KEYSTEP
Controller & Sequencer

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Special Thanks

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Thank you for purchasing the Arturia KeyStep!

This manual covers the features and operation of Arturia's **KeyStep**, 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 controller, with a serial number and unlock code on the bottom. You will need this information in order to register your KeyStep.
- One USB Micro B / Type A cable
- The Quick Start Guide for KeyStep.

Also included in the purchase of your KeyStep 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 on the Arturia website. Then you can download the installation file from ableton.com/live-lite.

Be sure to register your KeyStep 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 provides the following benefits:

- A product license key for your installation of Ableton Live Lite [see note below]
- Access to the KeyStep user manual and the latest version of the MIDI Control Center software
- You can download the installation file from ableton.com/live-lite.

Special offers restricted to KeyStep owners.

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!

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 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 the way that works best for your style and system.

KeyStep 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 to be a great source of musical inspiration and creativity.

Be sure to visit 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

Table Of Contents

1. OVERVIEW

1.1. Making the connections

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

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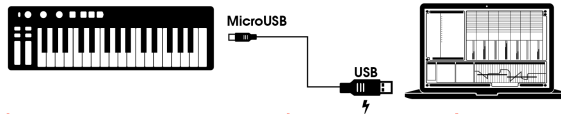
KeyStep is a USB class-compliant controller, so at its most basic level it can be connected to any computer with a USB port and used as an input device for various applications. The included MIDI Control Center software lets you choose which MIDI messages will be sent by the mod strip and pedal, and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

However, KeyStep can also be used without a computer attached! In this case, simply use a 9V DC 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.

1.1.2. ...with external devices
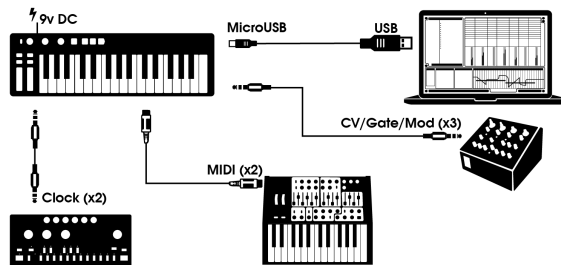
As you can see, KeyStep can be at the center of some amazing systems.

1.1.2.1. CV/Mod/Gate

KeyStep 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.

1.1.2.2. MIDI devices

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

1.1.2.3. Clock sources/destinations

The Clock input and output connectors allow KeyStep 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 for specific information about what cables to use for the various sync connections and formats.

1.1.3. ...with an iPad®
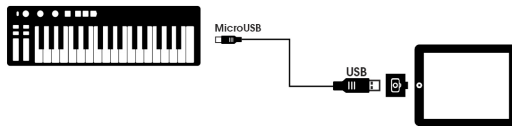
Add a camera connection kit and KeyStep becomes the perfect companion for an iPad. This enables it to be used as a controller for Arturia's iMini, iSem or iProphet applications, for example.

If you have an iPad but you don't already own those virtual instruments, please take a look at them on our website! They are very affordable, and live up to Arturia's reputation for modeling the sound of analog synthesizers with warmth and precision.

1.2. Front panel overview

1. Sequencer / Arpeggiator section
2. Tap Tempo / Rest / Tie
3. Transport section
4. Hold / Chord (with Shift)
5. Shift button
6. Keyboard functions (with Shift)
7. Oct - / Transpose (with Shift)
8. Oct + / Kbd Play (with Shift)
9. Pitch / Mod touch strips

1.2.1. Sequencer / arpeggiator

KeyStep 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.

1.2.1.1. 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.

1.2.1.2. Seq / Arp modes

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

For a full explanation of these features, see chapter 5 [p.34] and chapter 8 [p.44].

1.2.1.3. 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.12].

1.2.1.4. 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).

The MIDI Control Center allows you to choose how the Rate knob responds when it is turned: either immediately (Jump mode) or after you pass through the current value (Pick-up mode). See chapter 8 [p.44] to learn about the MIDI Control Center.

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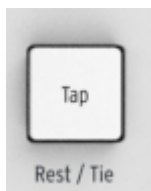
The **Tap** button allows you to set the tempo of the active sequence or arpeggio "on the fly". All you have to do is tap it in time with the music. The number of taps it takes to adjust the tempo can be defined in the MIDI Control Center.

This button is also used to enter rests or to tie two notes together when creating a sequence. See section 5.2 [p.23] for information about this.

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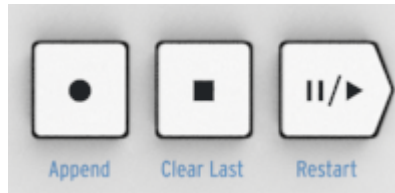
The Transport buttons control the sequencer, the arpeggiator, and external MIDI devices using MIDI Machine Control. But they also can send other MIDI messages if your DAW does not respond to MMC commands. Use the MIDI Control Center to make changes.

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

Each button has an addition function when creating a sequence (Append, Clear Last, and Restart). These features will be described in detail in section 5.2 [p.23].

1.2.3.1. 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 will then send an All Notes Off command over MIDI.

1.2.4. 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.12] and chapter 3 [p.17]

1.2.5. Shift button

The Shift button allows access to secondary functions such as Chord mode and the MIDI channel setting 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 3.4 [p.22].

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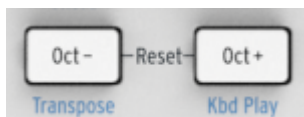
These buttons are a quick way to shift the keyboard in octave increments. The further you shift from the center, the faster they flash. Maximum transposition is +/- 4 octaves. Press both buttons at the same time to reset the keyboard to its center octave.

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 3.3.3 [p.20].

1.2.7. Pitch & Mod touch strips

These innovative controls take the place of the standard "wheels". Their MIDI Channels can be assigned separately by the MIDI Control Center, and the Mod strip can even be assigned to any MIDI Continuous Controller number (CC#).

See chapter 8 [p.44] to learn more about using the MIDI Control Center.

1.3. Rear panel overview

1.3.1. 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 even without a computer present.

1.3.2. 9V DC IN (with optional adapter)

KeyStep can be used as a stand-alone device without a computer or tablet present. Simply connect an optional power adapter to your KeyStep (9V DC, 500ma, positive to ground).

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

1.3.3. 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 7.4 [p.43] for information about the signal types that are supported.

1.3.4. Sustain pedal input

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

1.3.5. Sync input/output

These jacks allow KeyStep to interface with pre-MIDI technology that was capable of synchronization, such as early drum machines by Korg and Roland. See section 6.2.1 [p.41] for information about the types of sync signals KeyStep can send and receive.

1.3.6. MIDI input/output

Connect standard MIDI cables and KeyStep 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 can send and receive MIDI sync. It's also possible to configure some of KeyStep's controls to send specific MIDI data using the MIDI Control Center.

1.3.7. 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.
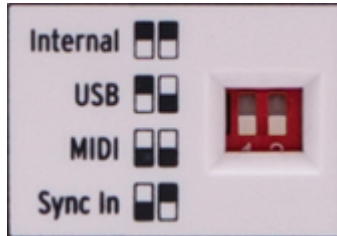
> ℹ The picture at right has both switches down. It corresponds to the Internal sync option.

For descriptions of the various sync settings see chapter 6 [p.40].

1.3.8. Kensington lock port

KeyStep 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 to your computer or an external device as shown in section 1.1 [p.6] 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 (sometimes called "aftertouch"). You can specify the velocity curve and aftertouch response using the MIDI Control Center. See chapter 8 [p.44] for details.

2.1.2. Keyboard MIDI channel selection

If you need to match the KeyStep MIDI channel to the external device, this is easily done. Simply 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 MIDI channel for Kbd Play mode, see section 3.3.3.2 [p.20].

