

# midicake ARP

## User Manual

### v1.5.4

\*also covers version 1.4.4

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## Overview

Midicake ARP has 4 polyphonic arpeggiators that can be combined and chained together to form complex but repeatable musical sequences.

Each arpeggiator is controlled via a set of configurable parameters. These parameters can be modified independently or all arpeggiators can be controlled together; even while the sequence is playing.

All arpeggiators can share a single output channel or output on separate channels, allowing for independent sequencing of up to 4 MIDI-compatible sound generators, VSTs or synthesizers.

Sequences are based on a root note and chord which can be changed during playback.

ARP has 16 banks, each with 12 sequences that can be saved and recalled, again while the music is playing, providing a multitude of creative options.

## Basic Operation

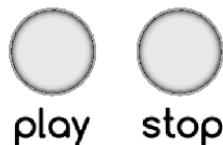
### Powering up

Connect the USB cable from a computer USB port or any 5v USB power supply.

Midicake ARP will flash its startup sequence and you'll be ready to go.

When switching on for the first time Midicake ARP will have a default patch loaded.

### Start and Stop



Press **PLAY** to start the sequence. The LED will light to indicate the sequence is playing.

Press **PLAY** again to pause the sequence. This leaves all playing notes held and can be used to create a long sustain at the end of a musical phrase.

Press **STOP** to stop the sequence. This will play out all notes in accordance with their individual gate parameter values.

Press **STOP** again to immediately stop all playing notes.

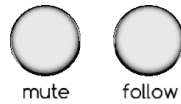
*Note: During Playback, a bar progress indicator will be displayed to visually represent the current position within the bar.*

## Arpeggiator Controls

Pressing the ARP SELECT 1, 2, 3, or 4 buttons will select the arpeggiator. (ARP 1 is selected by default).



Pressing MUTE (above each arpeggiator) will mute or unmute that individual arpeggiator. The LED will light when the arpeggiator is muted.



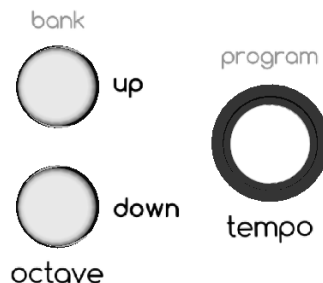
Toggleing FOLLOW (above each arpeggiator) will set that arpeggiator to follow the previous arpeggiator, thus playing the sequence associated with it and the previous arpeggiator on alternate bars. For example, selecting arpeggiator 2, 3 & 4 to follow will play all 4 arpeggiators in sequence over 4 bars, before going back to arpeggiator 1 on the 5th bar. The LED will light when the arpeggiator is set to follow.

## Play Mode Controls

By default, the unit is in PLAY MODE.

*(Indicated by green NOTE buttons and current NOTE and Chord shown on the display).*

Turning the main KNOB control will alter the current tempo (if not synced with an external midi clock).



Pressing the up or down buttons will increase or decrease the current octave of all arpeggiators.

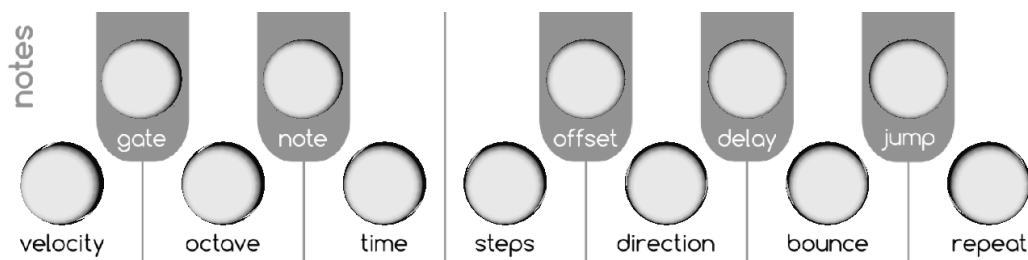
## Free Play

When in PLAY MODE, if the sequence is not playing, pressing down on any NOTE button will play all arpeggiator sequences.

# Changing Key and Chord

## Notes

There are 12 **NOTE** buttons representing musical notes C through to B. Like a single octave on a piano.

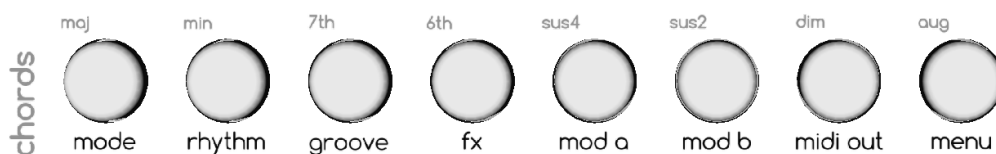


Pressing a **NOTE** button will change all arpeggiators to play with the selected note as the root note.

## Chords

Chords are used to define the notes available to the arpeggiator sequence.

There are 8 **CHORD** buttons representing 8 common chord types: Major, Minor, 7<sup>th</sup>, 6<sup>th</sup>, Suspended (Sus4), Suspended 2, Diminished and Augmented. (Chord 1, Major is selected by default).



Pressing a **CHORD** button will select that chord type but it will not change the current playing sequence. It will only affect the chord that plays the next time a **NOTE** button is pressed.

For example, if C major is currently playing and you wish to change to E Minor, press the "min" **CHORD** button then press the E **NOTE** button. As the button is pressed the note and chord will change.

In this way, you are free to create any chord progression you like.

## Alternative Chords and Scales

You may assign an alternative chord or scale to a **CHORD** button by selecting from a predefined list.

Press and hold a **CHORD** button and use the **UP** and **DOWN** buttons or the main **KNOB** control to cycle through the available chords and scales. The notes that make up that chord/scale will be highlighted on the **NOTE** buttons.

Release the button and the selected chord or scale will be assigned.

To reset to the default chord, press and hold the **CHORD** button and press the **LOAD/RESET** button.

## Custom Chords

ARP enables you to create your own chords by overriding the 8 default chords.

Hold down one of the **CHORD** buttons; the notes that make up that chord will be highlighted on the **NOTE** buttons.

Still holding the **CHORD** button, press any of the **NOTE** buttons to toggle that note on or off. You may add up to 12 notes to form your custom chord.

