

USER MANUAL

_SQ80 V

ARTURIA

_The sound explorers

Special Thanks

DIRECTION

Frédéric Brun Kevin Molcard Pierre-Lin Laneyrie

DEVELOPMENT

Yann Burrer Marie Pauli Alessandro De Cecco Stéphane Albanese
Patrick Perea Alexandre Adam Loris De Marco Christophe Luong
Raynald Dantigny Corentin Comte Samuel Limier Pierre Mazurier
Jari Kleimola Kevin Arcas Cyril Lepinette
Fanny Roche Baptiste Aubry Mathieu Nocenti
Rasmus Kurstein Hugo Caracalla Pierre-Lin Laneyrie

DESIGN

Edouard Madeuf Shaun Ellwood Maxime Audfray Yann Burrer
Florian Rameau Patrick Perea Raynald Dantigny

SOUND DESIGN

Jean-Michel Blanchet Tom Wolfe Maxime Dangles Diego Tejeida
Lily Jordy Solidtrax Hayden Moskowitz Simon Gallifet
Maxime Audfray Thomas Koot Leo Hivert Greg Cole
Florian Marin Leonard de Leonard Joey

TESTING

Aurélien Mortha Matthieu Bosshardt Thomas Barbier
Roger Schumann Maxime Audfray Germain Marzin
Florian Marin Arnaud Barbier Adrien Soyser

BETA TESTING

Gary Morgan, TJ Trifeletti George Ware Jeremy Bernstein
Mateo Relief vs MISTER X5 Dwight Davies Fernando Manuel Dwight Davies
Marco Koshdukai Correia Gert Braakman Rodrigues Andrew Henderson
Robin Bausewein Chuck Capsis Chuck Zwicky
Terence Marsden Guillaume Hernandez-
Pagnier Kirke Godfrey
Mat Herbert Angel Alvarado

MANUAL

Roger Lyons Florence Bury Holger Steinbrink
Jimmy Michon Minoru Koike Gala Khalife

SPECIAL THANKS

Rainer Butchy

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26 avenue Jean Kuntzmann
38330 Montbonnot-Saint-Martin
FRANCE
www.arturia.com

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Product version: 1.0.0

Revision date: 13 September 2021

Thank you for purchasing Arturia's SQ80 V!

This manual covers the features and operation of Arturia's **SQ80 V**, the latest in a long line of incredibly realistic software instruments.

Be sure to register your software as soon as possible! When you purchased SQ80 V you were sent a serial number and an unlock code by e-mail. These are required during the online registration process.

Note: If you bought the software through Arturia's website, the software will be registered automatically.

Special Messages

Specifications Subject to Change:

The information contained in this manual is believed to be correct at the time of writing. 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 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.

Introduction

Congratulations on your purchase of Arturia's SQ80 V!

We'd like to thank you for purchasing SQ80 V, a virtual instrument recreation of the groundbreaking Ensoniq Synthesiser.

We've painstakingly studied and modelled every nuance of the original hardware to provide you with the classic sound and experience of this classic synthesizer. But we didn't stop there - we've expanded on the original design with new features that make this groundbreaking synthesiser a powerhouse instrument adapted to a modern workflow.

As with all of our products, we believe in offering the best of both worlds in a single package and letting you choose how you want to use it - either use the original features on the main panel for a classic experience, or dive deep into the advanced features to create sounds not possible with the original hardware.

We hope you enjoy using it and hope it will bring inspiration, excitement and joy to your music making!

Musically yours,

The Arturia team

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1. WELCOME

1.1. History of Ensoniq

The company was founded in 1982 by engineers Robert "Bob" Yannes, Bruce Crockett, Charles Winterble, David Ziembicki, and Al Charpentier and was originally called Peripheral Visions and this was actually the same team that designed the Commodore 64. They had grand ideas about designing and building another computer after the C64 and to raise some capitol they agreed to design a keyboard for the Atari 2600. Unfortunately the project was cancelled. Commodore then tried to sue the team so they changed the name of the company to Ensoniq.

The first 2 products they released, first the Mirage sampler in 1985 then the wonderful ESQ-1 synthesiser in 1986 were an immediate success. In 1988 the SQ-80 was released building on the success of the ESQ-1 featuring an extra set of 43 waveforms, a powerful sequencer, floppy disk and Ensoniq's patented poly pressure keyboard. It had an easy to use and intuitive panel too with lots of info crammed onto the small display.

The artist Adamski used the SQ-80 to great effect on his hit single "Killer".

1.2. About the SQ-80

The SQ-80 was actually ahead of its time and was an early workstation. It had a very fat and rich sound really. It was an 8 voice and 8 part multitimbral synth with an integrated 20000 note MIDI sequencer. Each voice consisted of 3 x DCO's (based on the DOC5503 chip) into 3 DCA's, an analogue CEM 3379 based low pass filter, a stereo DCA, 4 envelopes and 3 LFO's. It has hard sync between the oscillators too.

1.3. Arturia's Version of the SQ-80

The Mirage and ESQ-1 were plagued by a few reliability issues but although the SQ-80 was better you'd still be lucky to find a working one now. Transporting hardware synthesisers around can be inconvenient and as a hardware device it can go wrong at a moments notice. Hardware can also present certain workflow limitations, since devices can only serve one function at a time.

At Arturia we pride ourselves on offering the best of both worlds - the uncompromised quality and character of the original hardware, delivered in a convenient software package that is adapted to a modern workflow. Arturia's SQ80 V is a faithful recreation of the original hardware, capturing all of its nuances and sonic character with utmost detail. In addition to this, we have expanded on the original design with new features and capability not found on the original unit, including:

- MPE implementation
- Phase Distortion & Transwave Synthesis
- Hidden Waveforms
- Unison Mode
- Arpeggiator
- Advanced modulation capabilities
- 4 FX slots featuring 15 high-quality effects
- Up to 16 voices of polyphony
- Run multiple instances with different settings
- Automate sound parameters from your DAW
- Unlimited patch recall

2. ACTIVATION AND FIRST START

SQ80 V works on computers equipped with Windows 8 or later and macOS 10.13 or later. You can use the instrument in standalone mode or as an Audio Unit, AAX, VST2 or VST3 instrument inside your Digital Audio Workstation (DAW) software.



2.1. Activate the SQ80 V license

Once SQ80 V has been installed, the next step is to activate your license for the instrument. This is a simple process that is done through a separate program called the Arturia Software Center. This program allows you to keep your Arturia software up to date at all times.

2.1.1. The Arturia Software Center [ASC]

If you have not already installed the ASC, you can do so by going here: [Arturia Updates & Manuals](#).

Look for the Arturia Software Center at the top of the page, and then download the version of the installer required by your operating system (macOS or Windows).

Once the software is installed:

- Launch the Arturia Software Center (ASC)
- Log into your Arturia account
- Scroll down to the My Products section of the ASC
- Click the Activate button and follow the instructions

That's it!

2.2. SQ80 V as a plug-in

SQ80 V comes in VST2, VST3, Audio Unit (AU) and AAX plug-in formats for use in all major DAW software such as Ableton, Cubase, Logic, Pro Tools and so on. When using SQ80 V as a plugin, all audio and MIDI device settings are handled by the host music software. Please refer to your host music software's documentation if you have any questions about loading or using plugins.

Note that when you load SQ80 V as a plug-in instrument inside your host software, its interface and settings work the same way as in standalone mode, with a few small differences:

- SQ80 V will synchronize to your DAW's host tempo/bpm rate, when tempo is a factor
- You can automate numerous parameters using your DAW's automation system
- You can use more than one instance of SQ80 V in a DAW project (in standalone mode you can only launch one instance of SQ80 V)
- You can run the output of SQ80 V through any additional audio effects available to your DAW such as delay, chorus, filters, etc.
- You can route SQ80 V's audio outputs more creatively inside your DAW using the DAW's own audio routing system.

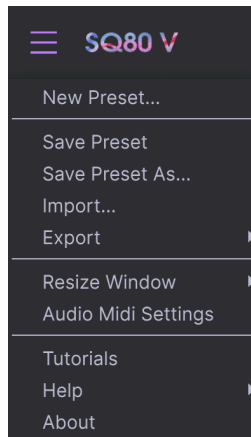
2.3. Initial setup for Standalone Use

If you would like to use SQ80 V in standalone mode, you will need to set up your instrument and ensure that MIDI and audio signals are flowing properly through the software. You generally only need to do this once unless you make major changes to your computer. The setup process is the same on both Windows and macOS computers.

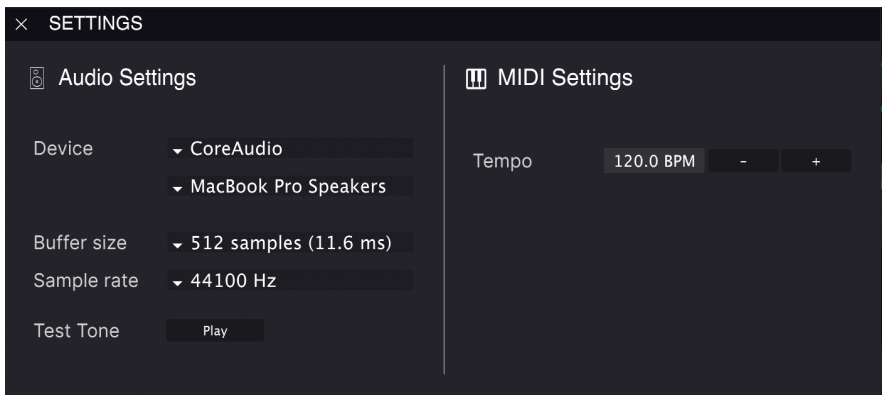
i!: This section only applies to users who plan to use SQ80 V in standalone mode. If you are only going to use SQ80 V as a plugin inside a host music software, you can safely ignore this section (your host music software handles these things).

2.3.1. Audio and MIDI settings

At the top left of SQ80 V you will find a pull-down menu. Click it to reveal the following:



Select **Audio MIDI Settings** to bring up the following window. Remember that this menu is only available when using SQ80 V in Standalone mode:



Starting from the top we have the following options:

- **Device** selects which audio driver and device will handle playback of SQ80 V. This can be your computer's internal driver, or an external soundcard driver. The name of your hardware interface may appear in the field below depending on your selection.



ⓘ: On MacOS all devices, including external soundcards, use the built-in CoreAudio driver. The device can be selected from the second menu.

- **Buffer Size** menu lets you select the size of the audio buffer your computer uses to calculate sound.



ⓘ: A larger buffer means a lower CPU load as the computer has longer periods of time to process commands and fewer interruptions, but this can result in a noticeable latency between keypress and hearing a result (an obvious problem when playing an instrument). A smaller buffer means lower latency between pressing a key and hearing the note, but a higher strain on your CPU. A fast, modern computer should easily be able to operate at low sample buffer sizes (256 or 128) without audio glitches. However, if you do hear clicks, pops and or artifacts, try increasing the buffer size until you have smooth playback without any glitches. The latency time is displayed in milliseconds on the right-hand side of this menu.

- **Sample Rate** menu lets you set the sample rate at which audio is sent out of the instrument. The options listed here will depend on the capability of your audio interface hardware.



ⓘ: Virtually all audio hardware can operate at 44.1 or 48 kHz which is perfectly fine in most applications, including SQ80 V. Higher sample rates place greater loads on the CPU so we recommend staying at 44.1 or 48 kHz unless you have a specific requirement to work at higher sample rates.