2.1.3. Pitch and Mod touch strips

The Pitch and Mod touch strips are similar to the standard wheels in how they work, 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 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.34].

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, disconnect KeyStep from its power source and then reconnect it. KeyStep will 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 8 [p.44] 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.

> ℹ 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 all features of your KeyStep back to the factory specifications. To do this:

- Unplug KeyStep from its power source
- Press the Oct- and Oct+ buttons and keep them down
- Plug KeyStep back into the power source

KeyStep will go through a longer version of its power-up LED sequence, which will end with the Hold/Shift/Oct-/Oct+ buttons flashing in a circular pattern twice.

2.2. Select and play a sequence

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

> ℹ **Note:** Chord mode has limited functionality in Seq mode. We'll describe how the two work together in section 3.1.1 [p.17].

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.15]

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.23].

2.2.3. Transport control

Press the Play/Pause button and the sequence will start. Press it again to pause the sequence, and another time to resume playback from where you stopped.

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

2.2.4. Tempo Rate knob

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 8 [p.44] for more information.

> ♪: You can make fine adjustments to tempo in quantized, 1 BPM increments by holding the Shift button while turning the Rate knob. For example, let's say you currently have a tempo of 123.12 BPM (set by the Rate knob or by using the Tap button). If you hold Shift and set the Rate knob to the "12:00" position, your tempo will be quantized to the 123.00 BPM. If you continue holding the shift button and turn the Rate knob clockwise, you will increase the BPM up to 133 BPM in quantized 1 BPM steps (124.00, 125.00, 126.00, etc.) Turning the knob counter-clockwise will reduce the BPM down to 113 BPM in quantized 1 BPM steps (122.00, 121.00, 120.00, etc.)

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.).

2.3. Using the arpeggiator

> ℹ️ 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.13].

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, Order, Up x2, and Down x2.

The Modes are described more fully in chapter 5 [p.34]

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; chapter 5 [p.34] will show you how.

Press the Play/Pause button again to pause the arpeggio pattern, and another time to resume playback from where you stopped.

To start an arpeggio pattern from the beginning, press the Stop button. Then press Play again and hold down some keys.

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

2.3.4. Set the tempo

Use the Rate knob or the Tap button to adjust the playback tempo. You can also set the exact tempo of the arpeggio pattern before starting the arpeggiator 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 8 [p.44] for more information.

Remember: Tap tempo and the Rate knob will not function when KeyStep is set to one of the external sync sources.

> ♪: You can make fine adjustments to tempo in quantized, 1 BPM increments by holding the Shift button while turning the Rate knob. For example, let's say you currently have a tempo of 123.12 BPM (set by the Rate knob or by using the Tap button). If you hold Shift and set the Rate knob to the "12:OO" position, your tempo will be quantized to the 123.OO BPM. If you continue holding the shift button and turn the Rate knob clockwise, you will increase the BPM up to 133 BPM in quantized 1 BPM steps (124.OO, 125.OO, 126.OO, etc.) Turning the knob counter-clockwise will reduce the BPM down to 113 BPM in quantized 1 BPM steps (122.OO, 121.OO, 120.OO, etc.)

2.3.5. Time Division

The Time Division encoder allows you to change the rhythmic relationship of the arpeggio 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.).

2.3.6. 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.34].

3. SHIFT FUNCTIONS

KeyStep has many secondary functions that can be accessed by holding the Shift button and pressing other buttons or a key. These functions are listed in light blue text under each button and over each key.

For a complete chart of all the Shift functions, see

3.1. Chord Mode

KeyStep has the ability to memorize a chord. You can then play an entire chord by pressing a single key on the keyboard. The chord will transpose automatically as you play different notes.

> **i** **Caution:** The following procedure will erase the previous chord and make a new one.

Here's how to memorize a chord:

- Hold two buttons: first the Shift button and then the Hold button. Don't let go.
- The Hold button will flash very quickly (4x per second).
- Play up to 16 notes on the keyboard. These will become your chord.
- When you are done, release the buttons.

Now the Hold button will flash once per second, which means KeyStep is in Chord mode. The next key you press will play the chord you created.

The lowest note you entered will be the center key for transposition. Any key higher than that will transpose the chord up; any key below it will transpose the chord downward.

Here are a few more things to know about this feature:

- You can use the sustain pedal instead of the Hold button for all Chord mode functions. (The pedal will not flash, of course. But that would be cool.)

When both Chord mode and Hold mode are active the Hold button will flash twice as fast (2x per second).

To enter or exit Chord mode, hold the Shift button and then tap the Hold button.

> **i** Chord memory is not saved when KeyStep is powered down.

3.1.1. Chords and the sequencer

You can use Chord mode and the sequencer together, but only under certain conditions.

3.1.1.1. Seq Recording and Chord mode

Chords from Chord mode will be recorded as independent notes in the sequencer. So if you have a 6-note chord it will occupy 6 of the 8 note maximum that is allowed in a sequence step.

3.1.1.2. Seq playback and Chord mode

The keyboard is in one of two modes during sequence playback: Transpose or Kbd Play.

When the keyboard is set to Transpose mode, the keys are used to transpose the sequence. Chord mode is disabled in this case, as it would be difficult to be certain which note in the chord was the transposition center.

When the keyboard is set to Kbd Play mode then Chord mode can be used to play chords on the target device.

These modes are discussed further in section 3.3.3 [p.20].

3.1.2. Chords and the arpeggiator

The arpeggiator can be used in conjunction with Chord mode to play arpeggiated chords. The process is simple:

- Make sure the Seq / Arp toggle switch in the Arp position
- Start the arpeggiator with the Play/Pause button
- Enter Chord mode by holding Shift and pressing the Hold button
- Play two or more notes so you can hear the chord being transposed by the arpeggiator.

That's all there is to it. And it doesn't matter whether you start the arpeggiator first and then activate Chord mode or do it the other way around. The results will be the same.

3.2. 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.

> 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 3.3.3.2 [p.20].

3.3. Seq / Arp playback functions

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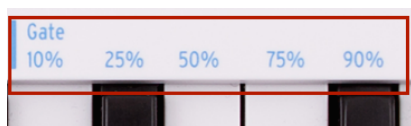
The Gate time of a Seq/Arp note is the percentage of time it stays "on" before the next note happens, with 10% being the shortest time and 90% being the longest. Hold Shift and press the appropriate key to make a selection.

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

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.26] for information.

3.3.2. Swing
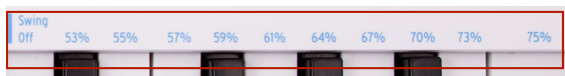
Swing introduces a "shuffle" feel to the active sequence or arpeggio. 11 different settings are available, ranging from Off (no swing, or 50%) through varying degrees of swing amount (53-75%). To make a selection, Hold Shift and press the appropriate key.

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.

Here's a graphic showing the minimum and maximum Swing values in musical notation:

> ℹ Each sequence can have its own Swing setting. Arp mode has an independent Swing setting also.

3.3.3. Transpose / Kbd Play

These two modes are mutually exclusive so we'll cover them 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+).

3.3.3.1. Transpose
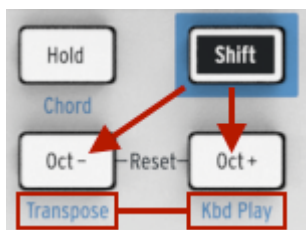
When this mode is active you can use the keys to transpose a sequence while it is running. To activate Transpose mode, hold the Shift button and press the Oct– button. It will become lit and the Kbd Play button will go dark.

The MIDI Control Center lets you specify whether the transposition will latch or return to center when the key is released. See chapter 8 [p.44] for details.

