

SSL 4K E Channel Strip Plug-in - User Guide

Introduction & Key Features

The **SSL 4K E channel strip plug-in** brings the iconic **SL 4000 E console** to your digital audio workstation, carrying the legacy of a console that defined a generation of music production. The 4K E plug-in faithfully replicates the **hallmark features** of the original console, including its renowned **high- and low-pass filters**, **versatile four-band equaliser**, **dynamic compressor/limiter**, and **precise gate/expander**. It also embodies the **characteristic warmth and depth** of the original console, thanks to its meticulously emulated **mic pre and VCA fader**, offering a **rich, analog feel** to your digital mixes. With the **4K E plug-in**, the celebrated **sound and functionality** of the SL 4000 E are seamlessly integrated into the modern digital audio environment, providing producers and engineers with a **timeless tool** for artistic expression.

This plug-in is a 360-enabled plug-in and integrates with the **SSL 360° Plug-in Mixer** software, including first-class integration and hands-on control via the **SSL UC1**, **SSL UF8** and **SSL UF1** hardware controllers.



Key Features

- **Authentic SL 4000E-series console emulation** – capturing the iconic sound and character of the original!
- Immortalises **SL 4000 E console sound** in your DAW.
- Historically used in famous studios throughout the '80s & '90s, shaping the sound of iconic albums and tracks.
- Celebrated by top mixing engineers like **Andy Wallace, Chris Lorde-Alge, Tom Lorde-Alge, Alan Moulder, and Spike Stent**.
- **Big, punchy sound with rich analogue character**.
- Combine **4K E** with **Channel Strip 2** and **4K B** in **SSL 360° Plug-in Mixer**.
- **First-class integration** with the **SSL UC1, UF8 and UF1 controllers** for tactile control.
- Developed by emulating the circuits from the original schematics **down to a component level**.
 - Detailed analogue saturation and drive with the **Jensen T-115K-E transformer mic pre** and **dbx 202 'gold can' VCA fader**.
 - **Precise model of SL 4000 E console**.
 - Includes revered **E Series EQ** in **Brown, Black**, and the rare 'passive' **Orange EQ flavours**.
 - **E-Series channel dynamics**, featuring the **Revision 4 Dynamics** with soft-knee and logarithmic release circuit.

- Enhanced output section with virtual fader and stereo image control, including **Fader Level, Pan, and Width** parameters.
- **Compressor mix control**.
- Enhanced **UC1/UF8/SSL 360° Plug-in Mixer integration** for comprehensive DAW control and synchronisation.
- **HQ mode** for optimal audio quality, utilising advanced processing such as oversampling.
- **Pro Tools EQ** and **dynamics integration**.
- **Built-in help feature**.
- **Cross-platform preset management**.
- **Undo/redo**.

A note on analogue modelling and measurements

This plug-in has been developed using the **original circuit schematics, analogue simulations, component-level modelling** and **detailed hardware prototypes**.

When testing a plug-in, please note that the classical **"transfer function" method** is only defined for linear, time-invariant systems - and therefore the testing approach should be considered carefully. Some of the typical testing methodologies that you leverage in audio measurement software such as Plugindoctor, SATlive or Smart can lead to **erroneous results** - so make sure you understand the **caveats of the testing approach** and whether or not it is valid for a **non-linear system**.

Please take care especially when using the **Linear Analysis tab** on **Plugindoctor**, as the plug-in features **non-linearities (additional frequencies or distortion added)**, and the results are likely to be **incorrect and not representative**.

You can observe how the **method of test can change the result**, by comparing the results you get with different testing approaches, and understanding the **caveats of each one**. Of course, if changing the testing approach changes the conclusion, then the test is **unreliable!**

Release Notes

For more comprehensive release notes and known issues about integration with the SSL 360° Plug-in Mixer and other hardware controllers, please refer to: [SSL 360° Downloads and Release Notes](#)

V1.0.13 (November 2023)

Initial release, including Native support for Apple silicon (VST, VST3 and AU only).