**Important Note:** All chords are represented with the root note of **C**, regardless of the currently selected note. Please bear this in mind when editing.

Release the **CHORD** button when done. The new chord will be shown as “**CUSTOM X**” in the display (where X is the chord number from 1 to 8).

**Note:** You can change the notes in a custom chord during playback.

To reset the custom chord back to default, press and hold the **CHORD** button and press the **LOAD/RESET** button.

## Sequencing Chords Chains

ARP enables you to create chord progressions up to 32 bars in length.

During playback the chord chain will automatically set the chord and note for each bar. The chain will repeat until a new chord is entered manually, by pressing a note button.

In **PLAY MODE**, press the **PROGRAM** button (Knob control)

- Select a chord, then press a note button to add a link to the chain
- The 8 chord buttons are colour coded
- Each link in the chain represents a chord playing for 1 bar
- Rotate the Knob Control to select any link in the chain
- Press **RESET** button to delete a link
- Press the **PROGRAM** button to exit

For more granular control of automated chord changes, use an external sequencer to control the chords, see External Key Synchronization (below). In this way, you are not limited to chord changes on the bar.

## External Key Synchronization

A key feature of Midicake ARP is its ability to track live musical performances.

In the same way that the current sequence is transposed when selecting the chord and note (see above), when Key Sync is enabled, incoming MIDI notes are sampled to transpose the whole sequence and to follow the root note, chord and key changes.

Key sync operates by sampling all incoming MIDI note messages, building a scale from all active notes and taking the lowest note as the root note.

For example, you might play a chord progression on a keyboard and have the same MIDI notes used by ARP to build its sequences. ARP will create a sequence that matches those notes based on the parameter values defined for each arpeggiator.

Another idea might be to use a step sequencer or piano roll pattern to drive arpeggios that reflect the original pattern.

There are huge amounts of creative possibilities.

In **SET MODE**, use the **MENU** button to select **SYNC CHANNEL**

- Set this to match the MIDI channel of the external controller (keyboard or sequencer)
- All incoming MIDI notes on this channel will be used to build the sequence

In **PLAY MODE**, on detecting MIDI notes, the active notes will be highlighted on the **NOTE** buttons. The display will show "FREE PLAY".

## Set Mode vs Play Mode

The current sequence can be modified at any time (even while playing) by entering **SET MODE**.



Press the **SET** button to enter **SET MODE**.

*(Indicated by blue NOTE buttons and "Arp Settings" on the display).*

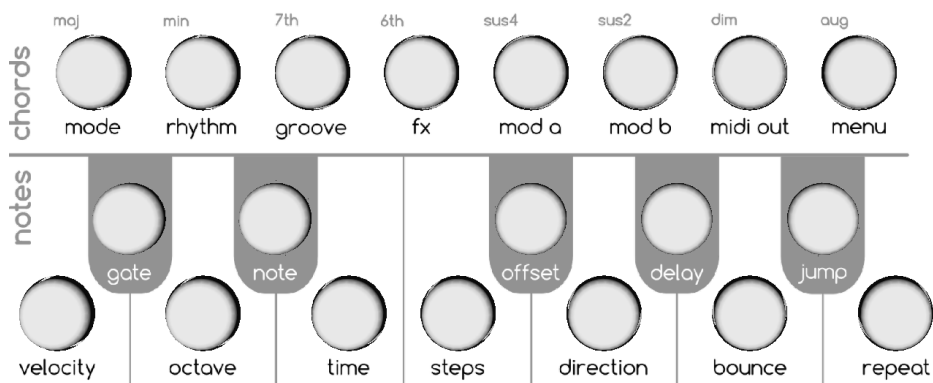
The screen will display the current parameter name and value.

Press the **SET** button again to return to play mode.

## Editing a Sequence

In **SET MODE**...

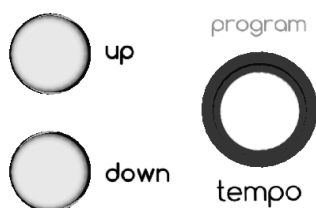
Select one of the **NOTE** or **CHORD** buttons to choose the parameter to change. The parameter associated with each button is shown below the button.



The screen will display the selected parameter and its current value. The button will highlight the selected parameter.



Many of the buttons have multiple parameters, press the button repeatedly to select the desired parameter.



Use the **UP/DOWN** buttons or rotate the **KNOB** control to change the value.

Hold **UP/DOWN** to change values quickly.

Select a different parameter by pressing another **NOTE** or **CHORD** button.

To exit **SET MODE** and return to **PLAY MODE**, press the **SET** button again.

## Selecting Arp Channels

Pressing the **ARP SELECT 1, 2, 3, or 4** buttons will select the arpeggiator. (ARP 1 is selected by default).



Pressing an already selected **ARP SELECT** will select all arpeggiators. This enables parameters to be modified across all arpeggiators at the same time.

## Modifying Multiple Arpeggiators

If all arpeggiators are selected, changes to the Velocity, Gate, Octave, and Note will be relative to the original value on each arpeggiator, e.g. on increasing the velocity by 5 steps, where arp 1 is set to 100 and arp 2 is set to 90 will result in arp 1 becoming 105 and arp 2 becoming 95.

For all other parameters, changes will result in the selected value being set for all arpeggiators.

# Arp Parameters

## Velocity

Controls how loud the individual arpeggiator sounds. Useful in balancing the volume of multiple arpeggiators.

*Values: 0 to 127*

## Gate

Sets the release time for all notes on the selected arpeggiator. Lower values will give short "staccato" sounds and higher values will allow longer "sustained" sounds that can fade over time.

*Values: 1 Beat to 32 Bars*

## Mode

Each arpeggiator can operate independently in any of 3 modes: **ARP**, **CHORD**, or **PAD**.

