

4K B Plug-in User Guide

Introduction

The **SSL 4K B channel strip plug-in** brings the elusive **SL 4000 B console** (of which only six were built) to your DAW. In the classic channel strip formula, the **4K B** features high- and low-pass filters, a four-band equaliser, compressor/limiter and gate/expander, along with harmonically rich mic pre & VCA fader emulation.

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** and **SSL UF8** hardware controllers.



Key Features

- Authentic **SL 4000 B-series analogue console** emulation – back to where it all began!

- Brings the elusive and rare sound of the **SL 4000 B console** (of which only 6 were built) to your DAW
- Installed in the 80s in 'The Stone Room' at **Virgin's Townhouse Studio** (London), **Le Studio** (Montreal) and **Record Plant** (LA)
- Favourite of engineers and producers such as **Steve Lillywhite, John Leckie, Mick Glossop, Hugh Padgham, Tony Platt** and many more
- Full of **tone, punch** and **rich non-linear analogue character**
- **Mix 'n' match** the 4K B with Channel Strip 2, and control them all from the **SSL 360° Plug-in Mixer** – your virtual SSL console
- **First-class integration** with the **SSL UF8** and **SSL UC1** controllers for **hands-on control**
- Add **analogue saturation and drive** to your tracks with the **pre-amp** section and **VCA fader** saturation
- Expanded output section features a **virtual fader** and stereo image control with the addition of **Fader Level, Pan** and **Width** parameters
- Detailed model of the original SL 4000 B console, developed by emulating the circuits from the original schematics down to a component level
 - Jensen JE-115K-E Transformer mic pre-amp
 - Original 4000-series EQ circuit, the precursor to the O2 Brown Knob EQ of the 4000 E
 - B-Series channel compressors, featuring a circuit topology that is based on the SSL Bus Compressor – peak detection and a sidechain VCA in a feedback loop
 - Unique 'ds' mode re-purposes the compressor to de-ess your signal
 - dbx 202 'black can' VCA fader
- Compressor mix control for **parallel compression**
- Enhanced UC1/UF8/SSL 360° Plug-in Mixer integration for **Live** (VST3), **Studio One** (VST3) and **REAPER** (VST3): including DAW Track Follow and solo/cut synchronisation with your DAW
- HQ mode lets you sacrifice CPU for higher quality – introducing processing such as oversampling under-the-hood
- Pro Tools EQ and dynamics integration
- Built-in help – simply click the '?' and mouseover the GUI to find out more
- 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!

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.

macOS M1/ARM Support

This plug-in is provided as a universal binary for macOS and features native M1 support.

Operating Systems

macOS	Monterey (12), Big Sur (11), Catalina (10.15)
Windows	11, 10

Hosts

- Logic Pro 10
- Pro Tools 2022
- Ableton Live 10
- Studio One 5
- Cubase 11

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, plus use the 'ds' ratio and release settings to drop the compressor into 'de-esser' mode.

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) Version Number

The current version number of the plug-in.

11) 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.

12) 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.

13) 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.

14) A/B

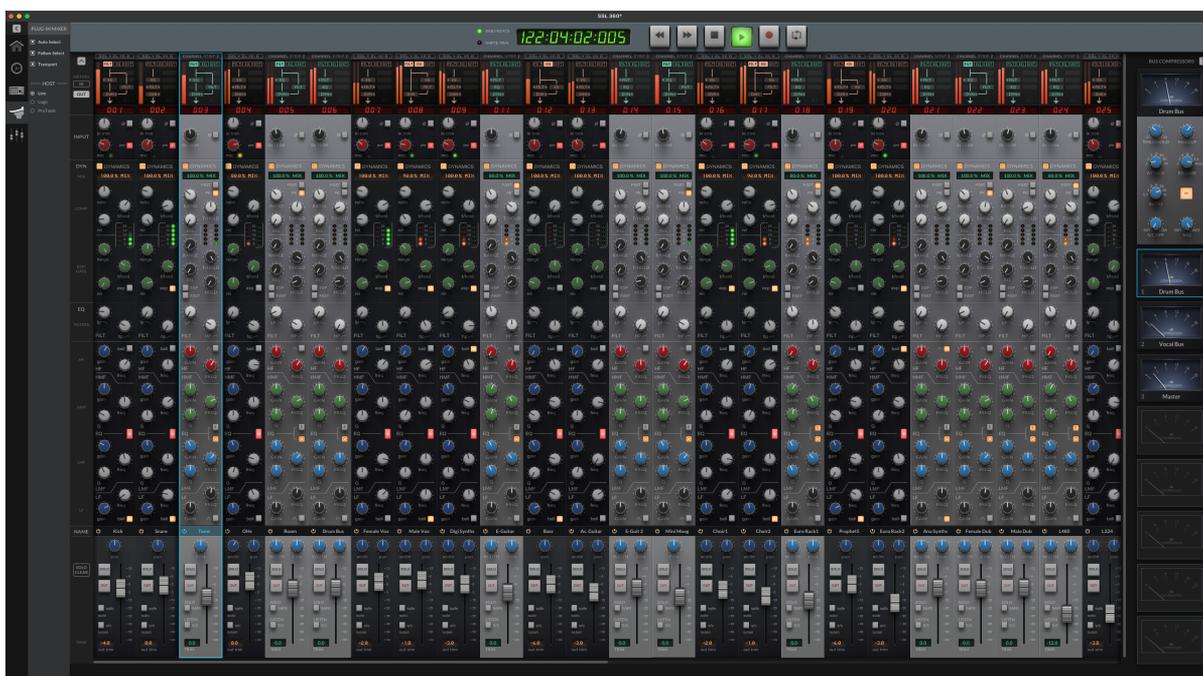
The A/B buttons allow you to temporarily store two plug-in states, and quickly compare between them