3.3.3.2. Keyboard Play

When this mode is active the keyboard can be used to play notes on an external MIDI device while a sequence is playing through the CV out. To activate Kbd Play mode, hold the Shift button and press the Oct+ button. It will become lit and the Transpose button will go dark.

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.

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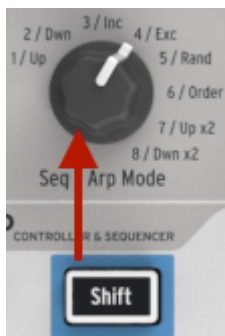
It's possible to switch between non-adjacent sequences or arpeggio patterns without launching the interim selections. In other words, if sequence 1 is playing and you want segue smoothly into sequence 3, you can jump over sequence 2 without playing it.

Here's how:

- Hold the Shift button
- Turn the Seq/Arp Mode encoder 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 the new sequence will begin immediately or at the end of the sequence. The full details are in chapter 8 [p.44].

3.3.5. Skip selections: Time Division

KeyStep 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 encoder until you reach the proper value
- Release the Shift button and the new Time Division will take effect.

3.3.6. Restart Seq / Arp from beginning
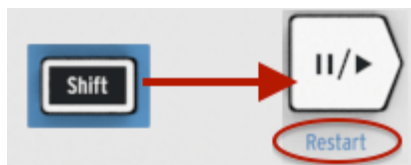
It's possible to repeat the first half of a sequence or arpeggio manually, or perhaps repeat the first few notes several times, etc., as a spontaneous performance option.

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.

3.4. 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
Shift + Key (22 to 32)	Select a swing value
Shift + Oct Minus	Enter Transpose mode
Shift + Oct Plus	Enter Kbd Play mode
Shift + Oct Plus + Key	Selects Midi channel for Kbd play mode
Shift + HOLD	Enter/Exit chord mode
Shift + HOLD + Keys	Enter new notes for the chord mode (Hold button blinks quickly)
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 + Seq/ Arp or Time Div	The new position of the encoder will become active when the Shift button is released
Shift + Rate	The BPM of an Arp or Seq is adjusted in quantized 1.00 BPM increments (up to +/- 10 BPM) around the Rate knob's "12:00" position. Note that KeyStep sync must be set to internal to do this.

4. CREATING SEQUENCES

KeyStep 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 for more information.

4.1. What's a step sequencer?

KeyStep 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 sequencer is capable of stacking up to 8 notes per sequence step.

Another way the KeyStep sequencer is more advanced than a traditional step sequencer is that it lets you to 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 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

> ℹ 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 already covered selecting and playing sequences in section 2.2 [p.13], so we'll only discuss how to create and edit a sequence in this chapter.

KeyStep 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-time 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

> ℹ **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.

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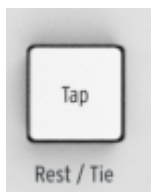
The spaces that sometimes happen between notes are called "rests". If you want to add rests while creating a sequence, KeyStep provides an easy way to do it.

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.

> ♪: 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 this example

> **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:

> **i** 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 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 the step record mode.
- It can be helpful to have an external drum machine slaved to the KeyStep via MIDI or the Sync output. That will help you be sure where the downbeat is. For more information about synchronization, see chapter 6 [p.40].

> ℹ You can also create a sequence in the MIDI Control Center and send it to the KeyStep over USB. Learn about the MIDI Control Center in chapter 8 [p.44].

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 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 will begin recording and replacing notes.

> ℹ️ 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 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.24], 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.

> ℹ️ 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. Adusting 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).

> ♪: The "Sequence Length Update" feature in the MIDI Control Center determines what happens to the truncated ("leftover") notes that are in a shortened sequence. Please refer to the MIDI Control Center chapter to learn more about this feature.

4.2.4. What does it record?

The KeyStep 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.30])
- Rests entered by pressing the Tap button or holding it for one or more steps
- Each note of a Chord from Chord mode will be recorded as an independent note on the same step. So if you have a 6-note chord it will occupy 6 notes of the 8-note maximum that a sequence step can hold.

> 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

KeyStep will capture the velocity of each note the way it was played by default. 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 8 [p.44] for more information about these features.

4.2.5. What it does not record

Here are the types of data not captured by the KeyStep 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
- Controller data
- Notes from Chord mode that exceed the limit of 8 notes per step. Only the bottom 8 notes of the chord will be recorded.
- Data that arrives via MIDI or USB. However, incoming note data can be used to transpose a sequence, and the KeyStep sequencer and arpeggiator can be slaved to incoming clock data.

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 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 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 for more information about the MIDI Control Center.

5. THE ARPEGGIATOR

5.1. What's 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.

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 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 section 2.3.4 [p.16]
- Time division settings section 2.3.5 [p.16]
- Hold / sustain function section 2.3.6 [p.16])
- Arpeggiate the Chord memory section 4.1.2 [p.18]
- Independent swing and gate settings section 3.3 [p.19]
- Skip encoder values sections 3.3.4 [p.21] and 3.3.5 [p.21]
- Restart arpeggio from the first note section 4.3.6 [p.22]

We'll cover these features in the sections ahead:

- The eight modes that determine the note order
- Building an arpeggio of up to 32 notes
- Pause an arpeggio in mid-stream and then resume the pattern

> **i** The Record button is inactive in Arp mode.

5.3. Arpeggiator modes

5.3.1. Start the arpeggiator

> ℹ 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 .

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:

Arp Mode: Up

5.3.3. Arp mode: Down

With the Arp mode encoder set to **Dwn** 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.

Arp Mode: Down

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.

Arp Mode: Inclusive

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.

Arp Mode: Exclusive

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. You can select exact nature of this randomness (i.e., totally random, a random-but-repeating pattern, or "brownian" motion) through the MIDI Control Center software. This is explained in detail in Chapter 7 [p.42].

Arp Mode: Random

5.3.7. 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:

Arp Mode: Order

5.3.8. Arp Mode: Up x2

With the Arp mode encoder set to **Up x2** the arpeggiator will play the held notes in order from the bottom to the top. But unlike the Up mode it will play each note twice before the next note plays.

Arp Mode: Up x2

5.3.9. Arp Mode: Down x2

With the Arp mode encoder set to **Dwn x2** the arpeggiator will play the held notes in order from the top to the bottom. But unlike the Dwn mode it will play each note twice before the next note plays.

Arp Mode: Down x2

5.3.10. Arp Octaves

You can easily create "arp octaves" from any of the Arp modes described above. To do this, hold Shift while pressing the Oct+ or Oct- button. Now when you press any keys on the keyboard, the associated octave will be repeated up or down around the notes that you are playing. You can even do multi-octave arpeggiations by holding Shift and pressing the Oct+ or Oct- buttons multiple times. Doing so will let you repeat the arpeggiation up or down by up to four octaves.

You can see if Arp Octave mode is active by holding the Shift key. The Oct+ or Oct- button will blink if the Arp Octave mode is active. The Arp Octave range is indicated by the blinking speed of the Oct+ or Oct- buttons (the buttons blink increasingly quickly as the Arp Octave range is increased).

5.4. Build a multi-octave arpeggio

Having read section 2.3.6 [p.16] 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. You can even press the Oct + / - buttons to access other octave ranges of the keyboard. For example, press the Hold button and press a note to start the arpeggiation. Now you can press the Oct + button twice and tap the same note on the keyboard to create an arpeggiation with the same note two octaves apart.

> ℹ As you go through the following section, don't forget: after you let go of the keys the arpeggio that's playing will be replaced as soon as you press another key.

5.4.1. Add up to 32 notes

You can add as many as 32 notes to your arpeggio. Here's an example of how to do it.

> ℹ **Remember:** Keep at least one key down at all times until the final step.