- **ARP** Mode will play each note in the chord or scale sequentially one after the other. Imagine playing the notes in a chord one at a time on a piano. Works well with shorter **GATE** values.
- **CHORD** Mode will play all notes in the chord or scale at the same time; in line with the **STEPS** parameter. Imagine playing a chord stab on a piano. The chord will repeat on every beat, so can often work better with lower **TIME DIVISION** and medium **GATE** values.
- **PAD** Mode, similar to chord Mode, will play all notes in a chord or scale, but will not release the note until the Note or Chord is changed. Imagine playing and holding a piano chord with sustain. It works well with longer **GATE** values or synthesizer pad sounds that play indefinitely.
- **DRONE** Mode is similar to PAD mode but as the chord/scale is changed, any notes that belong to both the current chord and the new chord will be held. This creates a drone effect that keeps notes playing longer. E.g. If you change from a C major chord to E Minor, the E and G notes will be sustained and only the C will be replaced by B.

## Octave

Modifies the octave of the selected arpeggiators. Changing the octave up or down can be a useful way to quickly change the pitch and intensity of a playing sequence without changing the melodic pattern.

*Values: -3 to +3 (default 0)*

## Octave Lock

Pressing the Octave button again will select Octave Lock.

When enabled, the selected octave of the individual arp will not be affected by changes to the global octave or by external sync notes. e.g. If Octave Lock is set to ON, notes played on an external MIDI keyboard will be transposed to the locked octave.

## Note

Pressing the Note button repeatedly will toggle through the note parameters.

## Note Offset

Offsets the currently playing notes by a single note.

This is intended for use in combination with the other arpeggiators and the **SCALE** Mode to build harmonies. Imagine using two arpeggiators playing an identical sequence but the 2nd being offset by 5 notes. Working in this way offers very precise control over musical notes in your sequence.

## Offset Mode

Controls how the Note offset is applied during playback.

In the default **SCALE** mode, the offset equates to the note intervals of the current chord or scale.

e.g, If the current note/chord is C Major, an offset of +1 will move the root note from **C** to **E**.

Changing to **CHROMATIC** mode, the offset equates to individual semi-tones. As such it is not limited to the current chord or scale.

e.g, If the current note is C, an offset of +1 will move the root note from **C** to **C#**, regardless of the chord or scale.

## Note Limit

Sets a maximum range to the number of semitones that a sequence note can be played (away from the root note). Up to +/- 48 semitones.

When Note Limit is set, any note in the sequence that falls outside of the range will be played at the furthest position that semi-tone can be played within the range.

e.g. If the limit is set to 24 semitones and the root note is C3: if a B5 is then demanded by the sequence, a B4 would be played in its place.

This behaviour is useful in 2 ways: -

- When using an external keyboard, if you press a single key, the scale would be a single note, as such the sequence may trigger a single note at rising or falling octaves, depending on the settings. This might result in undesirable effects, Note Limit can help prevent this behaviour.
- Used creatively, particularly with **Modulation**, it can be used to create interesting variations in a sequence.

Set to **Off** to disable.

## Note Lock

Allows you to fix the selected arpeggiator to a specific root note. It prevents the root note from being changed, either via the note buttons or external MIDI Note input.

Select one of the 12 semitones, C through to B.

Locking the root note can be useful for creating, for example, a continuous drone, or static melody, or if you are triggering fixed-note percussion instruments or samples.

## Scale Lock

Allows you to fix the chord/scale of the arpeggiator, preventing the active chord from affecting the sequence. Simply select one of the in-built chords or scales.

As with Key Lock, above, this can be used creatively or to ensure that fixed-note instruments such as samplers do not change when you change the chord externally.

Setting both Key Lock and Scale Lock together effectively disengages the selected arpeggiator from any input notes and key sync.

Combined with bounce and rhythm patterns you can create drum beats or melodies that remain static as you play different notes and chords. In combination with the other arpeggiators that are synced to the played chords, this can create some very interesting, and perhaps highly discordant, effects.

## Time Division

Specifies the number of times a note is played for each bar.

For example, a Time Division of  $1/4$  will play 4 notes for every bar.

Selecting a value of  $1/32$  will play 32 notes every bar making for very fast sequences.

A value of  $8/1$  will play 1 note every 8 bars. Such lower values allow for sequences to run very slowly.

Values suffixed with T are Triplet values and will divide a bar into thirds.

*Values:  $1/32T$ ,  $1/16T$ ,  $1/8T$ ,  $1/4T$ ,  $32/1$ ,  $16/1$ ,  $8/1$ ,  $4/1$ ,  $2/1$ ,  $1/1$ ,  $1/2$ ,  $1/4$ ,  $1/8$ ,  $1/16$ ,  $1/32$ ,  $1/4T$ ,  $1/8T$ ,  $1/16T$ ,  $1/32T$*

## Steps

Determines the number of steps used in creating the sequence of notes to be played. The Sequence is repeated.

e.g. Given the C Maj chord (C, E, G)

- A value of 1 will produce a sequence [C3] which would repeat as => C3, C3, C3, C3... etc.
- A value of 8 might produce a sequence [C3, E3, G3, C4, E4, G4, C5, E5], depending on other parameters such as direction and repeats.

The maximum sequence length is 16. Notes that fall outside the range C0 to B6 will not be heard.

## Pitch Filter

Limits the note pitches, taken from the active chord or scale, such that only the first few notes from the scale are used for the arpeggio sequences. Its purpose is in making simpler melody patterns from just a small number of notes when there are many notes that make up the scale.

*For example: If the chord/scale is C Major7, the notes C, E, G, & B will be available to the sequence. If we set Pitch Filter to 2, then this limits the available notes to C & E.*

This gives us the ability to create more stable basslines and melodies, that do not wander too far from a theme when playing more complex chords.

Combining Pitch Filter with Jump and Note Limit parameters can create some very interesting results.

*For example: Given the C Major7 chord, a Filter of 2 and Jump of 2 would limit the available notes to C & G. Interesting huh?*

## Offset

The Step Offset can be used to shift the sequence (up to 12 steps) to start in a different position.

Given the sequence from above [C3, E3, G3, C4, E4, G4, C5, E5]...

... an offset of 2 will create the sequence [G3, C4, E4, G4, C5, E5, C3, E3]

This enables a "round" to be created when combined with another arp.

**Note:** Step Offset is similar to Note Offset but with a key difference.

Step Offset is limited by the number of steps in the sequence, where Note Offset is not, e.g. if you have a Steps value of 4, the 5th offset will be applied to the 1st step. However, with Note Offset, the 5th offset will be 5 intervals above the 1st step, no matter the number of steps.

