

USER MANUAL

BEATSTEP PRO

Controller & Sequencer

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Special Thanks

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Thank you for purchasing the Arturia BeatStep Pro!

This manual covers the features and operation of Arturia's **BeatStep Pro**, a full-featured pad/knob controller, dual analog-style step sequencer, drum programmer and live performance device.

In this package you will find:

- One BeatStep Pro controller, with a serial number and unlock code on the bottom. You will need this information in order to register your BeatStep Pro.
- One USB cable
- Two MIDI adapter cables (1/8" TRS jack to 5-pin DIN, gray)
- One DIN adapter cable (1/8" TRS jack to 5-pin DIN, black)
- The two Quick Start Guides for BeatStep Pro.

Be sure to register your BeatStep Pro 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 BeatStep Pro allows you to receive special offers restricted to BeatStep Pro owners, among other benefits. To register your BeatStep Pro, visit the [Arturia website](#) and either log in to your existing account or create a new one.

Special Message Section

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 BeatStep Pro!

This unique device is a combination of many musical technologies: an assignable MIDI controller, two analog-style step sequencers, a drum programmer and a live performance tool, all in a single compact package. It has an unlimited number of potential uses and setup options, thanks to its simultaneous USB, MIDI, CV/Gate and synchronization capabilities.

We'll give some useful examples in this manual and then you should be able to start experimenting with BeatStep Pro. The unit has a relatively simple appearance, but you will find there are many ways to integrate it with your system. This in turn will open up many new avenues for musical inspiration and creativity.

Be sure to visit the [Arturia website](#) and check for the latest firmware, download the MIDI Control Center and check out the tutorials and FAQs.

We are very proud of the BeatStep Pro, and are confident that as you use it you will find yourself immersed in many extended periods of creativity.

Musically yours,

The Arturia team

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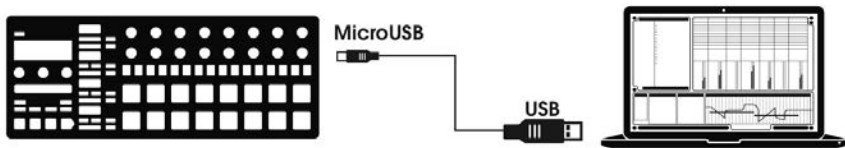
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1. BEATSTEP PRO OVERVIEW

1.1. Making the connections

BeatStep Pro offers an unprecedented number of ways to connect with other types of equipment, from vintage to modern. Below are examples of potential setups:

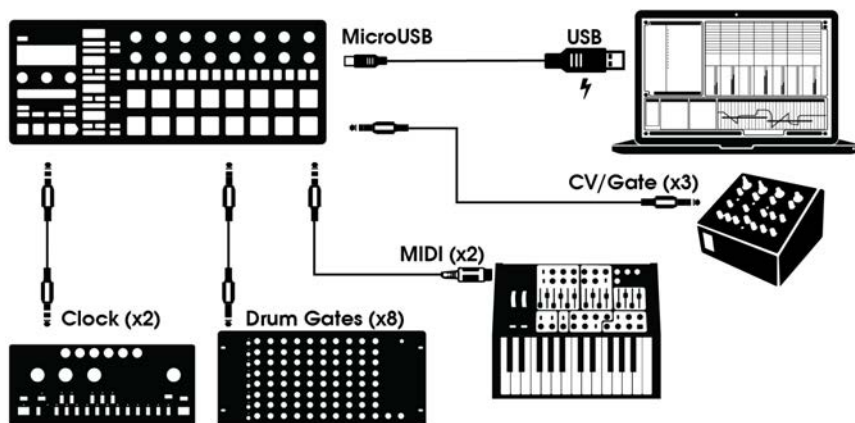
1.1.1. ...with a Computer



BeatStep Pro 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 downloadable [MIDI Control Center \[p.84\]](#) software allows you to define a wide variety of MIDI commands to be transmitted by specific encoders, buttons and pads of the BeatStep Pro.

However, BeatStep Pro is so powerful on its own that there may be times when you want to use it without a computer attached! In this case, simply use a standard USB mobile phone charger to power the unit and connect everything else as shown in the following diagrams.

1.1.2. ...with external devices



As you can see, the BeatStep Pro can be at the center of some amazing systems.

1.1.2.1. CV/Velo/Gate/Drum Gate

The front panel of the BeatStep Pro allows you to take command of all sorts of external devices through its Pitch, Velo and Gate connectors. It also can send data to those devices from the USB port of your computer.

1.1.2.2. MIDI devices

There are lots of great devices that only have MIDI ports (no CV/Gate connectors, no USB). BeatStep Pro can control them from its front panel as well. And of course it can send and receive MIDI data using the USB port of your computer.



Use the included adapters (1/8" TRS jack to 5-pin DIN, gray) to connect your external MIDI devices to the BeatStep Pro.

1.1.2.3. Clock sources/destinations

The Clock input and output can synchronize with older clock types such as 24 pulses per quarter note (ppqn), 48 ppqn, 2 ppqn, or even a single pulse per step.

The included adapter (1/8" TRS jack to 5-pin DIN, black) can be used to connect DIN sync capable devices to the BeatStep Pro. See the chapter on [Synchronization \[p.74\]](#) for specific information about what cables to use with other sync connections and formats.

1.1.3. Something to consider: Ground loops

A ground loop is an unwanted current in a conductor connecting two points. The result is noise in your audio signal, usually in the form of a low-frequency hum. In setups including computers, interfaces and audio devices, it's possible to end up with an annoying ground loop. We have provided you with a solution, however: the **anti ground loop adapter**.

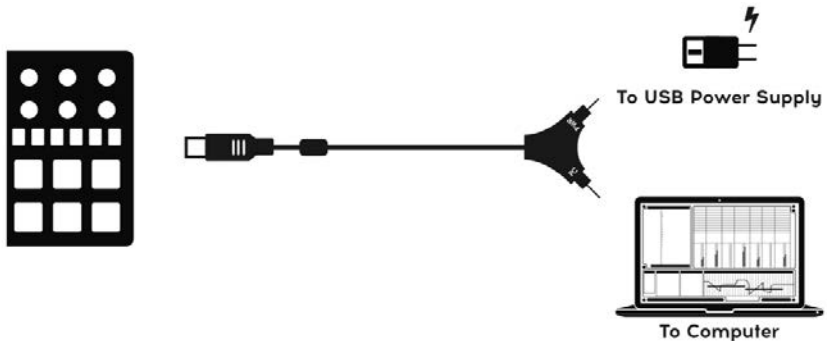
1.1.3.1. When should I use the anti ground loop adapter?

In most cases you will not need the anti ground loop adapter.

If you don't have a ground loop problem in your setup, simply connect the BeatStep Pro with the supplied USB cable to a computer or a USB power supply.

You should use the included **anti ground loop adapter** if you experience background noise in your speakers that disappears when you disconnect the audio interface from your computer or the CV/Gate connections to your analog gear. A ground loop can also cause problems with pitch tracking when using the BeatStep Pro CV connections with analog synthesizers.

Connect the anti ground loop adapter as follows:

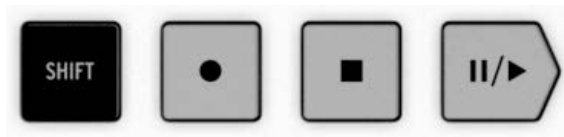


1.2. Front panel overview



1. [Transport/Shift buttons \[p.8\]](#)
2. [Preset/Project utility \[p.9\]](#)
3. [Roller/Looper \[p.10\]](#)
4. [Swing/Randomness/Probability \[p.10\]](#)
5. [Tempo and synchronization \[p.11\]](#)
6. [Sequencer control \[p.11\]](#)
7. [Project/Control modes \[p.12\]](#)
8. [Encoders \[p.12\]](#)
9. [Step buttons \[p.13\]](#)
10. [Pads \[p.14\]](#)

1.2.1. Transport/Shift buttons



The Transport buttons control the internal sequencers and external MIDI devices using MIDI Machine Control. But they also can send other MIDI messages to your DAW, which is handy if your DAW does not respond to MMC commands. Use our MIDI Control Center software to make any necessary changes.

The function of the Record and Stop buttons is obvious. But the Play button also serves as a Pause/Continue button. So you can pause a sequence in mid-stream, make an adjustment, and then press Play again to resume the sequence.

The SHIFT button allows you to access the secondary functions of the current mode, such as the playback direction for one of the sequencers.

1.2.2. Preset/Project utility



1. [Transpose Link \[p.55\]](#)
2. [Preset Link \[p.56\]](#)
3. [Preset Length section \[p.9\]](#)
4. [MIDI Channel \[p.57\]](#)

1.2.2.1. TRNS LNK button

TRNS LNK enables Sequencer 1 and Sequencer 2 to be transposed simultaneously; when the pitch of one is changed, the other will follow. There's more information about this feature in the [Transpose Link \[p.55\]](#) section of the [Projects \[p.49\]](#) chapter.

1.2.2.2. PRST LNK button

PRST LNK allows the three sequencers to have their preset patterns linked so they can be changed with a single action.

The operation of these features is described in the [Preset Link \[p.56\]](#) section of the [Projects \[p.49\]](#) chapter.

1.2.2.3. Preset Length section

BeatStep Pro sequences can be up to 64 steps long, consisting of up to four 16-step subdivisions that play one after the other. Those are called the Step Groups.

The four LEDs above the double arrow buttons (<< and >>) are used to indicate the pattern length and which Step Group is currently playing.

The LST STEP button is used with the Step buttons and the << >> buttons to change the length of the current sequence.

For a complete description of these features, see the [Sequence Length \[p.31\]](#) section of the [Step Sequencers \[p.24\]](#) chapter or the [Pattern Length \[p.43\]](#) section of the [Drum Sequencer \[p.38\]](#) chapter.

1.2.2.4. MIDI channel button

Each of the sequencers can be set to its own MIDI channel using this button. For information on how to do this, see the section [Selecting MIDI Channels \[p.57\]](#) in the [Projects \[p.49\]](#) chapter.

1.2.3. Roller/Looper



The touch strip has two modes: "Roller" and "Looper". You can toggle quickly between the two modes by holding the Shift button and pressing Step button 9 while in Control mode.

- The Looper repeats a section of the combined output of the sequencers (i.e., the Project). The loop starts when you press the touch strip, and the loop size is based on the location of your finger on the strip.
- The Roller works differently depending on which mode you are in:
 - DRUM/Control mode: Repeats the note of the pads you press, at the rate you select with the strip. This will override the drum track for the pads that are being rolled, but the others will continue to play.
 - SEQ1/SEQ2: Overrides the sequence and becomes an arpeggiator that follows which pads you press and the order in which you press them. The arpeggiator rate is determined by where your finger is on the touch strip.

For more information, see the [Roller/Looper modes \[p.54\]](#) section of the [Projects \[p.49\]](#) chapter and [Using the Touch Strip with a DAW \[p.117\]](#) in the [MCC \[p.84\]](#) chapter.

1.2.4. Swing/Randomness/Probability



Swing introduces a "shuffle" feel to the sequences. It can affect the entire Project (all three sequencers at once) or only the selected sequencer, leaving the others untouched.

Randomness and Probability introduce increasing amounts of unpredictability to the sequences. As with the Swing setting, these controls can affect the entire Project (all three sequencers at once) or only the current sequencer, leaving the others untouched.

For more details on all three features, see [Swing \[p.51\]](#) and [Randomness/Probability \[p.52\]](#) in the [Projects \[p.49\]](#) chapter.

1.2.5. Tempo and synchronization



Set the Project tempo here, either with a twist of the RATE/FINE encoder or by tapping the TAP/METRO button.

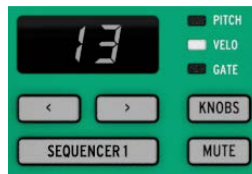
The display will normally display the tempo, but it changes temporarily to show encoder values when editing.

The metronome sends user-definable note data over MIDI, and can be toggled on/off using the SHIFT and TAP/METRO buttons together.

There are four Sync options which are accessed by pressing the Sync button repeatedly while the unit is stopped.

For descriptions of the tempo features see the [Tempo \[p.50\]](#) section of the [Projects \[p.49\]](#) chapter. For the sync features see the [Synchronization \[p.74\]](#) chapter.

1.2.6. Sequencer control



BeatStep Pro provides three independent sequencers: two step sequencers and a drum sequencer. Each sequencer has 16 patterns available per Project, and the patterns can be up to 64 steps long. The Mute buttons can be used to bring the sequences in and out of the mix instantly. And of course the various controls can be used to modify the sequences during performance.

i The BeatStep Pro will behave as a MIDI-to-CV converter while the unit is in Play mode if Sequencer 1 or Sequencer 2 are muted. If Seq1 or Seq2 are not muted while playing, it does not act as a MIDI to CV converter, but as a sequencer.

There are unique features available for each type of sequencer, so be sure to read the [Step Sequencer \[p.24\]](#) and [Drum Sequencer \[p.38\]](#) chapters to learn more.

1.2.7. Project/Control modes



There are 16 Projects available in the BeatStep Pro, and each Project contains 16 patterns per sequencer. This allows for tens of thousands of possible combinations, all available instantly. The Project button is used to select the desired Project.

Each Project also contains 16 [Scenes \[p.82\]](#). Each Scene contains a pattern or a [chain \[p.66\]](#) of patterns for SEQ1, SEQ2, and DRUM.

The Control Mode button transforms the BeatStep Pro front panel into a monster MIDI controller, with every encoder, pad, and button on the right side of the instrument able to send data to external MIDI devices and/or your computer. The MIDI messages can be precisely defined by the MIDI Control Center software, which is available for free on the [Arturia website](#).

For a full explanation of these features, see the [Project \[p.49\]](#) and [Control Mode \[p.79\]](#) chapters.

1.2.8. Control Encoders



The 16 "endless" encoders are highly versatile:

- In Control Mode they become fully assignable encoders for sending MIDI data (CC, program change, NRPN, etc.).
- They will edit the Pitch, Velocity or Gate time for each step in a sequence.
- They can shift the timing of individual drums forward or backward (Drum sequencer only)
- They are touch-sensitive, so when you want to know the current value of a parameter before you edit it, simply touch the corresponding encoder.

And we've only scratched the surface of what the encoders can do. To learn more about them, see [Encoders \[p.26\]](#), [Selecting the Encoder Editing Options \[p.41\]](#), and the [Control Mode \[p.79\]](#) chapter.

1.2.9. Step buttons



A familiar use for the Step buttons is to enable/disable events in a pattern. But they do many other things also, often in combination with another button. For example, they are used with the LST STEP button to set the pattern length.

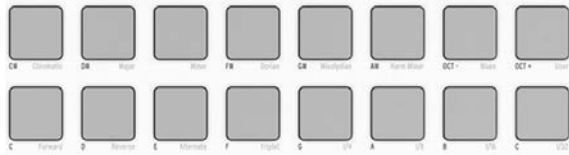
In the sections of this manual you will learn how the Step buttons are used to:

- Save and recall a [Project \[p.50\]](#), [Scene \[p.82\]](#), or [Sequencer pattern \[p.36\]](#)
- Make a [pattern chain \[p.66\]](#)
- [Enter notes in a Sequencer pattern \[p.30\]](#)
- [Clear note data from a pattern \(or clear all data\) \[p.20\]](#)
- Toggle the function of the [Roller/Looper strip \[p.80\]](#)
- Toggle the pattern load mode ([Instant or Wait Until End \[p.122\]](#))
- Toggle the [Global/Per Pattern tempo setting \[p.83\]](#)
- Toggle the [Polyrhythm \[p.63\]](#) setting
- [Select the MIDI channel \[p.57\]](#) for a Sequencer

And with the MIDI Control Center you can configure the Step buttons to do anything a pad can do in Control Mode.

But one of their most distinctive features is that they are color-coded to match the sequencer that is currently selected. So when Sequencer 1 is active the Step buttons are green; for Sequencer 2 they are yellow; and for the Drum sequencer they are purple. (Hint: This color scheme is followed on the rear panel, too.)

1.2.10. Velocity/Pressure Pads



The mode also determines the function of the 16 velocity- and pressure-sensitive pads:

- In Control Mode they are assignable to almost any MIDI-related function.
- In Sequencer mode most of the pads trigger notes, and pads 15 and 16 are used to shift the octave range. When used with the SEQUENCER 1 or SEQUENCER 2 button, the pads are used to transpose the sequence chromatically.
- If Drum mode is selected the pads trigger notes.
 - Used with the DRUM button, the pads let you select the corresponding drum without hearing it play.
 - Individual drums may be muted during recording and playback (DRUM + MUTE + the desired pad).
- Used with the SHIFT button the pads set the playback mode, timing value, and the input scale (SEQ1 and SEQ2 only).

See the [Control Mode \[p.79\]](#), [Step Sequencer \[p.24\]](#), and [Drum Sequencer \[p.38\]](#) chapters for specific information and procedures.



⚠: Pads 1-8 are the bottom row of pads, and Pads 9-16 are the upper row of pads.

1.3. Rear panel overview, part 1



1.3.1. Pitch/Velo/Gate outputs

These are normally used together to send electrical signals to an external device such as Arturia's powerhouse monophonic analog synthesizers (MatrixBrute, MiniBrute/SE, and MicroBrute/SE) or to a modular analog synthesizer. The Pitch output is often referred to as Control Voltage or CV.

1.3.2. Drum Gate outputs

These outputs correspond to pads 1-8 (the bottom row of pads) when the Drum sequencer is selected. When these pads are played manually or as part of a pattern they will send trigger pulses to the Drum gate outputs, which in turn can be used to trigger a sound on an external device.

i ⚡: Only the Gate on/off signals are transmitted for pads 1-8 from these connectors. In contrast, the MIDI connector sends Velocity and Gate Time information for all 16 pads. Read more about the [Drum Gates here \[p.78\]](#).

1.4. Rear panel overview, part 2



1.4.1. Clock input/output

The included DIN adapter (1/8" TRS jack to 5-pin DIN, black) allows BeatStep Pro to interface with pre-MIDI technology that used these connectors for synchronization, such as early drum machines by Korg and Roland. See the [Synchronization \[p.74\]](#) chapter for more details.



ⓘ The use of a TRS jack will provide both clock and start signals. A TS jack will provide only clock signals.

1.4.2. MIDI input/output

Use the included MIDI adapters (1/8" TRS jack to 5-pin DIN, gray) to send control signals of all sorts to external MIDI-compatible devices. Each of BeatStep Pro's encoders, the pads, and the Step buttons can be configured independently to send specific MIDI data.

1.4.3. USB/DC IN

This connector provides the power and data connections to a computer. It can also be used with a standard USB mobile phone charger (5V and minimum 500mA), allowing you to use your controller presets and sequences even without a computer present.

1.4.4. Power switch

If you want to turn the unit off without disconnecting the USB cable, use this recessed switch.

1.4.5. Kensington lock port

BeatStep Pro 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. What is a Project?

BeatStep Pro contains 16 [Projects \[p.49\]](#). Each Project holds 16 patterns for each of the three sequencers (SEQ1, SEQ2 and DRUM), including all of the settings for each pattern.

A [Project \[p.49\]](#) also includes 16 [Scenes \[p.82\]](#) and a [Control Mode \[p.79\]](#) preset, with independent settings defined by the [MIDI Control Center \[p.84\]](#) for each BeatStep Pro control.

A [Scene \[p.82\]](#) contains a pattern or a [pattern chain \[p.66\]](#) for SEQ1, SEQ2 and DRUM. BeatStep Pro can store 16 Scenes per project. The Scene feature is enabled and disabled using the [MIDI Control Center \[p.84\]](#) and accessed from within [Control Mode \[p.79\]](#).

2.2. The Blank Project

Each of the Projects and patterns starts out with default, “blank slate” settings.

For Control Mode this means:

- The encoders are assigned to a useful variety of MIDI CC numbers
- The pads are assigned to play notes based on a chromatic scale
- Every control is set to transmit data on the User MIDI Channel to both USB and the MIDI output



The default User MIDI Channel is 1. This can be changed from the front panel in Control mode by holding the CHAN button and pressing the Step button that corresponds to the desired MIDI Channel number. It can also be changed using the [MIDI Control Center \[p.84\]](#).

For all three sequencers this means:

- Playback mode is set to Forward
- Time division is set to 1/16 with Triplet set to Off
- Gate time for each step is 50%
- Swing is set to 50%
- Randomness and Probability are set to 0.

