one of those three functions, the sequence will grow longer by one step.



**Remember:** the CV/gate outputs will drive a single voice on a monophonic synthesizer. The MIDI Control Center has a parameter that specifies which note will be favored when a chord exists in a sequence step. See chapter 10 for details.

### 4.3.2. Clear Last

This feature allows you to remove the last step of a sequence. It works whether the sequencer is playing or recording, and even works if the sequencer is not running at all.

To clear the last step of a sequence:

- Make sure the proper sequence is selected
- Hold the Shift button
- Press the Stop button (Clear Last)

If the sequencer is running during this process, the next time it loops around to the end of the sequence, the last step will have been removed.



The Clear Last function does not undo the last recording you made; it shortens the sequence by removing the last step

## 4.4. Saving sequences

KeyStep 37 allows you to carry 8 sequences with you at all times. But you can store an unlimited number of sequences using the MIDI Control Center. So be sure to back up your hard work to your computer often.

And once the sequences are safely stored on your computer it is possible to hand-pick sets of sequences that are aimed at particular audiences or sessions.

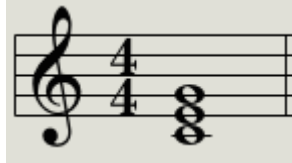
See [Chapter 9 \[p.64\]](#) for more information about the MIDI Control Center.

## 5. THE ARPEGGIATOR

### 5.1. What is an arpeggiator?

'Arpeggio' is a musical term that basically means "the notes of a chord played one after the other". For example, if you play a C chord and then play its component notes C, E, and G independently, you have played an arpeggio in the key of C major.

An example of notes in a chord



The same notes as an arpeggio



And you can play those three notes in any order and still have played an arpeggio in the key of C.

An arpeggiator, then, is a form of music technology that will take a group of notes played simultaneously on a keyboard and turn them into an arpeggio.

### 5.2. Arpeggiator features

The KeyStep 37 arpeggiator provides lots of different ways to arpeggiate the notes you play on the keyboard. These features we've covered previously:

- [Setting the rate or tempo \[p.19\]](#)
- [Time division settings \[p.19\]](#)
- [Hold / sustain function \[p.21\]](#)
- [Independent gate \[p.31\]](#) and [swing settings \[p.31\]](#)
- Skip knob values [sections 3.3 \[p.28\]](#) and [3.4 \[p.29\]](#)
- [Restart arpeggio from the first note \[p.29\]](#)



We'll cover the following features in the sections ahead:

- The eight modes that determine the note order
- Building an arpeggio of up to 32 notes
- Pausing an arpeggio in mid-stream and then resuming the pattern
- Setting the length of an Arpeggio



The Record button is inactive in Arp mode.

## 5.3. Arpeggiator modes

### 5.3.1. Start the arpeggiator



The arpeggiator will not run if the sync selection switches are set to something other than Internal and no external clock is present.

Before we describe each of the arpeggiator modes, let's do a quick review of how to select a mode and start the arpeggiator:

- Select Arp mode with the Seq / Arp toggle switch
- Use the Seq/Arp Mode encoder to select a mode
- Press the Play/Pause button
- Hold down some keys

The arpeggiator will start playing the notes you are holding one after the other. The order in which they are played is determined by the Arp mode.

All of the following examples involve holding down only 4 notes on the keyboard. But you can add up to 32 notes to your arpeggio through clever use of the Hold button and the Oct Minus / Plus buttons. We'll describe these techniques in the section about [building a multi-octave arpeggio \[p.50\]](#).

### 5.3.2. Arp mode: Up

With the Arp mode encoder set to **Up**, the arpeggiator will play the held notes in order from the bottom to the top. When it reaches the top it will start again from the bottom.

The results will sound something like this:



### 5.3.3. Arp mode: Down

With the Arp mode encoder set to **Down**, the arpeggiator will play the held notes in order from top to bottom. When it reaches the bottom it will start again from the top.



### 5.3.4. Arp mode: Inclusive

With the Arp mode encoder set to **Inc**, the arpeggiator will play the held notes in order from low to high, then from high to low, repeating the high note and low note.



### 5.3.5. Arp Mode: Exclusive

With the Arp mode encoder set to **Exc**, the arpeggiator will play the held notes in order from low to high, then from high to low, without repeating the high note and low note.



### 5.3.6. Arp Mode: Random

With the Arp mode encoder set to **Rand**, the arpeggiator will play the held notes in a random order.



### 5.3.7. Arp Mode: Walk

With the Arp mode encoder set to **Walk**, the arpeggiator will play the held notes in a controlled random order. It's as if the arpeggiator 'threw a dice' at the end of each step: there's a 50% chance it will play the next step, a 25% chance it will play the current step again and a 25% chance it will play the previous step.

### 5.3.8. Arp Mode: Pattern

Select Pattern to put the Arpeggiator in a semi-random mode. Keys you press in a legato fashion on the keyboard are used by the Pattern algorithm to generate arpeggio patterns.

Each time you press a key, KeyStep 37 will generate a new pattern. It's a bit like having a third sequencer.

This mode was originally introduced in our MicroFreak synthesizer. It can be used to quickly and spontaneously generate semi-random patterns that repeat. The "random but repeating" nature combined with the fact that you can set the length of the randomized loop makes this a very "musical" way of generating interesting ideas.

In this mode, every new note entered or released in the Arp will generate a random pattern using the pressed/held notes and the current octave. You can set the length of the pattern in steps by holding Rec and pressing keys 1-16. Note that you can create sequences up to 64 steps by holding down Rec and pressing multiple keys. For example, pressing Rec + 16 + 16 + 8 + 2 would generate a random but repeating pattern of 42 steps ( $16 + 16 + 8 + 2 = 42$ ) with your chosen notes. Changing any note (or even pressing the same note again) or changing the octave range (hold Shift and press the Oct- button or Oct+ button) instantly generates a new looping pattern!

This may sound complex, but in practice it's actually a very quick and fun way of generating patterns.

**Note:** The arpeggio can be 'chordified'; turn the type knob to activate Chord mode.

When you find a particularly interesting pattern, press the Hold button and refrain from touching the keyboard; the arpeggio will continue, and you'll have an extra hand to tweak knobs. If you were to touch the keyboard again, the Pattern algorithm would create a new pattern, replacing your current pattern.

Deactivate Hold to clear the pattern.

### 5.3.9. Arp Mode: Order

With the Arp mode encoder set to **Order**, the arpeggiator will play back the held notes in the order they were played on the keyboard, from first to last.

In the example below, the notes were played in this order: Middle C, G, E, and higher C. The result is the following arpeggio:



## 5.4. Adding Notes in other octave ranges

To add notes in other octave ranges, simply press the Oct- or Oct+ buttons. This will move the point where notes are inserted in the arpeggio an octave up or down. Hold Oct- and Oct+ simultaneously to reset the insertion point to the default octave.

Having read [the Hold Button section \[p.21\]](#), you already know that the Hold button allows you to keep the arpeggiator running after you take your fingers off the keys.

There's a second use for the Hold button: when Hold mode is active, you can keep adding notes to an arpeggio as long as you continue holding down at least one key. Again, you can press the Oct +/- buttons to access other octave ranges of the keyboard and add notes in that octave range.

You can keep adding notes to the arpeggio for quite a while: the limit is 32 notes.

## 5.5. Building a multi-octave arpeggio

By default, the arpeggiator will play the notes you hold down and stay within the limits of that octave. Holding down Shift and pressing one of the Arp Octave keys will extend the notes beyond that range. When you change the octave range, the arpeggiator will also play notes in the octave(s) below or above the chord you play.

Here's how:

- select ARP mode and press play to start the arpeggiator
- select an arpeggio mode. For this example we'll select the 'Up' pattern.
- hold down some keys to hear an arpeggio
- hold 'Shift' and press the Oct- button, the arpeggio will now extend and repeat the notes you're currently holding in the lower octave. The Oct- button will flash.
- Press 'Shift' + the Oct- button again; another octave below the current one is included. Notice how the Oct- button flashes at twice the speed. If you were to press the Oct- button once more, the speed at which the button flashes would double again.

In order to reduce the downward range you've created, press 'Shift' + the Oct+ button. Repeatedly pressing the Oct+ button will further reduce the range until only the keys you hold are playing. Pressing Oct+ once more will extend the range upward. Hold 'Shift' and hold both Oct- and Oct+ to limit a multi octave arpeggio to the held notes.

When you are done adding notes, you may release all keys. The multi-octave arpeggio will continue until you press another key or stop the arpeggiator.



**Note:** It's possible to let go of the original note(s) at any stage in the process as long as you keep holding down at least one of the new notes you add.



In the MIDI Control Center you can configure the sustain pedal to do all of the things the Hold button can do. See [chapter 9 \[p.64\]](#) for additional information.

## 5.6. Pausing an arpeggio

It is possible to pause an arpeggio in the middle of its pattern. Here's an example:

- Select any mode but Random or Order (it'll be easier to hear what's happening)
- Start the arpeggiator
- Press the Hold button
- Play a handful of keys to make an interesting pattern
- Once you are familiar with how the pattern sounds, press Play/Pause in the middle of the pattern
- The pattern will pause
- Press Play/Pause again. The pattern will resume and continue playing normally.

Keep in mind: the arpeggio will stop playing that pattern if:

- Hold/Sustain Off: You let go of all keys
- Hold/Sustain On: You let go of all keys and play a new note
- You press the Stop button.



Remember, if you want to force the arpeggio pattern to start again from the beginning, hold the Shift button and press Play/Pause.

## 5.7. Arpeggio Tricks

### 5.7.1. Ratcheting

In [chapter 3 \[p.22\]](#) we've discussed one of the features that make the KeyStep 37 rather unique: creating your own scale.

This feature opens up a lot of creative options when playing arpeggios. You could for instance create a scale with very few active notes; C, F, B.

All the other notes of the scale, when played, will be quantized to these three notes. Playing the scale chromatically yields:

Notes											
C	C#	D	D#	E	F	F#	G	G#	A	A#	B
C	C	C	F	F	F	F	F	F	B	B	B

When playing an arpeggio in this scale by holding down 5 or 6 keys, the F will be repeated very often (ratcheted) and will dominate the arpeggio, followed by less frequent appearances of C and B.

### 5.7.2. Spicing up your Arpeggios

Use the Pitchbend touch strip to change the pitch of your arpeggio.



! In the MIDI Control Center you can set the pitch bend range in semitones (half steps).