- **Show Control Panel** button will jump to the system control panel for whatever audio device is selected.



ⓘ: Note that this button is only available in the Windows version.

- **Test Tone** plays a simple test tone to help you troubleshoot audio issues. You can use this feature to confirm that the instrument is routed correctly through your audio interface and audio is playing back where you expect to hear it (your speakers or headphones, for example).
- Your connected MIDI devices will appear in the **MIDI Devices** area. Note that this is only displayed if MIDI devices are present on your computer. Click the check box to accept MIDI data from the device you want to use to trigger the instrument. Note that you can select more than one MIDI device if you wish to play SQ80 V from multiple controllers.
- **Tempo** lets you set the tempo of the SQ80 V Arpeggiator. When using SQ80 V inside a host music software as a plugin, the instrument gets tempo information from your host software.

2.4. Taking SQ80 V for a test drive

Now that you have SQ80 V up and running, let's take it for a quick test drive!

If you haven't done so already, launch SQ80 V as a plugin or as a standalone instrument. If you have a MIDI controller set up, use it to play some notes on SQ80 V. If not, use your mouse to play the on-screen keyboard.

The Up and Down arrows at the top of the instrument let you step through all of the SQ80 V's available presets. Try playing a few and when you find one that you like, try adjusting some of the other on-screen controls to see how it affects the sound.

Play freely with the controls - nothing is saved unless you specifically save a preset (described later in this User Guide), so there is no chance of messing up any of SQ80 V's factory presets as they are write protected.

At this point, we can wrap up the installation and test drive. We hope you have gotten off to a smooth start. The rest of this guide will help you work your way through all of the SQ80 V features on a section-by-section basis. By the time you reach the end, we hope you'll understand all of SQ80 V's features and will be using the instrument to create fantastic music!

3. THE USER INTERFACE

In this chapter we'll start with an overview of the SQ80 V user interface. This will give you an idea of how the instrument is organized and where to find things. The point here is to establish how the interface is composed at a high level. We'll dive deeper into the main panel explaining every module in detail in the next chapter.

3.1. High-Level Overview



The SQ80 V is neatly subdivided into three sections as shown in the illustration above.

1. **The Upper Toolbar:** This is where you handle administrative tasks such as saving, loading and browsing presets, editing various setup and configuration parameters, adjusting MIDI mappings and accessing advanced features of SQ80 V. We will go over the Toolbar in the next section of this chapter.
2. **The Main Panel:** Here is where you will likely spend most of your time when working with SQ80 V. It contains a detailed reproduction of the SQ-80 panel as well as additional features. We will go over this panel in the [Hardware Panel And Features \[p.22\]](#) section of this guide.
3. **The Lower Toolbar:** This section provides quick access to a number of important parameters and useful bits of information such as CPU usage, panic button and undo history. We will go over the Lower Toolbar at the end of this chapter.

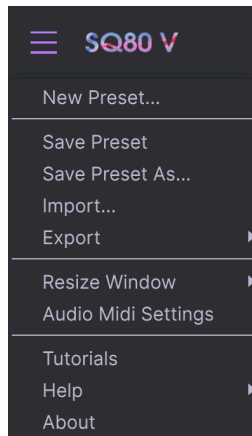
3.2. The Upper Toolbar



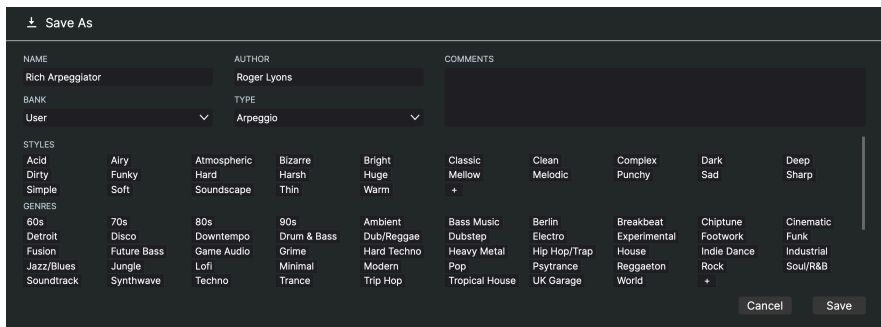
The toolbar that runs along the top of the instrument provides access to many useful features including the SQ80 V menu, preset browsing features, the SQ80 V's Instrument, Synthesis and Effects editing sections, Master Volume and lastly the gear button which opens the side panel giving access to various MIDI functions including global MIDI channel and mapping features.

3.2.1. The SQ80 V menu

Clicking the SQ80 V box at the top-left corner opens a pull-down menu and lets you access ten important features.



- **New Preset:** This option creates a new preset with default settings on all parameters. It is a good place to start if you would like to create a new sound from scratch.
- **Save Preset:** This option will overwrite the currently loaded preset with any changes you have made. If you would like to save the current preset under a different name, use the "Save As..." option below.
- **Save Preset As...** This lets you save your preset under a different name. Clicking this option reveals a window where you can name your preset and enter information about it.



i 🎵: Arturia's powerful browsing system lets you save much more than just a preset name. For example, you can enter the Author's name, select a Bank and Type, select tags that describe the sound, and even create your own Bank, Type, and Characteristics. This information can be read by the preset browser and is useful for searching the presets banks later. You can even enter freeform text comments in the Comments field, which is handy for providing a more detailed description of a sound. This can help you remember a sound or to provide context to other SQ80 V users with which you are collaborating.

- **Import:** This command lets you import a preset file, which can be either a single preset or an entire bank of presets. You can also import a sound as a Sysex file from the original SQ80, and use it inside this plugin. This way, you don't have to carry around the hardware synth anymore.
- **Export Menu:** You can export presets in two ways: as a single preset or as a bank.
 - **Export Preset:** Exporting a single preset is handy when you want to share a preset with someone else. The default path to these files will appear in the "save" window, but you can create a folder at another location if you like. The saved preset can be reloaded using the *Import Preset* menu option.
 - **Export Bank:** This option can be used to export an entire bank of sounds from the instrument, which is useful for backing up or sharing presets. Saved banks can be reloaded using the *Import Preset* menu option.
- **Resize Window:** The SQ80 V window can be resized from 50% to 200% of its original size without any visual artifacts. On a smaller screen such as a laptop you may wish to reduce the interface size so it doesn't dominate the display. On a larger screen or a second monitor you can increase the size to get a better view of the controls. The controls work the same at any zoom level but smaller controls can be easier to see at higher magnification levels.

i 🎵: While working with SQ80 V, you can also use the keyboard shortcuts Ctrl & +/- (or Cmd & +/-) to quickly adjust the window size.

- **Audio Settings: (only available in Standalone mode)** Here you manage the way the instrument transmits audio and receives MIDI. See the section Audio and MIDI settings for more information about this topic.

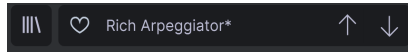


! The Audio Settings menu is only available in when using SQ80 V in Standalone mode. When using SQ80 V as a plugin, the host software handles all of the parameters in this menu including audio and MIDI routing, buffer size settings, and more.

- **Tutorials:** SQ80 V comes with tutorials that walk you through different features of the instrument. Select one of the tutorials to get step-by-step descriptions of how to make the most of the SQ80 V features.
- **Help:** This section provides handy links to the SQ80 V User Guide and the SQ80 V Frequently Asked Questions page on Arturia's website. Note that accessing these pages will require an Internet connection.
- **About:** Here you can view the SQ80 V software version and developer credits. Click the About window again to close it.

3.2.2. Browsing Presets

SQ80 V comes packed with lots of great-sounding factory presets and we hope you'll create many more of your own custom presets. To help you search through large numbers of presets, we have a powerful preset browser with a number of features to help you find sounds quickly.



The browsing features of the Toolbar (shown above) include the following:

1. The **Preset Browser Icon** (on the left) opens and closes the preset browser. This is covered in detail in the next section of this guide

2. The **Preset Filter** (set to "All Types" in the image above) helps you narrow down your selection. For example, you can define your search to only include presets tagged with *Keys*, *Lead*, or *Pads* so that you can find those sounds more quickly. To use this feature, click this section to open a pull-down menu and select any preset from the various categories ("Keys" "Lead" "Pads" etc.) This will load that preset and set the filter to only show you other sound tagged. You can now use the Preset Name or Arrow Icons to step through the filtered options. To reset the filter and show you all options, open the menu and select any preset from the "ALL TYPES" menu.

3. The **Preset Name** is listed next in the toolbar. Clicking on the name reveals a pull-down menu with other available presets. Click on any name to load that preset or click away from the menu to close it.

4. The **Arrow icons** select the previous or next preset in the filtered list. This is the same as clicking on the preset name and selecting the next option in the list, but does it with only one click.

 The Previous and Next arrows can be MIDI mapped. This means you can use buttons on your MIDI Controller to easily step through the available presets without having to use the mouse at all.

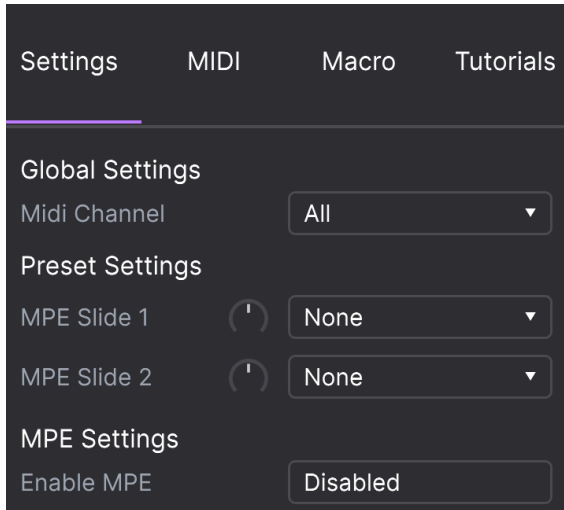
5. The **Shuffle Preset** button which simply shuffles the order of a preset list.

6. The **Hardware** button when pressed gives you the overview of the SQ80 V's virtual front panel allowing for very speedy editing of many parameters.

7. The **Synthesis** button opens up the in depth editing windows for deeper manipulation of the DCO's, Voice settings, Filter, Envelopes, DCA, LFO's and modulation mapping.

8. The **Effects** button opens up the editing page for the 4 Effect slots.

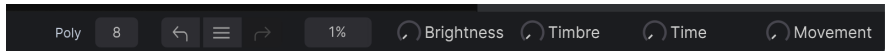
3.2.3. Side Panel



At the far right of the Toolbar, you will find the Gear icon which when clicked opens up the Side Panel. The Side Panel gives access to various MIDI related options. In here you can set the global MIDI channel, set up MIDI controller mapping to virtually any parameter of the SQ80 V, select either a generic MIDI keyboard controller OR one of Arturia's own great MIDI controllers, set up the Macros and access the tutorials.

3.3. The Lower Toolbar

The Lower Toolbar runs along the bottom of the SQ80 V user interface and provides quick access to several important parameters and useful bits of information.



- **Parameter Name** on the far left displays the name of the parameter as you adjust controls. The current value of the control is listed in a tooltip that appears next to the control.
- **Unison** This option becomes available and its value can be edited when the Unison button is activated on the main Instrument panel.
- **Poly** lets you set the polyphony of the SQ80 V.
- **Undo** undoes the last change in SQ80 V.
- **Undo History** lets you to see a list of recent changes. Click on a list entry to restore the patch to that state. This can be useful in the event you happened to go too far in your sound design and want to revert to an earlier configuration.
- **Redo** redoes the last change in SQ80 V.

i!: The Undo and Redo buttons only become visible AFTER you have started editing on the Main Panel. Try moving a control now and you'll notice the Undo button will magically appear.