For SEQ1 and SEQ2 this means:

- All steps in each sequence are disabled, with a pattern length of 16 steps
- The sequence steps are set to the same MIDI note (C3, or MIDI Note #60)
- The pads are not transposed chromatically nor by octave
- The Chromatic scale will be used for encoder pitch edits

For DRUM this means:

- Each step is set to default values for Shift (0), Velocity (100), and Gate Time (50%)
- Polyrhythm is set to Off

The [Step Sequencers \[p.24\]](#) chapter has details about editing a sequence and describes each of the SEQ mode parameters.

The [Drum Sequencer \[p.38\]](#) chapter describes all of the Drum mode features.

See the [MIDI Control Center \[p.84\]](#) chapter to learn how to use this software to configure BeatStep Pro so its controls are perfectly matched to your system. It also shows you how to access parameters that are not available from the front panel.

The [Parameter Charts \[p.125\]](#) chapter has a complete list of the default settings for each control.

2.3. Making a Project

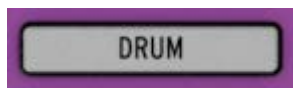
BeatStep Pro is such a spontaneous compositional tool that as soon as you change almost anything, you have started a new Project. At the heart of each Project are the patterns it contains, so let's take a quick look at how to record a pattern.

2.3.1. Select a Sequencer

First decide which of the three sequencers you want to use as the basis for your Project. If you have a melody in your head or want to improvise a bass line, select either SEQ1 or SEQ2 by pressing its button.



If you prefer to start building a drum pattern first, press the DRUM button instead.



2.3.2. Select a pattern

You can record to any one of the 16 patterns. There are two ways to select a pattern:

- Use the < > buttons until you reach the desired pattern number



- Hold the sequencer select button and press one of the 16 Step buttons



It isn't necessary to have the pattern numbers be the same for all three sequencers: you can have SEQ1 set to pattern 01, SEQ2 set to pattern 02, and DRUM set to pattern 03.

2.3.3. Clear a pattern

If you want to start recording on the selected sequencer with a pattern that's completely empty, hold the SHIFT button and press Step button 1. This will clear all of the data in the current pattern, so be careful!

If you want to copy the current data to a different location first, follow the instructions in the [Saving a Sequence \[p.36\]](#) section. You can also use the [MIDI Control Center \[p.84\]](#) to back up the pattern to your computer.

There's a less destructive option that will clear only the step data from the pattern: SHIFT + Step button 2. This will leave the following sequence-level parameters as they were:

- Sequence Length
- Playback Direction
- Time Division
- Transposition
- Scale

2.3.4. Set the tempo

When Sync is set to Internal, the tempo range of BeatStep Pro is 30-300 beats per minute (bpm).

There are two ways to set the tempo for your project:

- Turn the RATE/FINE encoder.
- Use the TAP/METRO button.

There are some more very useful features in this section:

- For fine tempo adjustment, hold SHIFT and then turn the RATE/FINE encoder.
- To enable the metronome, hold SHIFT and press TAP/METRO.

The MIDI Control Center offers even more features related to tempo and the metronome. See the [Sync \[p.121\]](#) section of the [MIDI Control Center \[p.84\]](#) chapter for details.



! When Sync is set to External the BeatStep Pro may respond less reliably if the external source is set outside the range of 30-300 bpm.

2.3.5. Enable the metronome

The metronome sends note data on MIDI channel 10 to an external device or your DAW. The MIDI channel and note can be changed using the [MIDI Control Center \[p.84\]](#).

To enable the metronome, hold SHIFT and press the TAP/METRO button. The same action will disable it.



! If the metronome has been enabled the TAP/METRO button will be lit when you press the SHIFT button.

2.3.6. Record a pattern (or three)

If you've followed all of the steps in [Making a Project \[p.19\]](#) up to this point, then let's make a quick pattern on each sequencer. For a more detailed explanation of the following procedures, see [Sequence Creation \[p.25\]](#) (SEQ1, SEQ2) and [Pattern Creation \[p.39\]](#) (DRUM).

- Select SEQ1, press the RECORD button and press the PLAY button. The TAP/METRO button will begin flashing, and the Step buttons will turn white one at a time to indicate the current position in the pattern.
- Use the pads as a keyboard to enter notes in real time. The notes will be recorded on your pattern, quantized to the current grid.
- Toggle the Step buttons on or off and tweak the 16 encoders to change the pitches of the notes. You should hear a crazy little melody taking shape. Press STOP to exit Record mode.
- Select SEQ2 and repeat the process described above.
- Select DRUM. If you want to figure out a beat before you begin recording, you can press PLAY and practice on the pads while SEQ1 and SEQ2 play their parts. When you're ready, enter Record mode as before (RECORD + PLAY) and record a drum beat.
- Add or remove some drum events using the step buttons. The 16 encoders can be used to change the velocity, gate length or timing shift of the events. We will cover that process in the [Selecting the Encoder Editing Options \[p.41\]](#) section of the [Drum Sequencer \[p.38\]](#) chapter.



! If you want to keep what you've created, be sure to save the Project or you could lose everything. Refer to the [Project Save \[p.22\]](#) section below to learn how. ! Always save a sequencer pattern before selecting a new one, even within the same Project. This process is covered in the [Saving a sequence \[p.36\]](#) and [Saving a Drum pattern \[p.48\]](#) sections of the manual.

2.3.7. Sequencer Mute

Each sequencer has a dedicated MUTE button, which is great for live performances and creative sessions. They can help you focus on the interactions of any two sequencers at a time, or you can use them to work on one of the patterns without hearing the others.

For the drum sequencer, you can choose to mute only specific pads by holding the DRUM button and MUTE button simultaneously, and pressing the pads you want to mute. The Drum sequencer's MUTE button will blink to show that some of the drum tracks are muted.

The status of the MUTE buttons is not stored with the Project.

2.4. Project Save

Your patterns can be lost unless you save the Project that contains them. Saving a Project is simple! It only takes three steps.



!: When you follow these instructions you will overwrite the selected Project and all of its patterns. Be sure this is what you want to do! If not, be sure to find out which memory location is available and store the Project there instead.

Once you're sure where you want to store the Project,

- Hold the SAVE button
- Press the PROJECT button and hold it
- Press the Step button number you chose earlier.

The next time you want this Project, that's where it will be.

It's also a good idea to back up the Project and patterns using the [MIDI Control Center \[p.84\]](#). The [Store To/Recall From \[p.92\]](#) section will tell you what you need to know about that.

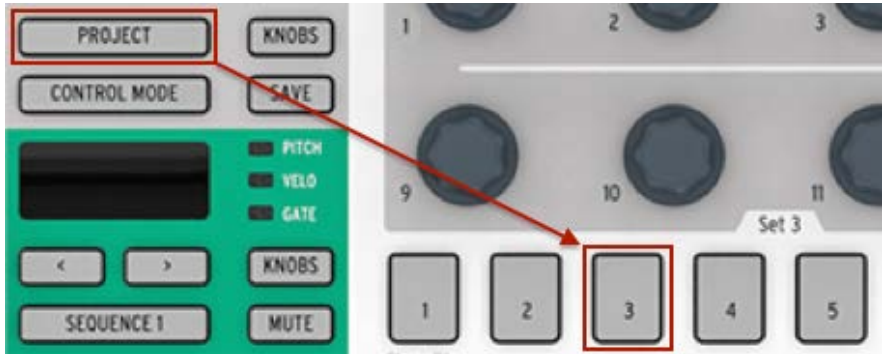


♪: Individual sequences and Drum patterns should be saved often during creative sessions. See [Saving a sequence \[p.36\]](#) and [Saving a Drum pattern \[p.48\]](#) for these procedures.

2.5. Project Load

i!: If you need to, be sure you have saved the current Project before you load in a new one, because doing so will replace all of the patterns of all three sequencers and will also load a new set of Control Mode assignments. Be sure this is what you want to do!

When you press the PROJECT button one of the Step buttons will be lit red. This helps you know which Project is currently loaded into memory. To select a new one, simply hold the PROJECT button and then press the Step button that corresponds to the Project number you want to load.



Selecting Project 03

i!: There's a preference in the [MIDI Control Center \[p.84\]](#) where you can specify whether the new Project should be loaded instantly or wait until after the Drum sequencer reaches the end of its current pattern. See the [Wait to Load Project \[p.121\]](#) section to learn about this feature.

2.6. All Notes Off

It's possible for a MIDI message to be interrupted for some reason. This can result in a stuck or 'hanging' note on the target device.

If this happens, just press the BeatStep Pro STOP button quickly three times in a row. It will then send an All Notes Off command over MIDI.

You can also send an All Notes Off command from a computer or another device and the BeatStep Pro will shut off all of the notes on its three sequencers.

3. THE STEP SEQUENCERS

The main focus of this chapter will be the sequencing features that are accessible from the front panel of the BeatStep Pro. There are more parameters available through the [MIDI Control Center \[p.84\]](#), though; see the [Sequence window \[p.97\]](#) section of that chapter for more information.

3.1. What's a step sequencer?

A step sequencer is a very basic type of music sequencer. Originally popular in the 1960's and 70's, they have been rediscovered as interest in modular synthesizers has grown. We've included virtual step sequencers in some of our analog synthesizer emulations.

A step sequencer is usually *monophonic*; i.e., it will output only one note at a time. It's different from an arpeggiator in that a step sequencer does not determine what to do based on keys you hold on a keyboard: the pitch of each note is set with a knob or a slider.

Once a sequence is running the performer's hands are free to adjust other parameters such as filters, envelope settings or pitch while the sequencer keeps looping.

Today's music often uses loops, so it makes perfect sense that step sequencers would experience a revival. With the purchase of BeatStep Pro you now have access to not one, but *two* of these unique creative tools (plus a drum sequencer!). And as you have come to expect, Arturia has taken them many steps beyond what the original devices could do.

3.2. SEQ1 and SEQ2 characteristics

Sequencer 1 and Sequencer 2 have identical features. They use the pads, Step buttons and encoders as input and control devices to help shape the sequences in the following ways:

- The pads can transpose the sequence while it is running, and are used with the SHIFT button to define various sequence parameters such as playback mode.
- The Step buttons show which sequence steps are active, allow you to enable and disable them, and indicate the current position of the sequence.
- The encoders can alter the pitch, velocity and gate time of each step in the sequence.

See the [Sequence window \[p.97\]](#) section for information about sequencer features that are only available in the [MIDI Control Center \[p.84\]](#) software.

3.3. Sequence Creation

The BeatStep Pro provides an astounding array of options for music creation. Each of the following features plays a major role in shaping a sequence:

3.3.1. Quantize Recording

The process of recording a sequence has been described in the Basic Operations chapter. But there's an important concept to know about recording in real time using the pads or incoming MIDI: the notes will be quantized according to the time division you have selected.

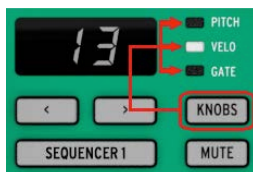
So for example, if 1/4 is the time division setting then the recorded notes will quantize forward or back to the nearest quarter note. And as the sequence loops you can replace certain notes by playing a new one within the timing range of those notes.

3.3.2. Encoders

The 16 encoders input the values of three different parameters for each sequence step:

- The note each step will play
- The velocity of the note
- The duration (gate time) of the note.

The parameter being affected by the encoders is determined by the KNOBS button:



Press this button repeatedly to cycle between the three options (Pitch, Velo, and Gate), then edit that value with the encoder that corresponds to the sequence step.

i The encoders are touch-sensitive, so you can touch an encoder to view the existing value for a parameter before selecting a new value. In other words, if you'd like to know the pitch of step 8 in the sequence, simply touch encoder 8 without turning it. To check the velocity of step 8, select VELO with the KNOBS button and then touch encoder 8.

Now let's focus on each editing option briefly.

3.3.2.1. Pitch

The encoders can edit the pitch of a step +/- 36 semitones from the default pitch of middle C (MIDI note 60).

You can edit the notes whether the sequencer is playing or not. When it is stopped you will hear the edit as it is made; when it is playing you won't hear the altered note until that sequence step comes around again.

The Scale Type parameter determines which notes are available when the encoders are turned. To learn more about this see the [Scales \[p.28\]](#) section below.

3.3.2.2. Velocity

If a note in a sequence is too loud or soft you can edit its velocity using the encoders. Just select the encoder that corresponds to that step in the sequence and then choose a new value from 1-127.

The default velocity for each step is 100.

3.3.2.3. Gate Time

The Gate Time parameter is used to adjust the length of a note. Potential values are from 1% (short) to 99% (long), with additional settings of TIE and SLIDE. These values can be set independently for each step in a sequence.

A setting 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.

A setting of SLIDE (SLd) is similar to TIE over MIDI, but has a different behavior in CV:

- The note that follows a SLIDE will change the control voltage in a continuous way, with a slide time of approximately 60ms regardless of the tempo. This allows for the usual Slide effect that was found on vintage bass sequencers, for instance.

By default the Gate Time is set to 50% for each event.

There is a technique called [Fast Ties \[p.69\]](#) that allows you to tie multiple notes together very quickly. We'll cover that in the [Advanced \[p.59\]](#) chapter.

3.3.3. Scales

3.3.3.1. What the Scales do

The BeatStep Pro front panel gives you the ability to assign one of eight input scales to a step sequencer: seven preset scales and one you can customize yourself (the User scale). A scale is a sort of 'filter' that will help you to hear only the notes you want to hear in your sequence.

Here's what the Scale feature does:

- It affects the notes you hear being played back. It's quantizing the **pitch** of the events instead of their timing, forcing them to be played back within a certain framework of notes.
- You can switch from one scale to the next to hear how the different scales affect the music without altering the original notes that were played on the pads. In other words, changing the scale setting is an act that is reversible; you can always reselect the original scale.
- A scale also gives the encoders a specific outline of notes to follow as they are turned. So rather than always altering the pitch chromatically, you have the option to specify a different musical scale. This is useful when you want to change the pitch of one or more sequence steps during playback: select the Scale that matches the song and no matter what, you'll never select a wrong note.
- There's a definable User scale that can be constructed using the [MIDI Control Center \[p.84\]](#). It can have anywhere from 1 to 12 notes per octave.

Here's what the Scale feature *does not* do:

- It doesn't change the notes that are available on the pads. Those will always be the notes in the chromatic scale, from C to C, as printed below the lower left corners of each button.
- It doesn't change the original notes that were input to the sequence steps using the pads. If you entered C D E F G into the sequence, the BeatStep Pro will remember those notes. If you select the Minor Scale afterward, you'll hear C D Eb F G during playback instead of C D E F G. But you can always switch back to the original notes.



ⓘ: When the original pitch of the step is not available within the selected scale, the closest note in the scale. If the played note is at the same distance between two notes of the scale, the next lowest pitch will be played. For example: If the scale contains C, D, and E, but the sequencer needs to play a D#, it will play a D at that step instead. The result will be C, D, and D.

3.3.3.2. Scale Types

Here's what each of the Scales looks like. Keep in mind that the last note pictured in each scale type is actually the first note of the next octave:



Chromatic

There are twelve notes in the chromatic scale: that's the largest number a Scale can have. It's like a musical 'bypass' setting: all of the notes entered by the pads will play back at their original pitches, and all notes are available when the encoder is turned.

Now the 'filters' will start to kick in. There are only eight notes in most of these Scales:



Major



Minor



Dorian



Mixolydian



Harmonic Minor



Blues

Notice that the Blues Scale only contains seven notes.

And last but certainly not least, the...



User Scale

Only you know what the User Scale will be: choose any note in the chromatic scale and any number of notes between 1 and 12. To learn how to create one, see the [User Scale \[p.124\]](#) section of the [MIDI Control Center \[p.84\]](#) chapter.

3.3.3.3. How the root note of a sequence is determined

The actual note sent by a BeatStep Pro sequence at any given moment is the sum of two parts:

1. The note being played by the current sequence step, as determined by the current scale
2. The transposition amount set by a pad or by a note received over MIDI. (See the [Transposition \[p.34\]](#) section for more information.)

3.3.4. Step buttons: note on/off/edit

One major use for the Step buttons is to enable or disable each step in the sequence. When a Step button is lit, a note will play at the Pitch and Velocity you entered and will keep playing for as long as you want it to (Gate time). To silence that note event, simply press that Step button. When its LED is dark, that event will not play the next time.

The Step buttons can also be used to change the pitch of a note while the sequence is playing back. There are two ways to do this:

1. Hold a pad and press the desired Step button
2. Hold a Step button and press the desired pad. The advantage of this method is that the pads are velocity-sensitive, so the velocity of the entered note will be remembered.

3.3.4.1. Viewing different Step button groups

A sequence can be longer than 16 steps (see the next section). When this is true you may see the enabled Step buttons change as the sequence crosses over from steps 1-16 to steps 17-32, etc.

You can view a particular set of 16 steps (or Step Group) by selecting that range of the sequence with one of the << or >> buttons, and you can switch to follow mode by pressing those buttons at the same time. You can disable this feature the same way.



ⓘ: A red LED above the « and » buttons indicates the current view range, while a white LED indicates the Step group that contains the last step of the sequence. When the LED is pink, both things are true: you are viewing the Step group that contains the last step of the sequence.

3.3.5. Default Sequence Length

The default length is 16 steps, but a sequence can be up to 64 steps long.

If you'd like your sequence to be less than 16 steps long, simply hold the LST STEP button and then press the Step button that corresponds to the desired setting. If you'd like it to be longer than 16 steps, see [Lengths > 16 steps \[p.32\]](#) below.

3.3.5.1. Sequence Follow mode

When working with sequences longer than 16 steps there is an important feature to know. When the double arrow buttons (<< >>) are pressed at the same time, their LEDs will toggle off and on. This takes BeatStep Pro into and out of Sequence Follow mode.

When this mode is active during playback, the Step Group LEDs and the Step buttons will show steps 1-16, then steps 17-32, then return to steps 1-16, and so on.

When « » LEDs are	Sequence Follow mode is
Dark	OFF
Lit	ON



⚠: The playback of the sequence itself is not affected when Sequence Follow mode is disabled. This only affects what you are seeing, which should make it easier to edit particular portions of the sequence.

3.3.5.2. Lengths > 16 steps

To make your sequence longer than 16 steps will involve the LST STEP button, the « » buttons and the Step Group LEDs.

For example, let's lengthen a 16-step sequence to 32 steps. We'll use SEQ1 this time.

First, press the Sequencer 1 button to select SEQ1.

Next, exit Sequence Follow mode by pressing the << and >> buttons at the same time. The buttons should be dark.

Here's what to do next:

- Hold the LST STEP button.
- Press the >> button once. A white LED will appear above the number 32.
- Press Step button 16 (technically it's button 32 now). It will turn green.
- Release the LST STEP button. Step 32 has now been defined as the last step in the sequence.

Now press << and >> at the same time to enter Sequence Follow mode (the buttons should be lit).

Next, press Play. You should see the Step buttons cycling through two sets of 16 steps, one with data and one without.

You should also see the Step Group LEDs changing every 16 steps:

- Steps 1-16: Red LED over #16, White LED over #32
- Steps 17-32: unlit LED over #16, Pink LED over #32 (White + Red)

The Red LED indicates the current position of the sequence. The White LED means that the last step in the sequence is during steps 17-32.

If you decide you want more than 32 steps for this sequence, hold the LST STEP button and press >> until the White LED is over the right number. Then press the appropriate Step button and you're ready to create.

 It is possible to extend a sequencer pattern by copying the existing data to the end. To learn how to do this, see the [Extending a sequence \[p.59\]](#) section in the [Advanced Features \[p.59\]](#) chapter.

3.3.5.3. Editing steps 17-32

If you want to focus on steps 17-32 while editing, here's what to do:

- Disable Sequence Follow mode (turn off the << >> buttons).
- Press >> once to move the Red LED over #32.

The Step buttons now show the status of steps 17-32. You can play the sequence while editing, if you want; it will play all 32 steps, but the Step buttons will stay focused on steps 17-32.

Simply edit the steps as desired with the Step buttons and encoders. When you're finished you can re-enter Sequence Follow mode with the << >> buttons if you like.

3.3.6. Pads

For SEQ1 and SEQ2 the pads act like a piano keyboard, starting with pad 1 on the left side of the lower row. You'll notice this pad is labeled with the note name "C". From there the note names proceed upward chromatically through an entire octave.

The pads with note names will transpose a sequence while it is playing. To do this for SEQ1, for example, hold the SEQUENCER 1 button and press one of the pads with a note name (C, C#, D, etc).