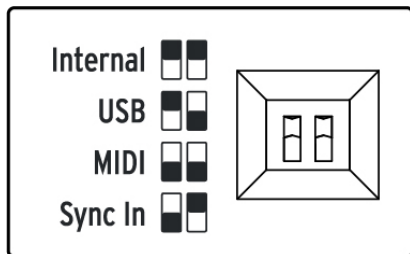
! One of the most overlooked applications of an arpeggiator is just playing one note instead of a chord. When you set the Arpeggio to medium speed, you can create interesting rhythms by sporadically lifting and pressing a finger on a key. You can take this idea further to create Hocketus. Hocketus is the name of a technique where you repeat one note over and over, never changing its pitch, though you do change other parameters of the note: for example, its timbre (LFO→Filter Cutoff), the Attack, Sustain and Decay stages of the note's amplitude or filter envelope, and its velocity or aftertouch (pressure).

## 6. SYNCHRONIZATION

KeyStep 37 can be the master clock for a wide range of musical devices, or it can serve as a slave to any one of several sources. See [section 1.1 \[p.7\]](#) for connection diagrams.

The Sync options are selected using different combinations of the rear panel switches.

For example; in the illustration below the MIDI sync option has been selected.



It's important to remember that the physical switch caps correspond to the white boxes in the visual aide to the left. Match the physical switches to the visual aide and you'll get it right every time.

The switches are recessed so they won't be changed accidentally. Use the tip of a pen or a small screwdriver when you need to change their position.

### 6.1. As Master

KeyStep 37 is the master clock when the Internal option is selected on the rear panel.

When this is the case:

- The transport section will control the internal sequencer and arpeggiator
- MIDI clock messages are sent to the MIDI output and to USB MIDI
- Clock signals are sent to the Sync output. You can specify the clock output type with the MIDI Control Center (see [Chapter 9 \[p.64\]](#))
- The tempo can be set using the Rate knob and the Tap button.

## 6.2. As Slave

KeyStep 37 functions as a slave to an external clock when one of those options is selected on the rear panel (USB, MIDI or Sync In).

When KeyStep 37 is in Slave mode:

- The Tempo controls will not control the internal sequencer or arpeggiator while the external source is running.
- The KeyStep 37 transport section will still perform as usual; you can still stop, start and pause the internal sequences and the arpeggiator, and you can still record sequences.
- KeyStep 37 will pass the synchronization messages it receives from the external source to all three clock outputs, and will convert all clock types to MIDI clock for the MIDI and USB outputs.

### 6.2.1. Sync In/Out types

The MIDI Control Center can be used to configure the KeyStep 37 to send and receive one of the following types of clock signals at the Sync input and output connectors:

- 1 step (Gate)
- 1 step (Clock)
- 1 pulse (Korg)
- 24 pulses per quarter note (ppqn)
- 48 ppqn

The default rate is 1 step (Clock).

### 6.2.2. Clock connectors

There are several types of connectors that have been used for musical synchronization purposes over the years. Here's a chart that indicates the best kinds to use when connecting older devices to KeyStep 37:

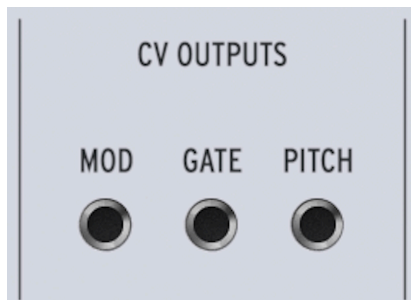
Connector type	Signal(s) sent
1/8" mono (TS)	Clock pulse only
1/8" stereo (TRS)	Clock pulse and start/stop
1/8" stereo (TRS) plus DIN sync adapter (not included)	Clock pulse and start/stop

You can use optional DIN sync adapters to connect to devices which utilize DIN sync messages. Check the owner's manual for your device if you are not sure which sort of sync capabilities it has.



## 7. MOD/GATE/PITCH FUNCTIONS

The GATE/PITCH outputs at the back of KeyStep 37 convert key presses to CV and Gate signals that are understood by modular systems. Nearly every module on a modular system accepts or generates voltages that control other modules. A gate signal can trigger an envelope or advance a sequencer. A pitch voltage as generated by the keyboard, the arpeggiator or the sequencer of your KeyStep 37 can drive an oscillator module.



In this chapter, we'll focus on these features of the KeyStep 37 MOD/GATE/PITCH outputs. [Chapter 9 \[p.64\]](#) has in-depth coverage of the features available to you with the MIDI Control Center.

### 7.1. Pitch and Gate signals

#### 7.1.1. How do Pitch and Gate work?

The notes you play on the keys are translated immediately into Control Voltage (CV) and Gate signals and sent to the Pitch and Gate connectors on the back panel. Two sets of voltages are sent for each note: Pitch and Gate open/close.

Pitch corresponds to MIDI note number and Gate open/close corresponds to note on and note off, respectively. The sequencer will record what you play on the keys, and upon playback those signals are sent to the attached device(s) through the CV/Gate connectors, just as if they had been played from the keyboard.

When KeyStep 37 is in Kbd Play mode, the sequencer will play the attached CV/Gate devices while you play your MIDI devices from the keyboard.

#### 7.1.2. Can my DAW send CV/Gate signals?

It's possible to send note data from a MIDI track on your DAW to the KeyStep CV/Gate jacks. Just match the MIDI channel on the DAW track to that of the KeyStep to make it happen.

There are two things to keep in mind, though:

- CV/Gate jacks are monophonic, so if the selected MIDI track on the DAW contains polyphonic data you won't hear all of the notes on the target device. There's a Note priority setting in the MIDI Control Center that specifies which note from a polyphonic source should be given preference (Low, High or Last). But playback could still be unpredictable unless the DAW track is perfectly quantized.
- CV/Gate jacks can send only basic signals: pitch and note on/off. In other words, you won't be able to use them to control synthesizer parameters. All edits to your modular synth settings need to be made on the synth itself.

### 7.1.3. Modulation [Mod] output

The Mod output connector sends voltage values generated by one of three sources inside your KeyStep 37: the Mod strip, aftertouch, or velocity. You can use this output to control volume, filter frequency, or any number of other modules on the target device.

The MIDI Control Center allows you to specify which of the three sources you want to use to control the Mod output. See [Chapter 9 \[p.64\]](#) to learn about this parameter.

## 7.2. Routing the signals

Typically the Pitch (CV) output is connected to a Voltage Controlled Oscillator (VCO), the Gate output is connected to a trigger input or a Voltage Controlled Amplifier (VCA), and the Mod output is connected to a VCA or a Voltage Controlled Filter (VCF) or both through a splitter or a patch bay. Those routings will produce the most predictable results. But you can send those signals to any parameters that will accept them.

## 7.3. MOD/GATE/PITCH specifications

Some analog synthesizers have unusual implementations that are not fully compatible with the KeyStep 37 MOD/GATE/PITCH signals. Please refer to their specifications before making a purchase so you can be sure the two devices will work together well.

We've designed KeyStep 37 to be as flexible as possible, though: the MIDI Control Center allows you to configure the response of the MOD/GATE PITCH jacks in a number of ways.

- PITCH has two options, each with its own keyboard reference settings:
  - 1 Volt/octave (O-10V)
  - 0 volt MIDI note range: C-2 to G8
  - Hertz per volt (max ~12V)
  - 1 volt MIDI note range: C-2 to G8 (1V reference default: C0)
- The GATE output has three options:
  - S-trigger
  - V-trigger: 5 volts
  - V-trigger: 12 volts
- The MOD output has eight options ranging from 0-12 volts. By setting the Max voltage for this output, you can fine-tune the effect of the MOD output or accomodate devices that do not respond well to higher voltage levels.

See [Chapter 9 \[p.64\]](#) for a description of the related MIDI Control Center parameters.

**Note:** The keyboard Shift functions will also work on the CV output. You can change Seq Pattern type, change the Time Division, Scale and Root Note and set a custom User scale.

## 8. CONTROLLING EXTERNAL SYNTHS

### 8.1. Control Mode

In Chord mode, the KeyStep 37 knobs send note values and triggers over MIDI to external synths. The Chord button has a second function that, when activated, turns the knobs into CC controllers. In this mode, they can transmit control change messages to external devices that are connected to the MIDI Out port (5-pin DIN). The same data will be sent to your computer via the USB port.



Each of the four knobs can control a parameter on an external device. But there's more: you can switch between four banks and each bank can hold four values. Changing banks will enable you to control another group of four external parameters.

On startup, the chord button lights up in a dimmed orange colour. To activate CC mode, press the Chord button; the button will turn white to confirm that you've indeed selected CC mode. Hold Shift and press the Chord button repeatedly to cycle through the four banks. The changing colours will indicate what bank you have selected. The Chord button acts as a toggle, it will switch between chord mode and the last selected CC bank.

#### 8.1.1. What are CC# messages?

When you draw notes in the MIDI editor of your DAW, you create MIDI data. With each note you add, you create a note-on message, a note-off message and a velocity value, all associated with a particular MIDI note number. Note number and velocity values (like most values in MIDI) are in the range 0-127. The velocity value imitates how fast a key is struck on a MIDI keyboard. When you create a note with a high-velocity value (> 100) in your DAW, the associated note will sound fairly loud on the synth you send it to.

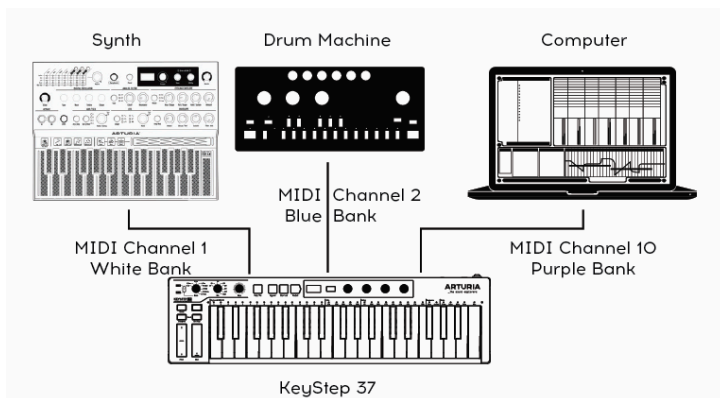
When you connect an external synth such as the Arturia MatrixBrute or MicroFreak to your DAW and press 'play', the DAW starts sending a stream of messages to the synth over MIDI. The MatrixBrute or MicroFreak interpret these messages and play your DAW sequence the way you intended it to sound.