- **CPU Meter-Panic Button** displays the current CPU usage of the instrument and when clicked it resets all MIDI signals in the event of stuck notes or other issues.


i!: If the CPU meter is high, you may hear clicks, pops and other audible glitches in playback. In this case, consider increasing the audio buffer size setting. This is found under Audio Settings when working in Standalone Mode or in your host music software's preferences menu. Alternatively, you can limit polyphony with the Poly and Unison settings.

- **Macro Parameters** show you visual feedback of the Brightness, Timbre, Time and Movement Macro's. They can be configured in the Instrument panel which we will cover in the next chapter.

3.4. Side Panel

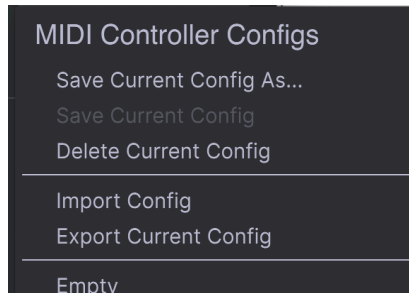
The Gear icon at the top right side of the upper toolbar opens up the Side Panel.

- **Settings** this sets the global MIDI channel for the SQ80 V

 By default, SQ80 V will receive MIDI data on all 16 MIDI channels (All setting). You can change this by selecting a specific channel here. You will need to do this if, for example, you want to use an external controller with multiple instances of SQ80 V. In this situation, every instance of SQ80 V can be set to a unique channel, and you can change the preset or MIDI channel on your controller to control the different instances of SQ80 V.

- **MIDI** this section lets you set the MIDI controller you are using and setup the mapping of MIDI CC commands.

3.4.1. MIDI controller configuration



If you click on the pulldown menu to the right of where it says MIDI Controller you can set whether you're using a generic MIDI controller or one of Arturia's own. Underneath this you have the MIDI configuration dropdown menu. Here you can manage different setups of MIDI mappings for controlling SQ80 V. For example, if you have multiple hardware controllers (small "live performance" keyboard, large "studio" keyboard, pad based controller, etc.), you can create a profile for each of them just once and then quickly load it here. This saves you from having to redo the MIDI mapping assignments from scratch each time you swap hardware.

Once you have created a profile, you can save, delete, import or export it using the options in this menu.

Your MIDI Mapping profiles are listed at the bottom of this pull-down menu and the currently active profile has a checkmark next to it.

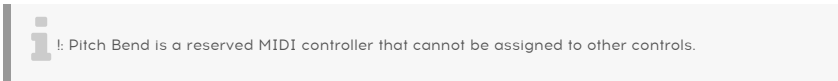
Underneath this you will see all the MIDI mappings currently setup. MIDI-assignable parameters are shown highlighted and you can map physical controls on your MIDI Controller to them. A typical example might be to map a real expression pedal to the Master Volume control, or a physical knob on the MIDI controller to the Frequency knob of the Filter module.



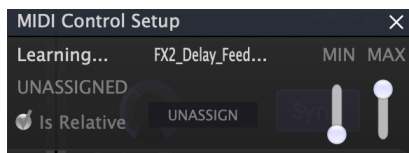
Notice in the image above that some of the assignable controls appear in red whereas others are in purple. Purple controls are unassigned whereas red ones have already been assigned to an external MIDI control.

3.4.2. Assigning / Un-assigning controls

When MIDI Learn mode is switched on, click on any purple control to select it. Then turn a knob, move a slider or push a button on your MIDI controller. Your selected on-screen control will change from purple to red, indicating that a link has been made between your hardware control and the on-screen software parameter.



A popup window appears providing additional information and various adjustable parameters about the newly "learned" connection.




3.4.3. Min / Max value sliders

By default, a hardware control will span the entire range of the on-screen control (i.e., from 0 to 100%). The minimum and maximum value sliders let you restrict the range to something different than 0%-100%. For example you may want the Master Gain to be controllable via hardware from 30% to 90%. To do this, set *Min* 0.30 and *Max* to 0.90. The relationship between the physical control and the on-screen control will now be scaled in such a way that volume cannot go below 30% or above 90%. This is very useful for making sure you cannot accidentally make the sound too quiet or too loud when performing.

3.4.4. Relative control option

If you right click on a mapped parameter in the list, you can make a parameter "absolute" or "relative". Only change to "relative" if your hardware MIDI control is sending "relative" MIDI messages. If the MIDI controller is sending out "absolute" messages leave it set to "absolute" (this is the more common behavior).

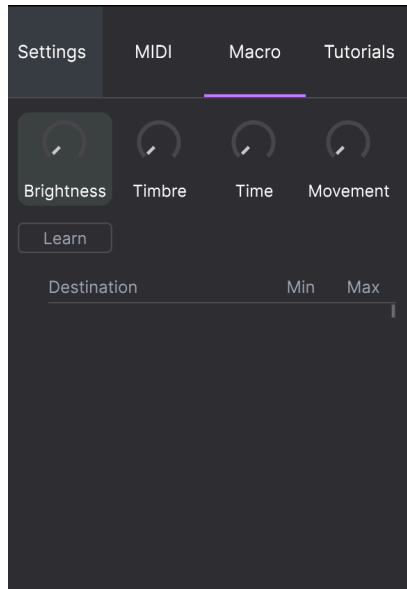
A "relative" change instructs the receiving device to increase or decrease its current value. The receiving device (SQ80 V in this case) interprets this command as "increase/decrease your current value." This type of control is often implemented on "endless" or "360 degree" knobs that do not have hard stops at the ends of their range. The advantage of this is that physical knobs always remain in sync with on-screen controls. However, not all hardware devices support this mode of operation which is why both options are available in SQ80 V.

 There are two common types of messages when working with MIDI knobs: Absolute and Relative. Absolute positioning sends the exact position of the knob as a specific numerical value (i.e., "Set value to 54, 55, 56, etc.") when you turn the knob on your hardware controller. This is the most common implementation and is almost always used when using potentiometer knobs with "hard" stops at the ends. One downside to this implementation is that if you change presets, your physical knob and on-screen control will be "out of sync" with each other and turning the physical control can cause the on-screen control to suddenly jump to that position.

3.4.5. Unassigning or "un-learning" a MIDI mapping

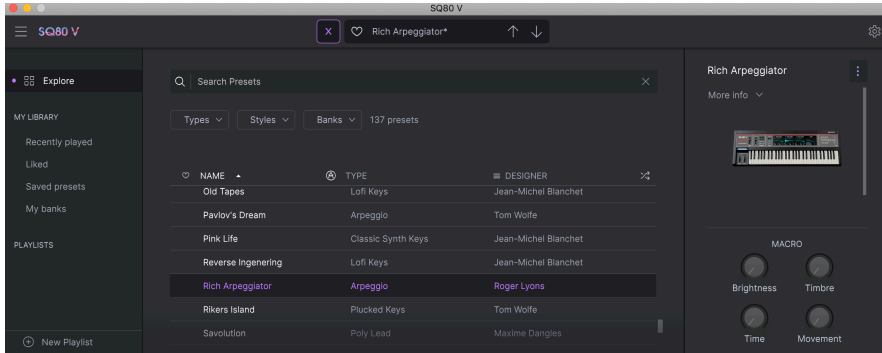
Click on an assigned parameter to highlight it then press the delete button on the keyboard to disconnect or "un-learn" the MIDI mapping of an on-screen control.

- **Macro** this function lets you setup the functionality of the macro section. Basically a macro lets you change a group of parameters simultaneously and there are 4 available (you can see the status of the 4 macros along the lower toolbar). The macro is selected using the back or forward arrows either side of the name and if you click on the name it can be changed.



You can add extra controls into the macro by selecting "add control" and clicking on the desired control on the panel. You will see it gets added to the macro control list and you can set upper and lower limits for each control. When you tweak one of the macro controls in the lower toolbar you will see all the linked controls move. You can also rename the Macro control with a more appropriate term if desired. To do this, just double click on the Macro name, change it accordingly and hit Enter. Very handy indeed!

3.5. The Preset Browser in Detail



The Preset Browser (shown above) is where you can search through all of the presets for the SQ80 V. Open the Preset Browser by clicking the library symbol on the toolbar. To close the Preset Browser and return to the main screen, click the "X" that appears in the Toolbar.

To narrow down your choice and help you find the sounds you want, you can enter keywords in the search bar. You can narrow down your search further by clicking on one of the drop down menus under the search bar which lists categories and has tags to point you in the right direction. You can reset the list by clicking "clear all".

The results of your search are listed in the middle column. You can easily audition any displayed preset by clicking on it and playing a connected MIDI keyboard. You can sort the list results in various ways by clicking the column headers directly above the preset names. If you're feeling spontaneous, click the Shuffle button at the top right to randomly select one preset from the results list. This is a fun and quick way to audition sounds without having to step through the list one-by-one.

Details about the currently selected preset are listed in the right column. If you really like a preset, click the heart icon at the top-right corner to tag that preset as a favorite. Click the heart icon again to un-like the preset. Once you've added some presets as favorites, you can click the Heart icon in the middle view to only display those presets.

Options for saving or deleting patches are listed at the bottom of this column.

i Factory presets cannot be modified, deleted or overwritten. Only "User" (user generated) presets can be deleted, overwritten or saved under a different name. This is done by using the "Delete" "Save" or "Save As" buttons at the bottom of the right column. If you have modified a Factory preset and would like to save it, you must save your modified preset under a different name (only the "Save As" option appears in this case since you cannot delete or overwrite factory sounds).

3.5.1. Browse Presets With MIDI Controller

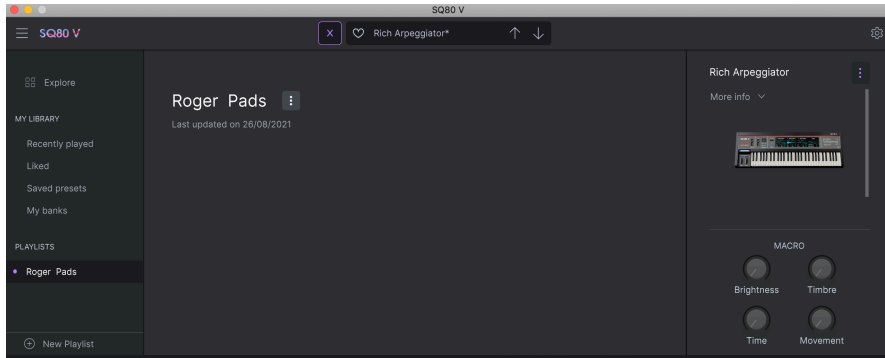
This option allows you to browse presets using the Browse knobs on Arturia MIDI Controllers. This makes it incredibly efficient to quickly audition sounds without having to reach for the mouse. To use this feature, select your Arturia controller from the menu and its Browse knob will be automatically mapped to preset browsing.

3.5.2. Playlists

In the lower left corner of the Preset Browser window is a feature titled Playlists. This is used to collect presets into collection groups, such as a set list for a particular performance or a set of presets related to a particular studio project.