Supported Platforms and Hosts

For compatibility information about plug-ins, visit the [Plug-in Operating System and DAW Compatibility FAQ](#).

When we release an SSL plug-in, we test it on all Windows and macOS operating systems that aren't End-of-Life (EOL) at the time of release.

The versions listed below are the latest on which we have officially tested the the product.

It is possible for our products to work on platforms outside of this list. However, if your host, host version or operating system is not listed here, we recommend you demo the product before purchase to confirm that it works correctly.

Apple Silicon Support

This plug-in is provided as a universal binary for macOS and features native support for Apple Silicon.

Operating Systems

Please refer to the Plug-in OS Compatibility FAQ.

Hosts

- Logic Pro 10.7
- Pro Tools 2023
- Ableton Live 11
- Studio One 6
- Cubase 12
- REAPER 6
- FL Studio 21
- LUNA v1.5

Demo/Trial

To demo this plug-in, you can simply download it from the product page and run it up in your host - the software will guide you through the rest of the process.

1. Download and install the plug-in.
2. Open your DAW/host.
3. Insert the plug-in to commence activation (sometimes this will happen when the plug-in is scanned on startup, depending on your DAW/host).
4. When you see 'Activation is required', click 'Try'.
5. Log into your iLok account and click 'Next'.
6. Select a location to activate the license to, and click 'Next'.

Installation and Download

You can download installers for a plug-in from the website's Download page, or by visiting a plug-in product page via the Web Store.

All SSL plug-ins are supplied in VST, VST3, AU (macOS only) and AAX (Pro Tools) formats.

The installers provided (macOS Intel .dmg and Windows .exe) copy the plug-in binaries to the common VST, VST3, AU and AAX directories. After this, the host DAW should recognise the plug-in automatically in most cases.

Simply run the installer and you should be good to go. You can find more information about how to authorise your plug-ins below.

Licensing

Visit iLok, Licensing and Activation for guidance in activating your SSL plug-in.

Overview



1) Track Name

The name of the track is automatically provided from your DAW, if supported (VST3/AAX/AU only).

2) Bypass

Toggles plug-in processing in or out.

3) 360°

Click to open the SSL 360° Plug-in Mixer window.

4) Input Section

Input trim control with +/-20 dB gain, polarity (ϕ) phase invert & mic pre-amp 'drive' circuit with automatically gain-compensated gain stage for adding saturation without effecting the level of the signal.

5) EQ

4-band EQ with LF, LMF, HMF & HF bands - including bell options on LF & HF bands and additional high- and low-pass filters.

6) Dynamics

Dynamics section with compression & gate/expander processing.

7) Routing Menu

Allows you to re-arrange the order of processing (dynamics, EQ) or move them to the sidechain.

8) Input/Output Meters

Instantaneous input & output signal meters and RMS average metering.

9) Output Section

Output section with mid-side (M/S) width control & pan (stereo and mono-to-stereo instances only), as well as modelled VCA fader, solo, cut, solo clear and safe options, sidechain listen and a clean output trim.

10) High Quality (HQ) mode

Enables or disabled High Quality (HQ) mode, which turns on intelligent oversampling under-the-hood for higher quality audio at the cost of increase CPU use.

11) Advanced Settings

Access 'under-the-hood' DSP parameters such as advanced Width control modes, toggling the analogue VCA emulation, and turn off the automatic make-up gain in the compressor.

12) Scale/Zoom

Click to set the scale of the plug-in, from 50% to 200%.

13) Built-in Help

When enabled, the '?' button drops the plug-in into help mode. Hover over the GUI, and a text box will provide a brief explanation of each parameter or GUI element.

14) Preset Manager

Clicking this area will open the Preset Manager. The Preset Manager list allows you to load factory or used-saved presets. Use the left and right arrows to quickly move between presets.

16) Undo/Redo

The Undo/Redo stack can be accessed via the undo/redo buttons.