In addition to note-on and note-off messages, there's another kind of MIDI data that allows you to control parameters on external synths, modular systems and virtual instruments loaded in DAW tracks. These Control Change (CC) messages are different from, and independent of, the note-related MIDI messages. They are referred to as CC# messages: strings of numerical data that are specifically designed to control parameters on an external MIDI-compatible hardware or software device; for example, a hardware synth, a Eurorack modular system or a software modular system such as VCV Rack.

A CC message consists of a Controller number (CC#) and a value. The controller number determines what parameter on the external synth must be controlled, the value determines the amount of control that must be applied.

### 8.1.2. CC messages and MIDI

When in Control Mode, the knobs of your KeyStep 37 will send CC messages over MIDI. A knob is assigned to a specific MIDI channel. Knob 1 could be made to transmit on MIDI channel 1 and knob 2 on channel 5. Each message has Data encoded in it that determines which parameter on which MIDI channel will change.



To control parameters on these external synths you'll have to tell KeyStep 37 which CC# codes it must send and on which MIDI channels. We'll cover this in more detail later in this chapter.

### 8.1.3. Monitoring CC#'s and their values

Whenever you turn a knob, the value it transmits will be displayed on the LED display, but there is no way of knowing what current control number is associated with this knob. CC data is more difficult to monitor than MIDI notes. Fortunately, there is an option in the MIDI Control Center (MCC) that helps you understand what is going on:

- Open MCC
- Select KeyStep 37 in the device window if it is not already selected
- In the MCC menu, select the view submenu and click on 'MIDI console'

A window will appear under the configuration settings. If one of the CC# banks is selected and you turn a knob, the values transmitted by the knob will appear in the MIDI console window. A line may read like this:

In: BO 4A 3A | Ch 1 CC 74 - Brightness

The second half of the info line which reads 'Ch 1 CC 74 - Brightness' in the above example stands for the MIDI channel (1), the CC number (74) and the default parameter that this CC number controls (Brightness)

The last digit in the first column (3A) is the actual value being transmitted in Hexadecimal notation.

## 8.2. The four CC Banks

When switched on, KeyStep 37 will default to chord mode. To switch to Control mode hold Shift and press the chord button. Pressing it repeatedly while holding Shift allows you to cycle through the four banks: white, blue, purple and green.

Each bank can hold four CC# numbers.

The default CC# messages stored in these banks are:

Knob	1	2	3	4
White Bank(B1)	74	71	76	77
Blue Bank (B2)	73	75	79	72
Purple Bank (B3)	18	19	16	17
Green Bank (B4)	80	81	82	83

Pressing the Chord/CC Bank button without involving the Shift button toggles between the Chord mode (orange) and the last selected CC Bank. As each bank can store four CC numbers there are a total of 16 available storage locations.

### 8.2.1. Editing CC numbers

There'll probably be a moment when you want to change the default CC values transmitted by the knobs. There are two ways to do this; on your KeyStep 37 itself or using the MCC.

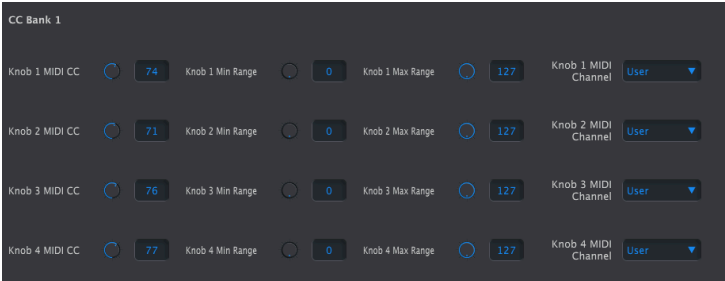
To change the values stored in a bank on KeyStep 37;

- Select the CC page where you want to edit a CC by holding the Shift button and pressing the Chord button repeatedly until it displays the colour of the bank where you want to assign new CC values.
- Keep holding Shift and press the Chord/CCbank button for two seconds. The button will blink to indicate that you are now in CC update mode
- Turn the knob to which you want to assign a new value. Select a new value.
- Press the CC page button again to exit editing

The new CC assign(s) you made will automatically be stored in memory.


As an alternative, you can assign new values to the knobs in the MCC. If you want to do more extensive editing with more options, editing CC values in the MCC is the better choice.

In addition to assigning CC values, you can edit all the other properties of a knob.



The Knob Min Range and Max Range fields enable you to limit the control values to a certain range. It's useful when controlling ADSR settings or Filter settings where you don't want changes to be extreme.

The MIDI channel enables you to target a certain synth in your setup. You may have the KeyStep 37 hooked up to a MicroFreak on channel 1 and a Drumbrute on channel 10. The MIDI channel field enables you to direct a stream of control value to a certain synth.

 If you're the lucky owner of the Arturia Pigments software synth, you could map the four knobs to Pigment's four macro knobs.

For more in-depth information about the MCC please refer to chapter 9.

## 8.3. Examples

### 8.3.1. Connecting knobs

To send a data stream from one knob to another, the CC number of the knob transmitting the data must match the CC number of the knob receiving it.

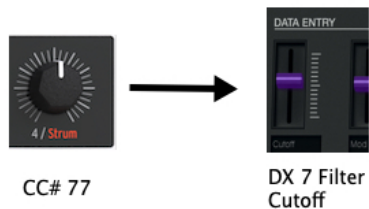
Let's say you want to change the amount of Glide on the Microfreak with knob 4 on the KeyStep 37.



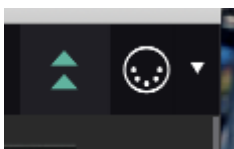
By default, knob 4 transmits as CC# 77. To be able to send data to the Glide knob on the Microfreak which receives data as CC# 5 we have to change the CC# number of knob 4.

So If you know the CC# of a synth's knob, you can use that CC# to control that parameter. The trick is to find out which controllers your synth responds to. You can usually find information about this in the user manual of your synth.

Controlling software synths is usually a lot easier, they will often have a MIDI learn function. In the example below, we'll assign the Filter Cutoff slider of the DX7 V.



- Open the DX7 V or any other synth of the V series
- Click on the MIDI learn icon in the top right corner. Knobs and sliders that can be controlled using CC# values will turn purple.



- Click on the knob/function you want to control (the knob/function will turn red) and an assign window will pop-up



- wiggle knob 4 on the KeyStep 37 and watch how the slider you selected on the DX7 V is now assigned to CC# number 77.

Knob 4 is now automatically linked to the Cutoff slider on the DX7 V

All the software synths of Arturia's V collection have a MIDI learn option.

To summarise: to create a data stream between the KeyStep 37 and a hardware synth, change the CC# number of the knob on the KeyStep 37. To create a data stream between the KeyStep 37 and a software synth, it's easier to use the MIDI learn feature of the software synth.

### 8.3.2. Controlling parameters on the MicroFreak

Let's try and control some parameters on the MicroFreak. If you don't own a MicroFreak, it doesn't matter: the description below fits every type of synth.

The MicroFreak, currently one of the most popular Arturia Synthesizers, has very sonically interesting CC# control options: sending a sequence of MIDI CC 23 messages with varying values to the MicroFreak will have the same effect as turning the filter knob by hand: sending CC 23 with a value of 0 closes the analog filter completely; sending CC 23 with a value of 127 opens it fully. The MicroFreak has a total of 20 different CC#'s that are available to control its parameters.

In the example below, we'll use the first knob to open and close the filter of the MicroFreak, and the second, third and fourth knobs to control Attack, Decay and Sustain of the Envelope generator.

Before starting to make changes, we'll have to make certain that there is a valid MIDI connection between the KeyStep 37 and the MicroFreak.

- Connect the MIDI out on the KeyStep37 to the MIDI-in on the MicroFreak and turn it on. Select a preset with a sound that has an audible response when you tweak the filter.
- Play some notes and check whether the Microfreak responds when you play the KeyStep 37's keyboard

To control the Filter on the Microfreak with the values stored in the white Bank, we'll have to change the values currently stored in the white Bank.

By default, the first knob of the first Bank (B1) is set to CC# number 74. we'll have to change this to CC# number 23:

- First, select the white CC page by holding Shift and pressing the Chord button repeatedly until it turns white
- Next, while holding Shift, press the Chord/CCbank button for two seconds. The button will flash to indicate that we are now in CC update mode
- Now turn the first knob and select 23 as CC#
- Finally, press the CC page button again to exit editing

Play some notes on the KeyStep 37 and wiggle the first knob. You should hear the filter on the MicroFreak responding.

When we're done, the envelope on the MicroFreak will respond to CC# 105 (attack), 106 (Decay) and 29 (Sustain). To create a control stream from the KeyStep 37 to the MicroFreak, we'll have to assign these values to the last three CC knobs on the Keystep37

To do so we'll have to repeat some the above steps, holding Shift for two seconds:

- wiggle the second knob and select 105 as CC number
- wiggle the third knob and select 106 as CC number
- wiggle the fourth knob and select 29 as CC number
- press the CC page button to exit editing

That's it!



• Another CC# number to explore is '2'. It controls the amount of spice (variation) that is applied to a sequence or an arpeggio.



This only scratches the surface of what is possible when you combine the possibilities of the KeyStep 37 and Eurorack Modules, software- and hardware synths. But it should be enough to whet your appetite and get you started on a fascinating journey.

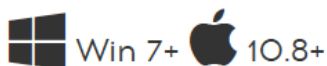
## 9. THE MIDI CONTROL CENTER

The MIDI Control Center is an application that allows you to configure the MIDI settings of your KeyStep 37. It works with most of Arturia's devices, so if you have an earlier version of the software you'll want to download the KeyStep 37 version. It will work with the other Arturia products as well.

The built-in MIDI Control Center manual has general descriptions of the features that are common to all Arturia products. To learn how to access the manual, see [this section \[p.66\]](#).

### 9.1. The Basics

#### 9.1.1. System requirements



- 2 GB RAM
- Intel i5 CPU or faster
- 1GB free hard disk space
- OpenGL 2.0 compatible GPU

#### 9.1.2. Installation and location

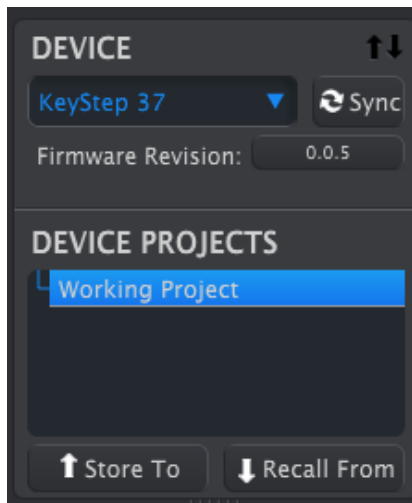
After downloading the appropriate MIDI Control Center installer for your computer from the Arturia website, double-click on the file. Then all you have to do is start the installer and follow the instructions. The process should be trouble-free.