Sequences will not transpose while they are in Record mode.

The pads also have secondary functions, which are accessed by holding SHIFT and pressing one of the pads. See the [Shift button chart \[p.72\]](#) in the [Advanced Features \[p.59\]](#) chapter for a list of these functions.

3.3.6.1. Input Scale

There are words like 'Chromatic' and 'Minor' printed beneath the pads on the top row. These are the names of the Input Scales, which are described in the [Scales \[p.28\]](#) section above. To select one, hold the SHIFT button and press one of those pads.

Remember: Selecting a new Input Scale doesn't change the notes that were originally entered into the sequence. But it does change what you will hear during sequence playback. It also chooses a certain set of notes that an encoder can select if you edit the Pitch of a step.

The default selection for this parameter is the Chromatic Scale. The User Scale can be defined using the [MIDI Control Center \[p.84\]](#) (see the [User Scale \[p.124\]](#) section there).

3.3.6.2. Octave range

There are two pads labeled "OCT-" and "OCT+" on the top row (pads 15 and 16). They have two functions:

1. To transpose the pads up or down an octave at a time so you can access notes within +/- 3 octaves while playing the pads. This does not edit the sequence.
2. To transpose the sequence up or down an octave at a time so your sequence can be played back in whatever octave you want. This is done within Transpose mode (hold the Sequencer 1 or Sequencer 2 button and press a pad). It is an edit to the sequence that must be saved in order to be preserved.



There is one octave range for the pads when they act as a keyboard, and one octave range when the pads act in Transpose mode. Changing the octave in Transpose mode will also affect the octave range of the pads in Keyboard mode. Changing the octave of the pads in Keyboard mode will not affect the octave set in Transpose mode.

To reset the Octave range, press "OCT-" and "OCT+" at the same time. If the octave is reset while in Keyboard mode it will not transpose the sequence, but if it is done while in Transpose mode it will transpose both the sequence and the pads.

3.3.6.3. Chromatic transposition

In addition to transposing the octave range of a sequence, there are two ways to transpose a melodic sequence chromatically:

1. Hold the SEQUENCER 1 or SEQUENCER 2 button and press one of the pads with a note name (C, C#, D, etc.)
2. Send a note to the BeatStep Pro on the [Input Channel \[p.58\]](#) as specified in the [MIDI Control Center \[p.84\]](#).

You can transpose a sequence whether the sequencer is running or not.

3.3.6.4. Playback mode

The first three buttons on the bottom row of pads are used with the SHIFT button to select the Playback mode (i.e., the playback direction). Here's what each option does, using a four-step sequence as an example:

- Forward: plays sequence steps 1, 2, 3, 4 | 1, 2, 3, 4, etc.
- Reverse: plays sequence steps 4, 3, 2, 1 | 4, 3, 2, 1, etc.
- Alternate: plays through the sequence steps first in one direction, then the other. The result: 1, 2, 3, 4 | 4, 3, 2, 1 | 1, 2, 3, 4, etc.

The default setting is Forward.

3.3.6.5. Time division

Depending on the current setting, this parameter can be a quick way to double the playback rate of your sequence or cut it in half. Triplet options are available, too.

To set the time division, press and hold the SHIFT button and then press the pad that corresponds to the timing you want:

- Quarter notes (1/4)
- Eighth notes (1/8)
- Sixteenth notes (1/16)
- Thirty-second notes (1/32)

To switch any of those time divisions into their triplet values, hold SHIFT and then press the Triplet pad.

The default setting is 1/16.

3.3.7. Swing: Project vs. Current Track

The Swing feature is described in greater detail in the [Swing \[p.51\]](#) section of the [Projects \[p.49\]](#) chapter, but it is important to know that each sequencer can have its own Swing % setting.

To try this, press the CURRENT TRACK button. After this, any changes to the swing percentage will affect only the current sequence on the selected sequencer. Then you can select the other sequencers and edit their Swing settings also.



! Be sure to save the sequence after making an edit to its Current Track setting.

To make a sequence use the project-level Swing % again, switch off the CURRENT TRACK button within that sequence. The project-level swing percentage is not saved with the Scenes, sequences, or patterns, but it is saved with each Project.

The default Swing setting is 50%.

3.3.7.1. How Project and Current Track Swing values interact

The actual Swing value for a sequence is calculated in this way:

Project value + Current Track value = Swing value

In other words, it's a combination of the project-level value and the Current Track value, assuming that the Current Track parameter is on.

For example, if Current Track swing value is set to 60 (default + 10) and the project-level swing value is moved from 50 to 60 (default +10), then the swing value you hear will be 70 (default + 20).

In this scenario it is not possible to have a swing value lower than 60 for that sequencer, so the lowest value you will be able to select with the Current Track parameter is 60. In fact, the Current Track parameter will be only able to select values between 60 and 75 until the project-level value is changed.



! The overall swing value can never exceed 75.

3.3.8. Randomness/Probability Features

The Randomness and Probability features are described in greater detail in the [Randomness/Probability \[p.52\]](#) section of the [Projects \[p.49\]](#) chapter, but it is important to know that each sequencer can have its own settings for these parameters.

To try this, press the CURRENT TRACK button. After this, any changes to the Randomness and Probability settings will affect only the current sequence on the selected sequencer. Then you can select the other sequencers and edit their settings for these parameters as well.



!: Be sure to save the sequence after making an edit to its Current Track setting.

To make a sequence use the project-level Randomness and Probability settings again, switch off the CURRENT TRACK button within that sequence. The project-level values are not saved with the Scenes, sequences, or patterns, but they are saved with each Project.

The default setting is 0 for each parameter.

3.3.8.1. How the Project and Current Track values interact

The Randomness and Probability parameter values for a sequence behave differently than the Swing values. In this case the project-level values and the Current Track values are mutually exclusive: the sequence will pay attention to the project-level values or the Current Track values, not both.

So if the Current Track parameter is on, those are the values that will be used for the Randomness and Probability parameters. If the Current Track parameter is off, the project-level values for those parameters will be used instead.

3.4. Saving a sequencer pattern

It's important to know that if you switch to another pattern within a sequencer, you will lose any edits you made to the first pattern unless you save it first. You will know that a pattern has been modified if a dot is visible next to the pattern number in the display.

You can save individual patterns from within a sequencer without having to save the whole Project. Here's how:

- If it has not already been selected, press the appropriate SEQUENCER button (-1 or -2).
- Hold the SAVE button. The Step button corresponding to the number of the current pattern will light up with the current sequencer's color (SEQ1 = green, SEQ2 = yellow). If you have saved other patterns their corresponding Step buttons will light up in white to show that they are not empty.
- Select the Step button that corresponds to the location where you want your new pattern to be saved.
- Release the buttons. Your pattern has been saved to the location you selected.

3.5. Copying a pattern

You can also copy a pattern from one location within the sequencer to another, even if no edits have been made. To do this, simply follow the steps described above in [Saving a sequencer pattern \[p.36\]](#) and select a new location number instead of the original number.

3.6. Copying a pattern between SEQ1 and SEQ2

The BeatStep Pro allows you to copy patterns from one melodic sequencer to the other. For example, if you'd like to copy pattern O1 from SEQ1 into pattern O4 of SEQ2:

- Press the SEQUENCER 1 button.
- Select pattern O1.
- Press and hold the SAVE button until the final step.
- Press and hold the SEQUENCER 2 button until the final step.
- Press Step button 4 to select the destination pattern. Sequencer 2 will display a blinking "O4" to indicate that the pattern is being written to the new location.
- Release all buttons.

3.7. Clearing a pattern

The process of [clearing a pattern \[p.20\]](#) is described in the Basics chapter.

4. THE DRUM SEQUENCER

4.1. DRUM vs. SEQ: a comparison

SEQ1/SEQ2 and DRUM look similar, but the Drum sequencer is different in many ways:

- Drum mode will record parts for up to 16 different instruments, not one.
- Each of the 16 drums has its own 'track', and when one is selected the Step buttons display the pattern events for that drum. This is similar to the 'classic' workflow of early drum machines.
- Pads 1-8 (the bottom row) will send Gate on/off signals to Drum Gates 1-8, as will any drum sequencer events entered by those pads. Output from all 16 pads is also sent over MIDI.
- The first option selected by the KNOBS button is Shift, not Pitch. The encoders can be used to 'shift' the timing of Drum events forward or backward in relation to the beat.
- The Drum Sequencer has a feature called [Polyrhythm \[p.63\]](#) that allows each drum track to have its own length within a drum pattern. This is covered in the [Advanced Features \[p.59\]](#) chapter.

See the [Drum Window \[p.103\]](#) section of the [MIDI Control Center \[p.84\]](#) chapter for information about Drum mode features that can only be accessed using that software.

4.2. Pattern Creation

For this section we'll assume you have your BeatStep Pro in Drum mode. If you aren't sure, press the DRUM button.

4.2.1. Recording a Pattern

To record a pattern, press the Record button and then press the Play button to start the pattern. If the pattern is already playing, just press the Record button. When both are lit and the unit is running, it is in Record mode. If it isn't running, check the Sync settings (see the [Synchronization \[p.74\]](#) chapter).

Now play one or more pads. Whatever you play will be captured as a part of the pattern. You can toggle individual events on and off with the Step buttons.

You can also record using an external MIDI/USB source, but the only steps that will be recorded are ones that correspond to the current drum note mapping. For more information see the [Drum Map \[p.124\]](#) section of the [MIDI Control Center \[p.84\]](#) chapter.

4.2.1.1. About quantize recording

There's an important concept to know about recording in real time using the pads or incoming MIDI: the notes will be quantized according to the time division you have selected.

So for example, if 1/16 is the time division setting then the recorded notes will quantize forward or backward to the nearest sixteenth note. And as the pattern loops you can replace certain notes by playing new ones within the timing range of those notes.

4.2.2. Selecting a Drum

To select a Drum instrument for individual track editing, simply tap a pad. When the pad is lit solid that means the Drum has been selected.

To select a Drum instrument without hearing it, hold the DRUM button and press a pad.

At this point the Step buttons will display the events that exist in the pattern for this Drum. You can use the KNOBS button and the encoders to edit particular events if you like. Use the Step buttons to toggle events on and off as needed.

4.2.3. Muting a Drum

If you'd like to mute one or more drums while creating your pattern or during performance, this is easy:

- Start in DRUM mode
- Hold the DRUM button
- Hold the MUTE button
- Press the pad that corresponds to the drum or drums you would like to mute. The muted pads will light solid so you can see which ones are muted.



♪: When individual Drum tracks are muted the Mute button will flash. When the entire Drum sequencer is muted the Mute button will be lit solid.

The same process is used to unmute the drums: hold DRUM + MUTE and press the desired pads to unmute them one by one. If you'd like to unmute them all at once, just press the MUTE button.

4.2.4. Selecting the Encoder Editing Options

Use the KNOBS button to cycle through the following editing options for the encoders.

4.2.4.1. Shift

The encoders can be used to 'shift' the timing of Drum events forward or backward in relation to the beat. This can help add a 'human' feel to your drum patterns. The range is -50 to +50, or half of the Time Division value.

4.2.4.2. Velocity

If a drum event in the pattern is too loud or soft you can edit its velocity using the encoders. Just select the drum in question with the pads and then use the encoder that corresponds to that step in the sequence. Turning the encoder will choose a new value from 1-127.

The default velocity is 100.



⚙️: Velocity values are not transmitted to the Drum Gate outputs.

4.2.4.3. Gate Time

The Gate Time parameter is used to adjust the length of a note. Potential values are from 1% (short) to 99% (long), with an additional setting of TIE. These values can be set independently for each step in a pattern.

A setting of TIE will keep the Drum Gate open through the duration of the step that follows the tied step. Multiple adjacent steps can be tied together in this way.

By default the Gate Time is set to 50% for each event.

There is a technique called [Fast Ties \[p.69\]](#) that allows you to tie multiple drum events together very quickly. We'll cover that in the [Advanced \[p.59\]](#) chapter.

4.2.5. Step-editing a pattern

One major use for the Step buttons is to enable or disable each step in the pattern. When a Step button is lit, a note will play at the Velocity you played on the pad and will keep playing for as long as you want it to (Gate time). To silence that note event, simply press that Step button. When its LED is dark, that event will not play the next time.

The Step buttons can also be used to change the velocity of an existing note while the sequence is playing back. Here's how:

1. Select a Drum track by pressing a pad
2. Hold the Step button of an existing event and press the pad. The velocity value will be remembered.

4.2.5.1. Viewing a different Step button group

A pattern can be longer than 16 steps (see the next section). When this is true you may see the enabled Step buttons change as the sequence crosses over from steps 1-16 to steps 17-32, etc.

You can view a particular set of 16 steps by selecting that range of the pattern with one of the « or » buttons, and then lock the view by pressing those buttons at the same time. You can disable this feature the same way.



⚡: A red LED above the « and » buttons indicates the current view range, while a white LED indicates the Step group that contains the last step of the pattern. When the LED is pink, both things are true: you are viewing the Step group that contains the last step of the pattern.

4.2.6. Pattern Length

The default length is 16 steps, but a pattern can be up to 64 steps long.

If you'd like your pattern to be less than 16 steps long, simply hold the LST STEP button and then press the Step button that corresponds to the desired setting. If you'd like it to be longer than 16 steps, see [Pattern Lengths > 16 steps \[p.44\]](#) below.

4.2.6.1. Pattern Follow mode

When working with patterns longer than 16 steps there is an important feature to know. When the double arrow buttons (« ») are pressed at the same time, their LEDs will toggle off and on. This takes BeatStep Pro into and out of Pattern Follow mode.

When this mode is active during playback, the Step Group LEDs and the Step buttons will show steps 1-16, then steps 17-32, then return to steps 1-16, and so on.

When « » LEDs are	Pattern Follow mode is
Dark	OFF
Lit	ON

 The playback of the pattern itself is not affected when Pattern Follow mode is disabled. This only affects what you are seeing, which should make it easier to edit particular sections of the pattern.

4.2.6.2. Pattern Lengths > 16 steps

To make your pattern longer than 16 steps will involve the LST STEP button, the « » buttons and the Step Group LEDs.

For example, let's lengthen a 16-step pattern to 32 steps.

First, press the DRUM button to select the Drum sequencer.

Next, exit Pattern Follow mode by pressing the << and >> buttons at the same time. The buttons should be dark.

Here's what to do next:

- Hold the LST STEP button.
- Press the >> button once. A white LED will appear above the number 32.
- Press Step button 16 (technically it's button 32 now). It will turn purple.
- Release the LST STEP button. Step 32 has now been defined as the last step in the pattern.

Now press << and >> at the same time to enter Pattern Follow mode (the buttons should be lit).

Next, press Play. You should see the Step buttons cycling through two sets of 16 steps, one with data and one without.

You should also see the Step Group LEDs changing every 16 steps:

- Steps 1-16: Red LED over #16, White LED over #32
- Steps 17-32: unlit LED over #16, Pink LED over #32 (White + Red)

The Red LED indicates the current position of the pattern. The White LED means that the last step in the pattern is during steps 17-32.

If you decide you want more than 32 steps for this pattern, hold the LST STEP button and press >> until the White LED is over the right number. Then press the appropriate Step button and you're ready to create.

 It is possible to extend a pattern by copying the existing data to the end. To learn how to do this, see the [Extending a Drum pattern \[p.61\]](#) sections in the [Advanced Features \[p.59\]](#) chapter.

4.2.6.3. Editing steps 17-32

If you want to focus on steps 17-32 while editing, here's what to do:

- Disable Pattern Follow mode (turn off the << >> buttons).
- Press >> once to move the Red LED over #32.

The Step buttons now show the status of steps 17-32. You can play the pattern while editing, if you want; it will play all 32 steps, but the Step buttons will stay focused on steps 17-32.

Simply edit the steps as desired with the Step buttons and encoders. When you're finished you can re-enter Pattern Follow mode with the << >> buttons if you like.

4.2.6.4. Polyrhythm

The Drum Sequencer has a feature called [Polyrhythm \[p.63\]](#) that allows each drum track to have its own length within a drum pattern. This is covered in the [Advanced Features \[p.59\]](#) chapter.

You can toggle the Polyrrhythm feature on and off from within Drum mode using SHIFT and Step button 16. If Step button is lit, Polyrrhythm mode is on; if the button is not lit, Polyrrhythm mode is Off. This parameter can also be set from within the [MIDI Control Center \[p.84\]](#) software.

4.2.7. Pad Functions

When the Drum sequencer is selected the 16 pads send note data over MIDI, including velocity. The bottom row of pads (#1-8) send gate on/off signals only to the Drum Gates on the rear panel (not velocity).

The pads also have secondary functions which are accessed by holding SHIFT and pressing one of the pads. These combinations allow you to specify the following pattern parameters:

4.2.7.1. Playback mode

The first three buttons on the bottom row of pads are used with the SHIFT button to select the Playback mode (i.e., the playback direction). Here's what each option does, using a one-bar 4/4 pattern as an example:

- **Forward:** plays pattern beats 1, 2, 3, 4 | 1, 2, 3, 4, etc.
- **Reverse:** plays pattern beats 4, 3, 2, 1 | 4, 3, 2, 1, etc.
- **Alternate:** plays through the pattern beats first in one direction, then the other. The result: 1, 2, 3, 4 | 4, 3, 2, 1 | 1, 2, 3, 4, etc.

The default setting is Forward.

4.2.7.2. Time division

Depending on the current setting, this parameter can be a quick way to double the playback rate of your drum pattern or cut it in half. Triplet options are available, too.



Note: When BSP Clock is set to 1 pulse per step, changing Drum Time Division is only available when BSP is stopped.

To set the time division, press and hold the SHIFT button and then press the pad that corresponds to the timing you want:

- Quarter notes (1/4)
- Eighth notes (1/8)
- Sixteenth notes (1/16)
- Thirty-second notes (1/32)

To switch any of those time divisions into their triplet values, hold SHIFT and then press the Triplet pad.

The default setting is 1/16.

4.2.8. The Swing feature

The Swing feature is described in greater detail in the [Swing \[p.51\]](#) section of the [Projects \[p.49\]](#) chapter, but it is important to know that the drum sequencer can have a different Swing % setting than the other sequencers.

To experiment with this, press the CURRENT TRACK button: any changes to the swing percentage after this will affect only the drum pattern. Then you can select the other sequencers and edit their Swing settings also.



! Be sure to save the pattern after making an edit to its Current Track setting.

To make a pattern use the project-level Swing % again, switch off the CURRENT TRACK button.



! The Current Track setting affects the entire Drum pattern (i.e., the individual drum tracks will be affected as a group.) ! The project-level swing percentage is not saved with the Scenes, sequences, or patterns, but it is saved with each Project.

4.2.8.1. Interaction between Project and Current Track Swing values

The actual Swing value for a pattern is calculated in this way:

Project value + Current Track value = Swing value

In other words, it's a combination of the project-level value and the Current Track value, assuming that the Current Track parameter is on.

For example, if Current Track swing value is set to 60 (default + 10) and the project-level swing value is moved from 50 to 60 (default +10), then the swing value you hear will be 70 (default + 20).

In this scenario it is not possible to have a swing value lower than 60 for that pattern, so the lowest value you will be able to select with the Current Track parameter is 60. In fact, the Current Track parameter will be only able to select values between 60 and 75 until the project-level value is changed.



! The overall swing value can never exceed 75.

4.2.9. Randomness and Probability

The Randomness and Probability features are described in greater detail in the [Randomness/Probability \[p.52\]](#) section of the [Projects \[p.49\]](#) chapter, but it is important to know that the drum sequencer can have its own settings for these parameters.

To experiment with this, press the CURRENT TRACK button: any changes to the Randomness and Probability settings after this will affect only the current drum pattern. Then you can select the other sequencers and edit their settings for these parameters as well.



!: Be sure to save the sequence after making an edit to its Current Track setting.

To make a pattern use the project-level Randomness and Probability settings again, switch off the CURRENT TRACK button. The project-level values are not saved with the Scenes, sequences, or patterns, but they are saved with each Project.

The default setting is 0 for each parameter.



!: The Current Track setting affects the entire Drum pattern (i.e., the individual drum tracks will be affected as a group.)

4.2.9.1. Interaction between the Project and Current Track values

The Randomness and Probability parameter values for a pattern behave differently than the Swing values. In this case the project-level values and the Current Track values are mutually exclusive: the pattern will pay attention to the project-level values or the Current Track values, not both.

So if the Current Track parameter is on, those are the values that will be used for the Randomness and Probability parameters. If the Current Track parameter is off, the project-level values for those parameters will be used instead.