## Direction

This sets the direction in which the sequence is travelled during playback.

- Up
  - [C3, E3, G3, C4, E4, G4, C5, E5]
- Down
  - [C3, G2, E2, C2, G1, E1, C1, G0]
- UpDown - changes from up to down mid-way through the sequence
  - [C3, E3, G3, C4, E3, C4 G3, E3 ]
- DownUp - changes down to up mid-way
  - [C3, G2, E2, C2, G1, E1, C1, G0]
- UpDownUp - changes up to down quarter past and back to up at quarter to
  - [C3, E3, C3, G2, E2, C2 E2, G2 ]
- DownUpDown - opposite of above
  - [C3, G2, C3, E3, G3, C4, G3, E3]

## Delay

Delay pushes the MIDI notes forward in time, delaying all the notes for the selected arpeggiator.

It is useful when combined with another arp playing a similar pattern to create a classic delay/echo effect. It can also be used to create off-beat patterns.

The resolution of the delay is beats so the relative timing changes depending on the number of steps.

## Bounce

Controls the order in which notes in the sequence are played. E.g. Where Direction controls the next note in the sequence, **Bounce** creates a more interesting movement through the sequence.

Tip. Try it with a Chromatic Scale and simple Up or Down directions to get started.

## Custom Bounce Patterns

There are 9 default and 20 custom bounces. These patterns are shared between all banks and patches.

Press **program** to select the first custom pattern or, if a custom pattern is already selected, to begin editing.

Rotate the knob control to select the step and use the Up/Down buttons to change the value.

*The value is the number of steps in the scale away from the root note of the current chord.*

Rotate all the way to the left to select the Root position and use Up/Down to change the position.

*The Root position represents the root note of the sequence and all steps in the bounce pattern are relative to it.*

*For example, if the root position is set to the lowest value, all individual steps in the bounce pattern will be on or higher than the root note.*

## Jump

Sets the interval between the selected notes used in the sequence.

A value of 1 will select every note in the scale or chord when creating the sequence.

A value of 2 will skip every other note.

The maximum value of 12, can easily take you out of the note range C0 to B6. So larger values are only really beneficial for fine control of the chromatic scale.

Combining Jump with Directions and Bounce parameters can create interest.

## Repeat

Sets the number of times each note in the sequence repeats before the next note is played. The default repeat is 1 and this will play each note in the sequence just once. You can set up to 32 repeats for each note.

For example, given a rising sequence with 4 steps, using C major:

- A Repeat of 1 will play C E G C
- A Repeat to 2 will play C C E E G G C C

This parameter is good for bouncing basslines or long pads that retrigger often but change note only after every n<sup>th</sup> step.

Repeat can also be useful in creating polyrhythmic and sequence phasing effects.

## Rhythm

Press the **Rhythm** button to toggle between Rhythm Pattern and Rhythm Length parameters.

### Rhythm Pattern

Enables the creation of 16-step patterns that modify the velocity and gate of individual notes in a sequence.

Rhythm Patterns, using ties, mutes and accents, can add movement to your sequence.

There are 16 default patterns to select, each of which can be edited.

### Rhythm Length

Allows control of the length of the pattern and therefore how often the pattern repeats.

Note that the pattern repeats independently of the sequence. Thus, a pattern and sequence of different lengths will move in and out of phase, creating interesting effects.

## Editing Rhythm Patterns

With either Pattern or Length highlighted, press the Program button (Knob control) to enter Edit Mode.

The pattern display will change colour with the first step in the sequence highlighted.

Rotate the Knob control to change the selected step.

Use the Up & Down buttons to change the velocity of the highlighted step.

To create Tied Steps: Press the **UP** button until the step reaches maximum velocity and press again to tie the step to the one previous, thus allowing you to create longer notes in the sequence.

To create Muted Steps: Press the **DOWN** button until the step reaches the minimum velocity, this will mute the step and the midi note will not be played for this step.

Note that the maximum velocity is controlled by the Velocity setting of the selected arp. Therefore, to create Accent Steps, set the Velocity setting quite high, then edit the Rhythm Pattern, setting most steps to a mid-level value with individual peak steps at a higher velocity.

## Groove

Press the Groove button to toggle between the Groove Pattern and Length parameters.

### Groove Pattern

The groove parameters let you create up to 16 step patterns that affect the timing of notes (similar to Delay), by offsetting individual notes in the sequence. From swing effects to drunken sounds, Grooves can add feeling.

There are 16 default patterns to choose from, all of which can be edited.

Tips. It's easy to create random-sounding sequences with groove patterns, but they always repeat. Try using lower values to create swing-style effects. Use higher values to create different rhythmic patterns.

### Groove Length

Groove Length allows you to set the length of the pattern and how often the pattern repeats.

Groove Patterns repeat independently of the sequence. Changing a pattern to a different length from the sequence length can create interesting phasing effects.

## Editing Groove Patterns

With either Pattern or Length highlighted, press the Program button (Knob control) to enter Edit Mode.

The pattern display will change colour with the first step in the sequence highlighted.

Rotate the Knob control to change the selected step.

Use the Up & Down buttons to change the timing delay of the highlighted step.



Note: Groove values are added to the Delay value when calculating note timing. Therefore, shifting the arp Delay will also shift the Groove pattern by the same amount, keeping the note timing in sync.

## Saving and Resetting Patterns

Press the Reset button when in Edit Mode to clear a Rhythm or Groove pattern back to a simple default pattern.

Edited patterns are saved automatically and are global to all patches within each bank. Editing a pattern with any arp or patch selected will change the pattern for any other arps or patches in the same bank. Therefore, it is recommended to use different patterns for each patch.

## FX

The FX parameter is a powerful tool to create variance and interest in your arp sequences. It utilizes a repeating pseudo-random sequence to modify a parameter value by a different value for each step of the sequence.

In **SET Mode**, press the FX button to show the effects menu. There are 4 controls:

**Amount:** 0 to 100%

- Controls how much the target parameter is affected by.

**Target:** Velocity, Octave, Note Offset, Time Division, Step Offset, Delay, Repeat, Bounce

- Determines the parameter that is affected by the FX sequence.