The installer puts MIDI Control Center with the other Arturia applications you have. In Windows, check the Start menu. On an OS X Macintosh computer you'll find it inside the Applications/Arturia folder.

### 9.1.3. Connection

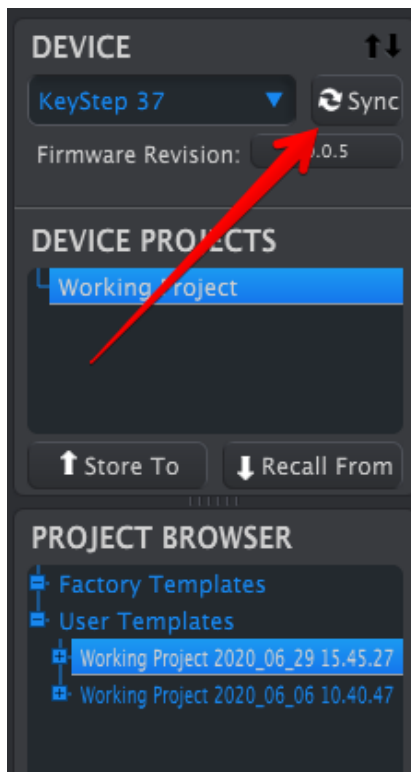
Connect KeyStep 37 to your computer using the included USB cable. It'll be ready to go after its LEDs go through the startup cycle.

Now launch the MIDI Control Center. KeyStep 37 will be in the list of connected devices:



### 9.1.4. Back up your sequences

If you want to make a quick backup of your KeyStep 37 sequences, click the Sync button:



This will grab whatever is in the sequence memory and pull it into your computer. MIDI Control Center will give this file the current date/time stamp for a name, but you can name it something else if you like.

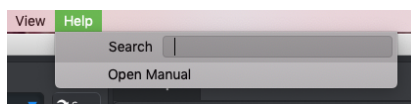
After this, every change made in the software will also be made inside KeyStep 37.



It's possible to use most functions of the MIDI Control Center even when it has not been synced to your KeyStep 37. There may be times you prefer not to sync the two.

### 9.1.5. Where to find the manual

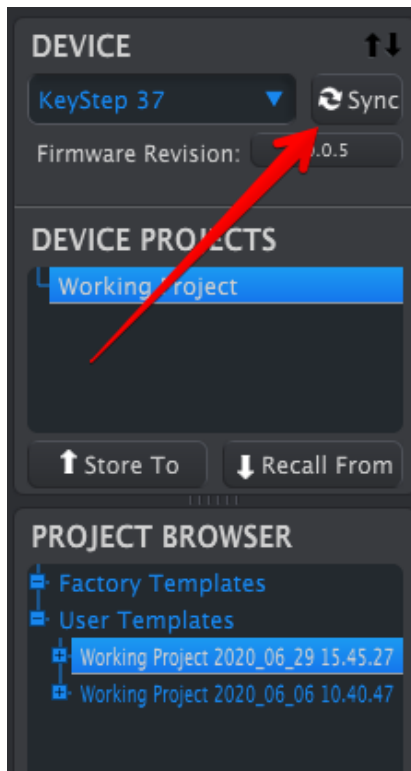
There is a built-in help file for the MIDI Control Center in its Help menu, as shown below:



It's a good introduction to the MIDI Control Center, describing each section of the software window and defining important terms you will need to know while using the MIDI Control Center, such as "'Working Project' and "'Template'.

The next chapter explains how to use the MIDI Control Center software to configure the KeyStep 37 settings so they match your system and enhance your workflow.

## 9.2. The Sync option



Clicking the Sync button is a quick way to back up your KeyStep 37 sequences. It also allows you to do other things we'll cover later in this chapter.

However, there are some things you can do even if you *don't* click the Sync button. Here's a quick overview of the different states:

### 9.2.1. Sync operations

The MIDI Control Center (MCC) does the following when you click the Sync button:

- It automatically makes a backup copy of the internal KeyStep 37 sequences. This is known as a Template.



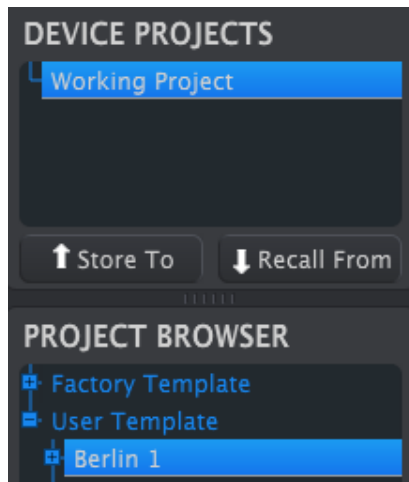
If the MCC and KeyStep 37 are synced, every time you click on a Template in the Project Browser window, it will be sent to the KeyStep 37 internal memory. Any changes you have made from the KeyStep 37 front panel will be lost.

### 9.2.2. Non-sync operations

When the MIDI Control Center and KeyStep 37 are not synced there are plenty of features available. For example, you are able to:

- drag and drop one of the sequences in the Project Browser to one of the SEQ tabs
- send one sequence or a set of eight sequences to the KeyStep 37 internal memory
- use the Store To and Recall From buttons to transmit an entire set of 8 sequences
- edit the Device Settings
- perform sequence editing

## 9.3. Device Projects



### 9.3.1. The Working Project

When the MCC and KeyStep 37 are in sync, the Working Project is the internal memory of the KeyStep 37. Edits made to sequences inside the MCC are made simultaneously to the KeyStep 37.

When they are not in sync the Working Project functions as a sort of 'target' onto which sequences can be dragged and then transmitted to the KeyStep 37 memory. But edits made to sequences inside the MCC when not in sync do not edit the sequences inside the KeyStep 37.

#### 9.3.1.1. Live editing

After you click the Sync button, the internal KeyStep 37 memory is shown inside the MCC in the Seq Editor window. Any edits you make to these sequences will also be made in the KeyStep 37. This is called 'live editing.'



Live editing works in one direction: from the MCC to KeyStep 37. Changes made from the KeyStep 37 front panel are not detected by the MCC. Use the Recall From button to back them up to your computer before selecting another Template.



**Important:** When you make a change in the Seq Editor window, an asterisk (\*) will appear next to the name of the selected Template. These changes are not automatically saved, so you will need to use the Save or Save As... buttons to preserve your new sequence data.

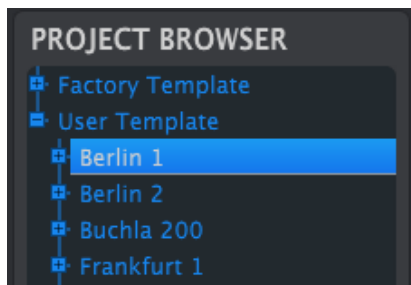
#### 9.3.1.2. Drag and drop

It's possible to drag a single sequence or a Template containing all 8 sequences from the Project Browser onto the Working Project. When you do, the sequence(s) will be sent to the KeyStep 37 internal memory.


## 9.4. Project Browser

The Project Browser shows a list of all Projects available to you inside the MIDI Control Center (MCC). They have been stored on your computer. These are divided into two main groups of Templates: Factory and User.

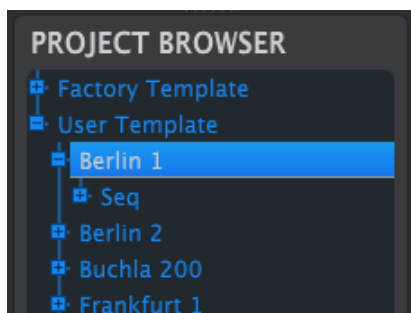
The User Templates are the ones you have recalled from your KeyStep 37 with the MCC using the 'Recall from' function.



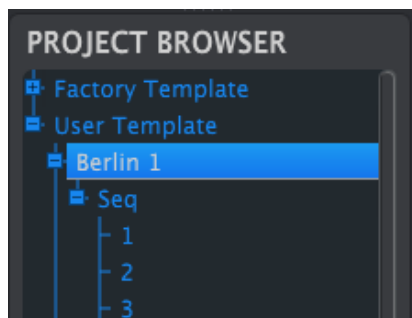
A Template contains the patterns from the sequencer along with their settings for swing, gate and sequence length.

 A Template does not contain the Device Settings. We'll show you how to save those separately [here](#) [p.75].

Here's an expanded view of the contents of a Template named 'Berlin 1', with a secondary view of the sequences it contains.







User Templates: click +/- to expand or collapse Project view

### 9.4.1. Building a library

You can build a limitless library of sequences and setups in the User Templates area.

Make as many sequences as you like, wherever you are, with or without a computer attached. Then the next time you use the MIDI Control Center, simply press the Recall From button. This will transfer the KeyStep 37 sequence memory into the Project Browser of the MCC, where it can be saved as a new Template.

The Template will be named automatically with a date/time stamp, but you can give it a more descriptive name if you like.

### 9.4.2. Revise a Template

#### 9.4.2.1. While synced

If the MIDI Control Center and KeyStep 37 are already in sync, it's easy to modify an archived Template. Simply select one in the Project Browser and its sequences will appear in the Seq Editor window. They will also be transmitted to the KeyStep 37 internal memory.

As long as KeyStep 37 and the MCC are in sync, any changes made to the sequences inside the MCC will also be made in the KeyStep 37. You can actually have the sequence running inside the KeyStep 37 while you make edits with the MCC, and then hear the edited sequence on a connected device. Just be aware that depending on when the edit was made you may not hear the new notes until the next time the sequence loops.



When an edit is made, an asterisk will appear next to the name of the source Template. This means you need to use the Save or Save As... buttons to preserve your new sequence data.

See [Editing basics \[p.76\]](#) and [Sequence window \[p.78\]](#) to learn about editing sequences in the Seq Editor window.

#### 9.4.2.2. Not synced

If the MIDI Control Center and the KeyStep 37 are not in sync you can still edit the sequences of an archived Template. Simply select the Template in the Project Browser and its sequences will appear in the MCC Seq Editor window, ready for editing.

If you would like to confirm the results by having the sequences played on a device that is attached to the KeyStep 37, there are two ways.