!: The Randomness and Probability parameters will act only upon drum tracks that already contain active steps. They will not generate new steps within an empty drum track.

4.3. Saving a Drum pattern

It's important to know that if you switch to another pattern, you will lose any edits you have made to the first pattern unless you save it first. You will know that a pattern has been modified if a dot is visible next to the pattern number in the display.

You can save individual patterns from within DRUM mode without having to save the whole Project. Here's how:

- Start in DRUM mode.
- Hold the SAVE button. The Step button corresponding to the number of the current pattern will light up with the DRUM mode color (purple). If you have saved other patterns their corresponding Step buttons will light up in white to show you that they are not empty.
- Select the Step button that corresponds to the location where you want your new pattern to be saved.
- Release the buttons. Your pattern has been saved to the location you selected.

4.4. Copying a Drum pattern

You can also copy a pattern from one location within the Drum sequencer to another, even if no edits have been made. To do this, simply follow the steps described above in [Saving a Drum pattern \[p.48\]](#) and select a new location number instead of the original number.

4.5. Clearing a Drum pattern

The process of [clearing a pattern \[p.20\]](#) is described in the Basics chapter.

5. PROJECTS

There are many independent features for each sequencer. But a Project is where you will find parameters that affect all three sequencers at the same time.

The internal memory of the BeatStep Pro holds a total of 16 Projects. You could think of a Project as a single song (although it could be an entire performance). Each one contains:

- 16 patterns for each of the three sequencers (SEQ1, SEQ2 and DRUM), including all of the Swing, Randomness and Probability settings for each pattern
- A Control Mode preset (i.e., a controller map), with independent settings for each assignable control
- 16 [Scenes \[p.82\]](#) (these are only active when Scene Mode has been enabled using the [MIDI Control Center \[p.84\]](#))
- Project-level settings for Tempo, Swing, Randomness and Probability.

See the [Sync \[p.121\]](#) section of the [MIDI Control Center \[p.84\]](#) chapter for information about other parameters that affect the way Projects respond when you switch from one Project to the next.

5.1. Loading a Project

To load a Project, hold the PROJECT button and press the Step button that corresponds to the number of the Project you want to load. Be sure you have saved your current Project somewhere before you do this!

Projects can also be loading during performance while the sequences are running.



⚡: The [MIDI Control Center \[p.84\]](#) has a parameter that allows you to specify whether the new Project should be loaded instantly or wait until after the Drum sequencer reaches the end of its current pattern. See the [Wait to Load Project \[p.121\]](#) section to learn about this feature.

5.2. Project management

5.2.1. Saving a Project



! : When you follow these instructions you will overwrite the selected Project and all of its patterns. Be sure this is what you want to do! If not, be sure to find out which memory location is available and store the Project there instead.

Once you have chosen a Project location,

- Hold the SAVE button
- Press the PROJECT button and hold it
- Press the desired Step button number.

To recall this Project later follow the steps described in the [Loading a Project \[p.49\]](#) section above.

5.2.2. Copying a Project

You can also copy a Project from one location to another, even if no edits have been made. To do this, simply follow the same steps described above in the [Saving a Project \[p.50\]](#) section above, and select a new location number instead of the original number.

5.3. Tempo

The RATE/FINE encoder controls the Tempo value, which is stored per Project. It's also possible to override the per-Project settings with a Global tempo using the [MIDI Control Center \[p.84\]](#) (see the [Tempo \[p.50\]](#)) section there.

5.3.1. Fine-tuning of the Tempo

If you want to change the tempo in increments smaller than 1 bpm (to 100.33 bpm, for example), hold the SHIFT button and turn the RATE/FINE encoder clockwise. Once you've reached the desired value between .00 and .99, release the SHIFT button.

To reset the fine-tune value to zeroes, turn the RATE/FINE encoder without holding the SHIFT button.

5.3.2. Tap tempo

You can set the tempo of your Project using the TAP/METRO button. All you have to do is tap the button at the desired rate and the tempo will change to match your rhythm.



! : Tap tempo will not function when the BeatStep Pro is set to one of the external sync sources.

You can [set the number of taps \[p.50\]](#) it takes to set the Tempo using the [MIDI Control Center \[p.84\]](#).

5.4. Swing

The Swing setting can shift the timing of the notes in a sequence to lengthen the first note of a pair and shorten the second note. To affect all three sequencers at the same time, simply turn the SWING encoder to a value between 50 and 75.

Assuming the time division is set to 1/8, here's what will happen:

- With Swing set to 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:



The Project swing value will be stored when you [save the Project \[p.50\]](#).

5.4.1. Current Track button (Swing)

The CURRENT TRACK button enables each sequencer to have its own Swing setting. After you press that button, changes to the swing percentage will affect only the current pattern on the selected sequencer. Then you can select the other sequencers and edit their Swing settings also.



To return all three sequencers to the Project's Swing %, toggle the CURRENT TRACK button off within each sequencer.



The CURRENT TRACK button is disabled in [Control Mode \[p.79\]](#).

5.5. Randomness/Probability

The Randomness and Probability encoders enable you to add an element of unpredictability to your sequences and drum patterns.

To summarize how the Randomness and Probability parameters interact:

- The Randomness value determines how *much* Randomness will occur;
- The Probability value determines how *often* the Randomness will occur.

You can specify how much these features will affect the sequencers. As their levels are increased, the following aspects of the sequenced notes can be affected:

- The playback order
- The rhythmic pattern (Steps on/off)
- The velocity (dynamics)
- The gate time

The pitches of the melodic sequencer notes will not change (though their [octave ranges can be randomized \[p.116\]](#)), so the sequence will stay within the chord structure you have defined. But the rhythms, playback order, dynamics and length of the notes will become increasingly disturbed as you increase these parameter values.

In a Drum pattern, only the rhythm, dynamics and length of the events will be affected.



⚙️ The Randomness and Probability parameters will act only upon drum tracks that already contain active steps. They will not generate new steps within an empty drum track. For example, if there are no events on the snare track there will continue to be no snare events regardless of the Randomness/Probability values.

5.5.1. Randomness

The Randomness encoder has a range of 0-100%, with 0% having no effect on the music.

But at 100% the rhythm, velocity and gate times of all three sequencers will be entirely random, within the constraints of the Probability setting. The pitches of SEQ1 and SEQ2 will be selected at random also within the pitches of their current sequences.



⚙️ The MIDI Control Center has a Global parameter for SEQ1 and SEQ2 that will restrict the effect of the Randomness parameter to the octave ranges of the notes. See the [Seq1 Randomize Octave \[p.116\]](#) section of the [MCC \[p.84\]](#) chapter for more information.

The Randomness encoder is touch-sensitive, so you can check its setting without editing the value by touching the encoder.

5.5.2. Probability

The Probability value will determine how often the Randomness will occur. Its encoder has a range of 0-100%, with 0% having no effect on the music.

At 100% probability, the pattern will be constantly random with the amount based on the value set by the Randomness encoder.

At low probability settings the randomness might only change the rhythm or velocity infrequently, maybe once every few bars. Lower probabilities will mean that much of the pattern is not affected and will play as normal.

For example, if the Probability value is at 10%, then only 10% of the time something random might happen. And if the value is increased to 50%, then random variations might happen half of the time.

5.5.3. Current Track button (Randomness/Probability)

Each sequencer can have an independent setting for both the Randomness and Probability parameters. To experiment with this, press the CURRENT TRACK button: any changes to the Randomness or Probability settings after this will affect only the current sequencer. Then you can select the other sequencers and edit their settings for these parameters as well.



To return all three sequencers to the Project's Randomness and Probability settings, toggle the CURRENT TRACK button off within each sequencer.



⚠: The CURRENT TRACK button is disabled in Control Mode.

5.6. Roller/Looper modes



The touch strip has two modes: "Roller" and "Looper". You can toggle quickly between the two modes by holding the Shift button and pressing Step button 9 while in Control mode.

i There is a setting in the [MIDI Control Center \[p.84\]](#) that enables touch strip activity to be transmitted over MIDI. It can then be recorded and played back by a DAW. For details on this feature, see [Using the Touch Strip with a DAW \[p.117\]](#) in the [MCC \[p.84\]](#) chapter.

5.6.1. Roller mode

The Roller works differently depending on which mode you are in:

- DRUM/Control mode: Repeats the note of the pad you press, at the rate you select with the strip. This will override the drum track for the pads that are being rolled, but the others will continue to play.
- SEQ1/SEQ2: Overrides the sequence and becomes an arpeggiator that follows which pads you press and the order in which you press them. The arpeggiator rate is determined by where your finger is on the touch strip.

Here are some other things to know about the Roller:

5.6.1.1. General operation

The Roller will repeat a pad based on a combination of the clock source, the position of your finger on the Roller strip.

The output is also based on 4/4 time. So if your song has a bar of 7/8 and you have your finger on the strip at 1/4, the Roller output will be off by an eighth note after that bar.

Roller activity can be captured while The BeatStep Pro is recording, too:

- In DRUM mode it will record rolls on the pads
- In SEQ1/SEQ2 modes it will either roll a single pad or arpeggiate a chord when you hold down multiple pads at once.

i The recording resolution is determined by the Time Division of the pattern. In other words, if the Time Division is 1/16 the BeatStep Pro will not record 1/32 notes played with the Roller. To capture 1/32nd notes, change the Time Division to 1/32.

5.6.1.2. Sync settings

The Roller will work even when an external sync source is used. The results may vary depending on the source, though.

If playback is stopped and no external clock is being received, the Roller will output notes at a rate based on the internal clock setting.

If the Time Division is set to TRIPLET, then the roller will playback in triplet beats (except in Control Mode, which does not have a Triplet setting).

5.6.2. Looper mode

The Looper function allows you to alter the playback of the Project in real time. It will generate smaller loops based on where you touch the Looper strip and when you do it.

It controls all three sequencers at the same time, so it doesn't matter which one is selected. It also works when the unit is in Control Mode.

5.6.2.1. Loop length

The length of the loop is determined by the placement of your finger on the Looper strip, with 1/4 being the largest loop and 1/32 being the smallest. Changing the location of your finger changes the size of the loop.



ⓘ While recording in SEQ1/SEQ2 or DRUM modes, the touch strip always acts as a Roller. BeatStep Pro will not record Looper activity.

5.6.2.2. Loop start point

The start point of the loop is based on when you touch the strip during playback. You can jump to a different loop position by pressing one of the Step buttons while holding your finger on the strip.

5.7. Transpose Link

The TRNS LNK button allows SEQ1 and SEQ2 to transpose together by the same amount. The Drum sequencer will not be affected.

There are three potential sources for transposition commands:

- Note data from the MIDI In connector
- Note data from the USB connection
- The pads (SEQ1 or SEQ2 must be selected).

The MIDI Control Center allows you to set [transposition preferences \[p.119\]](#) such as Latch on/off, the input port, the input channel and the center pitch. See the that section of the [MCC \[p.84\]](#) chapter for a full description.

To toggle the Transposition Link feature on and off, press the TRNS LNK button.

5.8. Preset Link

When the PRST LNK button is lit the sequencer presets are linked, which makes it possible to change the patterns on all three sequencers with a single action. You can use any one of the sequencers to make the change:

- Press one of the single arrow buttons in the [Sequencer control \[p.11\]](#) section, or
- Hold the SEQ1, SEQ2 or DRUM button and press a Step button.

There's a [MIDI Control Center \[p.84\]](#) preference related to the PRST LNK button that determines whether the patterns will change to the same pattern number (the Absolute setting) or be allowed to change to non-identical pattern numbers (the Relative setting). Examples of each response are given in the [Pattern Link \[p.114\]](#) section of the [MCC \[p.84\]](#) chapter.



⚙️: When the PRST LNK button is active the pattern will wait to change until the Drum pattern reaches its end. If [Polyrhythm Mode \[p.63\]](#) is also active, the longest Drum track will determine when the change will occur.

5.9. Selecting MIDI Channels

Each sequencer can have a different value for its send channel and its receive channel. This can be accomplished from the front panel (see **Output Channels** and **Input Channels** below) or with the [MIDI Control Center \[p.84\]](#). For details about that see the [MIDI Channel parameters \[p.118\]](#) section of the [MCC \[p.84\]](#) chapter.



⚠: The MIDI Channel settings are Global; i.e., the Input/Output channel settings are not stored with the Project.

5.9.1. Output Channels

Each sequencer in the BeatStep Pro can send information to its own MIDI channel by following these steps:

- Select the sequencer you want to change.
- Press and hold the CHAN button.
- Press one of the Step buttons.

But you probably noticed that when the CHAN button is pressed the Step buttons show *four* different colors, not three. This is because there's an independent MIDI output channel for Control Mode as well.

The color scheme follows the colors of the mode buttons on the front panel:

Output channel	color
Control Mode (also selects the User channel)	Red
Sequencer 1	Green
Sequencer 2	Yellow
Drum	Purple



⚠: The Control Mode channel is also the User channel. When you change the Control Mode channel, any control that is set to transmit on the User channel will begin to transmit on that new MIDI channel as well. But any control that is set to a particular MIDI channel will continue to transmit on that MIDI channel even after the User channel has changed.

5.9.2. Input Channels

Each sequencer (SEQ1, SEQ2 and DRUM) can receive MIDI on its own channel by following these steps:

- Select the sequencer you want to change by pressing the [SEQUENCER X] or [DRUM] button
- Press and hold the SHIFT button
- Press and hold the CHAN button
- Press one of the Step buttons.

Note that when the SHIFT + CHAN buttons are pressed the Step buttons show *three* different colors, not four. This is because Control Mode does not have an input channel.

The color scheme follows the front panel design:

Input channel	color
Sequencer 1	Green
Sequencer 2	Yellow
Drum	Purple

6. ADVANCED FEATURES

6.1. SEQ1, SEQ2, and DRUM

6.1.1. Extend a sequence, pattern, or drum track

It's possible to extend a sequence, pattern, or drum track using the SHIFT and >> buttons. This process will copy up to 16 steps of note data and attach it to the end of the current pattern.

The process will be slightly different depending on the selected Sequencer: [SEQ1 and SEQ2 \[p.59\]](#) are relatively simple to extend, but [DRUM \[p.61\]](#) is both more flexible and complex when its [Polyrhythm feature is On \[p.62\]](#). So we'll cover the different types of sequencers in separate sections.



ⓘ: Whichever Sequencer mode you select, its patterns can be extended up to the maximum pattern length of 64 steps.

6.1.1.1. Extending a sequencer pattern (SEQ1 and SEQ2)

- Start in SEQ1 or SEQ2 modes. Only the pattern in the selected mode will be affected.
- Hold SHIFT and then press the >> button. This will copy the first 16 steps of the pattern into the next Step Group, making the pattern 32 steps long.

Some rules to keep in mind:

- If the pattern has 16 or more steps, only the first 16 steps are copied and appended to the end.
- If the pattern is shorter than 16 steps, then that number of steps is copied and the sequence is doubled in length.

Here are some examples of this process in action:

Example 1

Original size	Action	New size	Reason
16 steps	SHIFT+>>	32 steps	Steps 1-16 were copied / appended to step 17
	SHIFT+>>	48 steps	Steps 1-16 were copied / appended to step 33

Example 2

Original size	Action	New size	Reason
32 steps	SHIFT+>>	48 steps	Steps 1-16 were copied / appended to step 33

Example 3

Original size	Action	New size	Reason
7 steps	SHIFT+>>	14 steps	Steps 1-7 were copied / appended to step 8
	SHIFT+>>	28 steps	Steps 1-14 were copied / appended to step 15
	SHIFT+>>	44 steps	Steps 1-16 were copied / appended to step 29

To make the pattern a particular length, use the LST STEP button and the Step buttons as described in the [Default Sequence Length \[p.31\]](#) section.

6.1.1.2. Extending a Drum pattern (Polyrhythm Off)

When [Polyrhythm \[p.63\]](#) is Off the pattern extension process is fairly straightforward: the copy/append process is done to all 16 drum tracks at once.

To extend a Drum pattern:

- Start in DRUM mode. Only the Drum pattern will be affected; the patterns in SEQ1/SEQ2 will not be changed.
- Hold SHIFT and then press the >> button. This will copy the first 16 steps of each drum track in the pattern into the next Step Group, each on its own track, making the overall Drum pattern 32 steps long.

Some rules to keep in mind:

- If the Drum pattern has 16 or more steps, only the first 16 steps are copied and appended to the end.
- If the Drum pattern is shorter than 16 steps, then that number of steps is copied and the sequence is doubled in length.

Here are some examples of this process in action:

Example 1

Original size	Action	New size	Reason
16 steps	SHIFT+>>	32 steps	Steps 1-16 were copied / appended to step 17
	SHIFT+>>	48 steps	Steps 1-16 were copied / appended to step 33

Example 2

Original size	Action	New size	Reason
32 steps	SHIFT+>>	48 steps	Steps 1-16 were copied / appended to step 33

Example 3

Original size	Action	New size	Reason
7 steps	SHIFT+>>	14 steps	Steps 1-7 were copied / appended to step 8
	SHIFT+>>	28 steps	Steps 1-14 were copied / appended to step 15
	SHIFT+>>	44 steps	Steps 1-16 were copied / appended to step 29

To make the pattern a particular length, use the LST STEP button and the Step buttons as described in the [Pattern Length \[p.43\]](#) section.

6.1.1.3. Extending a Drum track (Polyrhythm On)

When [Polyrhythm \[p.63\]](#) is On the copy/append function is performed **only on the currently selected Drum track**, not on the Drum pattern as a whole. You can choose to extend one or more Drum tracks and leave the others untouched.

In Polyrhythm mode each Drum track can have its own length, and so the examples below apply only to the selected Drum track. The rest of the Drum tracks will remain their original lengths.

- Start in DRUM mode.
- Hold SHIFT and verify that Polyrhythm is set to On. If Step button 16 is blue, Polyrhythm is On. If it is not, press Step button 16 to enable Polyrhythm mode.
- Select the Drum track to extend (hold DRUM, tap the pad). Only the selected Drum track will be affected; the other Drum tracks will not be affected, nor will the patterns in SEQ1/SEQ2.
- Hold SHIFT and then press the >> button. This will copy the first 16 steps of the selected Drum track into the next Step Group, making that Drum track 32 steps long.

Some rules to keep in mind:

- If the Drum track has 16 or more steps, only the first 16 steps are copied and appended to the end.
- If the Drum track is shorter than 16 steps, then that number of steps is copied and the Drum track is doubled in length.

Example 1

Original size	Action	New size	Reason
16 steps	SHIFT+>>	32 steps	Steps 1-16 were copied / appended to step 17
	SHIFT+>>	48 steps	Steps 1-16 were copied / appended to step 33

Example 2

Original size	Action	New size	Reason
32 steps	SHIFT+>>	48 steps	Steps 1-16 were copied / appended to step 33

Example 3

Original size	Action	New size	Reason
7 steps	SHIFT+>>	14 steps	Steps 1-7 were copied / appended to step 8
	SHIFT+>>	28 steps	Steps 1-14 were copied / appended to step 15
	SHIFT+>>	44 steps	Steps 1-16 were copied / appended to step 29

To make the Drum track a particular length, use the LST STEP button and the Step buttons as described in the [Pattern Length \[p.43\]](#) section.

6.1.2. Polyrrhythm mode

This feature is as interesting as it is unusual. And it has the potential to unleash creative explorations you might never have considered otherwise.

6.1.2.1. What is Polyrrhythm mode?

Usually a drum machine pattern will operate within a single time signature, such as 4/4 or 12/8. For example, with a single measure of 4/4 there are sixteen 16th notes, and if a drum only plays on the downbeat it must wait another 15 steps before it plays again.

But with the Polyrrhythm feature you can specify a different time signature for each Drum track! This could mean you'd have 16 loops of different lengths all happening at the same time.



♪: To toggle Polyrrhythm on and off: enter DRUM mode, hold the Shift button and press Step button 16.