**Seed:** 1-127

- Sets the seed value for the sequence to be applied. (The first 16 steps is visualized in the display)

**Repeat:** ¼ bar to 32 bars

- Determines how often the sequence will repeat.

FX can be used creatively in many ways and the possibilities are extensive.

## Modulation

Modulation can be used to evolve individual arp sequences over time, returning to the starting point based on the rate.

There are 2 modulations per arp: **Mod A** and **Mod B**.

Press the **SET** button, then **Chord 5** to edit **Mod A** (or **Chord 6** for **Mod B**)

Select the **Parameter**

Press the **Chord** button again to cycle through:

**Amount:** 0 to 100%

- Controls how much the target parameter is affected by.

**Target:** Velocity, Gate, Octave, Note Offset, Time Division, Steps, Step Offset, Direction, Delay, Bounce, Jump, Repeat, Rhythm Length, Groove Length, FX Amount, MIDI Channel, Note Limit

- Determines the parameter that is affected by the modulation.

**Shape:** Sine, Square, Triangle, Saw

- The wave shape of the modulation applied over time.

**Rate:** ¼ bar to 32 bars

- The wavelength. How often the modulation repeats

**Toggle:** On, Off

- Enables or disables the modulation

On pressing **play**, the modulation will start from the currently stored value of the selected parameter.

For list parameters like direction and bounce, the modulation will cycle through the parameter options in the same order they appear when editing that parameter.

If the modulation takes the value of the parameter beyond its minimum or maximum value it will hold at that value until the modulation brings it back within its valid range.

Combining 2 Modulations allows huge scope for creativity.

Using 2 modulations of different rates can greatly extend the length of the sequence pattern, up to many minutes. Modulating all 4 arps and setting them to follow can produce hours of evolving patterns.

Doing this can cause the sequence to appear random, but remember that there is no such thing as random and it will always return to the start.

## MIDI Out

Sets the midi channel on which the individual arp will output.

## Voice Mode

Also under the MIDI Out parameter, Voice Mode sets how the MIDI note output should behave.

## Poly Mode

- By default, arp respects the gate times of every note. This creates layered notes during playback and relies on the external instrument to control how it handles polyphony.

## Mono Mode

- arp will stop all notes on the current midi channel before sending new notes. This supports monophonic instruments that cannot handle polyphonic note input or behave erratically (which sometimes is no bad thing).

Note that Mono mode is per MIDI channel, so you can still layer notes using up to 4 separate monophonic instruments.

As an alternative to Mono Mode, try setting the **gate** value to 1.

Experiment with gate times to see how your mono instrument behaves; the results can be pretty interesting.

## Combining Parameters

Arp is not your regular sequencer and if you have experience of step sequencing or editing in a pattern roll it may seem unintuitive and difficult to control. The key to getting the best from arp is experimentation. There are a lot of parameters and how they interact doesn't make for a linear journey of creation; a small tweak can drastically change the resulting sequence.

Embrace it, you wouldn't be here if you wanted to stick to your tried and tested methods.

Remember that Arp's parameters are predictable. There is no such thing as random, only complex patterns.

## Macro Controls

The Macro knobs can be used to control any of the parameters for one or multiple arps.



By default, the 4 knobs are set to control the velocity of arps 1 to 4.

To set a knob to control a different parameter, press and hold down the knob button.

While still holding the button, select one or more arps to control by toggling the arp select buttons so that only the arps you want are lit.

Then, while still holding the button, select the parameter you wish to control by pressing the associated **CHORD** or **NOTE** button.

Where a button has multiple parameters, (e.g. Dynamics, Groove, FX, Mod A, and Mod B) press the button multiple times until you reach the desired parameter.

Release the knob to save the change.

Rotating the knob will now modify the parameter you selected.

The parameter value will be shown briefly in the display.

Holding down the knob button will highlight the arps and the parameter associated with that knob, and the display will also show the selected parameter and its value.

This applies in both **SET** and **PLAY** modes.

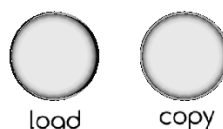
## Saving Parameters

All changes you make are automatically saved.

## Copying Arp Parameters

You can easily create a variation of a sequence on a different arp channel by copying the parameters.

Select the Arp you wish to copy, press the **COPY** button, then select the arp you wish to copy to.



# Global Settings

Press the MENU button repeatedly to move through each the multiple global settings:

## MIDI Control Mode

Set to **OFF** to isolate ARP from all incoming midi transport/control messages. (Start, Pause, Stop & Clock).

Set to **IN** to allow control of ARP from an external device via the MIDI In connector or USB port.

Set to **OUT** to use the Play and Stop buttons to send Start, Continue, Stop, and MIDI Clock messages to external devices via the MIDI Out connector or USB port.

## MIDI Thru

Enables or disables throughput of MIDI messages on all channels, via MIDI DIN, USB and USB Host.

## MIDI Sync Channel

Arp will key sync to incoming MIDI Notes on the specified channel. (See note on Key Sync)

Set to **Off** to disable key sync. Set to **Omni** to key sync to note messages on any incoming channel.

## Live Play on Note Input

Live Play is the triggering of ARP's sequences on input: when holding NOTE buttons or when sending MIDI Note messages (on the MIDI Sync Channel) via an external keyboard or sequencer.

Setting Live Play to **Off** in the menu will disable this feature. This is useful if you wish to select the Note/Chord or Scale silently before pressing PLAY.

## Program Change Channel

Sets the MIDI Channel for incoming Program Change messages. Set this to match the external source for Bank and Patch change messages to be obeyed.

Set to **Off** to disable or **Omni** to receive PC messages on all MIDI channels.

## Stop Play Behaviour

Offers 3 options for how ARP ends playback when pressing the Stop button.

- On Press - Stops playback immediately

- At End of Bar - waits until the end of the current bar before stopping, the last note played will be the last step in the current bar

- On Root/At Start of next bar - waits until the first step of the next bar before stopping. The last note played is the first step of the next bar, so this is usually the root note and resolves the music nicely.

This behaviour also functions when running an external MIDI clock. The internal clock detects the tempo from the external clock and will continue playing at that tempo until the end of the bar/start of the next bar. If these options are enabled.