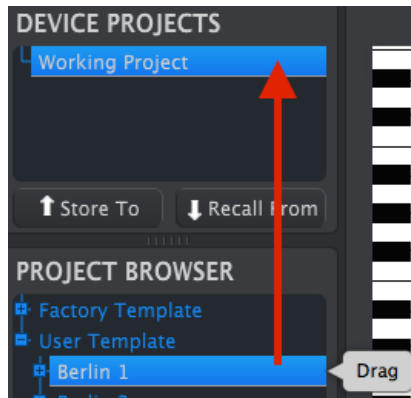
First use the Save or Save As... buttons to save your changes, then:

- drag the revised Template from the Project Browser and drop it on the Working Project, or
- press the Store To button (click [here \[p.74\]](#) for details).

Either of those two steps will send the selected Template directly into your KeyStep 37.



**Important:** This process will **overwrite** the memory inside the KeyStep 37. Be sure to save what you were doing before you transfer the file!



### 9.4.3. Send one sequence to KeyStep 37

#### 9.4.3.1. When synced



**Important:** The following process will send a single sequence to KeyStep 37 **and will overwrite the sequence** in the target memory location.

There are two ways to send a single sequence to the KeyStep 37 when it is synced to the MIDI Control Center.

First use the +/- buttons in the Project Browser to open the Template and locate the sequence you want to send. Then you can do one of two things:

- drag the sequence on the Working Project. It will be sent into the KeyStep 37 at the same sequence location as the source sequence (i.e., #1 will go to #1)
- drag the selected sequence to one of the eight tabs in the Seq Editor window. That way you can specify exactly which sequence location in the KeyStep 37 will receive the sequence. See [Sequence Management](#) for more information.

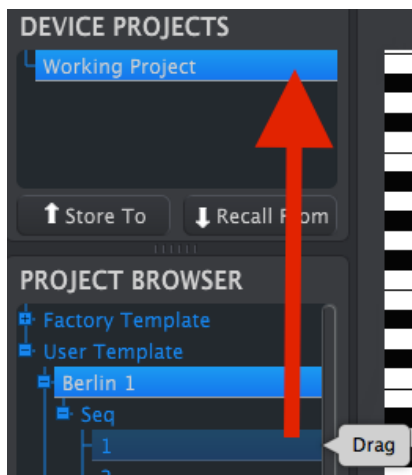
#### 9.4.3.2. When not synced



**Important:** The following process will send a single sequence to KeyStep 37 **and will overwrite the sequence** in that memory location.

If you'd like to transfer only one sequence from a Template to the KeyStep 37, find that sequence in the Project Browser and drop it onto the Working Project. This will send the selected sequence directly into the KeyStep 37 at that same sequence location.


In the example below, Sequence #1 from the Berlin 1 Template will overwrite Sequence #1 in the KeyStep 37 internal memory.



## 9.5. Store To/Recall From

### 9.5.1. The 'Store To' button

The upper left-hand section of the MIDI Control Center has a button called 'Store To'. It is used to transmit a Template from the Project Browser window to the KeyStep 37.

 The following process will overwrite the internal memory of the KeyStep 37. If you are not sure those sequences have been backed up, be sure to archive them to your computer using the Recall From button.

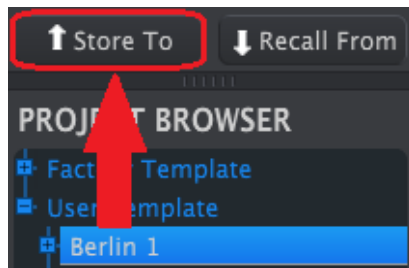
If there is a particular Template you would like to transmit to your KeyStep 37, select it in the Project Browser window.

If KeyStep 37 and the MCC have been synced, all eight sequences from the Template will be transmitted to your KeyStep 37 as soon as you select the Template.

But if KeyStep 37 and the MCC have not been synced, you will need to use the Store To button to transmit the Template.

The process is similar to the one described previously:


- Select the desired Template as shown below
- Click the Store To button at the bottom of the window.



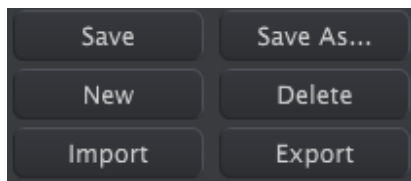
This process will store all eight sequences from the selected Template into the KeyStep 37.

### 9.5.2. Recall edited sequences from KeyStep 37

If you changed any sequences inside the KeyStep 37, you need to pull those sequences into the MIDI Control Center to back them up. To do that, click the Recall From button. A new file containing all eight sequences will appear in the Project Browser with the current time/date stamp for a name. You can rename it if you like.

 The Recall From button does not save the internal Chord memory of the KeyStep 37.

### 9.5.3. Save, Delete, Import/Export, etc.



These important features have been documented in the MIDI Control Center manual, which you will find in the software Help menu. Click [here \[p.53\]](#) for information about Save, Save As..., New, Delete, Import and Export.



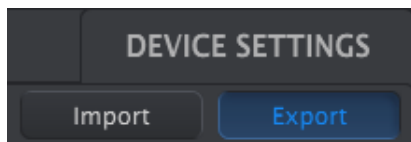
The Import / Export buttons pictured above perform a different function from those at the top of the Device Settings window (see the following section). Their files have the extension **.KeyStep 37**. They contain a complete set of eight sequences. Use these files to share settings and sequences with other users.

## 9.6. Import/Export Device Settings

When the Device Settings tab is selected in the MIDI Control Center window, you will see two buttons on the upper right labeled Import and Export. The function of these buttons is to manage files containing only the Device Settings. They are different from the buttons described in section 10.4.3, which are used to generate a file containing both the Device Settings and the Sequence settings.

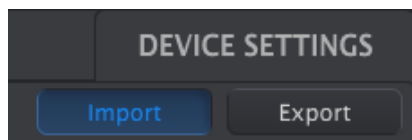
The Device Settings files carry the extension **.KeyStep 37\_ds**. You can swap these files with other users or build a library of configurations for the different systems you encounter in different locations.

### 9.6.1. Export Device Settings



To export the Device Settings, click the Export button. Then navigate to the appropriate location in your computer and follow the screen prompts to save the **.KeyStep 37\_ds** file.

### 9.6.2. Import Device Settings



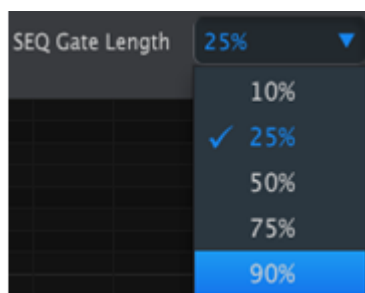
To import the Device Settings, click the Import button. Then navigate to the appropriate location in your computer and follow the screen prompts to load in the **.KeyStep 37\_ds** file.

## 9.7. Editing basics

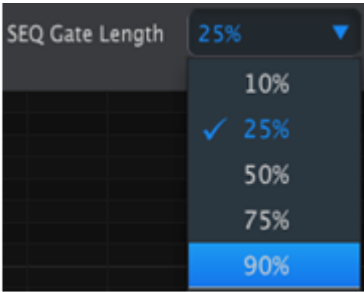
### 9.7.1. Data entry

There are two main ways to enter new parameter values in the MIDI Control Center: click something and move it, or type a number into a field.

To edit Swing %, for example, click and drag the knob graphic or double-click in the value field and enter a new value:

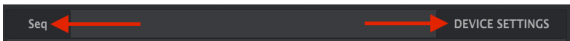


Editing a knob value : to edit a parameter such as Gate Length, click its pull-down menu and make a selection:



9.7.2. Selecting the tabs

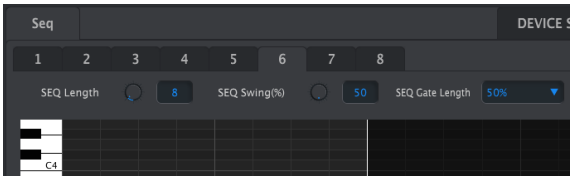
The middle window of the MIDI Control Center has two main tabs: Seq and Device Settings. Seq contains all 8 sequences from the KeyStep 37 memory, and Device Settings has all of the parameters for the various KeyStep 37 functions.



Simply click on a tab to select its window

9.7.3. Seq tab

The Seq tab contains eight numbered sequence tabs:



The Seq tab

These tabs allow you to select each of the sequences and fine-tune their note data. You can even create brand new sequences here.

In the image above, sequence #6 is selected. From here you can view and edit the Length, Swing % and Gate settings for this sequence. It is also possible to edit the pitch, velocity, and gate time of individual notes. You can even add notes, build chords, and more.

We'll go through each of the sequence editing features in the [Sequence Window section \[p.78\]](#).

### 9.7.4. Device Settings tab

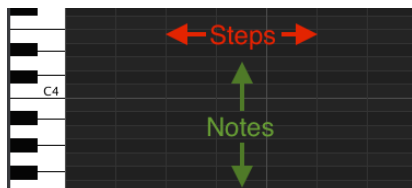
All of the Device Settings are contained within this tab. To view them within the MIDI Control Center, use the scroll bar on the right side of the window.

We'll go through each group of parameters in the [Working with Device Settings section \[p.87\]](#)

## 9.8. Sequence window

Below the individual sequence tabs is the sequence window. Right below the tabs are two virtual knobs and a pull-down menu. These are the per-sequence parameters.

The sequence window also has a note window with a piano-style keyboard along the left side. To the right of this keyboard is a grid with horizontal rows for note placement that correspond to the virtual keys. The vertical columns represent the steps within the sequence.



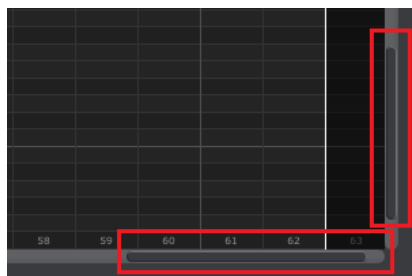
### 9.8.1. Navigation

#### 9.8.1.1. Scroll

If you have a scroll wheel you can move the piano roll view up and down. Place the cursor in the piano roll field first, not over the keyboard graphic.

If you hold the Shift key on your computer keyboard, the piano roll will move sideways.

You can also click/drag the scroll bars at the edge and bottom of the window to reposition the sequence view.



*Scroll bar locations*



### 9.8.1.2. Zoom

To zoom in and out of the horizontal view, place the cursor in the piano roll field. Then press Command (Mac) or Control (Windows) and use the scroll wheel to adjust the view.