6.1.2.2. What it does

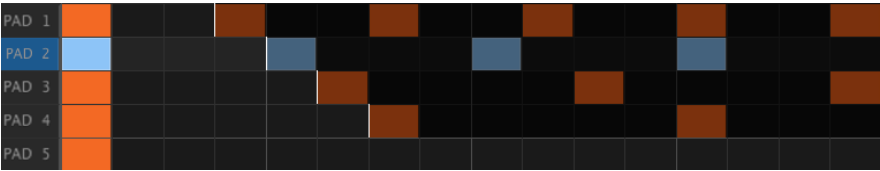
Here’s an example: What if you wanted a pattern with this mixture of time signatures:

Instrument	Pad 1	Pad 2	Pad 3	Pad 4	Pad 5
Time signature	3/16	1/4	5/16	3/8	4/4

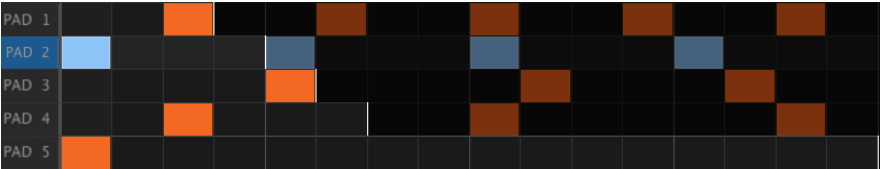
The Pad 5 track is longest, so we’ll use that as the timing reference for our discussion. Here’s how those tracks would look in the MIDI Control Center:



But here’s a visual representation of how they would sound during the first bar:



And during the second bar:



The second loop, Pad 2, is highlighted as a rhythmic reference. It plays on quarter notes 1, 2, 3, and 4, and Pad 5 will play on beat 1 every time.

But the other instruments will continue their shorter loops: Pad 1 will play its cycle of 3, Pad 3 will play a cycle of 5, and Pad 4 will play a cycle of 6. They will play at different times in relationship to each other for quite a while.

In this example it will be 360 bars of 4/4 time before the first bar is heard again!

6.1.2.3. Make a polyrhythm

Here's how to start building the example from the previous section.

1. Press the DRUM button.
2. Select an empty pattern.
3. Hold Shift and press Step button 16. It will turn blue to show that the pattern is in Polyrhythm mode.
4. Hold the DRUM button and tap Pad 1 to select it.
5. Hold the Last Step button and press Step button 3. Pad 1 now has a 3-step loop.
6. Press Step button 1 to add an event to the first step of the Pad 1 loop.
7. Press Play to confirm. If the pattern was blank before, it should now be only 3 steps long. If so, stop the pattern.
8. Hold the DRUM button and tap Pad 2 to select it.
9. Hold the Last Step button and press Step button 4. Pad 2 now has a 4-step loop.
10. Press Step button 1 to add an event to the first step of the Pad 2 loop.
11. Hold the DRUM button and tap Pad 3 to select it.
12. Hold the Last Step button and press Step button 5. Pad 3 now has a 5-step loop.
13. Press Step button 1 to add an event to the first step of the Pad 3 loop.
14. Press Play to confirm. You should hear the intersecting rhythms of all three instruments, and the pattern you hear during the first 3 beats will not repeat until the 61st beat ($3 \times 4 \times 5 = 60$).

Try your own experiments! Just be sure to save the pattern if you like what you're hearing.

6.1.3. Pattern Chains



! We recommend enabling [Scene Mode \[p.82\]](#) so you will be able to save the Pattern Chains you create. This can only be done using the [MIDI Control Center \[p.84\]](#).

It is possible to automate the selection of patterns in each sequencer by constructing a pattern chain.



! A pattern chain is limited to 16 patterns.

6.1.3.1. Example 1: SEQ1 only

For example, let's say you would like SEQ1 to play patterns 1, 2, and 3 without having to select those patterns manually.

1. Hold SHIFT + SEQUENCER 1 to activate pattern chain mode for SEQ1.
2. SHIFT can be released but the SEQUENCER 1 button must remain pressed.
3. Press the Step buttons in the order you want the patterns to play: Step button 1, then 2, then 3.
4. Release the SEQUENCER 1 button.
5. Press the Play button. SEQ1 will play patterns 1, 2, and 3 in that order while the other sequencers play the patterns that were already selected for them.
6. A faster way to confirm the contents of a pattern chain is to hold down the SEQUENCER 1 button. The Step buttons will flash one after the other in the order you entered them into the chain.



! If you change SEQ1 to a new pattern at this point its current chain will be lost. If you would like to save the pattern chain you have made, it must be saved as part of a [Scene \[p.82\]](#).

6.1.3.2. Example 2: SEQ1 and SEQ2

Let's say you would like SEQ1 to play patterns 1, 2, and 3 while SEQ2 plays patterns 3, 2, and 1.

1. Follow steps 1-4 in Example 1 above.
2. Hold SHIFT + SEQUENCER 2 to activate pattern chain mode for SEQ2.
3. SHIFT can be released but the SEQUENCER 2 button must remain pressed.
4. Press the Step buttons in the order you want the patterns to play: Step button 3, then 2, then 1.
5. Release the SEQUENCER 2 button.
6. Press the Play button. SEQ2 will play patterns 3, 2, and 1 in that order while SEQ1 plays patterns 1, 2, and 3 and the Drum sequencer plays the drum pattern that had already been selected.
7. A faster way to confirm the contents of the pattern chains is to hold down one of the SEQUENCER buttons. The Step buttons will flash one after the other in the order you entered them into the chain.



!: If you change SEQ1 or SEQ2 to a new pattern manually the current chain will be lost for that sequencer. If you would like to save the pattern chains you have made, they must be saved as part of a [Scene \[p.82\]](#).

6.1.3.3. Example 3: SEQ1, SEQ2, and DRUM

Let's say you would like DRUM to play pattern 4 twice and then play pattern 5, while SEQ1 and SEQ2 play the pattern chains constructed in Examples 1 and 2.

1. Follow steps 1-4 in Examples 1 and 2 above.
2. Hold SHIFT + DRUM to activate pattern chain mode for the Drum sequencer.
3. SHIFT can be released but the DRUM button must remain pressed.
4. Press the Step buttons in the order you want the patterns to play, only this time press Step button 4 twice and then press Step button 5.
5. Release the DRUM button.
6. Press the Play button. The Drum sequencer will play pattern 4, repeat pattern 4, and then play pattern 5. SEQ1 and SEQ2 will play the pattern chains from Examples 1 and 2.
7. A faster way to confirm the contents of the pattern chains is to hold down one of the SEQUENCER buttons. The Step buttons will flash one after the other in the order you entered them into the chain.



!: If you change any of the sequencers to a new pattern manually, the current chain for that sequencer will be lost. If you would like to save the pattern chains you have made, they must be saved as part of a [Scene \[p.82\]](#). ⚠: You can press any combination of the SEQUENCER , SEQUENCER 2 and DRUM buttons while holding SHIFT to create identical chains on the selected sequencers. ⚠: The [Preset Link \[p.56\]](#) function has no effect on pattern chains.

6.1.4. Enter/edit notes with Step button + Pad

When BeatStep Pro is in Record mode the pads are used to enter notes into Sequencer1 or Sequencer2 and drum events in the Drum sequencer. But there are other ways to enter notes and events that are very quick and easy:

6.1.4.1. SEQ1/SEQ2

You can enter and alter the Pitch and Velocity of a step when the sequencer is not recording or even running, To do this, hold the desired Step button and hit the Pad of the note you want to be a part of the sequencer pattern. The velocity at which you hit the pad will be memorized for this step as well.

This will also work by using an external MIDI keyboard instead of the pad.

6.1.4.2. DRUM

You can alter the Velocity of a drum track event when the Drum sequencer is not recording or even running, Here's how:

- Enter Drum mode by pressing the DRUM button.
- Select the desired Drum track by holding DRUM and pressing that drum pad.
- Hold the desired Step button and hit the pad. The velocity at which you hit the pad will be memorized for this step.



⚠: An external MIDI keyboard **can not** be used to alter the velocity of a drum track event.

6.1.5. Fast Ties

There's an easy way to create tied notes: the Fast Tie function. It works for all three sequencers (SEQ1, SEQ2, and DRUM). Here's how to do that:

6.1.5.1. ...for patterns 16 steps or shorter

- Press and hold one of the Step buttons.
- Press the second Step button to tie all steps between the two Step buttons.
- Release the buttons.

See [More about Tied events \[p.69\]](#) for more information.

6.1.5.2. ...for patterns >16 steps

If you have a [pattern that's longer than 16 steps \[p.44\]](#), it's also possible to tie notes from different Step Groups together using this method. One way to do this is:

- Select the first Step Group. For this example, we'll start with Step Group 1 (steps 1-16).
- Press and hold the first step of the tied event. We'll use Step button 15 for this example.
- While still holding Step button 15, press the >> button to cross over into the second Step Group (steps 17-32).
- Press a Step button in the second Step Group to tie all steps between the two Step Groups.

See [More about Tied events \[p.69\]](#) below for more information.

6.1.5.3. More about Tied events:

1. There will be a delay of up to 700 milliseconds before the tie will be applied.
2. The gate time of all intermediate steps will be set to TIE, except for the last step; its gate time will remain unchanged.
3. SEQ1 or SEQ2 only: The pitch of all intermediate steps will be set to the pitch of the first step.



Note: Tied step will be displayed in Cyan while holding Shift. It is a great way to see which steps are tied.

6.1.6. Editing all steps in a pattern at once

It is possible to edit certain parameters for all of the active steps in a pattern simultaneously. This is done using the SHIFT button and one of the first two encoders.

6.1.6.1. SEQ1/SEQ2

You can set the Velocity or the Gate length of all active steps in a pattern at the same time by holding [SHIFT] and turning Knob 1 or Knob 2.

- SHIFT+ Knob 1 will apply an offset to the values contained in the pattern. This offset will be shown in the display with a range between -99 and +99. See [example 1 \[p.71\]](#) below.
- SHIFT+ Knob 2 will force all active steps to the same value as soon as you turn the knob. The new value will be shown in the display. See [example 2 \[p.71\]](#) below.

These edits will affect only those events located between step 1 and the last step of the pattern (i.e., the active steps). Any steps outside of that range will not be affected.



⚠: The Pitch of all steps in SEQ1 or SEQ2 cannot be edited using these methods. To accomplish this, use the [Transposition features \[p.34\]](#) as described in the [Step Sequencers \[p.24\]](#) chapter.

6.1.6.2. DRUM

You can set the Velocity, the Gate length, or the Shift of all active steps in a Drum pattern at the same time by holding [SHIFT] and turning Knob 1 or Knob 2.

- SHIFT+ Knob 1 will apply an offset to the values contained in the pattern. This offset will be shown in the display with a range between -99 and +99. See [example 1 \[p.71\]](#) below.
- SHIFT+ Knob 2 will force all active steps to the same value as soon as you turn the knob. The new value will be shown in the display. See [example 2 \[p.71\]](#) below.

These edits will affect only those events located between step 1 and the last step of the pattern (i.e., the active steps). Any steps outside of that range will not be affected.

Note that the time shift will be applied after the SHIFT button is released.



⚠: For the DRUM sequencer the changes will be applied to the currently selected drum track only, not the entire drum pattern.

6.1.6.3. Example 1: Velocity offset

1. Select a pattern and set its length to 4 steps.
2. Select the Velocity setting with the KNOBS button.
3. Use encoders 1-4 to change the velocities of the four steps to the values 127, 100, 4, and 50, respectively.
4. Hold [SHIFT] and turn encoder 1 until you see a value of 10 in the display.
5. The Velocity values for the four steps should now be 127, 110, 14, and 60, respectively. This can be confirmed by touching encoders 1-4 briefly.



⚠: The offset feature will not allow you to reach velocity values outside of the range 0-127.

6.1.6.4. Example 2: Uniform velocity

1. Select a pattern and set its length to 4 steps.
2. Select the Velocity setting with the KNOBS button.
3. Use encoders 1-4 to change the velocities of the four steps to the values 127, 100, 4, and 50, respectively.
4. Hold [SHIFT] and turn encoder 2 until you see a value of 10 in the display.
5. The Velocity values for the four steps should now all be set to 10. This can be confirmed by touching encoders 1-4 briefly.

6.2. SHIFT button chart

The SHIFT button allows you to access important features in each mode. Some are shared between the two step sequencers, some are shared between all three sequencers, and some are also shared with Control Mode.

Here's a chart indicating which SHIFT functions are available in which mode:

MODE	SHIFT+	Function
Control mode	Step #9	Switch touch strip between Roller and Looper
Control mode	Step #14	Wait to Load Pattern on/off
Control mode	Step #15	Global Tempo on/off
DRUM	Pad 16	Polyrhythm mode on/off
SEQ1 or 2	Pad 9-16	Sets the output scale for the step sequencer pattern and filters the input scale for the encoders
SEQ1, 2 or DRUM	Pad 1-3	Sets the playback direction of the current SEQ or DRUM pattern
SEQ1, 2 or DRUM	Pad 4	Changes the time division of the selected sequence to Triplet
SEQ1, 2 or DRUM	Pad 5-8	Changes the time division of the selected sequence
SEQ1, 2 or DRUM	Step # 1	Clears the data in the current SEQ or DRUM pattern. Sets everything to default values (see Clear a Pattern [p.20])
SEQ1, 2 or DRUM	Step # 2	Clears only the notes in the current SEQ or DRUM pattern.
SEQ1, 2 or DRUM	Encoder 1	Offset value for all active steps
SEQ1, 2 or DRUM	Encoder 2	Set value for all active steps
SEQ1, 2 or DRUM	>>	Extends the length of the sequence
SEQ1, 2 or DRUM	Seq1/Seq2/Drum + Step buttons	Create pattern chain
All	Tap/Metro	Toggles the sending of metronome data ON or OFF
All	Rate/Fine	Increments or decrements the tempo to the 100th decimal place.
All	Play	Restart the 3 sequencers to the beginning of their sequences, quantized to the next DRUM step
All	Chan + Step button	Input MIDI Channel for current sequencer



Note: A cheat sheet that summarize all the button combinations is available on Arturia website. You'll find it in the resources of the BeatStep Pro page.

6.3. MIDI to CV conversion

It is possible to use BeatStep Pro as a MIDI to CV converter. Potential applications include:

- Using an external MIDI keyboard to play a vintage synth
- Using a drum sequence from your DAW to send triggers to an analog modular system.

6.3.1. Sequencer mode – MIDI to CV

When the sequencer is stopped, or when you have muted SEQUENCER 1 or SEQUENCER 2, then:

- The MIDI input defined for SEQ1 and SEQ2 is sent to the MIDI output defined for that sequencer.
- The Gate output is triggered.
- The Pitch CV output sends the incoming MIDI note plus pitch bend.
- The Velocity CV output sends the incoming MIDI velocity.

When the sequencer is playing and record mode is on, the same thing happens with two differences:

- The notes are recorded into the BeatStep Pro sequencer
- The Pitch CV output does not send pitch bend data

7. SYNCHRONIZATION

BeatStep Pro can be the master clock for an entire MIDI rig, or it can just as happily serve as a slave to any one of several sources. See [Making The Connections \[p.5\]](#) for connection diagrams.

You can cycle through the various Sync options using the SYNC button. A white LED will let you know which mode you've selected.

For example, in the illustration below the USB sync option has been selected:



⚠ When the unit is playing a sequence, the Sync setting cannot be changed.

7.1. As Master

BeatStep Pro is the master clock when the INT button is lit. When this is the case:

- The transport section will control the internal sequencers
- MIDI clock messages are sent to MIDI out, USB MIDI, and the Clock output
- The sequence tempo can be set using the TEMPO encoder and the TAP/METRO button.

7.2. As Slave

BeatStep Pro functions as a slave to an external clock when one of the other three SYNC LEDs are lit (USB, MIDI or CLK). When BeatStep Pro is in Slave mode:

- The Tempo controls will not control the internal sequencer while the external source is running.
- The BeatStep Pro transport section will still perform as usual; you can still stop, start and pause the internal sequences, and you can still record patterns.
- When the external source is not running, BeatStep Pro will function according to its internal clock at the last known tempo.
- BeatStep Pro will pass the synchronization messages it receives from the external source to its USB, MIDI and Clock outputs.

7.2.1. Clock In/Out rates

The MIDI Control Center can be used to configure the BeatStep Pro to send and receive one of the following clock signals at the Clock input and output connectors:

- 1 pulse per step
- 2 pulses per quarter note (ppqn)
- 24 ppqn - standard DIN sync
- 48 ppqn

7.2.2. 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 BeatStep Pro:

Connector type	Signal(s) sent
1/8" mono (TS) [1]	Clock pulse only [1]
1/8" stereo (TRS) [2]	Clock pulse and start/stop [2]
1/8" stereo (TRS) plus DIN sync adapter [2]	Clock pulse and start/stop [2]

You can use the supplied 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.

1. If Sync is set to an external source and a TS connector is used, the sequencer needs to be armed before it can start after receiving a clock signal. You must press [Play] to arm the sequencer. For example,
 - If [Play] is pressed but no clock has been received, the unit will wait for a clock signal and start when it receives one.
 - If clocks are received but PLAY is not active, the unit will start when you press [Play].
2. If Sync is set to an external source and a TRS connector is used, BeatStep Pro will follow the master and will:
 - play when it receives a high state signal and clock,
 - pause with a high state signal and no clock, and
 - stop on a low state signal, with or without clock.

8. CV/GATE FUNCTIONS

BeatStep Pro provides direct access to some of the best music technology the world has produced in the last six decades: USB, MIDI, Clock and CV/Gate connectors are all present on its rear panel in a space not much larger than a pencil.

Connection diagrams for each of these interfaces are available in [Making the Connections \[p.5\]](#).

In this chapter we'll focus on the features of the BeatStep Pro CV/Gate circuitry. See the [MIDI Control Center \[p.84\]](#) chapter for in-depth coverage of the MIDI features available to you with that software.

8.1. SEQ1/SEQ2: Pitch, Velo and Gate

When SEQ1 or SEQ2 is selected the notes you play on the pads are translated immediately into Control Voltage (CV) and Gate signals and sent to the connectors on the back panel. Three independent voltages are sent for each note: Pitch, Velocity, and Gate open/close.

The sequencers can record what you play on the pads, and then you can use the encoders to change the pitch, velocity and gate time (duration) of each note. When sequences play back they send those signals to the attached devices through the CV/Gate connectors, just like the pads would.

However, the pads can't "play" the CV/Gate connectors while the unit is in Control Mode. You can start the sequencers, though, and they will play the attached devices while you control your DAW and play your MIDI devices from Control Mode.

8.1.1. CV/Gate signals: DAW configuration

It's possible to use the BSP as a MIDI to CV converter, it means you can send note data from a couple of MIDI tracks on your DAW to the BeatStep Pro CV/Gate jacks. When the MIDI channels match, that's what will happen. The procedure for selecting the MIDI Channels for the sequencers is detailed [here \[p.57\]](#).

There are two things to keep in mind, though:

- All CV/Gate jacks are monophonic, so if the selected MIDI track on the DAW contains polyphonic data, playback could be extremely unpredictable. It's best to send only one note at a time to the CV/Gate jacks.
- CV/Gate jacks can send only basic signals: pitch, velocity and note on/off. In other words, the BeatStep Pro encoders aren't able to control synthesizer parameters through the CV/Gate jacks, for example. All edits to your modular synth settings need to be made on the synth itself.

8.1.2. Routing 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 Velo 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.

8.1.3. CV/Gate specifications

Some analog synthesizers have unusual implementations that are not fully compatible with the BeatStep Pro CV/Gate 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 the BeatStep Pro to be as flexible as possible, though: the [MIDI Control Center \[p.84\]](#) allows you to configure the response of the CV/Gate jacks in a number of ways.

These are the electrical signals that can be sent by the BeatStep Pro CV and Gate jacks:

- Control Voltage (Pitch) has two options:
 - 1 Volt/octave (O-1OV)
 - O Volt MIDI note range: O-127 (Volt/octave)
 - Hertz per Volt
 - 1 Volt MIDI note range: O-127 (Hz/Volt)
- Gate output has two options:
 - V-trigger (positive or "voltage"), trig voltage is between 10V and 12 V
 - S-trigger (negative, or "short")

The [MIDI Control Center \[p.84\]](#) allows each of these settings to be configured independently for SEQ1 and SEQ2.

8.2. Drum Gates

When DRUM is selected the notes you play on pads 1-8 (the bottom row) are translated immediately into Gate signals and sent to the Drum Gate connectors on the back panel. Two voltages are sent for each note: one for Gate open and one for Gate close. Velocity information is not sent.

The Drum sequencer can record what you play on pads 1-8 and then you can use the encoders to change the gate time (duration) of each note. When sequence plays back it will send those signals to the attached devices through the Drum Gate connectors, just like the pads would.

However, the pads can't "play" the Drum Gate connectors while the unit is in Control Mode. You can start the sequencers, though, and they will play the attached devices while you control your DAW and play your MIDI devices from [Control Mode \[p.79\]](#).