- Move the Seq / Arp toggle switch to Arp
- Press the Play / Pause button to start the arpeggiator
- Press the Hold button
- Press one or more keys; the arpeggio will play those notes.
- Keep at least one key down and then press the Oct+ button.
- Add more notes the arpeggio from the higher octave.
- Being sure to keep at least one key pressed, press the Oct- button.
- Add more notes the arpeggio from the lower octave, and so on.
- You can keep adding notes to the arpeggio for quite a while: the limit is 32 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.

> ℹ **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.

> ℹ The MIDI Control Center can configure the sustain pedal to do all of the same things the Hold button can do. See chapter 10 for more information.

5.5. Pausing an arpeggio

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

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

6. SYNCHRONIZATION

KeyStep 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.6] for connection diagrams.

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

For example, in the illustration below the USB sync option has been selected:
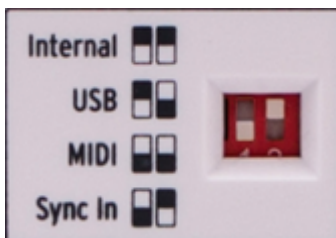
Sync switches set to USB option

It's important to remember that the physical switch caps correspond to the white boxes in the graphics to the left. Match the physical switches to the graphics 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 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 8 [p.44])
- The tempo can be set using the Rate knob and the Tap button.

6.2. As Slave

KeyStep 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 is in Slave mode:

- The Tempo controls will not control the internal sequencer or arpeggiator while the external source is running.
- The KeyStep 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.
- When the external source is not running, KeyStep will function according to its internal clock at the last known tempo.
- KeyStep 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 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:

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. CV/GATE/MOD FUNCTIONS

KeyStep provides direct access to some of the best music technology the world has produced since humans harnessed electricity: USB, MIDI, Sync and CV/Gate connectors are all present on its rear panel in a space the size of a candy bar.

Connection diagrams for each of these interfaces are available in section 2.1 [p.12].

In this chapter we'll focus on the features of the KeyStep CV/Gate circuitry. chapter 8 [p.44] 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 those 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. Velocity information can be carried by the Mod output (see the next section).

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 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.

7.2. Modulation (Mod) output

7.2.1. How does the Mod output work?

The Mod output connector sends voltage values generated by one of three sources inside the KeyStep: 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 8 [p.44] to learn about this parameter.

7.2.2. Can my DAW control the Mod output?

The MIDI Control Center allows you to specify which of three types of data you want to use to control the Mod output: velocity, aftertouch, or a MIDI Continuous Controller (CC). You can also specify the MIDI CC number.

See chapter 8 [p.44] to learn about these parameters.

7.3. 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.

7.4. CV/Gate/Mod specifications

Some analog synthesizers have unusual implementations that are not fully compatible with the KeyStep CV/Gate/Mod 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 to be as flexible as possible, though: the MIDI Control Center allows you to configure the response of the CV/Gate and Mod jacks in a number of ways.

Here are the ranges of electrical signals that can be sent by the KeyStep CV, Gate, and Mod jacks:

- Pitch has two options, each with its own keyboard reference settings:
  - 1 Volt/octave (0-10V)
    - 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.

See chapter 8 [p.44] for a description of the related MIDI Control Center parameters.

8. MIDI CONTROL CENTER

The MIDI Control Center is an application that allows you to configure the MIDI settings of your KeyStep. 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 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 .

8.1. The Basics

8.1.1. System requirements

 Win 7+ 10.8+

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

### 8.1.2. 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.
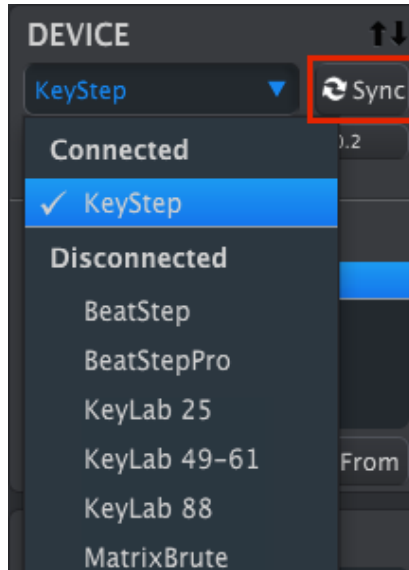
8.1.3. Connection

Connect KeyStep 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 will be in the list of connected devices:
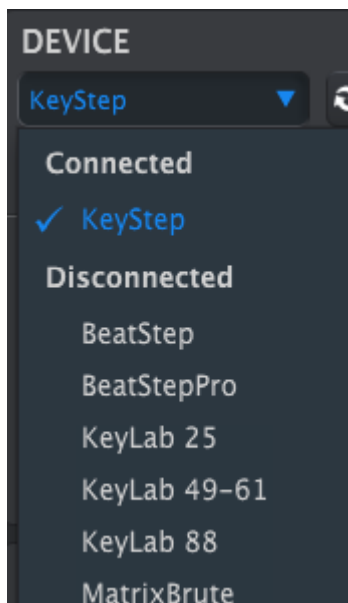
8.1.4. Back up your sequences

If you want to make a quick backup of your KeyStep 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.
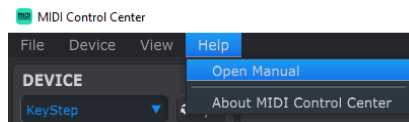
> ℹ It's possible to use most functions of the MIDI Control Center even when it has not been synced to the KeyStep. There may be times you prefer not to sync the two.

We'll go through these concepts in greater detail in chapter 8 [p.44].

8.1.5. 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 settings so they match your system and enhance your workflow.

8.2. The Sync option
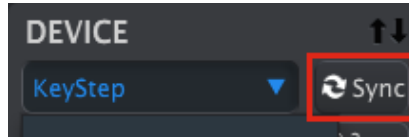
As mentioned in section 8.1.4 [p.46], clicking the Sync button is a quick way to back up your KeyStep sequences. It also allows you to do other things we'll cover later in this chapter.

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:

8.2.1. 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 sequences. This is known as a Template.
- It updates the Device Settings window with the settings from the KeyStep. These must be saved using the Device Settings Export button see section 8.6 [p.54]).
- It allows live editing of sequences from within the MCC sequence window. This is an extremely useful feature, and we'll cover it in section 8.8.3 [p.59].

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

### 8.2.2. Non-sync operations

When the MIDI Control Center and KeyStep 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 internal memory
- use the Store To and Recall From buttons to transmit an entire set of 8 sequences
- edit the Device Settings
- perform other MCC functions such as sequence editing, file management and Template creation, among other things.

> **Note:** The MCC will do all of these things when the MCC and KeyStep are synced also.

8.3. Device Projects
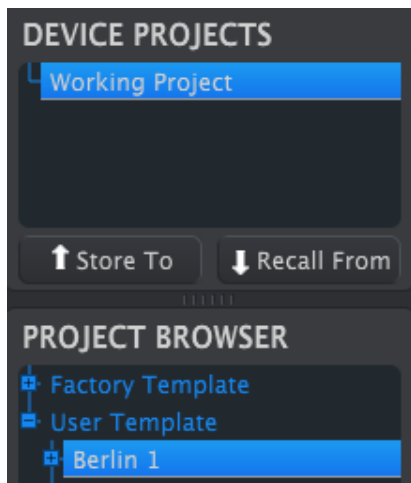
8.3.1. The Working Project

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

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

8.3.1.1. Live editing

After you click the Sync button the internal KeyStep 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. This is called "live editing."

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

> ℹ **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.