3.5.2.1. Add a playlist

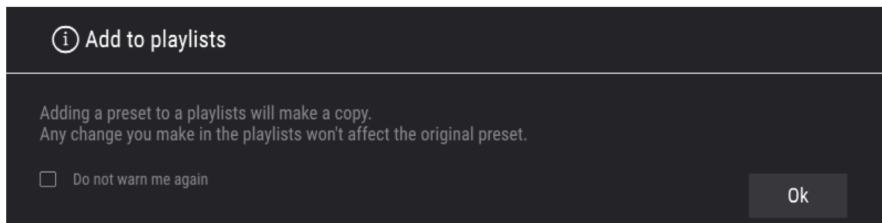
To create a playlist, click the **+ New Playlist** button. Give the playlist a name and it will appear in the Playlists menu. To rename the playlist at any time, double click on the name.



3.5.2.2. Add a preset to the playlist

You can use the Search window to locate the presets you want to add to your playlist. Once you have found the right preset, click and drag it onto the playlist name on the left.

You will see a message which tells you that the new preset will be duplicated. SQ80 V will create a copy of the preset so that you can modify settings in the playlist presets without impacting the original preset it is based on, and vice versa.



To view the contents of a playlist, click on the playlist name.

3.5.2.3. Re-order the presets in the playlist

Presets may be reorganized within a playlist. For example, to move a preset from slot 3 to slot 1, drag and drop the preset to the desired location.

This will move the preset into the new location.

3.5.2.4. Remove a preset from the playlist

To remove a preset from a playlist, right click on the preset name.

3.5.2.5. Delete a playlist

To delete a playlist, right click on the playlist name.

4. HARDWARE PANEL AND FEATURES



If you look at the SQ80 V front panel, you'll see that the synth has a deceptively simple layout however many parameters are available to view and edit here. We have expanded on the original design by offering many additional modulations which can be found in the [Synthesis Panel And Features \[p.26\]](#) section of this manual).

In this section we'll explain each control of the main Instrument Panel.

- **Volume** controls the output volume.
- **Arpeggiator** An arpeggiator allows you to hold down one or more notes and hear those notes played back, one after the other. When a single note is held it will be repeated; when two or more notes are held the arpeggiator will alternate between the notes. With an Arpeggiator, the pitch values are defined by which keys you hold down. Octave jumps can also be defined and randomized, so the arpeggios can be as intricate as you want them to be.

An arpeggio is basically an outline of a chord; rather than hearing all of the notes at once, they are delivered at different times. Many great pieces of music have arpeggios at their core, from Bach's Prelude 1 in C Major to Eddie Van Halen's hammer-on segment in Eruption.

In some ways an arpeggiator is more improvisational than a step sequencer, because you can decide on the spur of the moment to change which notes the arpeggio will produce by changing which notes you are holding, and how many.

Arpeggiator Rate sets the speed of the arpeggiator.

Pattern Immediately to the upper right of the rate control is the pattern button. Pressing this opens up a drop-down menu allows you to select how many octaves the arpeggiator will cover. When 1 is selected, the arpeggiator will play just the notes in the keyboard range you're playing. When 2 is selected, it will play those notes, then repeat them an octave higher before restarting the cycle. Octaves 3 and 4 do the same thing: play the notes of the Mode through a 3 or 4 octave range.

Here you also make a selection from the seven different patterns available for the arpeggiator.

Mode	Description
Ordered	Held notes will be arpeggiated in the same order they were played.
Reversed	Held notes will be arpeggiated in the reverse order they were played.
Up	Notes are played back in ascending order. New notes are inserted into the arpeggio as they are played.
Down	Notes are played back in descending order. New notes are inserted into the arpeggio as they are played.
Up-down Inclusive	Held notes are played back in ascending order and then descending order. The highest and lowest notes are triggered twice and then the direction is reversed.
Up-down Exclusive	Held notes are played back in ascending order and then descending order. The highest and lowest notes are triggered only once and then the direction is reversed.
Random	Held notes are played back in random order.

Sync button is located immediately to the right of the rate control and under the pattern button. It specifies whether the arpeggiator will be free-running, or locked to a tempo. When Sync is set to HZ, the rate is adjustable from 0.01 to 50 Hz. When Sync is on, the rate is adjustable from 1 to 1/64th of the current tempo, with 1/4 equaling one beat. There are also triplet and dotted options too.



ⓘ: The tempo is set in the Audio MIDI Settings in the standalone version, or by the DAW's tempo setting when running SQ80 V as a plug-in.

Hold button when pressed will keep any incoming MIDI notes held on until either the button is toggled off again or the patch is changed. When the arpeggio button is also on any notes played legato will be added to the arpeggiated pattern. Any notes played non legato will clear the notes already being arpeggiated.

Arpeggiator On switch turns the arpeggiator on or off.

Detune adjusts the detune amount when using Unison mode. The higher the value the more detuned the voices become. You can click and drag up and down to adjust. Double click to reset value.

Unison button when pressed engages (you guessed it...) Unison mode! This basically stacks voices together monophonically. You can set the amount on unison voices on the bottom toolbar and when used in conjunction with the Detune control makes the sound very full, fat and rich.

4.1. Oscillators 1, 2 and 3.

All 3 oscillators have the same functions.

Power button activates the oscillator.

Waveform menu: Let's you choose between folders with different waveform set. We have integrated the SQ80 and ESQ1 Hidden waves as well as Transwaves. More on Transwaves below.

Waveform has a left and right button that steps through the available waveforms of the selected folder (you will see the name of the waveform) and you get a graphic representation too.

Oct lets you shift the basic tuning of the Oscillator up 4 octaves or down 2 octaves.

Semi lets you shift the basic tuning of the Oscillator up or down 12 semitones.

LVL lets you set the gain of the Oscillator. You can intentionally overdrive the input to the filter too which can sound great.

Fine lets you shift the basic tuning of the Oscillator up or down 100 cents.

4.2. Transwaves

Transwave synthesis is a proprietary system developed in the 1980's and makes use of samples. Its a variation of wavetable synthesis which you may be more familiar with. You can do some very cool things like change the start point or the position of a loop within a transwave using modulation sources on the SQ-80. All oscillators can make use of the "Transwave" option by selecting the corresponding waveform folder.

4.3. Filter Section

This section contains the filter controls, which are responsible for sculpting the frequency spectrum and timbre of the sound. SQ80 V is equipped with a faithful recreation of the original CEM3379 based 24db resonant low-pass filter used in the original hardware.

There is a graphic representation of the filter profile here. If you click and hold on the graphic and drag up and down you can adjust the resonance and if you hold and drag left or right it adjusts the cut-off frequency.

- **Frequency** controls the cut-off frequency of the filter over a range of 35 to 74860 Hz. Frequencies above this setting will be rolled off.

 In the Synthesis Panel, try assigning Velocity to Cutoff Frequency with positive modulation. Now the harder you press a key, the more the filter will open up, resulting in a brighter sound. You can achieve the same result using the VEL knob under the resonance knob.

- **Resonance** controls the resonance around the cut-off frequency. Turning up Resonance not only boost frequencies at the cut-off band, but will also attenuate frequencies outside the cut-off band resulting in a quieter sound with more emphasis around the cut-off frequency.
- **Mod Amount 1** sets the amount of modulation that will be applied to the Filter Frequency from whichever modulation source its routed from.
- **Mod Amount 2** sets the amount of modulation that will be applied to the Filter Frequency from whichever modulation source its routed from.

4.4. Mod Wheel and Pitch Bend

This sections contains performance controls and settings for the Pitch Bend and Modulation wheels. You can adjust these controls on-screen but they are best controlled by the pitch bend and modulation wheels on your keyboards.

- **Pitchbend Wheel** lets you bend the pitch up or down.
- **Pitchbend Amount** If you click and hold on the box immediately above the bender and mouse up and down you can adjust the amount of bend from 0 to 12 semitones.
- **Bend Mode** If you click on the box immediately above the Mod Wheel you can toggle between the 2 bend modes. Selecting ALL means the Pitchbend Wheel will affect all currently played voices whereas HELD only affects the notes currently being held down.
- **Mod Wheel** controls the amount of modulation.

5. SYNTHESIS PANEL AND FEATURES

Now that we've covered the basic features in the Hardware panel, let's dive deeper and explore the Synthesis Panel.

5.1. Overview



Things have come a long way since 1986 when Ensoniq® released the SQ-80. We now have technologies that musicians from the 1980s could've only dreamt about and these technologies are actively driving music-making forward.

At Arturia, we are not content to simply model a classic synth with astounding accuracy and leave it at that. We want to make powerful instruments that are relevant to the music makers of today. We try to do this in a way that is tasteful and honors the sound and legacy of the original instrument and this is why we hide the advanced features of the SQ80 V away in a mode that you only see *if* you want to go further. This way, if you just want to get the classic SQ-80 experience – without all the extra features – you can have that by default. However, if you are ready to access the state-of-the-art features under the hood, just click the Synthesis button on the top toolbar.

5.2. Oscillator Section

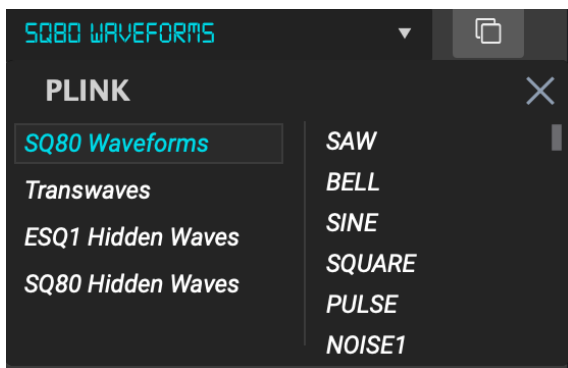


On the left hand side of the Synthesis window we have the 3 digital oscillators or DCO's. The DOC5503 chip that is emulated really is an integral part of the unique sound of an SQ-80 oscillator and here they are replicated with absolute accuracy. There are many banks of waveforms included most of which are "static" waveforms but there are also special Transwaves. These are wavetables which can be modulated! Exciting stuff. Lets look in more detail at a DCO.



Each oscillator features the waveform visualiser in the middle and has the following controls.

- **Power:** This toggles the oscillator on and off.



- **Waveform Browser:** Here we can get access to the different factory waveform banks and you can select a waveform within a bank. Clicking on the dropdown menu brings up a window with the waveform banks on the left and the individual waveforms are listed on the right and you can scroll through the list and select by clicking on the one you want then click on the cross to close the browser. The waveform browser contains the following banks
- SQ80 Waveforms: These are the original waveforms of the SQ80.
- Transwaves: In this bank the available waves have different behavior depending of their type. When one of the Transwaves is selected the 2 modulation (mod param) inputs become available. There is also a white fader that sets the initial start point within the waveform. The 2 modulation sources allow you to scan through the contents on the Transwave or wavetable in a musical or at least interesting way and can really bring a sound to life and fill it with movement. The classic waveforms have a Pulse Width Modulation (PWM) control which is the white fader on the visualiser. The transient waveforms are looping and their PWM can be modulated by the white fader too. The X- waveforms are the original VFX transwaves (aka wavetables) and here the white fader controls the wavetable playback position.

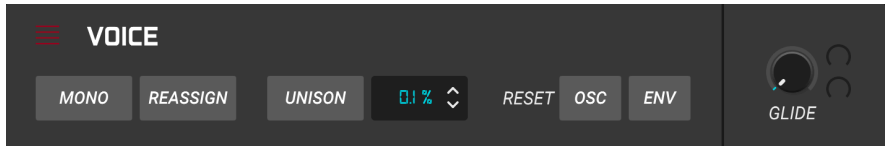


i: When you select a transwave in the waveform browser, the waveform in the visualiser can be dragged around to morph the transwave.