## LEDs Brightness

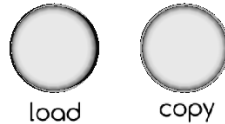
Controls the brightness of the button LEDs. Options: [Low, Medium, High].

## Patches and Banks

Patches offer a way to build a collection of different sequences that you can switch between during a performance.

ARP offers 192 patches. These are stored in 16 banks, each having 12 patches. The 12 correspond to the 12 **NOTE** buttons.

While in **PLAY MODE**, use the **LOAD** button to quickly restore the sequences you create.



To recall a patch...

- Press the **LOAD** button
- Use the **UP** and **DOWN** buttons to select the bank
- Then press the **NOTE** button that corresponds to the patch you wish to load

To cancel the operation, simply press the **LOAD** button again without selecting a patch.

### Synchronization

When loading a patch during playback, the patch will change on the bar to keep everything in sync. When this occurs a “**LOADING...**” message will be displayed. The bar progress indicator will also change colour to highlight the pending change.

### External Control

Banks and Patches can also be changed using MIDI Program Change messages from an external hardware or software sequencer. See [MIDI Automation](#)

## Copying Patches

To duplicate a patch, press the **COPY** button and then press one of the 12 **NOTE** buttons to store the sequence against that note. Note that the existing patch on that note button will be overwritten with a duplicate of the current patch.

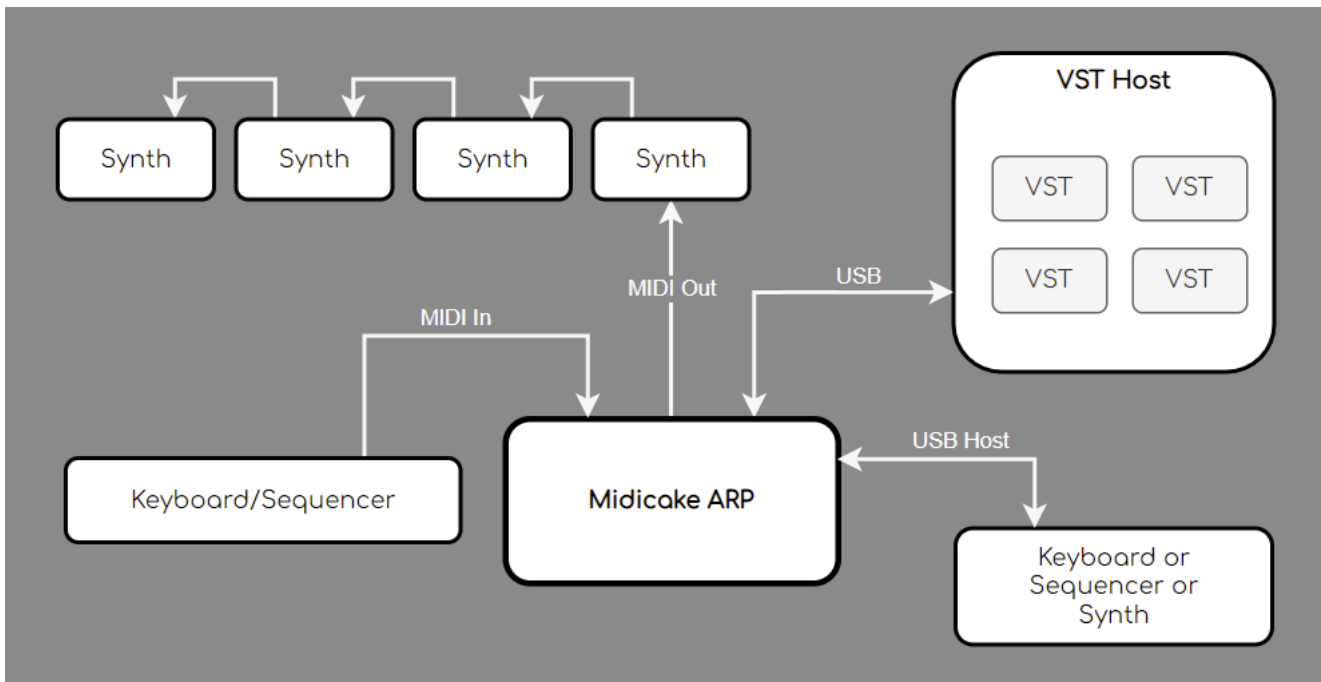
This operation is useful in creating multiple related patches to create compositions.

## Default Patches

ARP is pre-loaded with 12 default patches on each bank. These examples show how parameters can affect the sequence. (see Appendix i)

# Connectivity

ARP can be connected to external devices via midi messages over USB or the MIDI DIN connections.



## MIDI In

Midi In enables connection to any MIDI-compatible device via the DIN port.

It can be used to tempo sync to a master midi clock.

Key sync is also supported via **Midi In** forcing ARP to track to the incoming notes. This can be combined with MIDI Thru, enabling a keyboard or sequencer to control both ARP and an external sound generator, via either MIDI Out or USB.

## MIDI Out

Midi Out enables connection to any midi-compatible device via the DIN port.

It can be used to send MIDI clock and MIDI note messages to external devices.

It also passes external messages via Midi Thru from both MIDI in and MIDI over USB, if enabled.

## USB

The Type-B **USB** port provides power to the unit. It also supports MIDI over USB to connect to software sound generators, VSTs and DAWs.

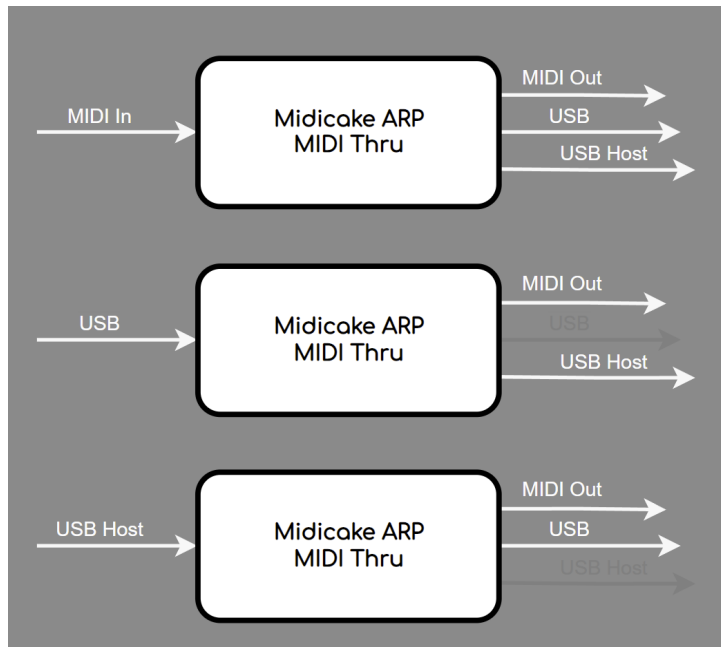
It supports both incoming and outgoing MIDI clock and MIDI note messages.