To zoom in and out of the vertical view, place the cursor over the keyboard graphic first. Then press Command (Mac) or Control (Windows) and use the scroll wheel to zoom in and out.

## 9.8.2. Per-sequence parameters



The knobs display the sequence's Length (in steps) and Swing %. The pull-down menu on the right allows you to select the Gate Length for the notes in that sequence.

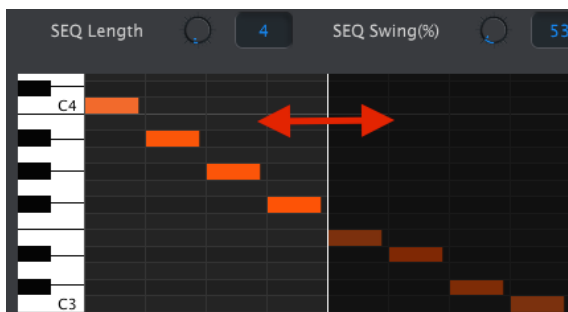


**Remember:** each sequence can have its own Length, Swing and Gate settings.

### 9.8.2.1. Seq Length

A sequence can be as short as 1 step and as long as 64 steps. There are two ways to change the length value: click on the knob and turn it, or click in the field and enter a value between 1 and 64.

As the length is changed you will see a difference in the sequence window. For example, let's look at a 4-step sequence:

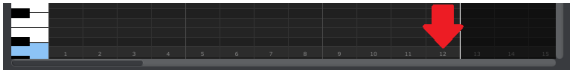


Everything to the left of the white line is within the active portion of the sequence. As the length increases, the white line will move to the right.

This also illustrates an interesting feature: a sequence can be shortened and still retain the data that was there originally. So at a later point you can re-lengthen the sequence and all of the original data will be available once again.

The patterns can be up to 64 steps long, and the unused steps are darkened because they are outside the pattern length area.

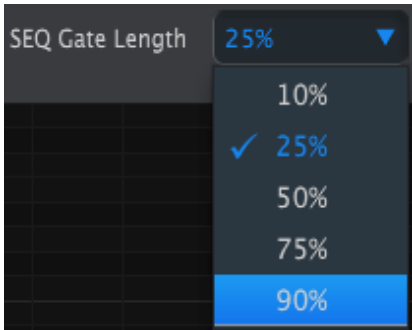
The steps are numbered along the bottom of the window:



**9.8.2.2. Seq Swing %**

There are 10 values for swing % available from the keyboard when you use the Shift button and play a key. But inside the MIDI Control Center, you can select any number between 50% and 75%. To change the swing % value, click on the knob and turn it, or click in the field and enter a value between 50 and 75.

**9.8.2.3. Seq Gate length**



The Gate parameter will adjust the length of all of the notes in the selected sequence. The potential values are 10% (short), 25%, 50%, 75% and 90% (long). Each sequence can have its own Gate setting.

To make a selection for the selected sequence, click the pull-down menu.

In the image above, the current value is 25%, and the value 90% is about to be selected in the pull-down menu.

### 9.8.3. Sequence events

#### 9.8.3.1. Enter/delete notes

Double-click on a square inside the piano roll to enter a note. To delete notes, select a note with a single click or drag a box around several notes. Then press the Delete key on your computer keyboard.

Remember, KeyStep 37 has a polyphonic sequencer. The four orange bars stacked on top of each other in the next image mean that the first step will play four notes at the same time.

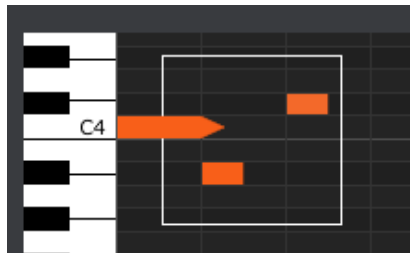


#### 9.8.3.2. Move notes

To move an existing note, click and hold the middle of note. The cursor will become a hand icon. Then drag the note up or down to place it anywhere within the MIDI note range.

You can also drag it to the left or right to place it anywhere within the sequence. If a note already exists at the new location, it will be replaced by the note you are moving.

It's also possible to move several notes at the same time. To do this, first drag a box around the notes with the cursor:



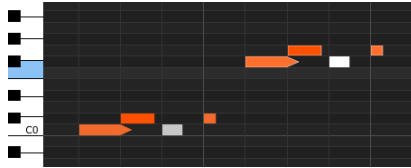
Next, click on the middle of one of the notes and drag the selected notes up, down, left or right.



**Note:** If one of the selected notes moves outside the MIDI note range, the entire piano roll will glow red. The same thing happens if the notes are moved beyond the 1st or 64th steps in the sequence.

### 9.8.3.3. Copy/paste notes

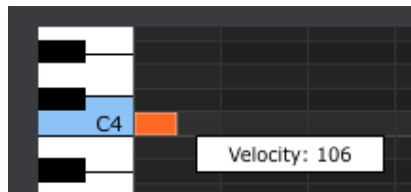
After selecting a group of notes you can make another copy of those notes in another section of the sequence. Just hold the Alt key (Option on a Mac), select one of the notes, and drag them all into the new area.



The new notes will have the same velocity and gate time values as the original notes.

### 9.8.3.4. Note velocity

If you click on the top of a note box you will see the cursor become a vertical arrow icon. Drag the cursor up and down to change the velocity of that note to a value between 1 and 127.

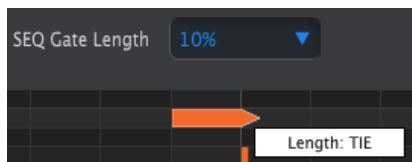
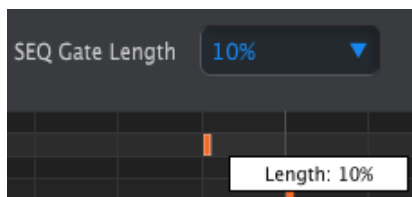


The color of the selected note will change to indicate the velocity value: white is the lowest velocity value and red is the highest velocity value.

When the velocities of multiple notes are edited at the same time they will all change to the same value.

#### 9.8.3.5. Change the Gate time

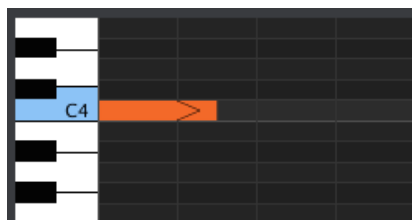
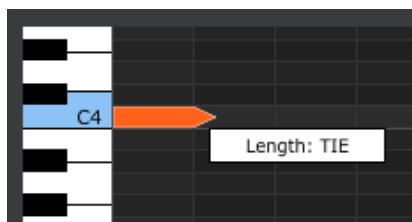
If you click on the right edge of a note box you will see the cursor become a horizontal arrow icon. Drag the cursor left and right to change the gate time of that note.



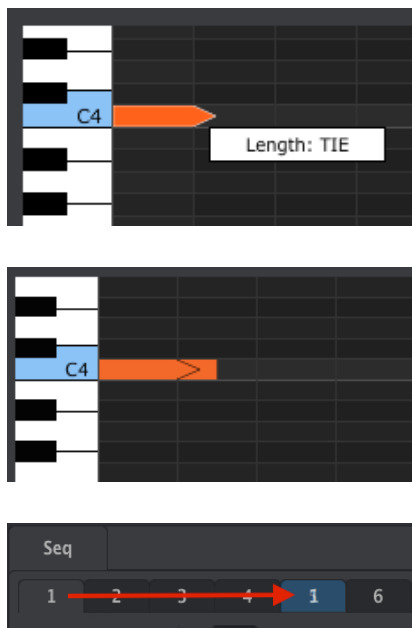
There are only two possible values: the Gate Length you selected for the entire sequence (10, 25, 50, 75, or 90%) or a value of TIE.

#### 9.8.3.6. Tie a note

If you drag the horizontal cursor far enough to the right a value of TIE will appear. The right edge of the note box will become an arrow:



If you double-click in the next step, a new note will appear. The overlapped arrow shows that the two notes are tied:



You can click on the second note and drag the cursor to the right again until the second note's length value also becomes TIE, and so on.



When the lengths of multiple notes are edited at the same time they will all change to the same value.



A value of Tie does different things for the CV/Gate output and over MIDI:

- *CV/Gate output:* the note that follows a TIE will change the control voltage but will not send a new gate signal to the attached device.
- *MIDI output:* the Note Off command for the first note happens after the Note On command for the second note. This allows for 'legato' playing on a monophonic synthesizer.

## 9.9. Sequence management

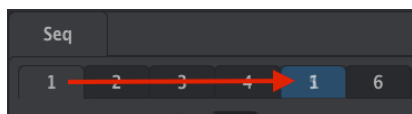
### 9.9.1. Copy a Seq tab to another Seq tab

If you would like to make several sequences based on a common musical phrase, you can take one sequence and copy it to one or more of the other tabs in the Seq window.



If the MCC and KeyStep 37 have been synced, this process will overwrite the target sequences in the KeyStep 37 internal memory.

To copy a sequence from one tab to the next, simply click the tab you want to copy and drag on top of the destination tab.



Click and drag to copy Seq 1 to the Seq 5 location.

### 9.9.2. Drag/drop onto a tab

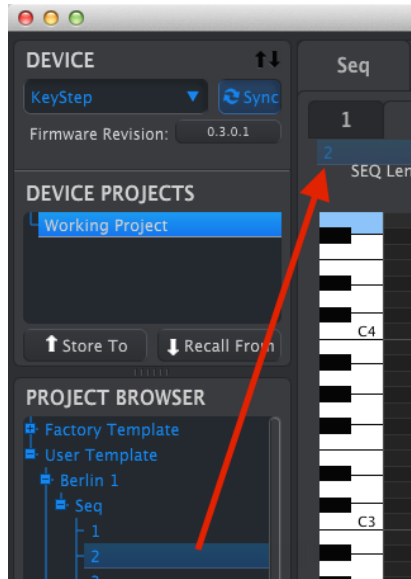
It's possible to build a 'Greatest Hits' group of sequences inside your KeyStep 37 using sequences from different Templates.



If the MCC and KeyStep 37 have been synced, this process will overwrite the target sequences in the KeyStep 37 internal memory.

Here's how to do this:

- Select a sequence by opening its Template in the Project Browser
- Click and drag it onto the desired Seq tab
- Repeat the process with the next seven sequences.



Click/drag an archived Seq to a tab in the Seq Editor window.