15) A/B

The A/B buttons allow you to temporarily store two plug-in states, and quickly compare between them

360° Plug-in Mixer + UC1/UF8/UF1

This plug-in is a 360-enabled plug-in, and integrates with the SSL 360° Plug-in Mixer.



Since the plug-in is controllable from the 360° Plug-in Mixer, it has first-class integration with the powerful UC1 & UF8 hardware control surfaces. For more information on the UC1 integration & SSL 360° please refer to the user guides on the UF1, UC1 and UF8 product pages.

Please refer to SSL 360° Downloads and Release Notes for more information about the latest release.



SSL hardware for your SSL software

For in-depth information about how to use the SSL UC1 hardware plug-in controller with your 360-enabled plug-ins, please visit the [SSL UC1 user guide](#).

To find out more about the UC1, visit the product page on our website: [UC1 | Solid State Logic](#)

SSL UF8



Accelerated creativity, intelligent production

For in-depth information about how to use the SSL UF8 studio and DAW controller with your 360-enabled plug-ins, please visit the [SSL UF8 user guide](#).

To find out more about the UF8, visit the product page on our website: [UF8 | Solid State Logic](#)

SSL UF1



Solid State Logic's legacy in control

For in-depth information about how to use the SSL UF1 single fader DAW controller with your 360-enabled plug-ins, please visit the SSL UF1 user guide.

To find out more about the UF8, visit the product page on our website: [UF1 | Solid State Logic](#)

To find out more about the SSL 360° Plug-in Mixer and integrated hardware, please visit the product page on our website: [SSL 360 | Solid State Logic](#).

Input Section

The Input Section provides two signal paths; a clean one, and an analogue one.

The INPUT TRIM control is the equivalent of a 'line input trim' on a console, and provides a clear signal path with ± 20 dB of gain.

When PRE is switched in, the signal is additionally passed through hardware-modelled JE-115K-E Transformer mic pre-amp before the INPUT TRIM. This allows for everything from gentle saturation to rich distortion.

MIC allows you to add +20-70 dB of automatically-compensated gain through the transformer gain stage. This allows you to drive the input signal and add harmonics without destructively effecting your level.

- PRE off = input signal → INPUT TRIM → POLARITY (ϕ) → rest of plug-in
- PRE on = input signal → MIC pre-amp → INPUT TRIM → POLARITY (ϕ) → rest of plug-in

Input Trim

Trim the input signal ± 20 dB.

Polarity (ϕ)

Inverts the phase of the input signal.

Mic Gain

Adds +0-50 dB of gain via the mic-pre amp emulation. This drive stage is automatically gain-compensated, so it only introduces harmonics without destructively effecting the level of your signal. You'll need to engage the 'PRE' button first.

The accompanying LED lets you know how hard you're driving the circuit.

- OFF = low/zero distortion
- GREEN = gentle saturation
- ORANGE = mid/high saturation
- RED = high distortion

Pre Toggle

Toggles the MIC pre-amp gain stage in or out.



Equaliser Section

The 4000 E EQ had several design iterations, each offering engineers very different characteristics and capabilities when sculpting sounds.

The 4K E Plug-in includes them all; the original '02 Brown' knob renowned for its grit, the rare passive '132 Orange' knob, and the cleaner '242 Black' knob with its legendary low-end weight.

Filters IN

Toggles the EQ processing in or out.

Low-Pass Filter

Engaged when moved from the out position, with a cutoff down to 3 kHz.

High-Pass Filter

Engaged when moved from the out position, with a cutoff up to 350 Hz.

HF Band

High frequency shelf with ± 15 dB gain between 1.5 kHz to 16 kHz, with optional bell curve modifier.

MHF Band

High-mid frequency bell filter with variable Q width and ± 15 dB Gain control from 600 Hz to 7 kHz.

EQ IN

Toggles the EQ processing in or out.

EQ Type

The 4000 E had several design iteration, and included different EQ and filters over its lifetime. the SSL 4K E offers all three.