## USB Host

The Type-A **USB Host** port support MIDI note and CC input from a USB MIDI device such as a keyboard or sequence.

## MIDI Thru

If enabled, (via the Menu) ARP will forward any incoming MIDI messages to all applicable MIDI output ports.



## Notes

- MIDI Thru for Transport and Clock messages is only enabled when ARP has MIDI Control Mode set to IN
- A software MIDI Thru is used so a small latency may be evident



# MIDI Automation

## Program Changes

MIDI Program Change messages from an external hardware or software sequencer can be used to change the active patch.

In **SET MODE**, select **Menu** and toggle through the settings to **PC Channel**. Select the incoming channel to match the output of your external MIDI device.

ARP will then respond to...

- Bank Change messages (using CC 0) with a value between 0 and 15 (bank 1 to 16)
- Program Change messages with a value between 0 and 11 (patch 1 to 12)

*Example: The following MIDI messages will change to bank 3, patch 9, if the PC Channel is set to 5.*

Action	Status	Byte 1	Byte 2	Channel	Note
Control Change	B0	00	02	05	Byte 2 = Bank
Program Change	C0	08	00	05	Byte 1 = Patch

## Control Changes

MIDI Control Change messages from an external MIDI controller can be used to remotely change the value of any setting or parameter.

### MIDI CC Learn Mode

Press and hold the **CC LEARN** button for 1 second to enter **MIDI LEARN MODE**.

The display will show the default or last selected control.

Press the **CC LEARN** button to exit **MIDI LEARN MODE**.

### Arp and Chord Controls

In **MIDI LEARN MODE**... select any of the 4 **ARP SELECT**, **MUTE**, **FOLLOW** or the 8 **CHORD** buttons you wish to assign external control to.

Transmit a MIDI CC message by activating any external control that is connected to ARP via the MIDI or USB MIDI ports. E.g. move the knob or slider.

The display will update to show the assigned MIDI Channel and Control numbers.

### Arp Parameters

When in **MIDI LEARN MODE**... enter **SET MODE** by pressing the **SET** button.

Use the **CHORD** and **NOTE** buttons to select the parameter to which you wish to assign external control.

*Remember... some parameters have multiple options, simply repeat press the button to select the desired parameter.*

Use the **ARP SELECT** buttons to select which arp to assign to.

Transmit a MIDI CC message by manipulating the external control.

The incoming MIDI CC channel and control number will be displayed and the external control will be assigned to the parameter.

*For Example, press the Note 1 button, then press ARP SELECT button 1 and assign the CC, then ARP SELECT button 2 and again assign the same CC. The external MIDI CC will now affect the velocity parameter for both arpeggiators, 1 and 2.*

Note that a parameter can have only a single CC assigned, but the same CC can be assigned to multiple parameters.

## Clearing MIDI CC Assignments

To clear the assignment, enter MIDI LEARN MODE, select the chord, arp control, or parameter, and then press the LOAD/RESET button.

## Controller Type Support

ARP supports two control types.

Select the controller type by entering MIDI Learn mode and pressing the UP or DOWN buttons to toggle.

### Absolute (ABS)

Controllers such as a slider or rotary potentiometer have a fixed range of movement.

In ABS mode ARP will map the incoming MIDI value to the parameter value range.

This means that you must use the full range of movement of the external control to fully control the parameter value. I.e. To get the highest value for the parameter you would have to set the controller to its max position.

*Example... Octave (with a range of -3 to +3) requires a value of 0 to set it to -3 and 19 to 36 to set it to -2 etc.*

### Incremental (INC)

Controllers such as rotary encoders have stepped movement and rotate infinitely.

In INC mode ARP will use the incoming MIDI value as the exact value for the parameter.

Where parameters have a negative value range, the incoming value will be offset to make a value of 0 equal to the lowest value in the parameter range.

Any value above the highest value in the parameter's range will be ignored.

This means that each increment on the controller will change the parameter value by a single step

*Example... Octave (with a range of -3 to +3) requires a value of 0 to set it to -3 and a value of 6 to set it to +3.*

## Workflow Ideas

1. Connect Midicake ARP to a single hardware or software synth via MIDI Out or USB and create a simple sequence on arp 1.
2. Explore the Chord and Note buttons to create interesting chord progressions.
3. Copy your parameters to a different patch and tweak the parameter values slightly, then load each patch in turn during playback to get interesting variations.
4. Copy the arp 1 parameters to arp 2, then tweak the values to create two complementary sequences. Do the same for arp 3 and arp 4.
5. Create a long-running sequence by setting each arp to follow the previous.
6. Increase the complexity of the sequence by modulating one or two parameters across the 4 arps.
7. Program the **Macro Controls** to modify any parameter you desire to create unique performances.
8. Change the **Midi Out Channel** parameter of each arp to control a different sound generator or hardware synth.
9. If you can, why not connect 4 Hardware synths and 4 Software VSTs and control them all with ARP.
10. Connect a midi keyboard via USB or MIDI In and set the (menu) **Sync Channel** to match the keyboard and set **Key Sync** to Note. Then play the keyboard and the sequence will track the incoming notes.
11. Connect a sound generator via MIDI Out or USB to the same midi channel as the keyboard, then you can play sounds with the keyboard and ARP will continue to track.
12. Experiment with Scales and Custom Chords.
13. Set the (menu) **Midi Control** to OUT and connect to external sequencers, DAWs, drum machines, etc. to control their playback and tempo.
14. Set (menu) **Midi Control** to IN to control ARP with external sequencers and DAWs.