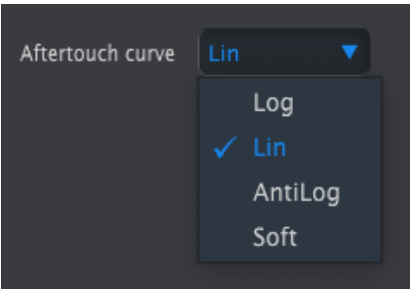
After you've gathered your eight favorite sequences onto the tabs be sure to use the Save As... button to store them as a new Template in the Project Browser.



# 9.10. Working with Device Settings

## 9.10.1. Common features

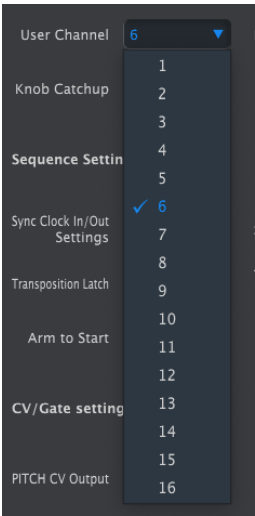
Some parameters have pull-down menus with additional options. For example, the Aftertouch curve has four settings:



The options of each field are different for each parameter.

### 9.10.1.1. MIDI Channel

Another example is setting the default MIDI channel for a parameter.

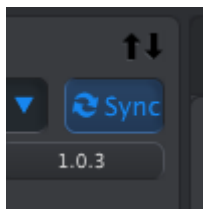


The 'User Channel' setting allows you to change the MIDI channel on which the keyboard transmits data.

So for each assignable parameter you can choose whether they will be locked to a particular MIDI channel or will 'float' with the keyboard MIDI channel.

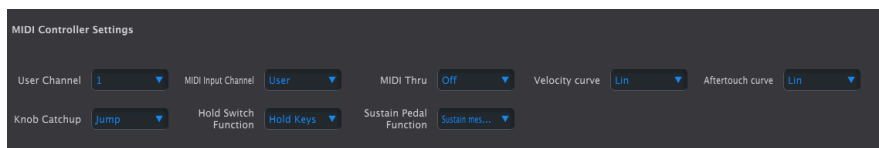
### 9.10.1.2. Synchronizing

To synchronize the settings in the MIDI control center with the settings on the KeyStep 37 click 'Sync' in the topleft corner of the MCC interface:



**Note:** Device settings are always synchronized

### 9.10.2. MIDI Controller settings



Here's a quick reference chart for those parameters:

Parameter	Range/Values	Description/Function
User Channel	1-16	Keyboard MIDI Channel
MIDI Input Channel	1-16, User	USB/MIDI CV channel when Seq/Arp are stopped
MIDI Thru	Off, On	Patch MIDI In to Out
Velocity curve	Log, Lin, AntiLog	Sets velocity response type
Aftertouch curve	Log, Lin, AntiLog, Soft	Sets Aftertouch response type
Knob Catchup	Jump, Hook, Scale	Matches the physical knob position with the digital value it represents
Hold Switch Function	Hold, Sustain, Both	Act as Sus. Pedal or not
Sustain Pedal Function	Hold, Sustain, Both	Act as Hold button or not

Now let's go through the parameters one at a time.

#### **9.10.2.1. User Channel**

This sets the keyboard MIDI Channel. It's the same parameter found on the keyboard that is set by holding Shift and pressing a key.

#### **9.10.2.2. MIDI Input Channel**

This parameter allows you to perform MIDI-to-CV conversion when the Sequencer and Arpeggiator are stopped. The selected value is the MIDI channel that will be allowed to control an external device through the CV/Gate/Mod connectors.

These MIDI messages can either arrive via USB or the MIDI Input connector.

#### **9.10.2.3. MIDI Thru**

This parameter will turn the KeyStep 37 MIDI Output into a MIDI Thru. Incoming MIDI data will be routed directly to the Output instead of being used to transpose sequences, etc.

#### **9.10.2.4. Velocity curve**

Three velocity curves are available so you can choose the one that best matches your style.

- Linear (the default) has an even response across the dynamic range
- Log requires the least amount of speed to play louder notes, but it's harder to control the dynamics at lower levels
- AntiLog is a mirror image of the Log setting: requires a lot of speed to play louder notes

#### **9.10.2.5. Aftertouch curve**

Four aftertouch curves are provided so you can choose the one that seems the most responsive to you.

#### **9.10.2.6. Knob Catchup**

Because the knobs are 270-degree encoders, they don't necessarily reflect their underlying settings. There are three choices for how they behave when sending MIDI.

- Jump means a knob sends the value of its physical position as soon as you move it, regardless of its parameter. If the parameter is 12, the knob happens to be at 3 and you move it to 4, the parameter will instantly jump from a value of 12 to a value of 4.
- Hook waits until you move a knob past its current setting to "catch" (hook) it before sending anything.
- Scaled increases or decreases the actual parameter regardless of the knob position. So if the actual value is 12 and you move the knob from 3 to 4, the actual value will go to 13. Scaled allows you to increment or decrement the knob value. The drawback is if the knob is at its maximum high or low, you obviously cannot move it further. In this case, you need to turn the knob, and the value will have to go either negative or positive first. This is the default mode.

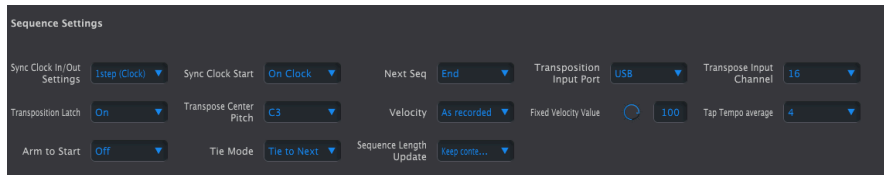
### 9.10.2.7. Sustain Pedal Function

The Sustain Pedal can be configured to toggle Hold/Chord modes on/off, send a sustain message or do both. Your choice.

### 9.10.2.8. Hold Button Function

The Hold button can be configured to toggle Hold/Chord modes on/off, send a sustain message or do both.

## 9.10.3. Sequence settings



Here's a quick reference chart for those parameters:

Parameter	Range/Values	Description/Function
Sync Clock In/ Out settings	1step (Gate/Clock), 1pulse, 24ppq, 48 ppq	Set Sync input/output type. Refer to external device documentation to determine what the settings should be.
Sync Clock Start	On Clock, On Gate Start	Determines which sort of signal will start KeyStep 37.
Next Seq	End, Instant Reset, Instant	Continue
Transposition Input port	USB, MIDI, both	Sequences can be transposed by external devices. This decides which ones are allowed to do so.
Transpose Input channel	1-16, all	Specifies the MIDI channel to obey for transposition.
Transposition Latch	On, off	Decides whether a sequence will only be transposed while a key is held down.
Transpose Center Pitch	Full MIDI note range	Notes above/below center transpose the sequence up/down
Velocity	As recorded, fixed	Disregard velocity or not
Fixed Velocity value	0-127	Set the preferred value
Tap Tempo average	2, 3, or 4 taps	Number of taps to respond
Arm to Start	On, Off	Determines the start/stop behavior of the sequencer when working with external clock sources

Parameter	Range/Values	Description/Function
Tie Mode	Tie to Previous, Tie to Next	Determines how notes are 'tied' together in the Sequencer
Arp Random	Total, Pattern, Brownian	Specifies the type of randomness exhibited by the arpeggiator when Arp Mode is set to "Random"
Sequence Length Update	Keep content beyond sequence length, Clear content beyond sequence length	Specifies behavior of sequencer when user shortens a sequence

Next we'll go through those parameters one-by-one.

### 9.10.3.1. Sync Clock In/Out settings

KeyStep 37 is endowed with the ability to transmit or receive clocking signals from a huge range of vintage devices. Here's a brief look at each setting:

- **1step (Gate):** Interprets the rising edge of the voltage as a Note On command and the falling edge as a Note Off. Then it will advance to the next step.
- **1step (Clock):** It is likely the input clock has a fixed period, so KeyStep 37 interpolates between the edges of the clock signal to derive a steady tempo.
- **1 Pulse (Korg):** As the name implies, this is a special sync clock used by Korg devices.
- **24 PPQ:** the DIN sync used by Roland and other companies in their devices.
- **48 PPQ:** the clock signal used by Oberheim drum machines, et al.

### 9.10.3.2. Sync Clock Start

When KeyStep 37 is slaved to an external device via the Sync input, this parameter allows you to specify how the sequencer and arpeggiator will start:

- **On Clock:** the Seq/Arp will start as soon as a clock is received on the jack tip. This mainly applies when you are using a Tip-Sleeve (TS) connector.
- **On Gate Start:** the Seq/Arp will start when a clock signal is received on the tip of the connector and the start signal is high on the ring. This setting is ideal when using a Tip-Ring-Sleeve (TRS) connector.

### 9.10.3.3. Next Seq

This parameter decides how quickly the KeyStep 37 sequences will change after a new sequence has been selected, and whether the new sequence will start from the top or somewhere in the middle .

- **End:** KeyStep 37 will not change sequences until the end of the current sequence.
- **Instant Reset:** The sequence changes immediately and starts at the top of the new sequence.
- **Instant Continue:** The sequence changes immediately but transitions at the current position into the new sequence.



If the two sequences are not the same length, the current position of the new sequence is calculated as if the new sequence had been played from the beginning.

#### **9.10.3.4. Transposition Input port**

Use this to tell KeyStep 37 which MIDI port will receive the transposition request.

#### **9.10.3.5. Transpose Input channel**

Instructs KeyStep 37 which MIDI channel will set the transposition amount.

#### **9.10.3.6. Transposition Latch**

This allows you to choose whether a sequence will be transposed momentarily or latched. With either setting, the transposition will happen immediately; the difference is what will happen once the key is released.

When Latch is Off, the sequences will transpose back to the center pitch immediately after the key is released. When Latch is On the sequences will stay transposed after the key is released, and continue at that transposition until another key is pressed.

This parameter also affects the way the KeyStep 37 responds to incoming MIDI notes on the Transposition Input channel.

#### **9.10.3.7. Transpose Center Pitch**

The Center pitch decides which incoming note means 'don't transpose'. The default value is MIDI note #60, or middle C [C3].

So for example, an incoming C3 won't transpose the sequence, but an incoming D3 will transpose the sequence +2, etc.

#### **9.10.3.8. Velocity**

This parameter determines whether the sequencer will preserve the velocity values of the original performance or set all recorded notes to the same value.