8.3.1.2. Drag and drop

It's possible to drag a single sequence or a Template from the Project Browser onto the Working Project. When you do, the sequence(s) will be sent to the KeyStep internal memory. See for information about this.
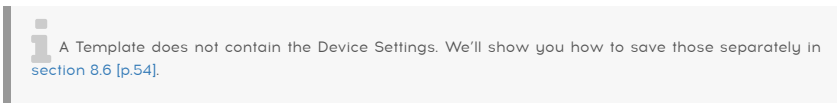
8.4. Project Browser

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 with the MCC. See to learn how to do this.
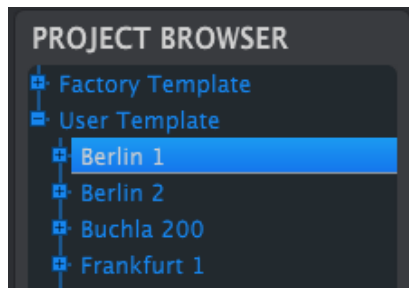
The Project Browser window

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

> ℹ️ A Template does not contain the Device Settings. We'll show you how to save those separately in .

Here's an expanded view of the contents of a Template named "Berlin 1", with a secondary view of the sequences it contains.
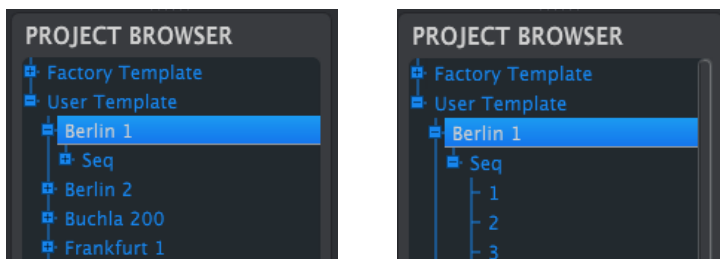
User Templates: click +/- to expand or collapse Project view

8.4.1. 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 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.

8.4.2. Revise a Template

8.4.2.1. While synced

If the MIDI Control Center and KeyStep 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 internal memory.

As long as KeyStep and the MCC are in sync, any changes made to the sequences inside the MCC will also be made in the KeyStep. You can actually have the sequence running inside the KeyStep 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.

> **i** 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 section 8.7 [p.55] and section 8.8 [p.57] to learn about editing sequences in the Seq Editor window.

8.4.2.2. Not synced

If the MIDI Control Center and the KeyStep 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, 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 (see section 8.5 [p.53]).

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

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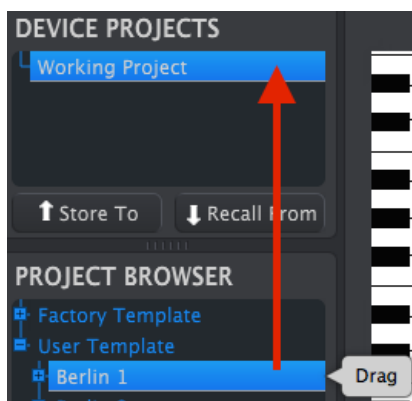
8.4.3. Send one sequence to KeyStep

8.4.3.1. When synced

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

There are two ways to send a single sequence to the KeyStep 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 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 will receive the sequence. See section 8.9 for more information.

8.4.3.2. When not synced

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

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

In the example below, Sequence #1 from the Berlin 1 Template will overwrite Sequence #1 in the KeyStep internal memory.
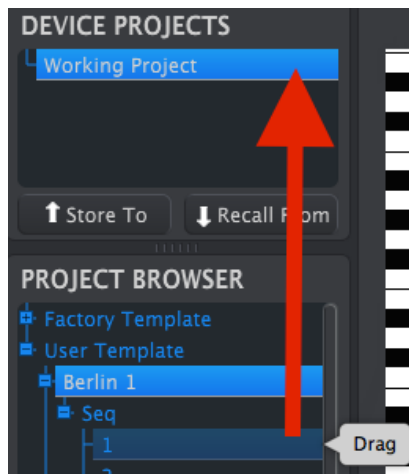
8.5. Store To/Recall From

8.5.1. 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.

> ℹ The following process will overwrite the internal memory of the KeyStep. 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, select it in the Project Browser window.

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

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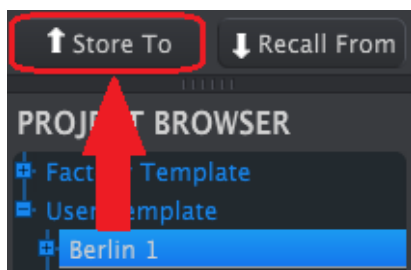
This process will store all eight sequences from the selected Template into the KeyStep.

8.5.2. Recall edited sequences from KeyStep

If you changed any sequences inside the KeyStep 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.

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

8.5.3. Save, Delete, Import/Export, etc.
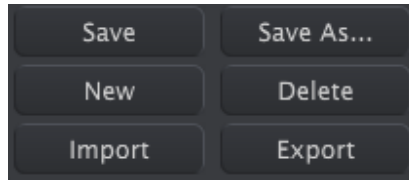
These important features have been documented in the MIDI Control Center manual, which you will find in the software Help menu. Look in section 6.1 [p.40] of the Help file for information about Save, Save As..., New, Delete, Import and Export.

> ℹ The Import / Export buttons pictured above perform a different function from those at the top of the Device Settings window (see section 8.6 [p.54]). Their files have the extension .keystep. They contain all of the internal KeyStep parameters: a complete set of eight sequences and all of the Device Settings. Use these files to share settings and sequences with other users.

8.6. 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_ds**. You can swap these files with other users or build a library of configurations for the different systems you encounter in different locations.

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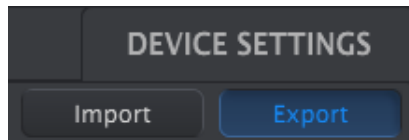
To export the Device Settings, click the Export button. Then navigate to the appropriate location in your computer and follow the screen prompts to save the **.keystep_ds** file.

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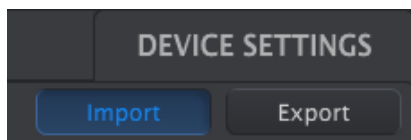
To import the Device Settings, click the Import button. Then navigate to the appropriate location in your computer and follow the screen prompts to load in the **.keystep_ds** file.

8.7. Editing basics

8.7.1. 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:
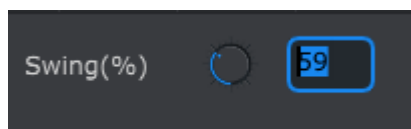
Editing a knob value

To edit a parameter such as Gate Length, click its pull-down menu and make a selection:

Selecting a pull-down menu option

8.7.2. 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 memory, and Device Settings has all of the parameters for the various KeyStep functions.
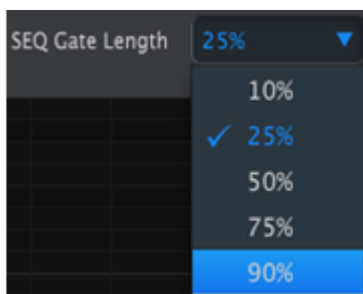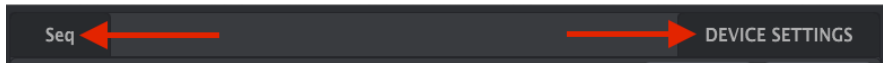

Simply click on a tab to select its window.

8.7.3. Seq tab

The Seq tab contains eight numbered sequence tabs:
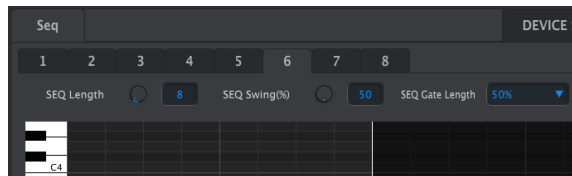
The Seq tab

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 graphic 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 section 8.8 [p.57].