8.2.1. Which pads do I use?

The bottom row of pads are numbered 1-8, which corresponds to the Drum Gate numbers on the rear panel. So these are the pads to play when you want to send trigger signals to an external device.

8.2.2. Can my DAW send Drum Gate signals?

It's possible to send triggers from up to 8 MIDI tracks on your DAW to the Drum Gate jacks. There's a MIDI note number assignment for each Drum Gate, and you can set those values using the [MIDI Control Center \[p.84\]](#).

When the MIDI channel and the note numbers match, the Drum Gates will be triggered.



The Drum Gate jacks can send only one type of signal: note on and note off. So even though the Drum pattern holds velocity data for all 16 pads, the Drum Gates are only intended to trigger sounds and shut them off.

8.2.3. How should I route the signals?

Typically the Drum Gate output is connected to a Voltage Controlled Amplifier (VCA). But you can send those signals to any parameters that will accept them.

For example, they can be used to trigger a synthesizer such as one from our MiniBrute or MicroBrute series.

8.2.4. Drum Gate specifications

Drum modules and other devices with Gate input connections have different requirements for the type of signal they will recognize.

Fortunately, we've designed the BeatStep Pro Drum Gate jacks to operate as either a V-trigger (positive, or "voltage") or an S-trigger (negative, or "short"). These settings will work with the vast majority of the devices you will encounter.

Please refer to the specifications of other devices before connecting them to the BeatStep Pro so you can know how to make them work properly together.

9. CONTROL MODE

9.1. What is Control Mode?

When BeatStep Pro is in Control Mode every encoder, button, and pad on the right half of the unit can transmit specific MIDI data to external devices that are connected to the MIDI output jack. This same data will be sent to your computer via USB.

The controller assignments can be set using the [MIDI Control Center \[p.84\]](#) software.

Here are some other things to know about Control Mode:

- The pads will not transmit directly to the CV/Gate or Drum Gate connectors.
- The sequencers continue to use the CV/Gate and Drum Gate connectors.
- The Transport buttons work the same as in the other modes.
- The CURRENT TRACK buttons are not available.
- The Step buttons can be configured to save/recall one of 16 [Scenes \[p.82\]](#).

9.2. Top panel functions

Most of the performance controls on the left side of the front panel will control the same features in Control Mode unless configured otherwise with the MIDI Control Center. There are some slight variations, though, which we'll point out as we go through them:

9.2.1. RATE/FINE encoder

The RATE/FINE encoder works exactly the same in all modes. Its functions are described here: [Tempo \[p.50\]](#).

9.2.2. Metronome/Tap Tempo button

The Metronome/Tap Tempo button works exactly the same in all modes:

- SHIFT + TAP/METRO toggles the metronome on and off.
- Tap the TAP/METRO button several times to set the tempo.

The [MIDI Control Center \[p.84\]](#) allows you to specify [the number of taps \[p.50\]](#) it will take to set the tempo.

9.2.3. Swing Encoder

The Swing encoder controls the Swing percentage of the entire Project in Control Mode. In other words, the Swing percentage is applied to all three sequencers equally. The CURRENT TRACK button is not available in Control Mode.

For a description of the Swing feature see the [Swing \[p.51\]](#) section of the [Projects \[p.49\]](#) chapter.

9.2.4. Randomness/Probability Encoders

The Randomness and Probability encoders still control their respective parameters in Control Mode. The difference is that the amounts are applied equally to all three sequencers; the shared CURRENT TRACK button does not have any effect over these parameters.

For a full description of the Randomness and Probability features see the [Randomness/Probability \[p.52\]](#) section of the [Projects \[p.49\]](#) chapter.

9.2.5. The Touch strip

The touch strip can function either as a Roller or a Looper in Control Mode. To toggle between these two behaviors, hold the SHIFT button and press Step button 9. If the button is lit blue then the touch strip is in Roller mode. If it is not lit, the touch strip is in Looper mode.

To use the touch strip in Roller mode, press and hold one of the pads while the unit is running. Then place a finger on the touch strip and it will repeat the MIDI note that was assigned to that pad using the [MIDI Control Center \[p.84\]](#). That event will be repeated at the time division you select with your finger.

For more information about Roller mode, [click here \[p.54\]](#). For more information about Looper mode, [click here \[p.55\]](#).

See also [Using the Touch Strip with a DAW \[p.117\]](#) in the [MCC \[p.84\]](#) chapter.

9.2.6. Transport section

The Transport section works the same way in Control Mode as it does in the other modes, unless instructed otherwise by the MIDI Control Center.

The functions of the Transport section are described in the [Transport/Shift buttons \[p.8\]](#) section of the [Overview \[p.5\]](#) chapter.

9.2.7. Disabled features

There are several features that are disabled in Control Mode:

- Current Track (both buttons)
- LST STEP button
- Transposing sequences from the pads
- Octave +/- buttons
- Encoder scale selection (SHIFT + pads 9-16)
- Time divisions (SHIFT + pads 1-8)

9.3. Selecting the User Channel

The MIDI Control Center allows you to assign each encoder, pad, and Step button to the MIDI channel of your choice. This is described fully in the [MIDI Channel control \[p.111\]](#) section of the [MCC \[p.84\]](#) chapter.

But it's important to know there are actually 17 options for each assignable control: MIDI Channels 1-16 and User. The first 16 options will "hardwire" that control to a particular MIDI Channel. But the User option allows you to specify that a control will 'float' to a new channel when you change the User channel in Control Mode.

Here's how to change the User channel:

- Select Control Mode.
- Press and hold the CHAN button.
- Press one of the Step buttons.

When the CHAN button is pressed you will see four different colors on the Step buttons: one for each of the three sequencers and one for the User channel.

The color-coding means this:

Output channel	color
Control Mode (i.e., the User channel)	Red
Sequencer 1	Green
Sequencer 2	Yellow
Drum	Purple

9.4. Working with Scenes

The MIDI Control Center has an option that affects what the Step buttons do in Control Mode. There are two options:

1. The Step buttons will transmit MIDI data as specified in the [Controller Map \[p.96\]](#), or
2. The Step buttons allow you to save and recall one of 16 [Scenes \[p.82\]](#).

9.4.1. What is a Scene?

A Scene will remember the following information:

- Which pattern was active on each sequencer
- The pattern chains you have constructed for each sequencer

The BeatStep Pro can store 16 Scenes per Project.

9.4.2. How to make a Scene

1. Enable [Scene mode \[p.82\]](#) in the MIDI Control Center. It's in the [Global parameters \[p.114\]](#) section.
2. Select the patterns you want each sequencer to load when the Scene is selected, or
3. Construct the [pattern chains \[p.66\]](#) you want each sequencer to load when the Scene is selected.
4. Enter Control Mode.
5. Hold the Save button.
6. Press one of the Step buttons. It will flash a few times to indicate that the Scene has been stored.



♪ Scenes can be overwritten but they cannot be "cleared" or erased.

9.4.3. Recalling a Scene

Here's how to recall one of the Scenes you have stored:

1. If [Scene mode \[p.82\]](#) has not been enabled, you must do so using the [MIDI Control Center \[p.84\]](#).
2. Enter Control Mode.
3. Press the Step button that corresponds to the Scene you wish to recall.

If a Scene has never been stored to a particular Step button then a default pattern number will be loaded when that Scene is recalled. In other words, if you recall Scene 10 and it is "empty", all three sequencers will load pattern 10.



♪ The [Wait to Load Pattern \[p.122\]](#) setting also determines when the next Scene will load.

9.5. Encoders: CC vs. MCU/HUI mode

There's a KNOBS button in the Project/Control Mode section also. It toggles the encoders between their MIDI CC assignments in Control Mode and their MCU/HUI protocol assignments.

For a detailed list of these assignments, see the list in the [MCU/HUI encoder assignments \[p.129\]](#) section of the [Parameter Charts \[p.125\]](#) chapter.

9.6. Shift functions in Control Mode

There are several Global settings that can be toggled from within Control Mode using the SHIFT button and one of the Step buttons.

Step button combination	Global setting
SHIFT + 9	Touch strip = Roller (lit) or Looper (unlit)
SHIFT + 14	Wait to Load Pattern = On (lit) or Off (unlit)
SHIFT + 15	Global tempo (lit) or per-Project tempo (unlit)

These can also be set using the [MIDI Control Center \[p.84\]](#) software.

10. MIDI CONTROL CENTER

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, click this link: [Where to find the manual \[p.87\]](#).

This chapter will cover only the MIDI Control Center features that are unique to the BeatStep Pro.

10.1. MCC Basics

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

10.1.1. System requirements

■ PC: 2 GB RAM; CPU 2 GHz (Windows 7 or higher)

🍏 Mac: 2 GB RAM; CPU 2 GHz (OS X 10.8 or higher)

10.1.2. 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. In Mac OS X, you'll find it inside the Applications/Arturia folder.

10.1.3. Connection

Connect BeatStep Pro 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. BeatStep Pro will be in the list of connected devices:



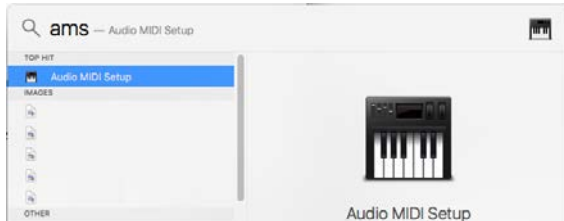
10.1.3.1. Potential issues: Windows OS

The MIDI driver for the BeatStep Pro is not "multi-client". That's a technical term that simply means this: If a DAW application is already active on your computer, the MIDI Control Center will launch but BSP won't be detected properly. In order to use the MIDI Control Center to alter the parameters of your BeatStep Pro you will need to exit the DAW application.

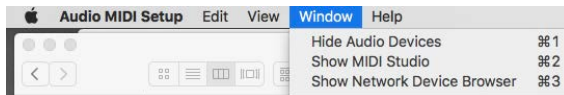
10.1.3.2. Potential issues: Mac OS X

If the cable between your Mac and the BeatStep Pro is connected properly and the Mac is having trouble detecting the unit, your Mac is experiencing what is known as a "USB port enumeration issue." Here is one potential solution.

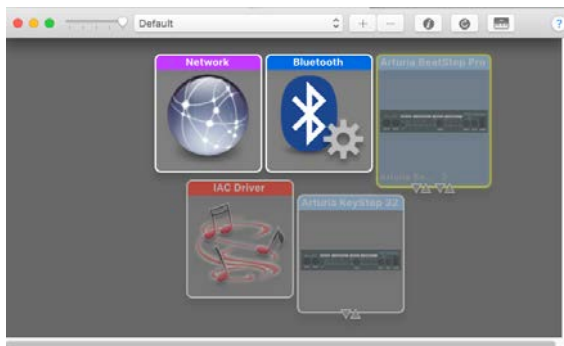
1. Launch the Audio MIDI Setup utility. The fastest way to do this is usually to hold the Command key, press the space bar, and type in the letters AMS.



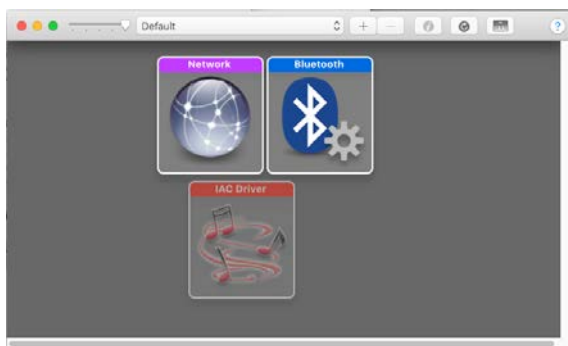
2. If you do not see the MIDI Studio window, hold the Command key and press 2.



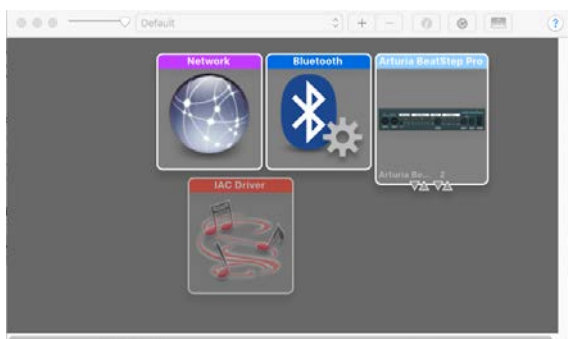
3. Turn the unit off or disconnect its USB cable. You should see the related device icon turn grey.
4. Select the greyed-out BeatStep Pro image and delete it.



5. The BeatStep Pro also might be labeled "MIDI Device" or something else, so you may need to delete all MIDI Device images and restart any connected devices. First you must disconnect any units or turn them off, or else you will not be able to delete the icons.

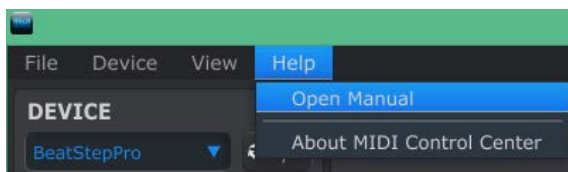


6. Restart the BeatStep Pro. It should reappear in the MIDI Studio window.



10.1.4. 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 'Project Browser' and 'Template'.

The next chapter explains how to use the MIDI Control Center software to configure the BeatStep Pro presets so they match your system and enhance your workflow.

10.2. Device Projects

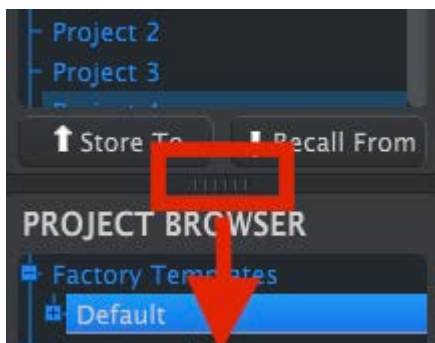


10.2.1. Project list

The left side of the MIDI Control Center window shows a list containing Projects 1-16. When one of the Projects is selected from the list the MIDI Control Center can recall that Project from the internal memory of the BeatStep Pro and place it into the User Project area in the Project Browser window. See the [Store To/Recall From \[p.92\]](#) section for instructions about this.

10.2.2. Resizing the window

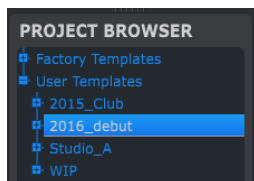
To see a larger number of the Projects in the Device Projects list, click and drag the window resizing button:



10.3. Project Browser

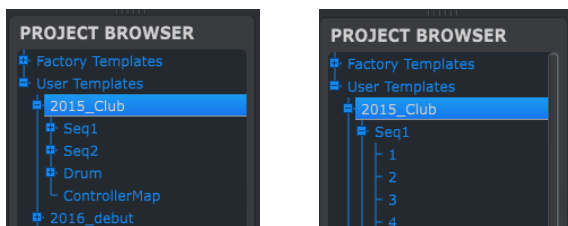
The Project Browser shows a list of all the Projects that have been archived using the MIDI Control Center. These are divided into two main groups of Templates: Factory and User.

The User Templates are the ones you have recalled from the BeatStep Pro using the MIDI Control Center. See [Store To/Recall From \[p.92\]](#) to learn how to do this.



A Template in the MIDI Control Center is the same thing as a Project inside your BeatStep Pro: it contains the Project-level settings, the Control Mode settings (including the 16 Scenes), and the patterns from all three sequencers.

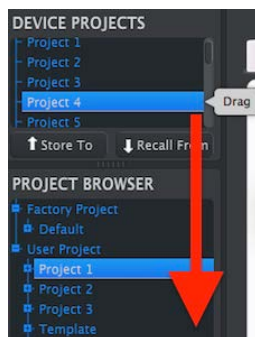
Here's an expanded view of the contents of a Template named "2015_Club", with a secondary view of the patterns inside Sequencer 1.



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

10.3.1. Building a Project library

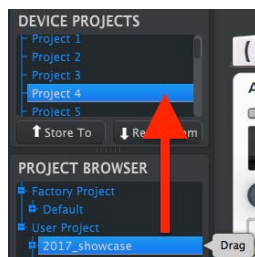
You can build a limitless library of Projects in the User Templates area. Simply drag one of the Projects to the Project Browser window and it will be transferred from the BeatStep Pro automatically. Then you can give it a new name if you like.



10.3.2. Revise a Template

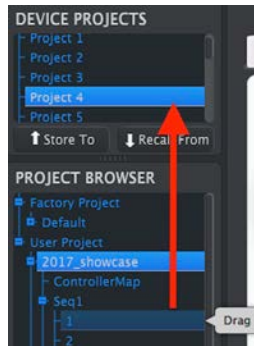
If you'd like to modify a Template you can drag it from the Project Browser and drop it on one of the Projects in the Device Projects area. This will send the selected Project directly into the BeatStep Pro internal memory at that Project location.

i!: This process will **overwrite** the selected Project in the BeatStep Pro internal memory. Be sure to save what you were doing before you transfer the file!



10.3.3. Revise a pattern

If you'd like to modify a pattern inside an archived Template you can drag that pattern from the Project Browser and drop it onto one of the Projects in the Device Projects window. This will send the selected pattern directly into the BeatStep Pro.



i!: When the MIDI Control Center sends a pattern to BeatStep Pro it will **overwrite the pattern** in that memory location. Be sure this is what you want to do before you transfer one of these files!

10.4. Store To/Recall From



The Store To/Recall From transfers cannot be performed while the BeatStep Pro is running.

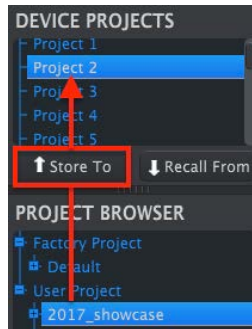
10.4.1. Store a Project to the BeatStep Pro

The upper left-hand section of the MIDI Control Center has a button called “Store To”. Right above that is a list that allows you to specify which of the 16 Projects in the BeatStep Pro internal memory will receive the User Project you have selected.



! When you follow the steps below you will overwrite the current Project #2 that resides inside the BeatStep Pro. Be sure this is what you want to do! If not, please store it to another location inside the BeatStep Pro.

We’ll assume that Project #2 is available for this example:



1. First, select “Project 2” in the list as pictured above.
2. Select the User Project you would like to store into the BeatStep Pro.
3. Click the Store To button at the bottom of that section.

That’s all there is to it! The settings and sequences of the User Project have been stored as Project #2 in the BeatStep Pro. Now you can load that Project whenever you want by using the PROJECT button and Step button 2.

10.4.2. Recall a Project from the BeatStep Pro

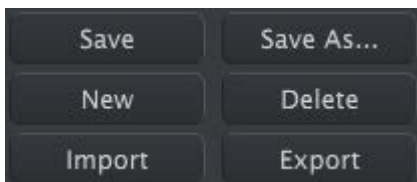
It is possible to make whole Projects without a computer attached. So when it's time to back them up, remember that you can grab any one of the internal Projects or patterns directly from the internal memory and store it as a Template in the Project Browser window of the MIDI Control Center.



For example, if you want to back up Project #1 from the internal memory, simply select it in the Device Projects window and click Recall From. Project #1 will show up in the Project Browser with a time/date stamp as a name. You can rename it if you like.

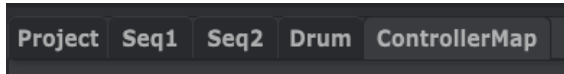
10.4.3. Template Utilities

Important features such as Save, Save As..., Delete, Import, and Export have been documented in the MIDI Control Center manual, which you will find in the software Help menu. Look in that document for the section titled Template Utilities.



10.5. Tabs

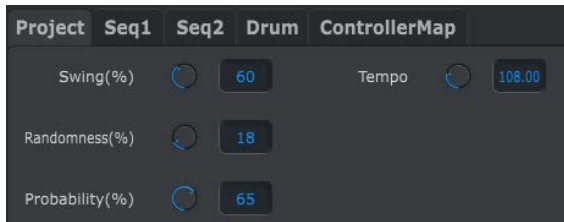
The middle window of the MIDI Control Center has five tabs, each of which contains the parameters for the various modes of the BeatStep Pro.



Simply click on a tab to select its window.