15) Undo/Redo

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

360° Plug-in Mixer + UC1/UF8

The SSL 4K B is a 360-enabled plug-in, and integrates with the SSL 360° Plug-in Mixer.



Since the 4K B 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 UC1 User Guide.

SSL UC1

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 [here](#).

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 UC1 user guide [here](#).

To find out more about the UF8, visit the product page on our website: [UF8 | 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 affecting 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

1) Input Trim

Trim the input signal ± 20 dB.

2) Polarity (ϕ)

Inverts the phase of the input signal.

3) Mic Gain

Adds +20-70 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

4) Pre Toggle

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



Equaliser Section

The 4000 B-series EQ was the precursor to the 4000 E-series EQ, and is every bit as musical and full of character.

In addition to the four EQ bands, low- and high-pass filters can be activated into the circuit. Both filters operate at 12 dB per octave roll-off.

1) Low-Pass Filter

Engaged when moved from the out position, with a cutoff from 35 kHz down to 3 kHz.

2) High-Pass Filter

Engaged when moved from the out position, with a cutoff from 10 Hz up to 350 Hz.

3) HF Band

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

4) MHF Band

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

5) EQ IN

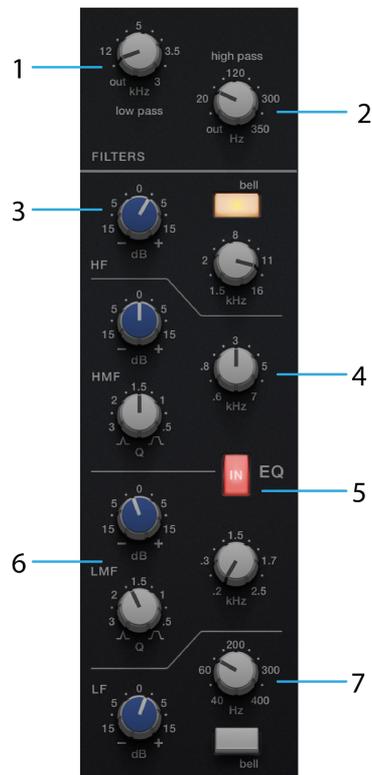
Toggles the EQ processing in or out.

6) LMF Band

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

7) LF Band

Low frequency shelf with ± 15 dB gain from 40 Hz to 400 Hz, with optional bell curve modifier.



Dynamics Section

The Dynamics Section in the 4000 B-series console channel strip is unlike any other SSL channel dynamics modules (4000 E-series, 9000- series etc.). It has a design more similar to the topology of the SSL Bus Compressor. The compressor features three fixed ratios, 2:1, 4:1 & 10:1 with an additional 'ds' mode.

There are six release settings including the 'ds' and 'auto'.

The gate/expander section features a gate with up to -35 dB signal attenuation, variable threshold & release times between 10 ms to 1.6 s. The interesting characteristic is the hysteresis; where the gate close level is lower than the gate threshold once it's passed the threshold, resulting in a musical and natural gating at higher thresholds.

The option to change into expander mode is available via the EXP button, providing a very gentle ratio and full soft knee characteristics for near-transparent signal attenuation.

The compressor features a COMPRESSOR MIX control, allowing the compressed signal to be blended in parallel with the uncompressed signal. Setting the COMPRESSOR MIX to 100% means the signal is completely wet (processed), 50%

means equal contribution of wet (processed) and dry (unprocessed), down to 0% where no compressed signal is audible and the signal will not be compressed at all.