8.7.4. 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 section 8.10 [p.64]

8.8. Sequence window

Below the individual sequence tabs is the sequence window. Right below the tabs are a two virtual knobs and a pull-down menu. These are the per-sequence parameters.
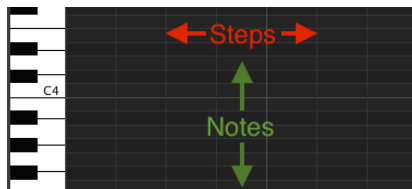
The sequence window also has a note window with a piano-style keyboard along the left side. To the right of this keyboard is a grid with horizontal rows for note placement that correspond to the virtual keys. The vertical columns represent the steps within the sequence.

8.8.1. Navigation

8.8.1.1. 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.
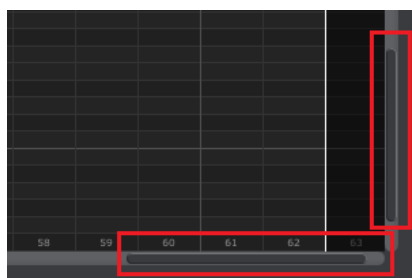
Scroll bar locations

8.8.1.2. 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.

8.8.2. Per-sequence parameters

The knobs display that 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.

8.8.2.1. 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 sequence window. For example, let's look at a 4-step sequence:
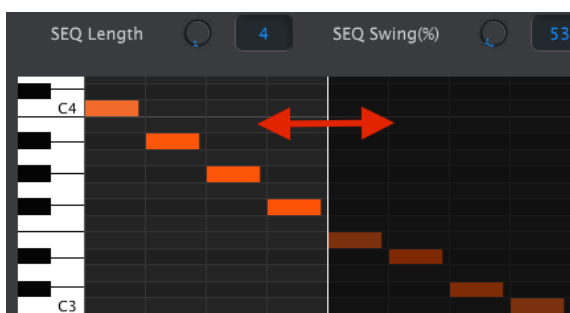
Everything to the left of the white line is within the active portion of the sequence. As the length increases, the white line will move to the right.

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:
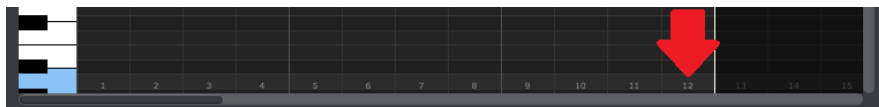
8.8.2.2. Seq Swing %

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%.

Same thing here: 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.

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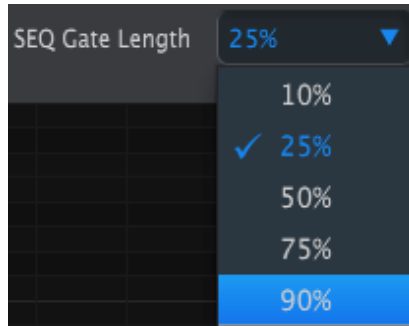
The Gate parameter will adjust the length of all of the notes in the selected sequence. The potential values are 10% (short), 25%, 50%, 75% and 90% (long). Each sequence can have its own Gate setting.

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

In the graphic on the right the current value is 25%, and the value of 90% is about to be selected.

8.8.3. Sequence events

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

8.8.3.2. 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:
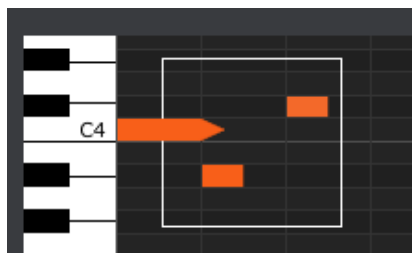
Next, click on the middle of one of the notes and drag the selected notes up, down, left or right.

> **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.

8.8.3.3. 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.
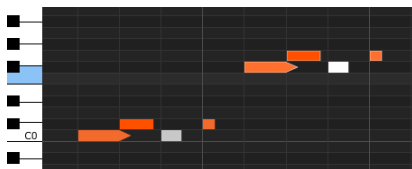
The new notes will have the same velocity and gate time values as the original notes.

8.8.3.4. 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.
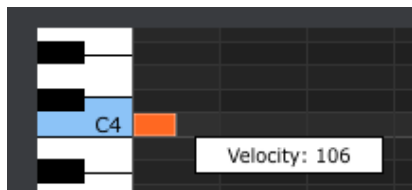
The color of the selected note will change to indicate the velocity value: white is the lowest velocity value and red is the highest velocity value.

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

8.8.3.5. 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.
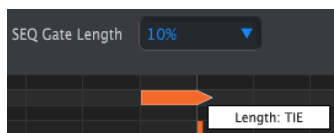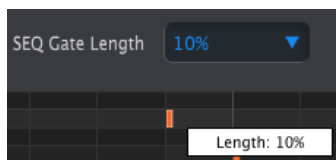
There are only two possible values: the Gate Length you selected for the entire sequence (10, 25, 50, 75, or 90%) or a value of TIE.

8.8.3.6. 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:
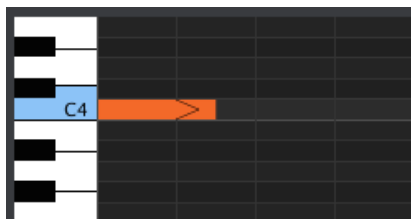
You can click on the second note and drag the cursor to the right again until the second note's length value also becomes TIE, and so on.

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

> ℹ️ 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.

8.9. Sequence management

8.9.1. 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.

> ℹ️ If the MCC and KeyStep have been synced this process will overwrite the target sequences in the KeyStep 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.
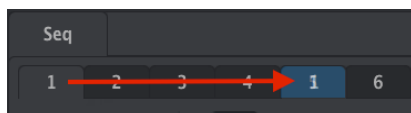
Click and drag to copy Seq 1 to the Seq 5 location.

8.9.2. Drag/drop onto a tab

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

> ℹ️ If the MCC and KeyStep have been synced this process will overwrite the target sequences in the KeyStep 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.
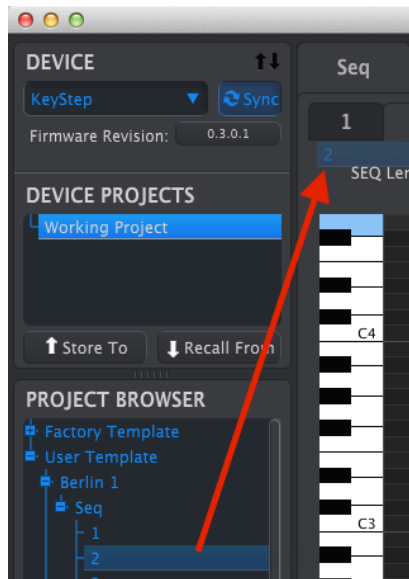
Click/drag an archived Seq to a tab in the Seq Editor window.

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.

8.10. Working with Device Settings

8.10.1. Common features

Some parameters have pull-down menus with additional options. For example, the Aftertouch curve has three settings:
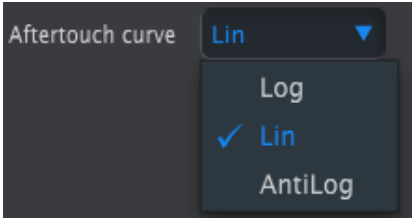
The options of each field are different for each parameter.