1. Black Button In = '242 Black' EQ and filters.
2. Orange Button In = '132 Orange' EQ and filters.
3. Buttons Out/Brown = '02 Brown' EQ and filters.

LMF Band

Low-mid frequency bell filter with variable Q width and ± 15 dB gain control from 200 Hz & 2.5 kHz.

LF Band

Low frequency shelf with ± 15 dB gain from 30 Hz to 450 Hz, with optional bell curve modifier.



Dynamics Section

Flexibility is at the heart of SSL channel compression; it's designed to smooth and enhance almost any signal. Several revisions were made over the course of the lifetime of the SL 4000 E console, but 'Revision 4' is what we consider to be the

pinnacle design reference, with a soft-knee, FAST/SLOW attack options and logarithmic release curve.

Compressor Mix

Determines the parallel mix amount of wet signal added to the Dry pre-compressed signal. 100% means the signal is entirely the signal passed through the compressor section, and 0% is an entirely dry signal path following the previous channel strip processing sections. 50% would be equal amounts wet to dry signal.



Compression Ratio

The severity with which the signal is reduced when it exceeds the Threshold. When set to 1, the compressor is bypassed.

Compressor Fast Attack

Provides a faster attack time (3 ms per 20 dB gain reduction). When off, the attack time is slower and less aggressive (30 ms for 20 dB of gain reduction).

Compressor Threshold

Set the threshold from +10 to -20 dB. The threshold determines the level above which compression occurs. *In this compressor design, the Threshold also applies an automatic gain-make-up. This can be disabled via Advanced Settings.*

Compressor Release

Controls how quickly the level returns to normal after the input level has dropped below the Threshold (measured in seconds).

DYN IN

Toggles the dynamics processing (both compression and gate/expander) in or out.

Gate/Expander Threshold

Sets the threshold above which the the gate/expander will be opened. *Variable hysteresis is incorporated in the threshold circuitry. For any given 'open' setting, the Expander/Gate will have a lower 'close' threshold. The hysteresis value is increased as the threshold is lowered. This is very useful in music recording as it allows instruments to decay below the open threshold before gating or expansion takes place.*

Gate/Expander Range

Controls the maximum amount of gain reduction applied by the gate/expander. When set to 0, the gate/expander is bypassed.

Compressor and Gate Meters

The left meter (orange) indicates the amount of compression (attenuation in dB) that is being applied to the signal, and the right meter (green) indicates the amount of gating (attenuation in dB) that is being applied to the signal.

Gate/Expander Release

Sets how long the signal remains audible after the gate/expander closes, from 0.1 to 4 seconds. *This control interacts with the Gate/Expander Range.*

Expander Button

Switches the gate into downwards expander mode with a gentle curve instead of the high ratio gate.

Gate/Expander Fast Attack

Sets the gate/expander to a fast attack time (100 μ s per 40 dB). When off, a controlled linear attack time of 1.5 ms per 30 dB is applied. *When gating signal with a steep rising edge, such as drums, a slow attack may effectively mask the initial 'thwack', so you should be aware of this when selecting the appropriate attack time.*

Output Section

The Output Section adds additional harmonic saturation with the modelled dbx 202 'gold can' VCA fader from the 4000 E console - the FADER LEVEL parameter.

This fader controls the output signal of the plug-in and can be driven up to +12 dB to add another colour of harmonic distortion, with an additional 'clean' output trim to compensate for additional gain added at this stage.

The WIDTH & PAN controls (only for plug-in instances with a stereo output) allows for additional mid-side (M/S) width control & panning of the signal. These two options are greyed out when the plug-in is instanced on a mono channel.

**The controls are available in stereo or mono-to-stereo operation only. When the plug-in output is mono, WIDTH & PAN controls will be greyed out.*

***When using the VST3 format in Live, Studio One or REAPER, the SOLO & CUT are automatically linked to the DAW's solo and cut controls.*

Width*

Using mid-side processing, the WIDTH control can fully mono the signal (0) when turning fully anti-clockwise, or increases stereo width by increasing the 'sides' volume when turning clockwise (up to 2).