10.5.1. Project Tab

The Project tab contains four parameters:



- [Swing / Randomness / Probability \[p.10\]](#)
- [Tempo \[p.11\]](#)

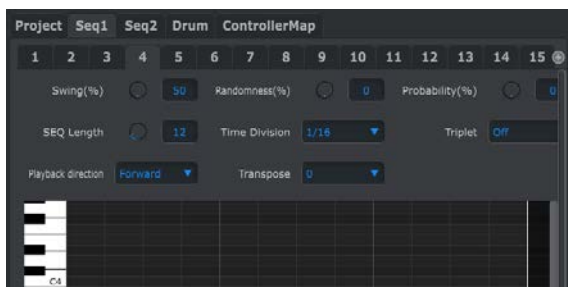
Of these four parameters, three can be overridden by one of the CURRENT TRACK buttons. In this case the individual settings per sequencer will take effect. See the [Current Track button \(Swing\) \[p.51\]](#) and [Current Track button \(Randomness/Probability\) \[p.53\]](#) sections of the [Projects \[p.49\]](#) chapter for more information about those features.

10.5.2. SEQ1 & SEQ2 Tab

The tabs for SEQ1 and SEQ2 are identical. We'll cover them in the [Sequence Window \[p.97\]](#) section below, but there is one feature we'd like to point out here: pattern selection.

Click one of the SEQ1/SEQ2 tabs and look below it for the second set of tabs immediately below the 5 mode tabs. These allow you to select the patterns within each Sequencer.

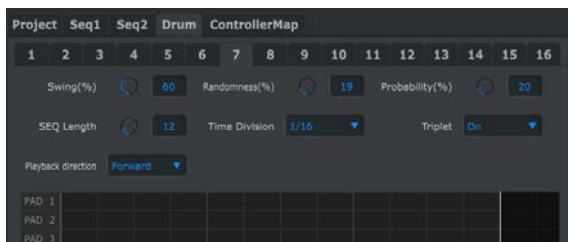
 If you're using a laptop with a smaller screen you might see a plus sign (+) on the right, as we've shown next to tab 15. This allows you to select the patterns you can't see at first.



10.5.3. DRUM Tab

The Drum tab contains almost all of the same parameters as the SEQ1/SEQ2 tabs. We'll cover them in the [Drum Window \[p.103\]](#) section, but we'd like to point out the pattern selection feature here.

Click the DRUM tab and look below it for the second set of tabs immediately below the 5 mode tabs. These allow you to select the individual patterns within the Drum sequencer.



10.6. Sequence window

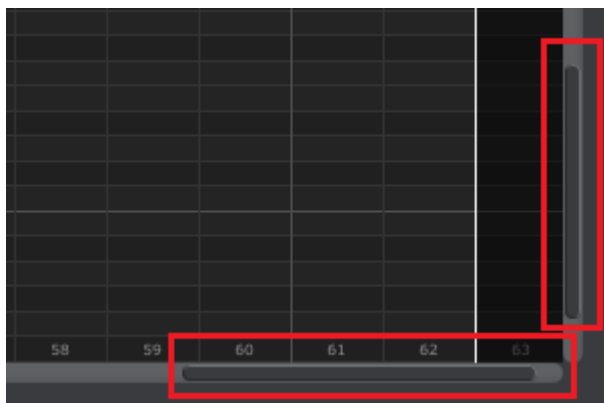
10.6.1. How to Navigate

10.6.1.1. 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

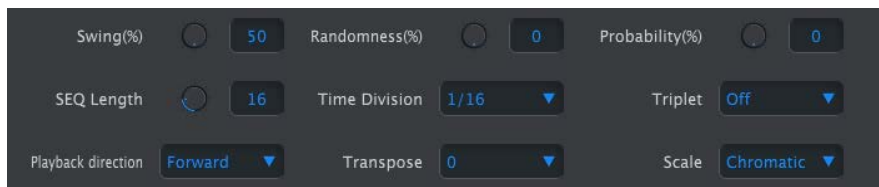
10.6.1.2. Zoom

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.

10.6.2. Front-panel parameters

Most of these parameters have been covered extensively in the [Step Sequencer \[p.24\]](#) chapter:



Front-panel parameters for SEQ1 and SEQ2

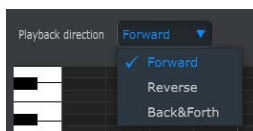
However, the Transpose parameter is even easier to use inside the MIDI Control Center than it is from the front panel. See the [Transpose parameter \[p.98\]](#) section below for information on that.

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

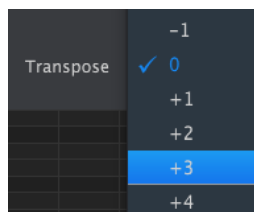
To edit a parameter such as Playback Direction, click its pull-down menu and make a selection:



Selecting a pull-down menu option

10.6.2.1. Transpose parameter

This parameter allows you to transpose the entire pattern up or down chromatically over a range of +4/-3 octaves without having to select the notes and drag them to new places in the piano roll window.



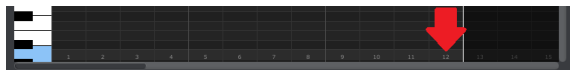
10.6.3. Sequence Length

Changing the sequence length here affects the SEQ window. For example, here's how it looks when the length is set to 12:



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:



10.6.4. Sequence Events

10.6.4.1. Enter/delete notes

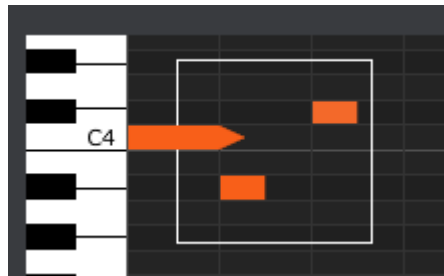
Double-click a square inside the piano roll to enter a note. To delete notes, select a note with a single click or drag a box around several notes. Then press the Delete key on your computer keyboard.

10.6.4.2. 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:



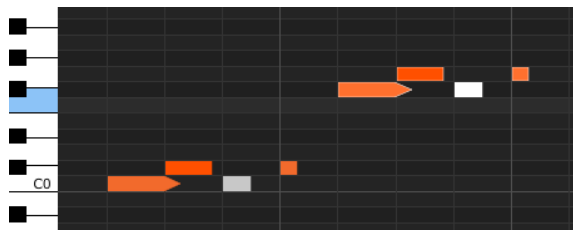
Next, click on the middle of one of the notes and drag the selected notes up, down, left or right.



⚠: 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.

10.6.4.3. Copy/paste notes

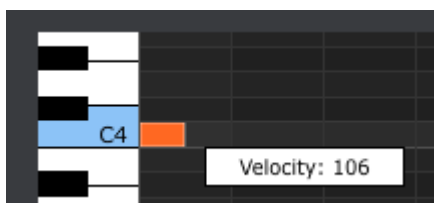
After selecting a group of notes you can make another copy of those notes in another section of the sequence. Just hold the Alt key (Option on a Mac), select one of the notes, and drag them all into the new area.



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

10.6.4.4. 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.

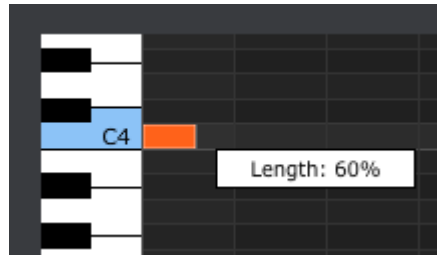


The color of the selected note will change to indicate the velocity value: white is the lowest velocity value and red is the highest velocity value.

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

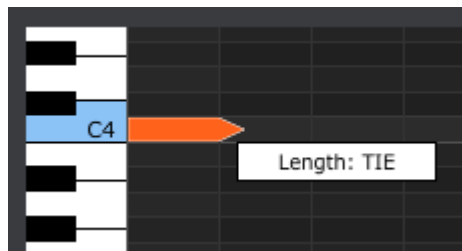
10.6.4.5. Note length/Gate time

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 to a value between 0 and 99%.

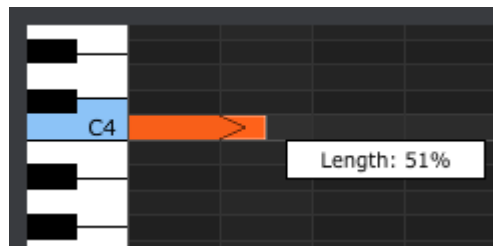


10.6.4.6. TIE a note

If you continue dragging the horizontal cursor to the right past 99%, a value of TIE will appear. The right edge of the note box will become an arrow:



A new note will appear in the next Step. The overlapped arrow shows that the two notes are tied:



You can continue dragging the cursor to set the Gate time of the second note. If you want an even longer note, you can keep dragging the cursor until the second note's length value also becomes TIE, and so on.

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

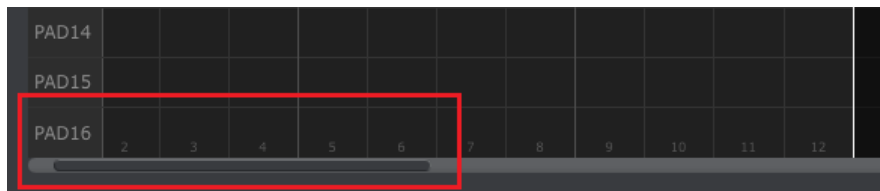
10.7. Drum window

10.7.1. Navigation

10.7.1.1. Scroll

If you have a scroll wheel you can move the pattern view horizontally. Place the cursor in the pattern field (not over the pad names), then hold the Shift key on your computer keyboard and use the scroll wheel. The pattern view will move sideways.

You can also click/drag the scroll bar at the bottom of the window to reposition the pattern view.



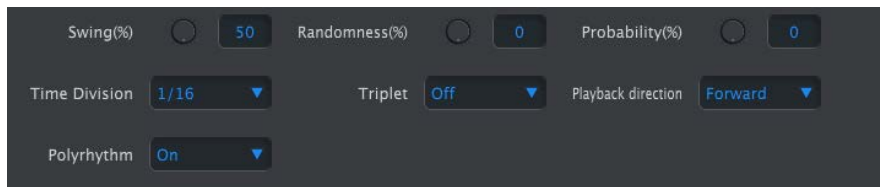
Scroll bar location

10.7.1.2. Zoom

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

10.7.2. Front-panel features

Most of these parameters have been covered in the [Drum Sequencer \[p.38\]](#) chapter:



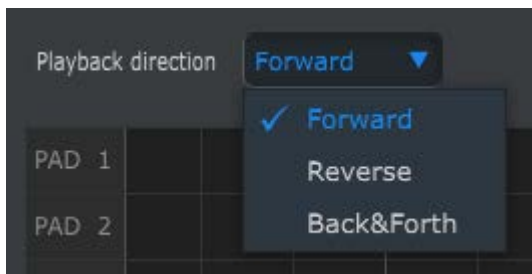
Front-panel parameters for the DRUM tab

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 Playback Direction, click its pull-down menu and make a selection:



Selecting a pull-down menu option

10.7.3. Pattern length (Polyrhythm Off)

When the [Polyrhythm \[p.63\]](#) parameter is disabled you can change the length of the entire Drum pattern by clicking the white line and dragging it to the left or to the right:



Here's how the pattern length looks when the length is set to 12:



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

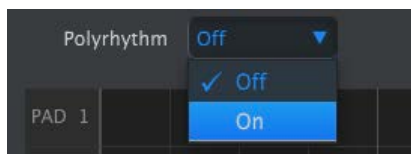
The steps are numbered along the bottom of the window:



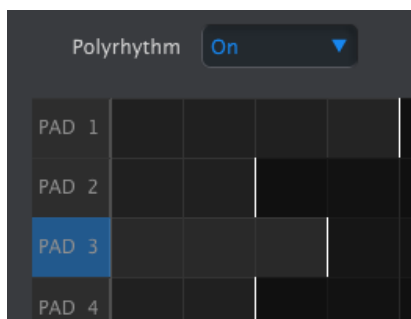
10.7.4. Track length (Polyrhythm On)

The [Polyrhythm \[p.63\]](#) feature was explained in the [Advanced Features \[p.59\]](#) chapter. In this section we will focus on how to utilize that feature from with the Pattern window of the MIDI Control Center.

To toggle the Polyrhythm feature on and off, use the pull-down menu in the Pattern tab window:



When the Polyrhythm feature is active, you can click on the white line at the end of the pattern length boundary and drag it left or right for any Drum track independently.



In the image above the Pad 1 track has been extended from 2 steps to 4, the Pad 3 track has been extended to 3 steps, and the tracks for pads 2 and 4 remain at 2 steps.

To return all tracks to the same pattern length value, select the Off value in the Polyrhythm pull-down menu. The length of all tracks will jump to match the length of the longest Drum track, and the entire pattern will now be 4 counts long.

10.7.5. Pattern events

10.7.5.1. Enter/delete events

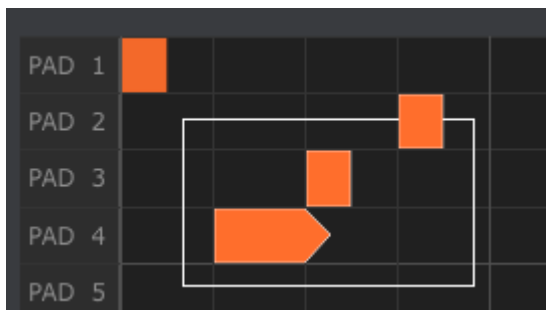
Double-click on a square inside the pattern view to enter an event. To delete events, select one event with a single click or drag a box around several events. Then press the Delete key on your computer keyboard.

10.7.5.2. Move events

To move an existing event to a different drum, click and hold the middle of that event. The cursor will become a hand icon. Then drag the event up or down to place it in the drum track you want.

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

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



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



⚠: If one of the selected events moves beyond pad 1 or pad 16 the entire pattern field will glow red. The same thing happens when a note is moved beyond the 1st or 64th steps.

10.7.5.3. Copy/paste events

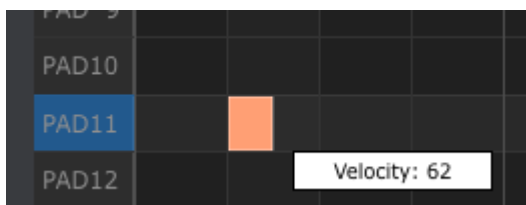
After selecting a group of events you can make another copy of those events in another section of the pattern. Just hold the Alt key (Option on a Mac), select one of the events, and drag them all into the new area.



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

10.7.5.4. Event velocity

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

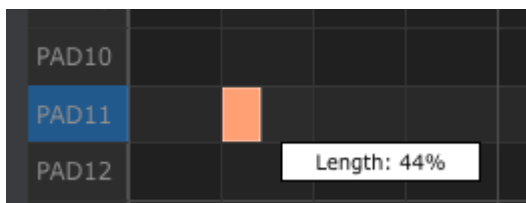


The color of the selected event will change to indicate the velocity value: white is the lowest velocity value and red is the highest velocity value.

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

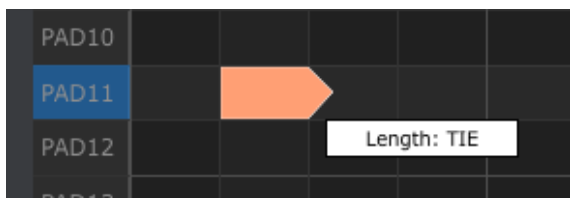
10.7.5.5. Event length/Gate time

If you click on the right edge of an event you will see the cursor become a horizontal arrow icon. Drag the cursor left and right to change the gate time of that event to a value between 0 and 99%.

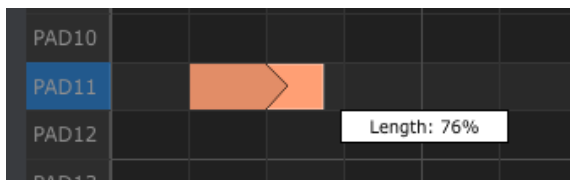


10.7.5.6. TIE an event

If you continue dragging the horizontal cursor to the right past 99%, a value of TIE will appear. The right edge of the event will become an arrow:



A new event will appear in the next Step. The overlapped arrow shows that the two events are tied:



You can continue dragging the cursor to set the Gate time of the second event. If you want an even longer event, you can keep dragging the cursor until the second event's length value also becomes TIE, and so on.

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

10.8. Controller window

Here are some examples of what you can assign a BeatStep Pro control to do using the MIDI Control Center:

- Configure Step buttons or pads to transmit MIDI notes
- Set a pad to switch between two values of any MIDI CC# each time it is played
- Assign an encoder to control any MIDI CC# and define its operational range

i If [Scene Mode \[p.82\]](#) has been enabled the assignments made to the Step buttons in the MIDI Control Center will not be available from the front panel of the BeatStep Pro. They will be remembered, however, so if Scene Mode is disabled the Step buttons will again be able to transmit the specified MIDI commands.

We'll take you through two examples of those scenarios in this chapter. For more detailed information please refer to the MIDI Control Center manual.

10.8.1. Common features

When each control is selected a tab appears at the bottom of the Controller window. They have many similar features:



Knob control options

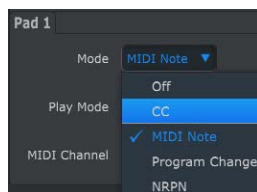


Step button control options



Pad control options

Each has pull-down menus with additional options. For example, the Mode of a pad can also be assigned to CC:

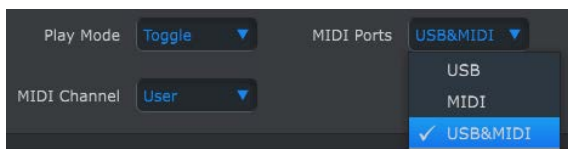


The options of each field are different for each control type.

However, there are two fields that are always available for each control: MIDI Port and MIDI Channel.

10.8.1.1. MIDI Port

There is an option that allows you to choose whether the MIDI data for each control will be sent out of the physical MIDI port, the USB connection to your computer, or both.



10.8.1.2. MIDI Channel control

Another option is available for setting the MIDI channel for the control. Be sure to check the MIDI Channel assignment to make sure it matches that of the receiving device.



The "User" setting allows you to change the MIDI channel of this control from within Control Mode by holding the CHAN button + pressing a Step button.

So for each control you can choose whether they will be locked to a particular MIDI channel or will 'float' with the Control Mode MIDI channel.

Now let's go through a couple of real-world examples of MIDI control assignments.

10.8.2. Toggle MIDI CC values with a pad

One popular musical effect is to take an audio loop, filter it heavily for one section of a song, and switch it back to the full-open sound later. You can configure one of the BeatStep Pro pads to send those commands to a filter module inside your DAW.

We'll use Pad 9 for this example. Select it and then use the pull-down Mode menus to select "CC" and "Toggle":



These settings will allow you to send two different values of a particular MIDI CC number each time you press the pad.

There are a couple of MIDI CC numbers that have been assigned the task of controlling filter brightness (CC# 74) or harmonic content (CC# 71). We'll use CC# 74 for this example.

Click on the MIDI CC number field and select the Brightness controller number as shown:



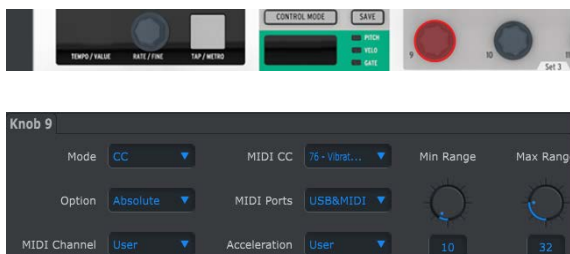
Next we'll set some minimum and maximum values that might work (adjust them to suit the audio source):



The first press of Pad 9 will send a CC# 74 command with a value of 127, opening the filter completely. The second press of Pad 9 will send a value of 78, which will close the filter down part way but still let a lot of the audio pass through.

10.8.3. Set encoder range for a MIDI CC

The encoders are assignable using the same techniques described for the pads. Let's give a quick example of an interesting use: setting the rate of an LFO so it operates only within a certain range.



Looking at the pictures above we see familiar information:

- Knob 9 has been selected, so it is shown in red.
- It is assigned to the User MIDI channel; you can specify any MIDI channel from 1-16 or leave it on the User channel.
- Its Mode is set to CC, which means it will transmit a value for a particular MIDI Continuous Controller number (CC#) when it is turned.
- The second Mode field is set to Absolute, which means it will transmit in a linear fashion from fully counter-clockwise to fully clockwise.
- The CC number field shows CC# 76, the MIDI CC# that has been assigned to control Vibrato Rate.
- The MIDI Port setting means the data will be sent to both the physical MIDI port and to your computer via the USB port.
- The Acceleration field allows you to set the controller response to one of four “locked” options or the “floating” value of User. See the [User Knob Acceleration \[p.115\]](#) section for details.
- The Min Value and Max Value fields are set to values that will cause Knob 5 to transmit data only within a certain range.