8.10.1.1. MIDI Channel

Another option is available for setting the MIDI channel for a parameter.
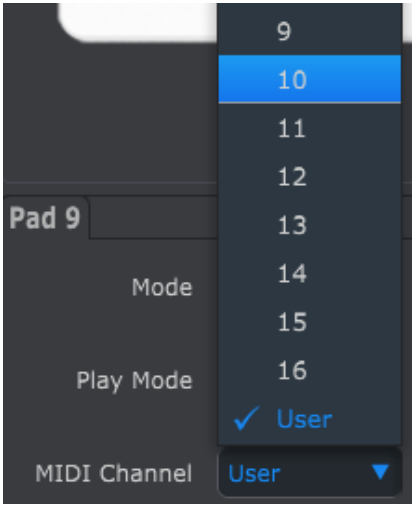
The "User" setting allows you to change the MIDI channel of this parameter when you change the MIDI channel of the keyboard.

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.

8.10.2. MIDI Controller settings
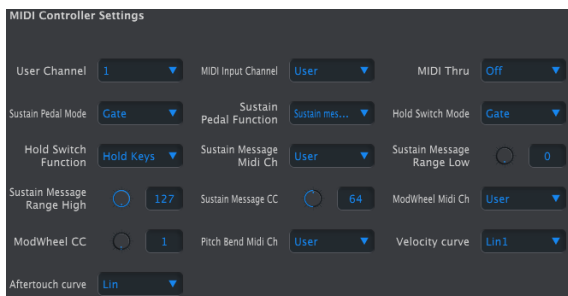
Here's a quick reference chart for those parameters:

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
Sustain Pedal Mode	Gate, Toggle	Momentary or Latching
Sustain Pedal Function	Hold, Sustain, Both	Act as Hold button or not
Hold Switch Mode	Gate, Toggle	Momentary or Latching
Hold Switch Function	Hold, Sustain, Both	Act as Sus. Pedal or not
Sustain Message MIDI Ch	1-16, User	Fixed/follow User channel
Sustain Message Range Low	0-127	Set minimum range
Sustain Message Range High	0-127	Set maximum range
Sustain Message CC	0-127	Assign MIDI CC #
Mod strip MIDI Ch	1-16, User	Fixed/follow User channel
Mod strip CC	0-127	Assign MIDI CC #
Pitch Bend MIDI Ch	1-16, User	Fixed/follow User channel
Velocity curve	Log, Lin, AntiLog	Personalized response
Aftertouch curve	Log, Lin, AntiLog	Personalized response

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

8.10.2.1. 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.

8.10.2.2. 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.

8.10.2.3. MIDI Thru

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

8.10.2.4. Sustain Pedal Mode

You can determine whether you want your sustain pedal to behave in one of two ways:

- As a momentary footswitch, which maintains its maximum value only while your foot is on the pedal, or

- As a latching footswitch, which stays on (or off) until you press it a second time.

8.10.2.5. Sustain Pedal Function

Your pedal can send a MIDI CC message, toggle Hold/Chord modes on/off, or it can do both. Your choice.

8.10.2.6. Hold Switch Mode

You can determine whether you want the Hold button to behave in one of two ways:

- As a momentary switch, which maintains its maximum value only while you are holding it down, or

- As a latching switch, which stays on (or off) until you press it a second time.

8.10.2.7. Hold Switch Function

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

8.10.2.8. Sustain Message MIDI Ch

This determines whether the Sustain Pedal will send its messages down a fixed MIDI Channel at all times or change MIDI Channels when the keyboard does.

8.10.2.9. Sustain Message Range Low

Ordinarily a sustain pedal sends a value of O when it is off. But if you set the pedal to a different MIDI CC number you could use as another modulation source. This would set the minimum value that would be transmitted when the pedal was off, and it could be something other than zero.

8.10.2.10. Sustain Message Range High

Ordinarily a sustain pedal sends a value of 127 when it is on. But if you set the pedal to a different MIDI CC number you could use as another modulation source. This would set the maximum value that would be transmitted when the pedal was on, and it could be something other than 127.

8.10.2.11. Sustain Message CC

Ordinarily a sustain pedal is assigned to MIDI CC #64. But this parameter allows you to set it to a different MIDI CC number so you can use it as another modulation source.

8.10.2.12. Mod strip MIDI Ch

This determines whether the Mod strip will send its messages down a fixed MIDI Channel at all times or change MIDI Channels when the keyboard does.

8.10.2.13. Mod strip CC

Ordinarily a mod wheel is assigned to MIDI CC #1. But this parameter allows you to set it to a different MIDI CC number so you can use it as an alternate modulation source.

8.10.2.14. Pitch Bend MIDI Ch

This determines whether the Pitch strip will send its messages down a fixed MIDI Channel at all times or change MIDI Channels when the keyboard does.

8.10.2.15. Velocity curve

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

8.10.2.16. Aftertouch curve

Three aftertouch curves are provided so you can choose the one that seems the most responsive to you.
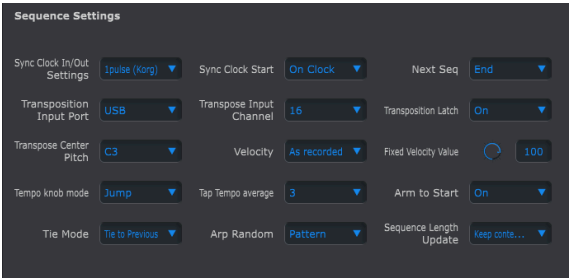
Arturia - User Manual KeyStep - MIDI Control Center

8.10.3. 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.
Next Seq	End, Instant Reset, Instant Continue	Selects when the KeyStep sequences will change and whether they'll start from the top or the middle.
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
Tempo knob mode	Jump, pickup	Tempo can jump to knob position or wait for passthru
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.

8.10.3.1. Sync Clock In/Out settings

KeyStep 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 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.

8.10.3.2. Sync Clock Start

When KeyStep 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 for when using a Tip-Ring-Sleeve (TRS) connector.

8.10.3.3. Next Seq

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

- **End:** KeyStep 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.

> ℹ 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.

8.10.3.4. Transposition Input port

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

8.10.3.5. Transpose Input channel

Instructs KeyStep which MIDI channel will set the transposition amount.

8.10.3.6. 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 responds to incoming MIDI notes on the Transposition Input channel.

8.10.3.7. 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.

8.10.3.8. 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.

8.10.3.9. 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'.

8.10.3.10. Tempo knob mode

If you're performing live and you want to speed up the tempo or slow it down without a sudden change in value, this parameter will allow you to do that.

Jump: The tempo value will respond immediately when the Rate knob is turned.

Pickup: The tempo will not change until the Rate knob passes through the current value.

8.10.3.11. Tap Tempo average

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

8.10.3.12. 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 is synchronized to an external clock source. This parameter does nothing when KeyStep'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.

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. 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 blink but the sequence will not play until a synchronization signal comes in. This is a useful feature in cases where you want to have manual control over KeyStep's sequencer but always want the synchronization signal to be passed through to other devices connected downstream through the KeyStep.

> ♪: If the sequencer is stopped and external clock signals are being received, pressing Play will start the KeyStep 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 is stopped and you press play on the clock master device, the KeyStep 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 will begin playback of the sequence on its 9th step, in sync with the master clock.

8.10.3.13. Tie Mode

This determines how notes are "tied" together in the KeyStep 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.

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

8.10.3.14. Arp Random

This sets the type of randomness exhibited by the arpeggiator when Arp Mode knob is set to "Random"

Total: This is the original (legacy) version of random mode that KeyStep has had since its introduction. It plays your selected notes in totally random order. At each step, any of the keys you have pressed is equally likely to be played.

Pattern: This is a mode 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 users 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 instantly regenerate a new looping pattern!

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

Brownian: Brownian motion is type of randomization colloquially known as the "drunk walk" due to its meandering motion. In this mode, notes are arranged in the order that they were played (similar to KeyStep's "Order" mode) except that the arpeggiator plays through the notes in a "Brownian" motion. By that, we mean the arpeggiator has a 50% change of moving forward to the next note, a 25% chance of moving backward in the sequence and a 25% change of staying in the same place (i.e., playing the same note). This produces a kind of "movement" through the arpeggiation that is generally forward-moving but accentuated with stops and backward fumbles that can be strangely musical!