Default state (1) means is standard stereo operation, and no mid/side processing is applied to the signal.

Pan*

Allows positioning of the signal in the stereo field, by balancing the left/right components on the signal.

Default state is 'C' which means no panning is applied to the signal.

Solo**

Engages channel solo.

Cut**

Engages channel cut (mute).

VCA Fader

Audio passing through the channel strip can be further driven into harmonic distortion via the VCA-modelled fader.

This is a model of the dbx '202' gold can VCA. The non-linear harmonics are level dependent so driving the fader will add more colour.

This can then be offset with the 'clean' output trim to compensate for level.

Solo Modifiers

SOLO SAFE* protects a channel from being muted when another channel is solo'd. This is useful when using the channel strip plug-in on an aux or bus.

SOLO CLEAR turns off solo for all channels.

*SOLO SAFE only works when the channel strip is connected to the 360° Plug-in Mixer, and using the 360° Plug-in Mixer solo layer.

If using the VST3 format in a compatible DAW (Live, Studio One, REAPER) then SOLO SAFE will not function. SOLO CLEAR will still function.

Sidechain Listen

Solos the sidechained signal.

Output Trim

The digital output allows an extra clean gain stage, post VCA fader. Use this control to compensate for added gain when driving the VCA harmonics with a range of ± 20 dB, or to trim the level without destructively effecting your current fader level.



Routing Menu and Sidechaining

The Routing Menu allows you to configure the processing order of the Filters, EQ and Dynamics processing blocks. Click on the up/down arrows to position that processing element within the overall signal flow.

Please note: EQ > DYNAMICS > FILTER is not possible. In SSL's analogue consoles, the filter will always occur directly before the EQ unless 'Filter to Input' is activated.

Filters to Sidechain

Use the 'FILTERS' radio button to move the filters from the input signal path to the sidechain path.

EQ to Sidechain

Use 'EQ' radio button to move the EQ to the dynamics sidechain.

Routing Order

Press the up/down arrows in DYN, EQ & FILTERS to reorder the modules.

External Side Chain

Use the 'EXT' checkbox to feed the compressor sidechain from an external source, routed from your DAW. Check your DAWs documentation on how to route a signal to a plug-ins sidechain input.

S/C Listen Indicator

The S/C Listen Indicator will light up when S/C Listen is enabled.



How the Solo System Works

1) Live (VST3), Studio One (VST3) and REAPER (VST3)

When using the VST3 format in Live, Studio One or REAPER, the SOLO & CUT are automatically linked to the DAW's solo and cut controls.

2) DAWs without VST3 extension support

In other all other DAWs except those listed above, the mixer-wide solo'ing functionality will require the SSL 360° application to be running on your desktop.

The solo feature works by cutting the output of all other 360-enabled channel strip plug-ins in the DAW session. This happens when you action a Solo (either from the UC1, the 360-enabled plug-in, or from the 360° Plug-in Mixer). Therefore, it is recommended that you:

1. Insert a 360-enabled channel strip plug-in on all tracks in your DAW session.
2. Make sure to engage the SOLO SAFE button on channel strip plug-ins that have been inserted onto auxes/busses/sub-groups/sub-mixes. This will ensure that you hear individual instruments that are routed to these destinations when you start soloing.

SOLO SAFE prevents a channel strip from being cut when another channel strip's SOLO is activated.