- SQ80 and ESQ1 Hidden Waves: Here we have the mysterious hidden waves from the SQ-80 and its sibling, the ESQ1. Many of these can give unmusical but quite ambient sounding results but are a great source of experimentation.
- **Copy to DCO:** This function allows you to copy the settings of one DCO to another.
- **Octave:** lets you shift the basic tuning of the Oscillator up 4 octaves or down 2 octaves.
- **Semi (mod param):** lets you shift the basic tuning of the Oscillator up or down 12 semitones. This parameter has 2 modulation inputs. I'll explain a little more in depth about the modulation parameters at the end of the chapter.
- **Fine:** lets you shift the basic tuning of the Oscillator up or down 100 cents.

- **Visualiser:** This contains a graphic representation of the selected waveform. Above the waveform are 2 arrows which allow you to step through the waveforms of the selected bank and the name of the waveform is also displayed here. Clicking on the name also brings up the Waveform Browser. Oscillator 2 has a couple of extra options in the visualiser. There is a sync button that hard syncs Osc2 to Osc1. There is also an AM (mod param) amplitude modulation setting. This can add tremelo type effects to the output of the oscillator and this parameter also has 2 modulation inputs.
- **DCA Level (mod param):** Each DCO also has an output level. You can overdrive the filter using this control too. This parameter also has 2 modulation inputs.

5.3. Voice Section



Underneath the Oscillators is the Voice Section. It has the following controls.

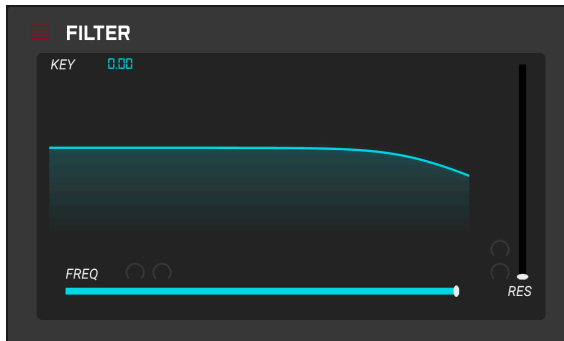
- **Mono:** Pressing this puts the voice into monophonic mode. This only plays one note at a time but if Unison is also selected you can play monophonic melodies with stacked unison voices. You select the amount of unison voices on the lower toolbar.



⚠: If you play legato lines the envelopes and LFO's will not retrigger.

- **Reassign:** When this is set to ON, if the same key is played again it will be assigned the same Voice that was previously playing it. That Voice will be 'stolen' to play the new note. When OFF: If a key is replayed before the note has died away, a new Voice will be assigned to it, and the first Voice will continue to play. If there are already two Voices playing that note, the older of the two is stolen.
- **Unison:** Pressing this activates Unison mode and the amount of unison voices is shown on the lower toolbar. Just to the right of the button you can select the percentage of detune.
- **Reset Osc:** When a voice stops playing, the phase of the oscillator halts in its current position. When Reset Osc is on, the phase is reset when playing a new note. When off, it will continue on from its halted position.
- **Reset Env:** When On, the envelope start its attack from the initial point level (in most case 0 except for the MSEG where it can be tweaked). When Off, the envelope starts from the last level it had (example: in reassign on, you set a long release, long attack, press a key wait for the env to reach its maximum level, release it and press it again. You will hear that on the second press the attack starts from the current release level).
- **Glide (mod param):** Glide lets you play a note and when you play a 2nd note the pitch will "Glide" up or down from the first note to the 2nd note. The time taken is determined by the setting of this control. The higher the value the longer it takes. This parameter also has 2 modulation inputs.

5.4. Filter



Next we have the Filter Section which is based on an emulation of the CEM3379 and this too plays a major part in the instruments sonic character. The level of the oscillators and how hard they drive the filter has a big impact on the sound. It has a graphic representation of the filter settings. You can click and drag on the graphic and it will change the filter frequency dragging horizontally and resonance dragging vertically. This will also be reflected on the Freq and Res controls too. The filter has the following controls.

- **Key:** This sets the amount of keyboard tracking which means the keyboard pitch can control the filter by the amount set here.
- **Freq (mod param):** controls the cut-off frequency of the filter. Frequencies above this setting will be rolled off. This parameter also has 2 modulation inputs.
- **Resonance (mod param):** controls the resonance around the cut-off frequency. Turning up Resonance not only boost frequencies at the cut-off band, but will also attenuate frequencies outside the cut-off band resulting in a quieter sound with more emphasis around the cut-off frequency. This parameter also has 2 modulation inputs.

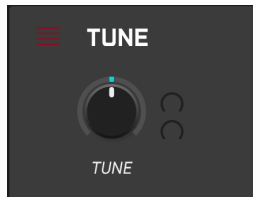
5.5. DCA 4



This deceptively simple section contains DCA 4 which also plays a fundamental part in the sonic character of the SQ80 V instrument. As you drive the input more, a very pleasing and harmonic distortion is introduced exactly like the original circuit. There is a clipping indicator that flashes red when you overdrive the DCA and you can also set the voices left or right position in the stereo field using the Pan control. DCA 4 has the following controls.

- **Level (mod param):** This controls the output level for the instrument. This parameter also has 2 modulation inputs.
- **Pan (mod param)** This controls the left to right position in the stereo field of the instrument. This parameter also has 2 modulation inputs.

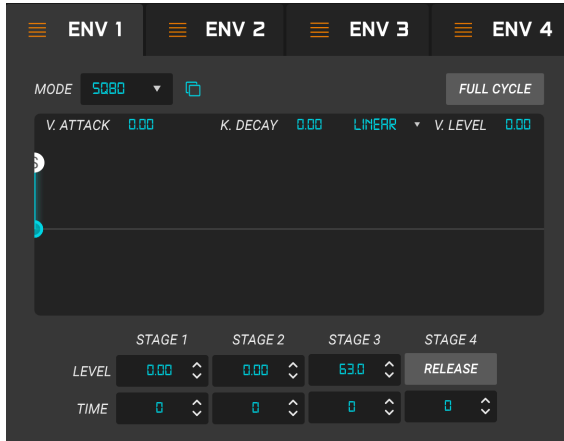
5.6. Tune



This very simple section controls the overall tuning of the SQ80 V. Nominally you would leave it set to 440Hz but you can drop as low as 400Hz and as high as 480Hz. It has one main control which is

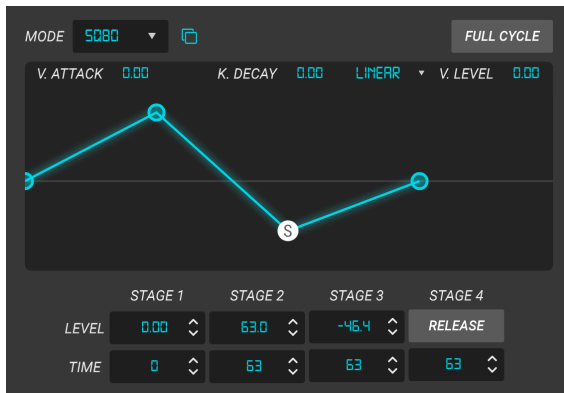
- **Tune (mod param)** This sets the initial pitch of the instrument. This parameter also has 2 modulation inputs.

5.7. Envelope Section



The SQ80 V has 4 envelopes to help you manipulate filter levels, DCO pitch etc and are a crucial part of the sound design process. The SQ-80 original envelopes are 4 stage envelopes with full bipolar control of level and time for each stage. The envelopes in the SQ80 V however can also be switched to MSEG (Multi Segment Envelope Generator) or DADSR (Delay, Attack, Decay, Sustain, Release) modes. You can freely switch between modes. There is a handy visualiser to give you immediate visual feedback of how the envelope is set. You can just click and drag on the handles on the envelope to change level and time of each stage or just manually set the parameters using the controls. We shall dive a little deeper into envelope 1 now but all 4 envelopes are the same.

5.7.1. The SQ80 Envelope Mode



This is the standard SQ-80 envelope generator and it has the following controls.

- **Env Module Type:** In the top left corner of the Env visualiser there is a dropdown menu to switch between the 3 types of envelope (in this case SQ-80).

- **Env Copy:** just to the right of the dropdown Env type menu you will find the Env Copy button. When pressed it allows you to copy the parameters from the currently active envelope to any of the other envelopes.
- **Full Cycle:** When this is switched on the envelopes will play for the full length set on the controls. The sustain level is not kept even if the key is still held
- **V Attack:** This setting lets you map the attack time of stage 1 to keyboard velocity. The harder the note is played the shorter the attack time.
- **K Decay:** This setting lets you map the decay time of stages 2 and 3 to MIDI notes. The higher the note the faster the decay time.
- **V Level Response:** this lets you alter the envelopes response from linear to logarithmic.
- **V Level Control:** this makes all three envelope levels responsive to keyboard velocity. The harder a note is played the more the level increases. Level response curve can be Exponential or Linear. On the original, values below 64 are the Lin values, and 65 and above are the Exp values.
- **Stage 1 LVL:** this sets the level at the end of the attack portion of the envelope.
- **Stage 1 Time:** this sets the length of the attack portion of the envelope.
- **Stage 2 LVL:** this sets the level at the end of the decay portion of the envelope.
- **Stage 2 Time:** this sets the length of the decay portion of the envelope.
- **Stage 3 LVL:** this sets the level at the end of the sustain portion of the envelope.
- **Stage 3 Time:** this sets the length of the sustain portion of the envelope.
- **Stage 4 Release Mode:** this adds a constant release to mimic reverb sound. Here is an example of how to set it up. First a sharp release that almost fades to nothing (but greater than 0, the time to reach this level is short), then a longer release to have a longer fade of the note. So it has some kind of elbow shape. Increasing the release (stage 4 time) make the first part of the "elbow" flatter and so the time longer.
- **Stage 4 Time:** this sets the length of time that it takes for the sustain level to reach zero.

5.7.2. The MSEG Envelope Mode



The Visualiser plays an important role in editing this Envelope. The envelope can have up to 16 stages or points. You can add another point by clicking on the envelope and you can right click to delete a point. Click and drag on a point to edit it if you click and drag a segment between 2 points you can alter the curve. Sustain is always the penultimate point and the last segment is always the Release. Lets take a look at controls for the MSEG Envelope.

- **Env Module Type:** In the top left corner of the Env visualiser there is a dropdown menu to switch between the 3 types of envelope (in this case MSEG).
- **Env Copy:** just to the right of the dropdown Env type menu you will find the Env Copy button. When pressed it allows you to copy the parameters from the currently active envelope to any of the other envelopes.
- **Rate:** this sets the rate (in Hertz) that the MSEG loops at when Loop is activated and when Rate Type is set to Hertz. When Rate Type is set to Sync, Triplets or Dotted the rate is set in divisions of bars.
- **Rate Type:** this can be set to Hertz or one of 3 synced modes that will lock to the host clock.
- **Loop:** activating the loop function makes the MSEG cycle round at whatever the Rate is set to and when it is off the envelope is just triggered once.
- **Bipolar:** activating this function makes the envelope bipolar and unipolar when off. The Visualiser also reflects this.
- **Key Time:** This allows you to map the rate to MIDI notes. The higher the note the faster the rate and the lower the slower. This is a bipolar control so a negative value will have the opposite effect.
- **Vel Level:** This maps the MSEG output level to velocity. The harder you play a note the louder the output of the MSEG.
- **Visualiser:** You can click drag and edit the envelope shape intuitively here. Clicking on a point lets you edit its parameters below the visualiser.
- **Point:** this shows the number of the selected point.
- **Level:** this shows the level of the selected point.