To summarize, the settings seen above mean that Encoder 9 will control the Vibrato Rate of the target device, sweeping it between the values of 10 and 32 only. The vibrato will not become too fast, nor will it become too slow.

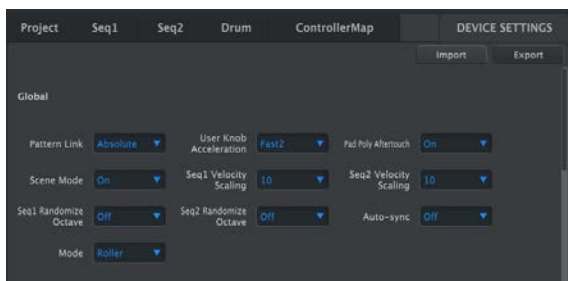
Naturally you can choose settings that are appropriate for the MIDI device you are using.



Some devices may not use standard MIDI controller assignments. Refer to the documentation for your device to determine what settings to use for each purpose.

10.9. Device Settings

The right side of the MIDI Control Center window contains essential parameters you can use to optimize BeatStep Pro for your setup and your working style. You will need to scroll down to see them all.



10.9.1. Global parameters

10.9.1.1. Pattern Link

The first parameter determines how the sequencers will respond when a new pattern is selected from the front panel. There are two settings: Absolute and Relative.

Absolute: all of the sequencers will change to the same pattern number whether you use the < or > buttons or select a pattern directly using the Step buttons. Note that each sequencer has its own set of < and > buttons, so the results may vary.

Example: If SEQ1 = 01, SEQ2 = 02, and DRUM = 03, there are three possible results:

1. Press the > button for SEQ1: All sequencers will change to pattern 02.
2. Press the > button for SEQ2: All sequencers will change to pattern 03.
3. Press the > button for DRUM: All sequencers will change to pattern 04.

Relative: the sequencers will add or subtract a number from the pattern selections when the < or > buttons are used.

Example: If SEQ1 = 01, SEQ2 = 02, and DRUM = 03, pressing any one of the > buttons once will increment all pattern numbers by one. Result: SEQ1 = 02, SEQ2 = 03, and DRUM = 04.



Direct selection of a pattern by holding Sequencer 1, Sequencer 2, or Drum and then pressing a Step button will give the same result as using the < or > buttons.

10.9.1.2. User Knob Acceleration

There are four response curves for the encoders:

- **Slow (Off):** the encoders transmit every value. It takes more turns of an encoder to move from minimum to maximum. Use this when greater precision is desired.
- **Medium:** when turned quickly the encoders will skip a few values. It takes fewer turns of an encoder to move from minimum to maximum.
- **Fast 1:** when turned quickly the encoders will skip a few more values. It may take as few as 1-1/2 turns of an encoder to move from minimum to maximum.
- **Fast 2:** maximum acceleration; when turned quickly the encoders will skip even more values. Parameter values can change from minimum to maximum in the least number of encoder turns (usually only one), but there will be less precision when the encoder is turned at a moderate speed.



Each encoder can be set to its own Acceleration value (see [Set Encoder range for a MIDI CC \[p.113\]](#)). One of the values available there is "User", and all encoders set to that value can have their Acceleration setting changed at the same time by changing the User Knob Acceleration parameter here.

10.9.1.3. Pad Poly Aftertouch

This setting will allow each pad to send an independent Aftertouch value, even on the same MIDI channel as the other pads. Check the specifications the target device to confirm whether it is capable of responding to Polyphonic Aftertouch. If it is, this is a powerfully expressive way to control that device.

But it also will generate a lot of extra MIDI data, so route your devices accordingly.

10.9.1.4. Scene Mode

[Scene Mode \[p.82\]](#) is described in detail in the [Control mode \[p.79\]](#) chapter. Use the drop-down menu to enable or disable this feature.

10.9.1.5. Seq1 Velocity Scaling

This parameter makes it possible for you to adjust the voltage range for the Sequencer 1 VELO CV output. All MIDI velocity values of 0-127 will be represented, but the voltage for the velocity values will be different depending on the value you select here. Range: 1-10, with 10 providing the maximum voltage range (up to 11 Volts).

10.9.1.6. Seq2 Velocity Scaling

This parameter makes it possible for you to adjust the voltage range for the Sequencer 2 VELO CV output. All MIDI velocity values of 0-127 will be represented, but the voltage for each velocity value will be different depending on the value you select here. Range: 1-10, with 10 providing the maximum voltage range (up to 11 Volts).

10.9.1.7. Seq1 Randomize Octave

The Randomness parameter for SEQ1 can be forced to select the same chromatic note but allowed to select it from a different octave range. To enable or disable this feature, use the drop-down menu.

10.9.1.8. Seq2 Randomize Octave

The Randomness parameter for SEQ2 can be forced to select the same chromatic note but allowed to select it from a different octave range. To enable or disable this feature, use the drop-down menu.

10.9.1.9. Auto-sync

When this parameter is enabled the BeatStep Pro will switch automatically to follow a start message from the first external clock source it receives.

The clock sources are prioritized in this order: USB, then MIDI, then CLK. If a STOP message has not been received but the clock is lost, the unit will switch back to internal clock (MIDI and USB only). The response to CLK mode is different: if the clock is lost, the unit will switch to PAUSE, and if the START signal is lost, the unit will switch to STOP.

Use the drop-down menu to enable or disable this feature.

10.9.1.10. Mode: Roller/Looper

This parameter determines the functionality of the Touch Strip: either Roller or Looper. It is also possible to toggle between the two settings from the front panel of the BeatStep Pro within [Control Mode \[p.79\]](#) using SHIFT and Step button 9. When Step button 9 is lit, Roller mode is selected. When it is dark, Looper mode is selected.

10.9.2. Touch Strip



10.9.2.1. MIDI Send/Receive

Use the pull-down menu to specify whether the BeatStep Pro will send and receive MIDI controller data. The range of transmitted and recognized values is detailed in [Using the Touch Strip with a DAW \[p.117\]](#).

10.9.2.2. MIDI CC

Use the virtual knob or the value field to select the MIDI CC number the Touch Strip will transmit and receive.

10.9.2.3. Using the Touch Strip with a DAW

The activity on the touch strip can be recorded into a DAW when the MIDI Send/Receive parameter is enabled. It will send values for MIDI CC #9 by default, but you can select a different MIDI CC# as described above.

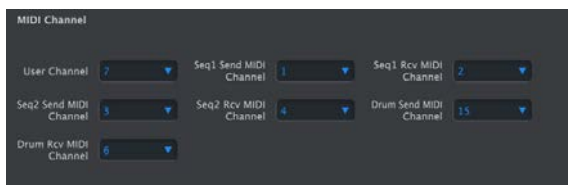
The touch strip will send only the following values:

Touch strip region	MIDI CC value
1/4	25
1/8	50
1/16	75
1/32	100
release value	0

However, if you draw a controller curve for the touch strip in your DAW the BeatStep Pro will respond to the values in the following way:

MIDI CC value received	Touch strip region selected
1-25	1/4
26-50	1/8
51-75	1/16
76-100	1/32

10.9.3. MIDI Channel parameters



10.9.3.1. User Channel

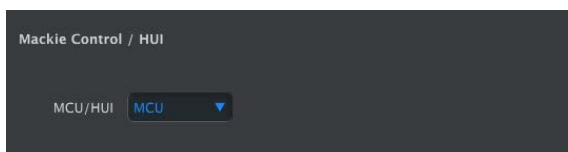
Use the pull-down menus to select the User MIDI Channel for BeatStep Pro. This is the same parameter as the Control Mode MIDI Channel that you can set from the front panel. Changing the User Channel is a quick way to reassign many controls at once.

There are also separate Send and Receive MIDI Channels for each sequencer:

- Seq1 Send MIDI Channel (Range: 1-16)
- Seq1 Rcv MIDI Channel (Range: 1-16, User, All)
- Seq2 Send MIDI Channel (Range: 1-16)
- Seq1 Rcv MIDI Channel (Range: 1-16, User, All)
- Drum Send MIDI Channel (Range: 1-16)
- Drum Rcv MIDI Channel (Range: 1-16, User, All)

Each of the sequencers can be set to receive on the User channel (defined above). They can also be set to a value of All, which is also known as "Omni mode". This means that particular sequencer will receive data from any one of the 16 MIDI channels (or all of them).

10.9.4. Mackie Control / HUI



This parameter toggles the encoders between their MIDI CC assignments in Control Mode and their MCU/HUI protocol assignments.

For a detailed list of these assignments, see the list in the [MCU/HUI encoder assignments \[p.129\]](#) section of the [Parameter Charts \[p.125\]](#) chapter.

10.9.5. Transposition



These parameters affect the way the BeatStep Pro will respond to Transposition commands:

10.9.5.1. Transposition Latch

This preference allows you to choose whether a sequence will be transposed momentarily or latched when receiving incoming MIDI notes on the Transposition Input Channel. 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 original key immediately after the key is released. When Latch is On the sequences will stay transposed after the key is released, and continue in that key until another key is pressed.

This parameter does not affect the transposition from the pads on the unit, only what comes from an external source.

10.9.5.2. Seq Trans. Input channel

Instructs the BeatStep Pro which MIDI channel will set the transposition amount.

10.9.5.3. Seq Trans. Input port

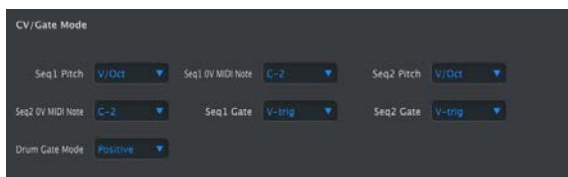
Use this to tell the BeatStep Pro which MIDI port will receive the transposition request. The options are USB, MIDI, or USB & MIDI (both).

10.9.5.4. Seq Trans. 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.

10.9.6. CV/Gate mode



This is where you select the electrical behavior for each sequencer. The various settings are described in the [CV/Gate Functions \[p.76\]](#) chapter: see the [CV/Gate specifications \[p.77\]](#) for SEQ1/SEQ2 and the [Drum Gate specifications \[p.78\]](#) for DRUM.

- Seq1 Pitch (Range: V/Oct, Hz/Volt)
 - With V/Oct selected: Seq1 OV MIDI Note (range: C-2 to G8; default: C-2)
 - With Hz/Volt selected: Seq1 1V MIDI Note (range: C-2 to G8; default: CO)
- Seq2 Pitch (Range: V/Oct, Hz/Volt)
 - With V/Oct selected: Seq2 OV MIDI Note (range: C-2 to G8; default: C-2)
 - With Hz/Volt selected: Seq2 1V MIDI Note (range: C-2 to G8; default: CO)
- Seq1 Gate (Range: V-trig, S-trig)
- Seq2 Gate (Range: V-trig, S-trig)
- Drum Gate Mode (Range: Positive, Negative)

10.9.7. Sync



These allow you to specify the response to various synchronization and tempo options.

10.9.7.1. Clock In/Out Settings

This is where you determine which clocking signal will be transmitted and recognized by the Clock input and output connectors. Settings: 1step, 24 ppq (pulses per quarter note), 48 ppq, and 2 ppq (Korg).

10.9.7.2. Tap Tempo

Choose whether it will take 2, 3, or 4 taps to set the Tempo.

10.9.7.3. Tempo

This parameter allows you to override the independent Tempo settings of each Project. When set to Global each Project will play at the current Tempo value on the front panel.

There also is a front-panel shortcut that will toggle between Global tempo and per-Project tempo. From Control Mode, hold SHIFT and press Step button 15. When the Step button is lit, Global tempo is selected. When it is not lit, Project tempo is selected.

10.9.7.4. Wait to Load Project

With this parameter you can specify whether a new Project will be loaded as soon as you select it or not. This is useful in live performance settings where you may not want to interrupt the flow of the music between Projects.

If SEQ1, SEQ2 and the Drum pattern are different lengths and this preference set to On, the BeatStep Pro will wait until the end of the Drum pattern before loading the next Project.

10.9.7.5. Wait to Load Pattern

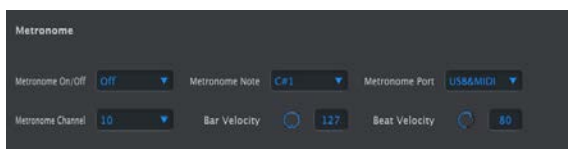
Similarly to the wait to Load Project, you can choose if you want the patterns to switch instantaneously or wait until the end of the current pattern before switching.

There also is a front-panel shortcut that will toggle the Wait to Load Pattern parameter on and off. From Control Mode, hold SHIFT and press Step button 14. When the Step button is lit, Wait to Load Pattern is On. When it is not lit, Wait to Load Pattern is disabled.

If PRST LNK is On and this function is active, BeatStep Pro will wait until the end of the DRUM pattern.

This parameter also affects when a selected Scene will be loaded. It also instructs the BeatStep Pro to delay its response to incoming MIDI Program changes and Song Select messages.

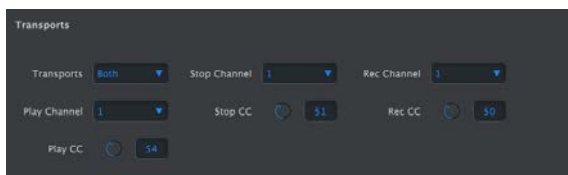
10.9.8. Metronome



These parameters work together to define the metronome:

- **On/Off:** when set to On the Metronome will be enabled by default when the unit first powers up.
- **Note:** select the MIDI note of the metronome sound
- **Port:** the metronome note can be sent to external MIDI, your computer via USB, or both.
- **Channel:** choose the MIDI channel of the metronome sound
- **Bar Velocity:** set the velocity at which the metronome note will play on the downbeat of each bar.
- **Beat Velocity:** set the velocity at which the metronome note will play in the middle of each bar.

10.9.9. Transport



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: MMC, MIDI CC, or both.

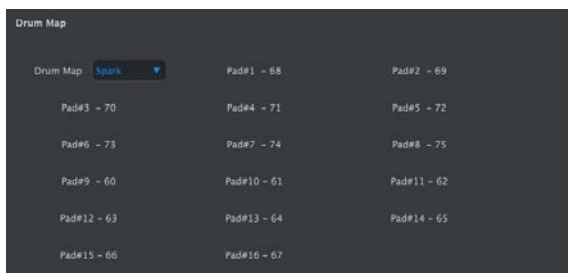
- Transports (Range: Off, MIDI, MMC, Both)
- Stop Channel (Range: 1-16, User)
- Rec Channel (Range: 1-16, User)
- Play Channel (Range: 1-16, User)
- Stop CC (Range: 0-127)
- Rec CC (Range: 0-127)
- Play CC (Range: 0-127)

The Stop, Record, and Play channels can be set to the User channel. It is selected with the [User Channel \[p.118\]](#) parameter.



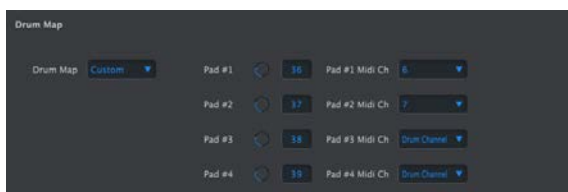
ⓘ The BeatStep Pro will transmit its transport commands over MIDI but does not respond to incoming transport control messages.

10.9.10. Drum Map

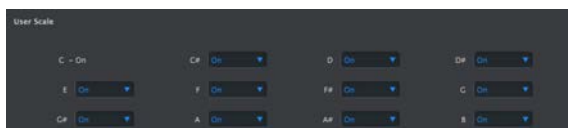


There are four options for the MIDI note assignments of the pads in Drum mode:

- **Chromatic:** MIDI notes 36-51 are spread evenly across pads 1-16
- **General MIDI:** pads 1-16 conform to the General MIDI specification.
- **Spark:** Conforms to the layout of our Spark drum controllers.
- **Custom:** user-definable drum mapping. Enter a MIDI note value for each pad with its knob or by double-clicking in the field and entering a number. Each drum can also be assigned to any one of the 16 MIDI channels or the [Drum Send Channel \[p.118\]](#).



10.9.11. User Scale



To create your own User Scale for the encoders, turn each note on or off.

For example, if you wanted to set up a whole-tone scale that starts with C, turn off C#, D#, F, G, A and B. That way the encoders will only select C, D, E, F#, G# and A# when they are turned.

As with the other Scales, if the User Scale is selected it will dictate which notes will played back by a sequence. See the [Scales \[p.28\]](#) section of the [Step Sequencer \[p.24\]](#) chapter for more information.

11. PARAMETER CHARTS

11.1. Default settings

The following tables list the default settings for Control Mode:



Loop determines if the encoder will stop when it reaches 0 or 127 or loop around.

11.1.1. Encoders settings

CC mode	Range	Default settings / notes
CC	0-127	Varies
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
Acceleration/scaling	Slow, Medium, Fast, Fast2, User	User
Min range	0-127	0
Max range	0-127	127
Data mode	absolute, relative 1, relative 2, relative 3	Absolute

Program change	Range	Default settings / notes
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
Min range	0-127	0
Max range	0-127	127
Loop	ON/OFF	OFF

Bank LSB	Range	Default settings / notes
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
Min range	0-127	0
Max range	0-127	127
Loop	ON/OFF	OFF

Bank MSB	Range	Default settings / notes
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
Min range	O-127	O
Max range	O-127	127
Loop	ON/OFF	OFF

Aftertouch	Range	Default settings / notes
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
Min range	O-127	O
Max range	O-127	127

NRPN mode	Range	Default settings / notes
Bank MSB	O-127	127
Bank LSB	O-127	O
Data	O-127	Varies
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI

11.1.2. Step buttons settings

CC mode	Range	Default settings
CC	O-127	Varies
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
MIn range	O-127	O
Max range	O-127	127
Play mode	GATE/TOGGLE	Gate

MIDI Note mode	Range	Default settings
MIDI note	O-127	Varies
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
Note Off Velocity	O-127	O
Note On Velocity	O-127	127
Play mode	GATE/TOGGLE	Gate

Program Change mode	Range	Default settings
Program Number	O-127	Varies
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
Bank LSB	O-127	O
Bank MSB	O-127	127

NRPN mode	Range	Default settings
Bank MSB	O-127	127
Bank LSB	O-127	O
Data	O-127	Varies
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI

11.1.3. Pads settings

MIDI CC - mode	Range	Default settings
CC	O-127	Varies
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
Min range	O-127	O
Max range	O-127	127
Play mode	GATE/TOGGLE	Gate

MIDI Note mode	Range	Default settings
Note	O-127	Varies
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
Min velocity range	1-127	1
Max velocity range	1-127	127
Play mode	GATE/TOGGLE	Gate

PROGRAM CHANGE mode	Range	Default settings
Program number	O-127	Varies
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI
Bank LSB	O-127	O
Bank MSB	O-127	127

NRPN mode	Range	Default settings
Bank MSB	O-127	127
Bank LSB	O-127	O
Data	O-127	Varies
MIDI channel	USER, 1-16	User
MIDI ports	USB, MIDI, USB&MIDI	USB&MIDI

11.2. MCU/HUI encoder assignments

Mackie Control Universal (MCU) / Human User Interface (HUI) settings:

Item	Position left/right	Type	CW	CCW	Channel
Vpot 1	1	Gen. purpose 1	1	65	1
Vpot 2	2	Gen. Purpose 2	1	65	1
Vpot 3	3	Gen. Purpose 3	1	65	1
Vpot 4	4	Gen. Purpose 4	1	65	1
Vpot 5	5	Controller 20	1	65	1
Vpot 6	6	Controller 21	1	65	1
Vpot 7	7	Controller 22	1	65	1
Vpot 8	8	Controller 23	1	65	1

Continuous (level)	Position left/right	Controller	Value/Max	Value/Min	Channel
fader one	1	Pitch Wheel	8176	-8192	1
fader two	2	Pitch Wheel	8176	-8192	2
fader three	3	Pitch Wheel	8176	-8192	3
fader four	4	Pitch Wheel	8176	-8192	4
fader five	5	Pitch Wheel	8176	-8192	5
fader six	6	Pitch Wheel	8176	-8192	6
fader seven	7	Pitch Wheel	8176	-8192	7
fader eight	8	Pitch Wheel	8176	-8192	8

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