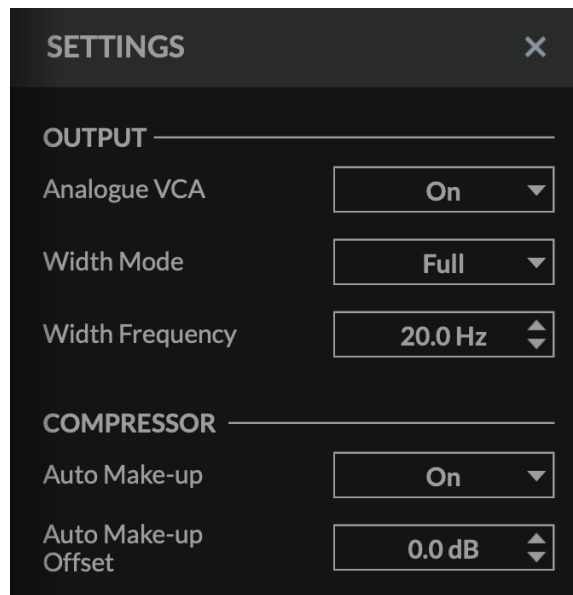
Sidechaining

The 'EXT' (External) toggle in the Routing Menu feeds the Dynamics module fed from an external sidechain, routed from your DAW. Check your DAWs documentation on how to route a signal to a plug-ins sidechain input.

e.g. you could route a kick drum signal to the sidechain input of a plug-in instance on your bass guitar track, and toggle 'EXT' in. This would trigger the compressor the a bass guitar from the kick signal, causing the bass guitar to be 'ducked' when the kick occurs.

The high- and low-pass filters and EQ modules can be moved into the Dynamics sidechain, using the circular toggles in the Routing Menu. The 'EQ' toggle corresponds to 'EQ to Sidechain' and the 'FILTERS' toggle corresponds to 'Filters to Sidechain'.

Advanced Settings



Advanced Settings - Output

Analogue VCA

This option can be set to 'off' to remove the saturation element that is added at the VCA fader output stage.

Width Mode

- Full - the width control affects all frequencies equally
- Low - the width control only affects frequencies below the Width Frequency
- High - the width control only affects frequencies above the Width Frequency

Use this in combination with the Width Frequency control to e.g. only mono frequencies below 120Hz, or only widen frequencies above 10 kHz.

Width Frequency

Determines the frequencies that are affected by the Width control, when the Width Mode is 'Low' or 'High'.

Advanced Settings - Compressor

Auto Make-up

This option can be set to 'off' to bypass the automatic make-up gain in the compressor section. When disabled, you will have to manually trim the level using the Output Trim control.

Auto Make-up Offset

When Auto Make-up is on, the Auto Make-up Offset applies an offset to the reference level used to calculate the auto make-up gain. The reference level is the level at which the input and output levels are the same on the compressor gain curve.

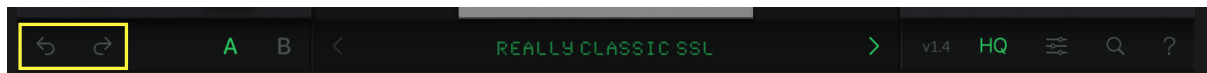
SSL Plug-in Engine

The 'SSL Plug-in Engine' has several features that are available across our entire plug-in range.

NOTE: the available features in a plug-in might be or look different depending on what plug-in you are using, or when the plug-in was most recently updated.

Undo/Redo

SSL plug-ins come with a built-in undo/redo stack, in case your DAW doesn't handle this.



- **Undo (left arrow)** undoes the current action in the history stack.
- **Redo (right arrow)** re-does the next action in the history stack.

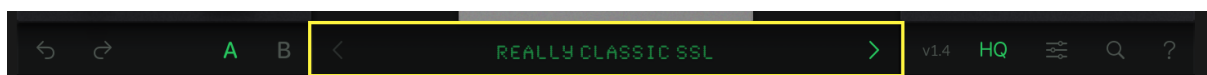
Presets

All of our plug-ins ship with carefully designed presets to aid your workflow.

Factory presets are included in the plug-in installation, installed in the following locations:

macOS: /Library/Application Support/Solid State Logic/PlugIns/Presets/[Plug-in Name]

Windows: C:\ProgramData\Solid State Logic\PlugIns\Presets\[Plug-in Name]



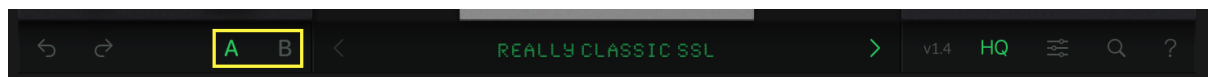
Switching between presets can be achieved by clicking the left/right arrows in the preset management section of the plug-in GUI, and by clicking on the preset name which will open the preset management display.