## Tricks and Tips

Midicake ARP can seem a bit overwhelming at first and can be a little tricky to find great-sounding sequences.

- Start with something simple and gradually increase the complexity.
- To begin with, set the sequence to a small number of **Steps**.
- Sometimes parameters won't seem to have an effect because of another parameter's selected value, e.g. bounce and jump won't do anything if **Steps** is set to 1.
- If you don't understand what's going on with your sequence try setting **Scale** to Chromatic.
- Check you are in Set Mode before tweaking parameters, it's easy to change the chord or note during a performance.
- Octave, Note, Steps, Step Offset, and Delay parameters can all be used to create rounds or out-of-phase sequences over two or more arps.
- Use Repeat to build simple basslines.
- Try assigning parameters to the **Macro Controls** and use those to experiment.
- Dynamics patterns don't work on Hardware synths that don't support velocity.
- Beware of polyphony when working with mono synths, the results can be interesting.
- Modulation waveforms take their starting position from the selected parameter's value. Try changing the main parameter value to see the effect on the modulation.
- Beware modulating Time Division and Delay parameters, modulation is only updated on each note played and if the time between notes is pushed to 2 or more bars, it'll seem like the sequence has stopped. Just wait, or set the modulation back to Off and things will get back to normal.

# Firmware Updates

To see the current firmware version, press and hold the stop button.

To install firmware updates:

1. Download the **Midicake arp** firmware package and unzip it somewhere
  1. Midicake arp firmware packages are available via [midicake.com](http://midicake.com)
2. Download the **Teensy Loader**
  1. Windows: <https://www.pjrc.com/teensy/teensy.exe>
  2. Mac: <https://www.pjrc.com/teensy/teensy.dmg>
3. Open the Teensy Loader



4. Select **File > Open HEX File**, then select the `midicake.ARP.Firmware.ino.hex` file downloaded in step 1, then click **Open**
5. Make sure the (green) **Auto** button is selected.
6. Press the **UPDATE** button on the back of the unit (next to the USB port).
7. The arp should restart within a couple of seconds with the new firmware.

*Note: the firmware version number is displayed on the logo screen at startup and can be shown by holding down the stop button.*

# Resetting your Device

To reset the unit to its factory defaults...

- Restart the device by temporarily unplugging the USB cable
- Hold the **RESET** button for 2 seconds to enter the BIOS menu
  - There are 2 options:
    - **Soft Reset** will clear all global settings
    - **Full Factory Reset** will clear all stored settings including your patches
- Press the **COPY** button to confirm

Warning, all user parameters, patches, patterns, and chords will be lost!

# Troubleshooting

## Device is not responding?

- Restart the device by temporarily unplugging the USB cable

Still not working?

- Restart the device while holding the **RESET** button, to enter the BIOS menu, and then perform a **Soft Reset**
- If it is still not working, please contact Midicake via the website.

## Only One Note heard?

On Play, you only hear the first note played but ARP looks like it's still playing.

Is your instrument monophonic? Try setting **Voice Mode** to **Mono** or reducing the **gate** value to 1.

## Notes keep playing after pressing stop?

This can occur (rarely) when multiple notes of the same pitch are sent to some instruments. Setting an arpeggiator to **Mono Voice Mode** may help. Pressing **Stop** twice should stop all notes. If all else fails, restart ARP and/or the instrument that's in a twist.

# Mounting Options

ARP has 100mm VESA mounting points on its underside that enable ARP to be attached to a bracket or stand.

**IMPORTANT NOTE:** Ensure to use M4 bolts that do not intrude into the case by more than 12mm. Exceeding this depth may damage internal components.

# Appendix I – Default Patches

## Tips

- Use a polyphonic synth on MIDI channel 1 or set each arp to a different MIDI OUT channel
- Try setting all arps to 'follow' to hear each arp sequence in turn (see fig 1)
- Switch chords and patches during playback to turn the sequence into a composition

## Patch 1 (C) - Basic Quartet

- Set all arps to play simultaneously, the 4 sequences should compliment

## Patch 2 (C#) - Direction and Bounce

- Each sequence differs only by the direction and bounce parameters
- Direction and Bounce both define how individual notes are selected from the available notes in the chord or scale

## Patch 3 (D#) - Repeat and Jump

- Each arp has different repeat or jump values
- Jump defines the number of notes in the scale that will be skipped between steps

## Patch 4 (D) - Time Divisions

- All 4 arps are playing the same sequence but at a different number of beats per bar

## Patch 5 (E) - Triplets & Polyrhythms

- Arps 1 & 2 have a time division of 1 and 4 beats per bar
- Arps 3 & 4 have a division of 3 and 12 beats per bar creating an interesting polyrhythm
- To access triplet timings, increase the Time parameter past 32/1

## Patch 6 (F) - Step Offsets

- Arps 2 & 4 are offset from 1 & 3 by two steps. Set 2 and 4 to follow

## Patch 7 (F#) - Note Offsets

- Arps 2 & 4 are offset from 1 & 3 by a number of notes, creating harmonies of the same sequence
- The Note parameter has a second option to switch the offset mode between scale and chromatic, press the button twice to access

## Patch 8 (G) - Note Delay

- Arps 2 & 4 have a Delay value that pushes the notes off the main beat

### **Patch 9 (G#) - Mode - Chords and Pads**

- Arps 1 & 2, in Chord Mode, will play all sequence notes simultaneously on each beat
- Arps 3 & 4, in Pad Mode, will play only when the Note/Chord is updated

### **Patch 10 (A) - Rhythm and Groove Patterns**

- Arps 1 & 2 have a Rhythm Pattern, affecting note velocity
- Arps 3 & 4 have a Groove Pattern, affecting note timing

### **Patch 11 (A#) - Modulation**

- Arp 1 modulates the Octave parameter. Arp 2 modulates Note Delay
- Arps 3 & 4 have an alternating velocity sweep

### **Patch 12 (B) - Modulation steps and timing**

- Arps 1 & 2 have an alternating modulation on Time Division, causing the number of notes in the bar to change
- Arp 3 has a modulation on the number of steps
- Arp 4 has timing delay increasing over 4 bars