- **Time:** this shows the amount of time taken for the selected point to reach the next point.
- **Presets:** this is a pulldown menu where you can save and recall your own MSEG envelopes.

5.7.3. The DADSR Envelope Mode

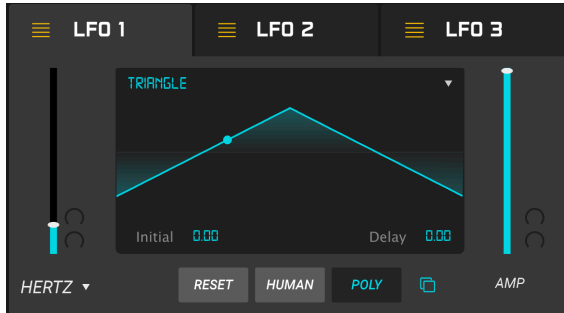


Lets take a look at the DADSR (delay, attack, decay, sustain, release) Envelope. This behaves much more like a traditional ADSR envelope found on many synthesisers and provides very natural sounding contours.

Lets take a look at the controls.

- **Env Module Type:** In the top left corner of the Env visualiser there is a dropdown menu to switch between the 3 types of envelope (in this case DADSR).
- **Env Copy:** just to the right of the dropdown Env type menu you will find the Env Copy button. When pressed it allows you to copy the parameters from the currently active envelope to any of the other envelopes.
- **Key Time:** This allows you to map the length of time of each stage of the DADSR to MIDI notes. The higher the note the shorter the time and the lower the longer. This is a bipolar control so a negative value will have the opposite effect.
- **Velocity:** This maps the DADSR output level to velocity. The harder you play a note the louder the output of the DADSR.
- **Visualiser:** You can click drag to edit the DADSR envelope shape here.
- **Delay:** this sets the length of the Delay section of the Envelope.
- **Attack:** this sets the length of the Attack section of the Envelope.
- **Decay:** this sets the length of the Decay section of the Envelope.
- **Sustain:** this sets the length of the Sustain section of the Envelope.
- **Release:** this sets the length of the (you guessed it) Release section of the Envelope.

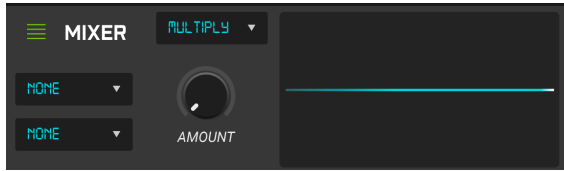
5.8. LFO Section



There are 3 fully featured LFO's in the SQ80 V with some very useful added functionality like MIDI sync. There is a handy visualiser to see what the LFO waveform is doing too. Lets take a look at the controls for LFO1.

- **Rate (mod param):** this sets the rate (in Hertz) that the LFO runs at when Rate Type is set to Hertz. When Rate Type is set to Sync, Triplets or Dotted the rate is set in divisions of bars. This parameter also has 2 modulation inputs.
- **Rate Type:** this can be set to Hertz or one of 3 synced modes that will lock to the host clock.
- **Visualiser:** if you click on the top of the visualiser a drop down menu lets you pick the LFO waveform from a choice of Triangle, Ramp, Square, Noise,, Sine, Saw.
- **Initial:** When delay is set above zero it sets the initial fade in level.
- **Delay:** This determines the time between the Initial level and Amp level. This determines the rate of change of slope. Lower values give a longer delay and higher values will result in a shorter Delay. The amount of time it takes for the LFO to reach Amp level thus depends on both the rate and the level.
- **Amp (mod param):** This sets the level of the modulation the effects of which can be observed on the visualiser.
- **Reset:** If this is on the LFO restarts every time a note is played.
- **Human:** When activated this adds slight randomness to the LFO parameters.
- **Poly:** When activated this puts the LFO into Poly mode meaning each voice has its own LFO. When poly mode is used its more useful to have Reset on too so each LFO restarts when a note is triggered.

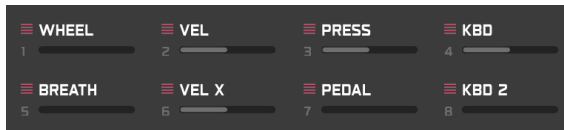
5.9. Mixer



This is a cool and very handy modulation mixer. It has 2 inputs that you assign to modulation sources and set of operators to do various types of combining the 2 sources. There is also a waveform visualiser so you can see the effect the operator has on the modulation sources in a very intuitive way. It has 4 controls.

- **Mod Source 1:** On the left of this module is a dropdown menu which when you click on it gives you the list of modulation sources.
- **Mod Source 2:** On the left of this module underneath Mod Source 1 is a dropdown menu which when you click on it gives you the list of modulation sources.
- **Operator:** This is another dropdown menu just above the Amount control. When you click on it you get the list of possible operators to use on the 2 inputs. These are basic mathematical operations and do as their name suggests.
- **Amount:** This controls the level of the modulator source into the operator.

5.10. MIDI Modulation sources



This panel shows you which midi modulation sources are being used and gives great instant visual feedback. Lets take the Filter Res control as an example. Assign Res to (for instance) the Mod Wheel. Now try clicking on the Res control and you will see a pink dot appear in the Mod Wheel box. Now try clicking on the Mod Wheel box and you will notice the Res control start to flash. The grey bar in the Mod Wheel box shows the amount of modulation too. This functionality makes it very easy to trace modulation system flow in the SQ80 V.

5.11. Modulation Parameters (Mod Param)

If you look next to any of the Mod Param controls you will see 2 greyed out controls. These appear next to modulation parameters (mod param). Move your mouse just to the side of one of these and a + symbol will appear. Clicking this will bring up the list of assignable modulation sources. Picking one will activate the greyed out control which will then turn orange, green, yellow or pink, and allow you to set the level of the modulation source. A marker will show the range of modulation on the chosen mod param control. These controls are also bipolar so can be positive or negative. The following 16 modulation sources are available and are colour coded as follows

- LFO's 1, 2 and 3 are yellow.
- Env's 1, 2, 3 and 4 (DCA 4) are orange.
- The midi sources are Modwheel, Velocity, Aftertouch, Keyboard 1, Breath, Velocity-Exp, Expression and Keyboard 2 and are all pink.
- Modmixer is green.

You can right click on the + symbol to bypass the control. When bypassed the modulation level control and the modulation amount ring or line are greyed out but the values will stay set as when last used.

6. FX PANEL AND FEATURES

Now that we've covered the advanced features in the Synthesis panel, let's dive deeper and explore the FX Panel.

6.1. The Effects

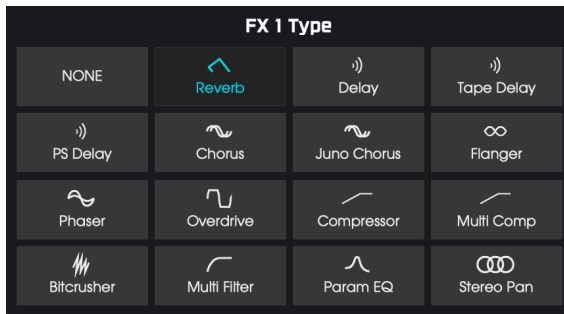


6.1.1. Why use effects at all?

The way we think about effects has changed since the 1980s. In earlier times, effects were not considered an essential part of the synthesis process and were used sparingly. Today, effects are a vital component of a sound, and their importance sometimes even supersedes that of samples and other sound generators. Why? We believe it's because effects are really effective at adding expression and emotion to raw sounds. We expect that effects will continue to be a source of inspiration and innovation in music and this is why we revive classic effects and modernize them with 21st century touches.

6.1.2. Selecting an effect

SQ80 V includes 15 powerful effects that can be arranged serially or in parallel. To start using and editing the effects, click on the Effects button on the top toolbar. Here you will see four effect slots. Each slot has its own **Bypass** switch to enable and disable its effect and a pull-down menu to select the effect that you would like to use.



Each slot also has a **Wet/Dry** fader that controls the percentage of the original signal that passes through to the output. Moving this all the way down will effectively bypass the effect. Finally, the **Series** and **Parallel** buttons to the left of the Routing panel let you decide if you want the effects to be arranged serially or in parallel. In Series mode, SQ80 V's output goes from one effect to the next in succession; In parallel mode, SQ80 V's output goes into Effect 1 and then into Effect 2 and the SQ80 V output also goes into Effect 3 and then into Effect 4. The output of Effects 2 and 4 are then mixed together.

i All effect parameters are MIDI-assignable, which means you can use the MIDI "learn" function to map effect parameters to hardware controls on an external USB MIDI device. This is covered in the [MIDI controller configuration \[p.15\]](#) section of this guide.

6.1.3. Each effect in detail

Each of the effects has its own unique controls and indicators as well as a single parameter (**mod param**) that can be easily routed and assigned in the [Controls Section \[p.16\]](#). You will also see 2 greyed out controls next to the mod param control for the chosen effect. These are the 2 modulation controls. Move your mouse just to the side of one of these and a + symbol will appear. Clicking this will bring up the list of assignable modulation sources. Picking one will activate the greyed out control which will then turn orange and allow you to set the level of the modulation source. An orange marker will show the range of modulation on the mod param control of the chosen effect. These controls are also bipolar so can be positive or negative. The following 16 modulation sources are available. LFO's 1, 2 and 3. Env's 1, 2, 3 and 4 (DCA 4). Modwheel. Velocity. Aftertouch. Keyboard 1. Breath. Velocity-Exp. Expression. Keyboard 2. Modmixer.

We will discuss each effect in detail separately below.

6.1.3.1. Reverb

This effect simulates the reverberant sound of a room or large space by creating a large number of filtered echoes that fade or "decay" over time. You can greatly affect the character of the reverberant sound by adjusting knobs controlling delay, filter and various other parameters.



The controls are:

- **Damping:** Controls the "brightness" of the sound by attenuating high frequency content of the reverberant echoes. Low settings will provide very little damping and will result in a bright sound; high settings will filter much of the high frequencies and will result in a duller sound.
- **MS Mix:** This knob controls the "stereo width" of the reverberation. Low settings will sound monophonic whereas high settings will have a wide, expansive stereo sound field.
- **Predelay:** Sets the amount of time before the input signal is affected by the reverb. Adjusting this parameter can affect the sense of space.
- **Decay (mod param):** Sets how much time it takes for reverberant echoes to fade away. This parameter also has 2 modulation inputs.
- **Size:** Controls the size of the reverberant space. Low settings result in smaller sounding rooms whereas high settings sound like massive halls and chambers. Use this knob in conjunction with the Predelay to achieve a variety of different sonic spaces.
- **Input HP:** This is a high pass filter that can be used to remove some of the low frequency tones that can make reverberation sound "muddy" indistinct and washed out. This filtering happens on the input signal before the reverberation takes place. Use this knob in conjunction with the Input LP Frequency to dial in clear reverberations.

- **Input LP:** This is a low pass filter that can be used to remove some of the high frequency tones that can make reverberation sound "sizzle-y" or unnaturally bright. This filtering happens on the input signal before the reverberation takes place. Use this knob in conjunction with the Input HP Freq knob to dial in clear reverberations.