The Preset Management menu reflects the folder structure of the preset folder.

Revert Changes and Delete

- **Revert Changes** discards any changes to the current preset.
- **Delete** removes the current preset from the filesystem. Factory and Producer presets cannot be deleted from the plug-in GUI, although they can be manually deleted using the filesystem (Windows Explorer or Finder).

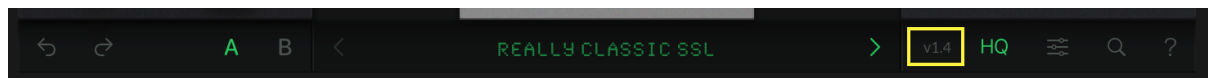
A/B and Copy



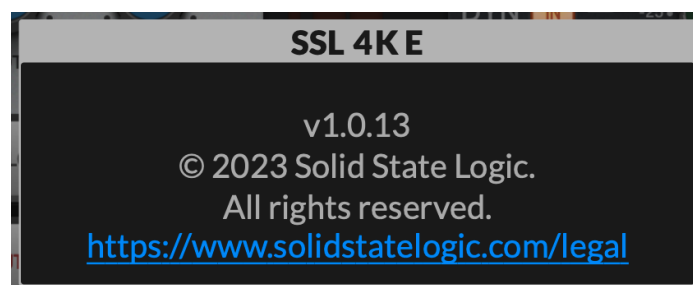
- **A/B** allows you to toggle quickly between two presets. This is useful for comparing between two parameter settings.
- **COPY X TO Y** is used to copy presets between A/B.

Version Number

Click the version number to display more information about the plug-in.

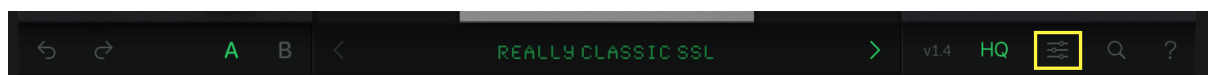


When logging a bug to our support team, always include the full version number e.g. v1.0.13.



Advanced Settings

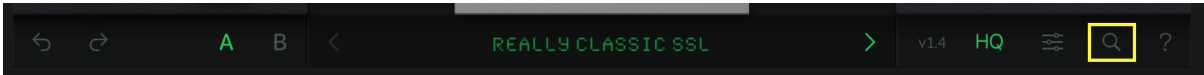
Click the 'Advanced Settings' button to access advanced plug-in functionality.



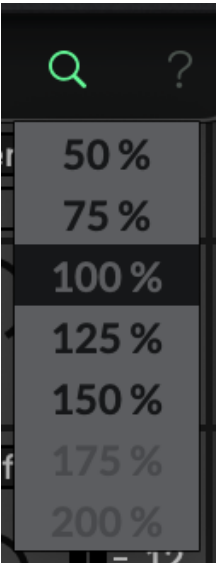
This will drop the plug-in into 'Advanced Mode', exposing more settings, and allowing you to tweak the 'under-the-hood' behaviour of the plug-in.