8.10.3.15. 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).

8.1O.4. CV/Gate settings
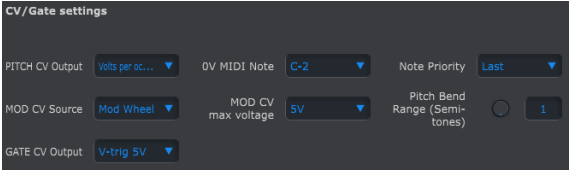
This is where you select the electrical behavior for the Control Voltage connectors.

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
[**]1 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 feature drives the Mod CV
MOD CV max voltage	5-12 Volts	Minimum = O 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.

8.1O.4.1. Pitch CV Output

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

- 1Volt 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.

8.1O.4.2. 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.

8.1O.4.3. MIDI Note reference (OV, 1V)

KeyStep 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 OV reference to a 1V reference depending on which Pitch CV Output option is selected.
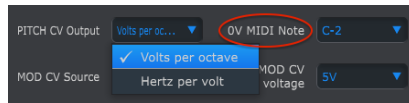
Volts per octave uses a OV MIDI note reference
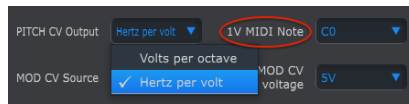
Hertz per Volt uses a 1V MIDI note reference

8.1O.4.4. 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 gives you: Low note priority, High note priority, or Last note priority.

8.1O.4.5. Mod CV source

This parameter determines which KeyStep feature will send signals to the Mod CV output: the Mod strip, velocity or aftertouch.
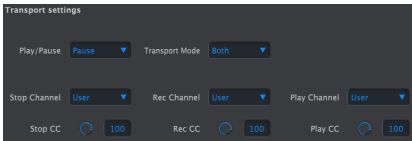
8.1O.4.6. Mod CV max voltage

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

8.10.4.7. Pitch Bend Range

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

8.10.5. 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.

Stop/Record/Play: You can define the MIDI channel and CC number for each of the three main Transport commands independently. All three must transmit the same type of MIDI information, though: MIDI CC, MMC, or both.

Parameter	Range/Values	Description/Function
Play/Pause	Pause, Reset	Pause or 'stutter' sequence
Transport Mode	MIDI CC, MMC, Both	Covers most devices
Stop Channel	1-16, user	Fixed channel or linked to keyboard channel
Record Channel	1-16, user	Fixed channel or linked to keyboard channel
Play Channel	1-16, user	Fixed channel or linked to keyboard channel
Stop CC	0-127	Full MIDI range
Rec CC	0-127	Full MIDI range
Play CC	0-127	Full MIDI range

8.10.6. Miscellaneous settings
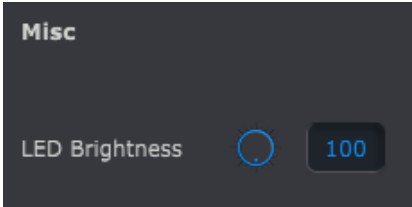
LED Brightness: This parameter adjusts the brightness level of the KeyStep LEDs.

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1. Software Ownership Arturia shall retain full and complete title to the SOFTWARE recorded on the enclosed disks and all subsequent copies of the SOFTWARE, regardless of the media or form on or in which the original disks or copies may exist. The License is not a sale of the original SOFTWARE.

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You are entitled to prepare a backup copy of the software which will not be used for purposes other than storage purposes.

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The product registration is possible during the activation process or at any time later through the Internet. In such a process you are asked to agree to the storage and use of your personal data (name, address, contact, email-address, and license data) for the purposes specified above. Arturia may also forward these data to engaged third parties, in particular distributors, for support purposes and for the verification of the upgrade or update right.

5. No Unbundling The software usually contains a variety of different files which in its configuration ensure the complete functionality of the software. The software may be used as one product only. It is not required that you use or install all components of the software. You must not arrange components of the software in a new way and develop a modified version of the software or a new product as a result. The configuration of the software may not be modified for the purpose of distribution, assignment or resale.

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A return of the product due to a failure to accept the terms and conditions of this Agreement, e.g. the product activation, shall not be possible following the assignment of rights.

7. Upgrades and Updates You must have a valid license for the previous or more inferior version of the software in order to be allowed to use an upgrade or update for the software. Upon transferring this previous or more inferior version of the software to third parties the right to use the upgrade or update of the software shall expire.

The acquisition of an upgrade or update does not in itself confer any right to use the software.

The right of support for the previous or inferior version of the software expires upon the installation of an upgrade or update.

8. Limited Warranty Arturia warrants that the disks on which the software is furnished is free from defects in materials and workmanship under normal use for a period of thirty (30) days from the date of purchase. Your receipt shall be evidence of the date of purchase. Any implied warranties on the software are limited to thirty (30) days from the date of purchase. Some states do not allow limitations on duration of an implied warranty, so the above limitation may not apply to you. All programs and accompanying materials are provided "as is" without warranty of any kind. The complete risk as to the quality and performance of the programs is with you. Should the program prove defective, you assume the entire cost of all necessary servicing, repair or correction.

9. Remedies Arturia's entire liability and your exclusive remedy shall be at Arturia's option either (a) return of the purchase price or (b) replacement of the disk that does not meet the Limited Warranty and which is returned to Arturia with a copy of your receipt. This limited Warranty is void if failure of the software has resulted from accident, abuse, modification, or misapplication. Any replacement software will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer.

10. No other Warranties The above warranties are in lieu of all other warranties, expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose. No oral or written information or advice given by Arturia, its dealers, distributors, agents or employees shall create a warranty or in any way increase the scope of this limited warranty.

11. No Liability for Consequential Damages Neither Arturia nor anyone else involved in the creation, production, or delivery of this product shall be liable for any direct, indirect, consequential, or incidental damages arising out of the use of, or inability to use this product (including without limitation, damages for loss of business profits, business interruption, loss of business information and the like) even if Arturia was previously advised of the possibility of such damages. Some states do not allow limitations on the length of an implied warranty or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

1O. DECLARATION OF CONFORMITY

USA

Important notice: DO NOT MODIFY THE UNIT!

This product, when installed as indicate in the instructions contained in this manual, meets FCC requirement. Modifications not expressly approved by Arturia may avoid your authority, granted by the FCC, to use the product.

IMPORTANT: When connecting this product to accessories and/or another product, use only high quality shielded cables. Cable (s) supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FFC authorization to use this product in the USA.

NOTE: This product has been tested and found to comply with the limit for a Class B Digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide a reasonable protection against harmful interference in a residential environment. This equipment generate, use and radiate radio frequency energy and, if not installed and used according to the instructions found in the users manual, may cause interferences harmful to the operation to other electronic devices. Compliance with FCC regulations does not guarantee that interferences will not occur in all the installations. If this product is found to be the source of interferences, witch can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

- Relocate either this product or the device that is affected by the interference.
- Use power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter(s).
- In the case of radio or TV interferences, relocate/ reorient the antenna. If the antenna lead-in is 3OO ohm ribbon lead, change the lead-in to coaxial cable.
- If these corrective measures do not bring any satisfied results, please the local retailer authorized to distribute this type of product. If you cannot locate the appropriate retailer, please contact Arturia.

The above statements apply ONLY to those products distributed in the USA.

CANADA

NOTICE: This class B digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulation.

AVIS: Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

EUROPE

CE

This product complies with the requirements of European Directive 89/336/EEC

This product may not work correctly by the influence of electro-static discharge; if it happens, simply restart the product.