6.1.3.2. Delay

A delay can increase the spaciousness of a sound without making the sound “swim” the way some reverbs do. It can also be used as a rhythmic counterpoint to accentuate a groove. This delay repeats the input signal and creates an “echo”, giving it more space and depth. The Time dial offers a range of settings from 2 milliseconds to two seconds (2000 ms).

i **J**: This is a modern “digital” delay that provides clear, precise echoes that are common in modern delay effects.



The controls are:

- **Delay Time (mod param):** Sets the length of the delay. Turning the dial clockwise increases the delay time; turning in the opposite direction shortens it. Values here are shown in either bars or milliseconds, depending on how Sync is set (see below).
- **Width:** This knob controls the “stereo width” of the delay. Low settings will sound monophonic whereas high settings will have a wide, expansive stereo sound field.
- **Ping Pong:** When activated this produces “ping-pong” delays alternating hard panned left and right, so that they “bounce” from left to right.
- **Feedback:** Determines how much of the Delay’s output is fed back into its own inputs. Higher settings mean that more repetitions will be heard for a longer period of time before fading out.

i **J**: Setting Feedback to its maximum amount will mean that a signal is looped infinitely and never fades out. This effectively turns the Delay into a looper! Be aware, that maximum feedback can overdrive and distort your audio output!

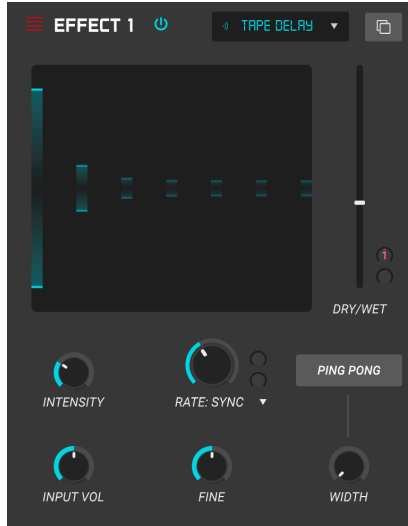
- **HP Freq:** This is a high pass filter that can be used to remove some of the low frequency tones that can make the delay sound "muddy" indistinct and washed out. This filtering happens on the input signal before the delay takes place. Use this knob in conjunction with the LP Frequency to dial in clear delays.
- **LP Freq:** This is a low pass filter that can be used to remove some of the high frequency tones that can make delay sound unnaturally bright. This filtering happens on the input signal before the delay takes place. Use this knob in conjunction with the HP Freq knob to dial in clear delays.

6.1.3.3. Tape Delay

A tape delay can increase the spaciousness of a sound without making the sound “swim” the way some reverbs do. It is an emulation of a tape based delay.



This is a vintage style “tape” delay that provides an effect full of character and warmth.



The controls are:

- **Delay Time (mod param):** Sets the length of the delay. Turning the dial clockwise increases the delay time; turning in the opposite direction shortens it. Values here are shown in either bars or milliseconds, depending on how Sync is set (see below).
- **Tempo Sync:** This is in the dropdown menu just above the delay time parameter. There are four options which are Time (this allows adjustment of the delay time in milliseconds) and Sync Straght, Triplet or Dotted. When one of the Sync modes is switched on, Delay Time is displayed in Bars. If Sync is deactivated, Delay Time is shown in milliseconds.
- **Stereo Spread:** This knob controls the “stereo width” of the delay. Low settings will sound monophonic whereas high settings will have a wide, expansive stereo sound field.
- **Ping Pong:** When this is activated by clicking on the banner above Stereo Spread it produces “ping-pong” delays alternating hard panned left and right, so that they “bounce” from left to right.
- **Intensity:** Determines how much of the Tape Delay's output is fed back into its own inputs. Higher settings mean that the delay will be heard for a longer period of time before fading out.



Setting Intensity to its maximum amount will mean that a signal is looped infinitely and never fades out. This effectively turns the Delay into a looper! Be aware, that maximum feedback can overdrive and distort your audio output!

- **Fine:** This allows fine adjustment to the delay time up or down in thousandths of a millisecond.
- **Input Vol:** This sets the level of the incoming signal and allows you to "overdrive" the delay.

6.1.3.4. Pitch Shift Delay

The Pitch Shift Delay works like a tradition style echo/delay but with the ability to add a shift in pitch everytime the signal is delayed producing almost a descending or ascending pitch "cascade" effect at higher settings



The controls are:

- **Delay Time (mod param):** Sets the length of the delay. Turning the dial clockwise increases the delay time; turning in the opposite direction shortens it. Values here are shown in either bars or milliseconds, depending on how Sync is set (see below).
- **Tempo Sync:** This is in the dropdown menu just above the delay time parameter. There are four options which are Time (this allows adjustment of the delay time in milliseconds) and Sync Straght, Triplet or Dotted. When one of the Sync modes is switched on, Delay Time is displayed in Bars. If Sync is deactivated, Delay Time is shown in milliseconds.
- **Stereo Offset:** Offsets the delayed signal in the stereo picture
- **Feedback:** Determines how much of the Pitch Shift Delay's output is fed back into its own inputs. Higher settings mean that the delay will be heard for a longer period of time before fading out.

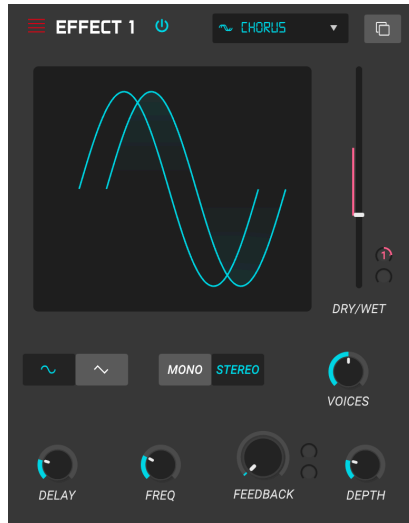
i: Setting Feedback to its maximum amount will mean that a signal is looped infinitely and never fades out. This effectively turns the Delay into a looper! Be aware, that maximum feedback can overdrive and distort your audio output!

- **Stereo Detune:** This knob controls the "stereo
- **Pitch Shift Delay Mode:** This is in the dropdown menu just above the Stereo Detune parameter. There are three options which are Normal Oct up and Oct Down.
- **Pitch Shift:** This allows adjustment to the pitch shift applied up or down in semitone and cents upto 24 semitones.
- **Spray:** This adds an amount of random behavior to the delay time.
- **HP Freq:** This is a high pass filter that can be used to remove some of the low frequency tones that can make the delay sound "muddy" indistinct and washed out. This filtering happens on the input signal before the delay takes place. Use this knob in conjunction with the LP Frequency to dial in clear delays.
- **LP Freq:** This is a low pass filter that can be used to remove some of the high frequency tones that can make delay sound unnaturally bright. This filtering happens on the input signal before the delay takes place. Use this knob in conjunction with the HP Freq knob to dial in clear delays.

6.1.3.5. Chorus

A chorus module recreates the sound of multiple takes of an instrument being combined in a mix. The effect works by duplicating the incoming signal, delaying one side while using an LFO to slowly modulate the delay time and mixing the delayed signal back with the original sound. To make the choral sound more rich and lush, the signal can be duplicated multiple times and modulated by separate LFOs.

i The chorus effect is very similar to the Flanger effect (see below) except chorus delay times tend to be longer (0.6ms minimum for this effect) which results in a subtle and pleasing choral effect.



The controls are:

- **LFO Shape:** Selects the shape of the LFO used to modulate the delayed voices. Options are Sine or Sawtooth.
- **Delay:** Sets delay time for the chorus effect.
- **Depth:** Sets the strength of the LFO's modulation on the delayed signal, from very subtle to quite extreme.
- **Stereo Mode:** The output of the chorus can be set to stereo for a wider and more modern sound or mono for a more vintage sound.
- **Voices:** Sets the number of duplicated voices in the chorus effect, from one to three voices.
- **Freq:** Adjust the speed of the chorus by setting the LFO rate.
- **Feedback (mod param):** Determines how much of the Chorus output is fed back into its own input.

6.1.3.6. Juno Chorus

The Juno Chorus is a faithful representation on the chorus effect from the Arturia Jun 6 V instrument.



The controls are:

- **Rate:** Adjust the speed of the chorus by setting the LFO rate.
- **Tempo Sync:** This is in the dropdown menu just above the rate parameter. There are four options which are Hertz (this allows adjustment of the LFO rate in Hertz) and Sync Straight, Triplet or Dotted. When one of the Sync modes is switched on, Rate speed is displayed in Bars.
- **Depth:** Sets the strength of the LFO's modulation on the delayed signal, from very subtle to quite extreme.
- **Phase:** This parameter changes the phase of the signal upto 180 degrees.

6.1.3.7. Flanger

The Flanger effect is similar in principle to the Chorus effect above, except that the delay time tends to be much shorter (as low as 0.001ms in the case of the effect). The extremely short delay time produces a “comb filter” effect that sweeps up and down through the harmonics of the original signal.



Flanging can create both subtle and extreme effects, depending on the Frequency and Depth of the modulation. With higher Depth settings you will begin to hear changes to the pitch of the sound. This is how the circuits in an analog flanger work, and we have taken care to recreate these conditions in our software.

The controls for the effect are:

- **Shape:** Selects the shape of the LFO used to modulate the delayed voices.
- **Polarity:** This determines whether the feedback polarity will be positive or negative. This can provide smoother or harsher flanging effect depending on your other settings, so experiment with positive and negative settings to see what works best for your sound.
- **Stereo:** The output of the flanger can be set to stereo for a wider and more modern sound or mono for a more vintage sound.
- **Rate (mod param):** Sets the LFO's modulation rate for the minimum delay time.
- **Min Delay:** Sets a minimum limit for the delay time, which can be useful for controlling the flanger's harmonic content.
- **Depth:** Sets the strength of the LFO's modulation. This is set to “max out” at less than 100% to limit runaway feedback.
- **Feedback:** Determines how much of the flanger's output is fed back into its own input.

- **HP Freq:** Sets the highpass cutoff frequency for the flanger effect. Frequencies below this are not flanged.
- **LP Freq:** Sets the lowpass cutoff frequency for the flanger. Frequencies above this are not flanged.

6.1.3.8. Phaser

Phase shifting is a sweeping effect that was first popularized in the 1960s. It adds motion and a swirling character to the sound. It works by splitting the incoming signal, changing the phase of one side, and recombining it with the unaffected signal. This creates a notch-comb filter which can be swept through the frequency spectrum, causing the signature “whooshing” sound of the phase shifter. This particular phaser is a stereo model with tempo synchronization.



The controls are:

- **Rate (mod param):** Sets the speed of the LFO. If tempo synchronization is enabled (see below), this parameter is displayed in bars. If synchronization is disabled, the Rate parameter is displayed in Hz.
- **Sync:** This switch immediately to the right of the Rate control locks the phaser's LFO to the current tempo of the DAW.
- **LFO Amount:** Sets the strength of the LFO's modulation.
- **LFO Shape:** This is a dropdown menu and allows you to select the wave shape of the modulating LFO. Choose from Sine, Triangle, Saw, Ramp, Square or Sample and Hold.
- **Frequency:** Sets the center frequency at which the phaser affects the incoming signal.
- **Rate Synced:** This is a dropdown menu just above the frequency parameter. There are three options which are Sync Straight, Triplet or Dotted.
- **Feedback:** Effectively controls the amount of phaser resonance. Look out! Higher settings can make the filtering effect very pronounced.
- **N Poles:** Sets the number of poles used in the sweeping filter. Low settings will have a gentler sound whereas high settings will have a more pronounced sound.
- **Stereo:** Sets the stereo width of the effect, from mono to maximum stereo (hard left to hard right).