Scale/Zoom

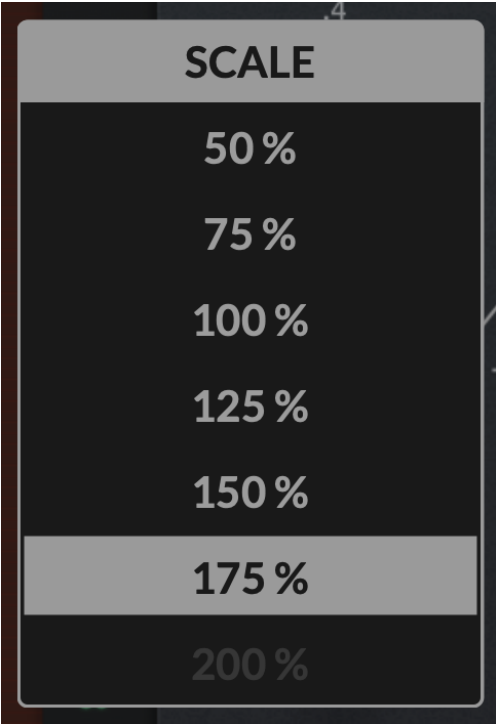
The scale/zoom menu allows you to resize your plug-in from 50% up to 200%.

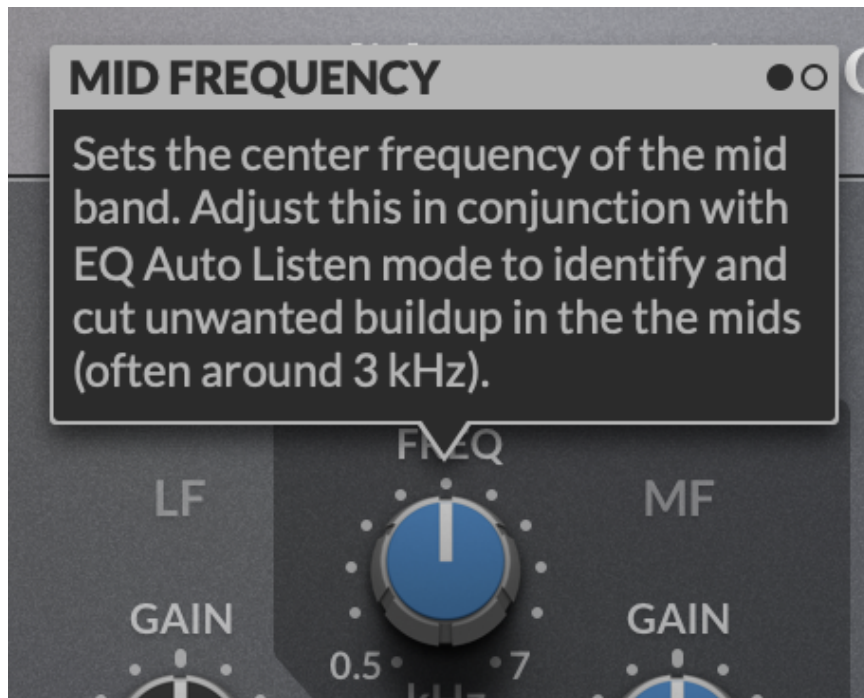


Note that if resizing would cause the plug-in to go offscreen, then this option will be disabled. This is designed to prevent DAW resizing bugs that exist in some DAWs.

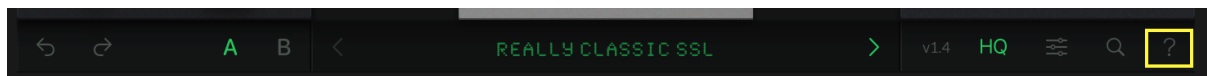


You can also right-click anywhere on the background of the plug-in to change the scale.



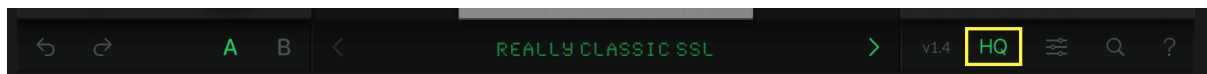


This plug-in features built-in contextual help. To turn this feature on, click the '?' in the bottom right-hand corner. Mouse over elements of the GUI to see some information about the feature.



Click the tooltip to cycle through the pages.

HQ mode



Click the HQ button introduces processing such as oversampling under-the-hood - allowing you to sacrifice CPU for higher quality audio, especially when introducing harmonics using the pre-amp in the input section, and if driving the VCA fader output.