#### **9.10.3.9. Fixed Velocity value**

This sets the velocity value for all recorded notes to the same number if the Velocity parameter is set to Fixed, not 'As Recorded'.

#### **9.10.3.10. Tap Tempo average**

This lets you set your preference for how many times the Tap button must be pressed before the tempo will change.

### 9.10.3.11. Arm to Start

This determines the start/stop behavior of the sequencer when working with external clock sources. Note that Arm to Start *only* applies when KeyStep 37 is synchronized to an external clock source. This parameter does nothing when KeyStep 37's clock source is set to Internal.

OFF: This is the default setting and is common behaviour for sequencers receiving synchronization signals from an external source (via MIDI or sync jack). In this mode, the sequencer will automatically execute (run/pause/stop) when a synchronization signal is received. That synchronization signal is then sent on to other devices that are daisy chained downstream from KeyStep 37.

ON: When set to On, the sequencer no longer executes automatically but does pass on synchronization signals to devices that are daisy chained to the KeyStep 37. In other words, if sync is set to external and no synchronization signal is coming in, pressing the play button will make the play button flash but the sequence will not play until a synchronization signal comes in. This is a useful feature in cases when you want to have manual control over KeyStep 37's sequencer but always want the synchronization signal to be passed through to other devices connected downstream through the KeyStep 37.

**i**!: If the sequencer is stopped and external clock signals are being received, pressing Play will start the KeyStep 37 sequence at the position it *would have been* if it had been playing all along. For example, if you have a 32 step sequence, KeyStep 37 is stopped and you press play on the clock master device, the KeyStep 37 will pass the clock master's synchronization signal but not play the sequence until you press Play. If you press the Play button between the 8th and 9th step of your sequence, KeyStep 37 will begin playback of the sequence on its 9th step, in sync with the master clock.

### 9.10.3.12. Tie Mode

This determines how notes are "tied" together in the KeyStep 37 sequencer. "Tie to Previous" (the default setting) ties the current note to the previous note in the sequence. The "tie to next" option lets you tie the current note to the next note in the sequence. The Tie Mode setting is stored with the sequencer preset, so loaded sequences will playback correctly.

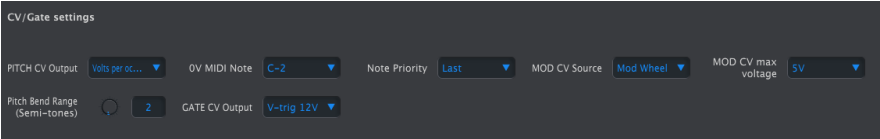
**i**!: Note that the behavior of KeyStep 37's Tap (Rest/Tie) button is different when "Tie To Next" is selected in MCC:

### 9.10.3.13. Sequencer Length Update

This setting determines what happens to the "leftover" notes in a sequence that you shorten. The default "Keep content beyond sequencer length" setting will keep any leftover notes so that if you lengthen the sequence again, the notes continue to play as they did before the shortening. The "Clear content beyond sequence length" setting clears leftover steps when you shorten a sequence. In this case, if you lengthen the sequence back to its original length the newly added steps will be silent (rests).

### 9.10.4. CV/Gate settings

This is where you select the electrical behavior for the Control Voltage connectors.



Here's a quick reference chart for these parameters.

Parameter	Range/Values	Description/Function
PITCH CV Output	Volts per octave [*] Hertz per volt [**]	The two standards. Each uses a different MIDI note reference
[*]O Volt MIDI Note	Full MIDI range for center	[*] With Volts per Octave
[**]H Volt MIDI Note	Full MIDI range for center	[**] With Hertz per Volt
Note Priority	Low, High, Last	Specifies the response of monophonic devices
MOD CV source	Mod strip, Velocity, Aftertouch	Determines which KeyStep 37 feature drives the Mod CV
MOD CV max voltage	5-12 Volts	Minimum = 0 Volts in all cases; maximum can be 5 to 12 volts.
Pitch Bend Range	1-24 semitones	Chooses how much the Pitch CV will vary when the Pitch strip is used.
GATE CV Output	S-trig, V-trig 5V, V-trig 12V	“Short/negative” trigger and two common types of “Voltage/positive” triggers.

Now we'll take a look at each of those parameters.

#### 9.10.4.1. Pitch CV Output

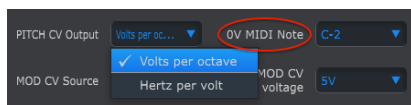
The various models of vintage gear respond differently to electricity. KeyStep 37 works well with the most common types.

- (\*) 1 Volt per octave " This is the standard used on most Eurorack modules and on our very own Mini- and MicroBrute synthesizers.
- (\*\*) Hertz per volt " This is the technology used by Korg and older Yamaha synthesizers.

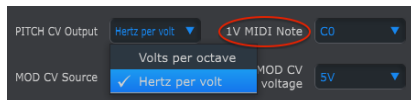


#### 9.10.4.2. MIDI Note reference (0V, 1V)

KeyStep 37 provides the option to set a separate reference note for both Volt per Octave and Hertz per Volt formats. This parameter will change from a 0V reference to a 1V reference depending on which Pitch CV Output option is selected.



Volts per octave uses a 0V MIDI note reference



Hertz per Volt uses a 1V MIDI note reference

#### 9.10.4.3. Note Priority

Since CV connectors are always monophonic, it's important to be able to determine which note from a polyphonic sequencer track or keyboard will be interpreted as the one the mono synth on the other end should play.

And even some mono synths prefer one or the other of the three choices KeyStep 37 gives you: Low note priority, High note priority, or Last note priority.

#### 9.10.4.4. Mod CV source

This parameter determines which KeyStep 37 feature will send signals to the Mod CV output: the Mod strip, velocity or aftertouch.

#### 9.10.4.5. Mod CV max voltage

Each of the three sources has a 'zero' point that translates into 0 Volts. This parameter lets you specify whether the range will be 0-5V, 0-6V, etc., on up to 0-12V.

#### 9.10.4.6. Pitch Bend Range

This parameter sets the maximum amount the Pitch CV output will vary when the Pitch strip is used.

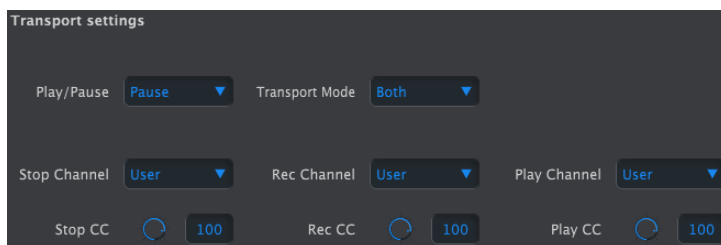
### 9.10.4.7. Gate CV Output

We've included three types of Gate signal response:

**S-trig:** This stands for "Short-circuit trigger", though sometimes it's called "negative trigger". It involves keeping the voltage high and then shorting the trigger circuit whenever the note should play. This format is used by Dr. Bob's classics, Korg and Yamaha synths, among others.

**V-trig:** An abbreviation for "Voltage trigger", also known as "positive trigger". This method involves keeping normally low voltage on trigger and producing a fixed positive voltage to indicate a note is on. It's favored by Roland and Sequential Circuits synths and others as well.

### 9.10.5. Transport settings



First a quick summary of the Transport settings, then the chart:

**Play/Pause:** The alternate setting is 'Reset'. This would allow you to perform 'stutter edits' on your sequences.

**Transport Mode:** You can define how transport commands are transmitted: MIDI CC, MMC, or both.

Parameter	Range/Values	Description/Function
Play/Pause	Pause, Reset	Pause or 'stutter' sequence
Transport Mode	OFF, MIDI CC, MMC, Both	Covers most devices

### 9.10.6. CC Bank settings

#### 9.10.6.1. What are CC# values?

When you draw notes in the MIDI editor of your DAW, you create MIDI data. With each note you add, you create a note-on message, a gate message, a note-off message and a velocity value, etc., all associated with a particular MIDI note number. The velocity value imitates how hard a key is struck on a MIDI keyboard. When you connect an external synth to your DAW and press 'play', the DAW starts sending a stream of digital MIDI messages to the synth. The synth interprets these messages and plays your DAW sequence the way you intended it to sound. Note number and velocity values (like most values in MIDI) are in the range 0-127.

There's another kind of MIDI data that allows you to control parameters on external synths. These Control Change (CC) messages are different from, and independent of, the note-related MIDI messages. They are referred to as CC# messages: strings of numerical data that are specifically designed to control parameters on an external MIDI-compatible hardware or software device; for example, a hardware synth, a Eurorack modular system or a software modular system such as VCV Rack. MIDI CC# messages have existed for over 40 years and, despite their enormous potential, they are not widely used. For in depth info on how to access and edit the values stored in the CC banks please refer to chapter 8. When you turn one of the CC bank knobs a CC# message will be transmitted. The default CC numbers are:

CC Bank 1

Knob 1 MIDI CC

74

Knob 1 Min Range

0

Knob 1 Max Range

127

Knob 1 MIDI Channel

User

Knob 2 MIDI CC

71

Knob 2 Min Range

0

Knob 2 Max Range

127

Knob 2 MIDI Channel

User

Knob 3 MIDI CC

76

Knob 3 Min Range

0

Knob 3 Max Range

127

Knob 3 MIDI Channel

User

Knob 4 MIDI CC

77

Knob 4 Min Range

0

Knob 4 Max Range

127

Knob 4 MIDI Channel

User

This is were you set the value the CC knobs will transmit when turned. Although editing these values is also possible on the KeyStep 37 itself, editing the values here is quicker. For each knob you can set:

Knob	Range/Values (D)efault	Description/Function
MIDI CC	1-127 (D=74)	CC number
Min Range	0-127 (D=0)	set minimum value
Max Range	0-127 (D=127)	set maximum value
MIDI channel	1-16, user (D= user)	set MIDI Channel

With MIDI CC, you determine with CC message number will be used to send control values.

In the second and third fields (Min and Max), you set the minimum and maximum boundaries of the values that can be transmitted, very useful when you want to control only a specific range of a parameter: a filter frequency, the attack of an ADSR or the rate of an LFO.

The MIDI channel determines which of the connected synths or modules will receive the controller value. You may for example have a Microfreak on channel one, a V collection ARP 2600 on channel two in your DAW and a vintage drum machine on channel 10. To control them separately you can either set each knob of Bank 1 to its own MIDI channel (1, 2, 10) or (the better option) set the knobs of Bank 1 to MIDI channel one, those of Bank two to MIDI channel two and those of Bank Three to MIDI channel ten.

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