6.1.3.9. Overdrive

Will add gain to a signal causing it to clip and distort. This introduces new harmonics that add a harsh edge to sounds. This is similar to an overdrive pedal for a guitar.



The controls are:

- **Drive (mod param):** Sets the overdrive amount.
- **Tone:** Brightens the sound and adds a harsher edge through a high frequency shelving filter.
- **Level:** Sets the output level of the overdrive. This allows you to compensate for increased output caused by the drive.

6.1.3.10. Compressor

At its core, a compressor is simply a device that is used to maintain a consistent level of sound. You can think of it as a very fast manual control that turns down the volume when the input is too loud and raises it again when the loud parts have passed. Over the decades, audio engineers have found many creative uses for compressors beyond simply evening out loudness levels. For example, many mix engineers use compressors to bring an increased sense of power and excitement to a single track or an overall mix.



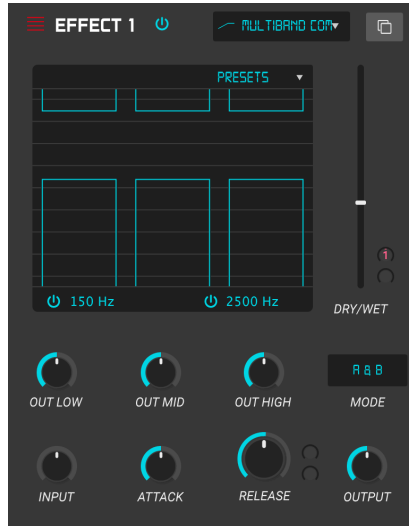
If you are using a compressor in a chain of effects, the compressor can keep the attack transients of a sound from overloading the input of the next effect. It can also re-contour a sound that naturally decays quickly so that it has a longer sustain. Drums are often compressed to add "punch". Compression is also routinely added to radio and television audio levels to keep them within a certain volume range.

The controls are:

- **Makeup:** Switches the compressor's automatic make-up gain feature on and off. This feature compensates for the natural reduction in output loudness as the compressor brings down peaks.
- **Attack:** Sets the speed with which the compression will react to an incoming signal. Short attack times mean the compressor will immediately affect an incoming signal. Longer attack times allow momentary peaks to slip through before the compressor has a chance to affect on the signal. In some cases this can be desirable as it allows a signal to maintain some of its natural "attack" transients before it starts working.
- **Release (mod param):** Sets the release time of the compressor. Generally, this is set such that the output of the compressor sounds natural and transparent. However, many contemporary artists deliberately choose to set this to more extreme values in order to achieve "pumping" and "breathing" artifacts. Go ahead and experiment—maybe you'll stumble upon a sound you love!
- **Input Gain:** Adds gain to the signal before the start of the compression process.

- **Threshold:** Sets the loudness level above which the compressor will begin to work. The compressor ignores signals that fall below the threshold.
- **Ratio:** The compressor ratio determines the amount of compression that will be applied once the threshold is reached. For example, if the ratio is set to 2:1, signals exceeding the threshold by 2 db will be allowed to increase by only 1 dB. An 8 dB increase will be reduced to a 4 dB increase, and so on.
- **Output Gain:** Controls the final output level of the compressor.

6.1.3.11. Multiband Compressor



The multiband compressor allows you to use different amounts of compression and expansion on 3 different frequency bands allowing for almost surgical sonic precision. If you look at the graphic above you'll see 3 columns with 2 bars which represent the threshold and ratio for each band. The top bar deals with compression and the lower bar deals with expansion. Click on a bar then hold and drag to adjust. If you are using a Multiband compressor in a chain of effects, it can really help to dynamically sculpt the frequency range of a sound to help it sit right in a mix.

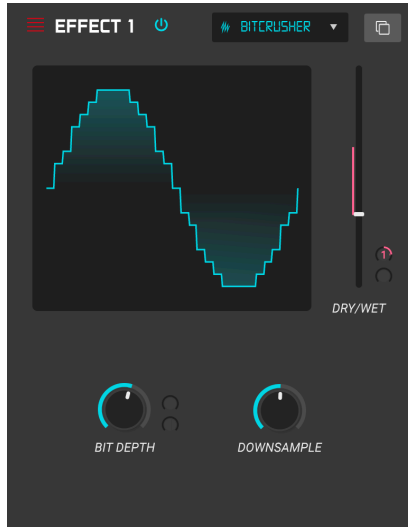
The controls are:

- **Threshold:** If you drag the top or bottom of a bar you can adjust the point at which the compression (or expansion) for the selected band starts working.
- **Ratio:** If you drag inside of a bar you can adjust the amount of compression for that band. Increasing ratios are depicted by denser horizontal lines, until the bar turns blue at maximum.
- **Freq Bands:** You can toggle on/off the high and/or low bands, resulting in a 2 or 1-band compressor/expander.
- **Presets:** This is a dropdown menu containing a few choice presets to get you started and you can save your own presets here too.
- **Band Outputs** You can set the output level of each band in use. This is often called makeup gain.
- **Output:** This controls the final output level of the compressor.
- **Input Gain:** Here you can set the initial gain of the signal at the input to the compression bands.

- **Attack:** Sets the speed with which the compression will react to an incoming signal. Short attack times mean the compressor will immediately affect an incoming signal. Longer attack times allow momentary peaks to slip through before the compressor has a chance to affect on the signal. In some cases this can be desirable as it allows a signal to maintain some of its natural "attack" transients before it starts working.
- **Mode:** This drop-down menu selects whether the bars for both compression and expansion (Above & Below), or just the bars for compression (Above Only) are displayed
- **Release:** Sets the release time of the compressor. Generally, this is set in such a way that the output of the compressor sounds natural and transparent. However, many contemporary artists deliberately choose to set this to more extreme values in order to achieve "pumping" and "breathing" artifacts. Go ahead and experiment—maybe you'll stumble upon a sound you love!

6.1.3.12. BitCrusher

Arturia instruments generate very high fidelity sounds, however, in some scenarios you may prefer a gritty lo-fi sound. The BitCrusher effect can really help make this happen! It adds nasty digital distortion by intentionally reducing the bit depth and sampling rate of incoming signals.

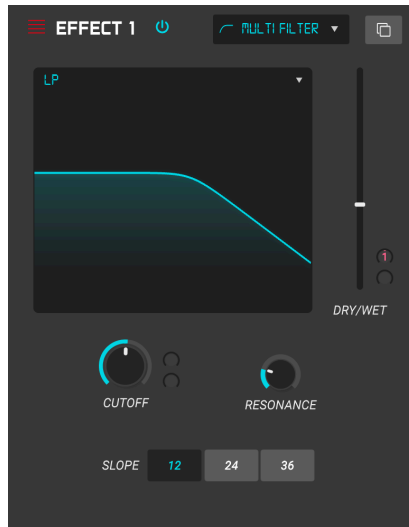


To explore this effect, start by setting the Bit Depth and Downsample dials to the minimum settings. Then gradually turn each dial up to reduce the bit depth and sampling rate of the incoming signal. Each knob has a different degrading effect and you can experiment with different settings to find the perfect blend of sonic destruction for your sound!

The controls are:

- **Bit Depth (mod param):** Reduces the resolution of your sound (i.e., the number of bits used to render an output) as this knob is turned up. There is no reduction at the minimum setting and extremely reduction at the maximum setting.
- **Downsample:** Resamples the already bit-reduced signal (set by the Bit Depth knob). As you turn up this knob, your incoming signal will be re-sampled at lower and lower frequencies, increasingly destroying the fidelity of the pure sound.

6.1.3.13. Multi Filter

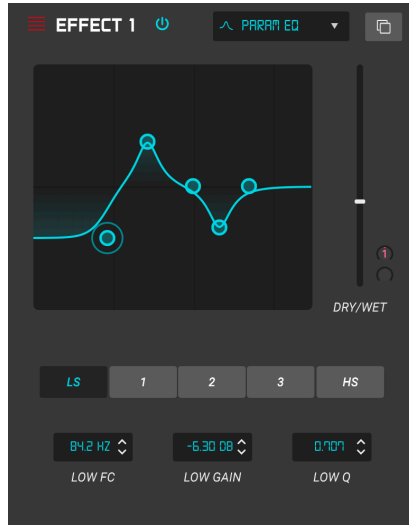


Multi Filter is a powerful sound shaping filter, that offers an additional way of sculpting frequencies at the output stage. You can click and drag on the filter graphic to adjust Cutoff and Resonance in addition to using the controls.

The controls are as follows:

- **Filter Mode:** This is a dropdown beneath the filter graphic. You can choose from one of 5 different filter modes: Low Pass, High Pass, Band Pass, Comb Feed Back, Comb Feed Forward.
- **Slope:** This changes the slope of the filter: -12, -24, or -36db/octave.
- **Cutoff (mod param):** controls the cut-off frequency of the filter.
- **Resonance:** controls the resonance around the cut-off frequency.

6.1.3.14. Param Eq



The Parametric EQ

The SQ80 V offers a five-band fully parametric equalizer. An equalizer (EQ) selectively amplifies or attenuates frequencies in the frequency spectrum. A parametric EQ allows you to adjust the range that will be affected by its frequency bands (i.e., the Q, or width).

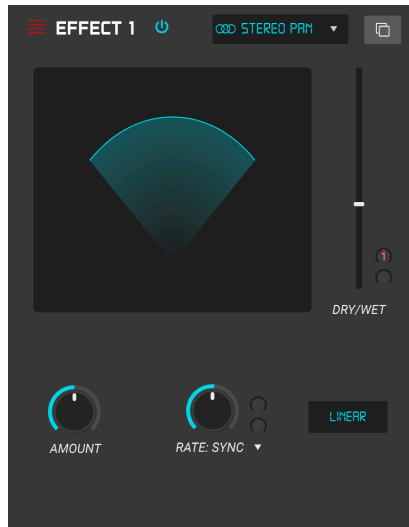
Many parametric EQs take the easy way out and use shelving EQs for the lowest and highest frequency ranges, but SQ80 V allows you to adjust the Q for all 5 frequency bands.

The circles in the picture correspond to the controls below the curve visualizer. The circles may be dragged around, which adjusts the frequency and the gain of the selected band at the same time. A right-click on the circle will adjust the width of that band as you drag the cursor up and down.

You can also select a particular EQ band by clicking on its tab to the left of the curve visualizer.

Control	Description
Curve visualizer	Provides visual image of EQ curves
Low / Peak X / High fc (frequency)	Sets center frequency of band: Low 50-500 Hz; mids 40-20kHz; High 1k-10kHz
Low / Peak X / High gain	Each control adjusts the gain of its EQ band
Low / Peak X / High Q	Sets width of band: Low / High range: 0.100 - 2.00; Peak X ranges 0.100 - 15.0

6.1.3.15. Stereo Pan



The StereoPan effect

This is an LFO-driven effect that moves the signal from left to right in the stereo field. It can move the signal left and right ever-so-slightly from center, or it can swing wider and wider until it covers the entire range.

The controls are as follows:

- **Amount:** Controls the amount of deviation from center.
- **Rate (mod param):** Sets the rate at which the stereo motion will occur, with freerun and sync options.
- **Sync (dropdown menu):** Options are Hz, Sync Straight, Sync Triplets and Sync Dotted (set by rate control)

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