1) Compression Ratio

Stepped compression ratios 2:1, 4:1, 10:1 and 'ds'. The 'ds' setting is a fixed 10:1 with an additional sidechain filter. When 'out', the compressor is bypassed.

2) Compressor Threshold

Set the threshold from +10 to -20 dB. The threshold determines the level above which compression occurs.

3) Compressor Release

Fixed release ranges from .2 ms to 1.6 ms with additional 'ds' & auto release options.

4) Dynamics Engage

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

5) 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.

6) Gate/Expander Range

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

7) Gate/Expander Threshold

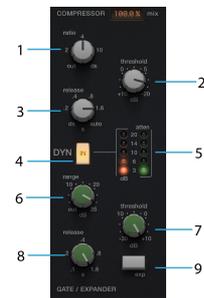
Sets the threshold above which the the gate/expander will be opened.

8) Gate/Expander Release

Sets how long the signal remains audible after the gate/expander closes.

9) Expander Button

Switches the gate to expander mode with a gentle curve, for subtler control of level below the threshold.



How to use the SL 4000 B de-esser mode

Set the COMPRESSOR RATIO and RELEASE controls to 'ds'.

The ds ratio is a 10:1 ratio with filtered S/C input signal, delivering broadband compression triggered by sibilance. The 'ds' release is variable in accordance to the signal between 30 & 50 ms. This is a much faster minimum release than you would normally expect from an SSL Dynamics section.

Note COMPRESSOR RATIO & RELEASE in 'ds' work independently of each other & can be utilised in very creative ways. E.g you can use the fast 'ds' release without using the 'ds' ratio, for aggressive compression.

Output Section

The Output Section adds additional harmonic saturation with the modelled dbx 202 'black can' VCA fader from the 4000 B 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 of WIDTH & PAN controls for (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.

1) 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.

2) 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.

*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.

3) Solo**

Engages channel solo.

4) CUT**

Engages channel cut (mute).

**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.

5) 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' black 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.

6) 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.

7) Sidechain Listen

Solos the sidechained signal.

8) 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.

1) Filters to Sidechain

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



2) EQ to Sidechain

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

3) Routing Order

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

4) External Side Chain

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

5) 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'.

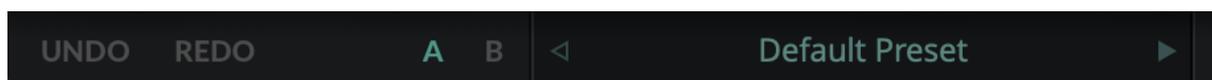
Presets

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.

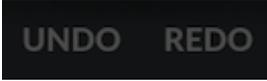
Revert Changes and Delete

- **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.

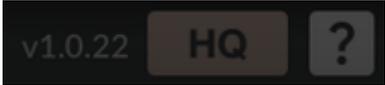
UNDO/REDO

A dark rectangular button with the text "UNDO" and "REDO" in a light, sans-serif font, separated by a small gap.

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

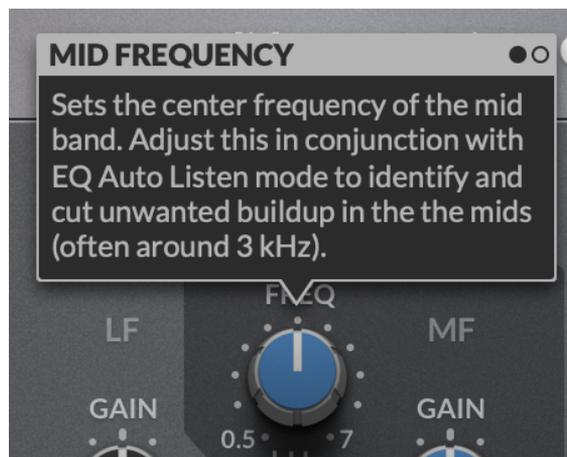
- **UNDO** undoes the current action in the history stack.
- **REDO** re-does the next action in the history stack.

HQ mode

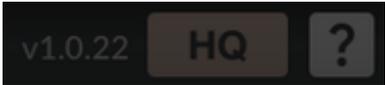
A dark rectangular button containing three elements: the text "v1.0.22", the text "HQ", and a question mark icon, all in a light, sans-serif font.

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.

Built-in Help



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.

A dark rectangular button containing three elements: the text "v1.0.22", the text "HQ", and a question mark icon, all in a light, sans-serif font.

Click the tooltip to cycle through the pages.