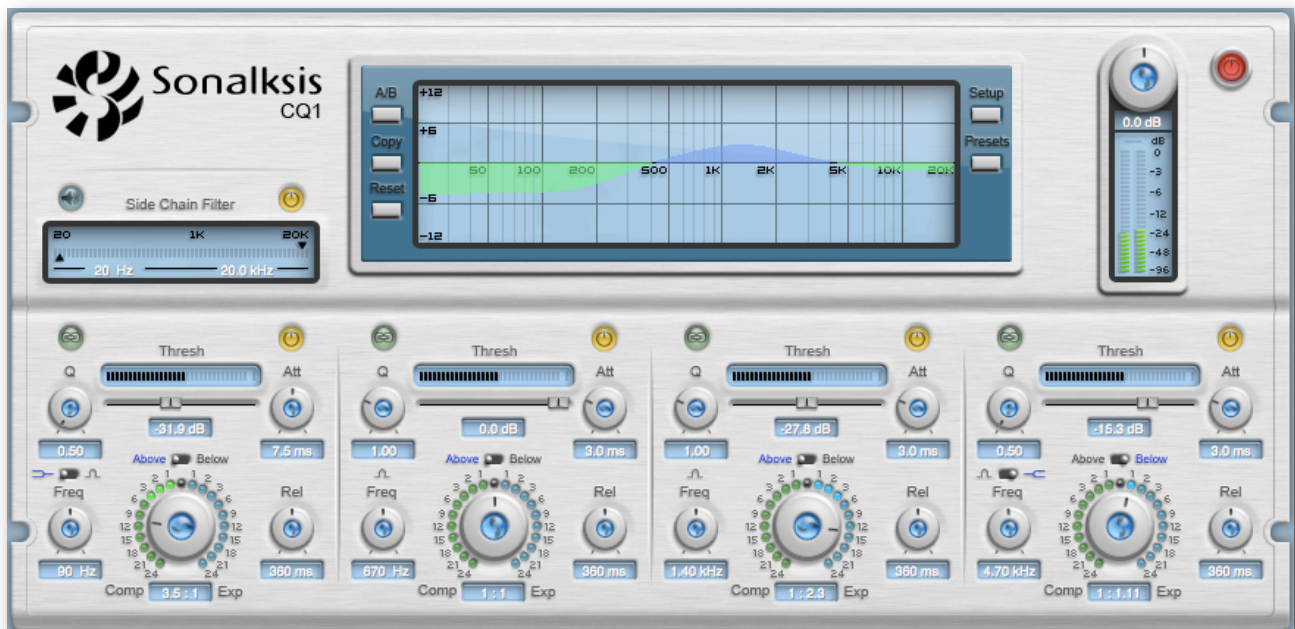




# SONALKSIS

## CQ1



# Operation Guide

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# Sonalksis CQ1

## Introduction

This operation guide describes the features, operation and applications of the CQ1. For detailed installation instructions, please refer to the Sonalksis *Plug-in Manager User Guide*. You can read more about general features common to all Sonalksis plug-ins in the *Universal Plug-in User Guide*.



*The Sonalksis CQ1*

The Sonalksis CQ1 is a multi-band, frequency-selective dynamics processor, allowing independent compression or expansion of four freely adjustable filter bands. While typical multi-band dynamics processors utilise cross-over partitioned frequency bands and are designed primarily to compress composite program material, the CQ1 uses the principle of 'dynamic equalisation' and is therefore suitable for a much broader range of applications. The CQ1 greatly extends the possibilities of dynamics processors with the ability to refine specific frequency compression or expansion with unparalleled accuracy.

The CQ1 is far more sophisticated than standard 'frequency conscious' multi-band compressors. Each explicitly selectable frequency band may be compressed or expanded either above or below a threshold, with a variable ratio, up to a user definable maximum gain or attenuation.

In addition to general program compression/expansion, the CQ1 will find uses in applications that could otherwise present difficulties for less flexible processors, including multi-source separation, high/low frequency enhancement, transient enhancement and de-essing or pop/squeak reduction.

## Installation



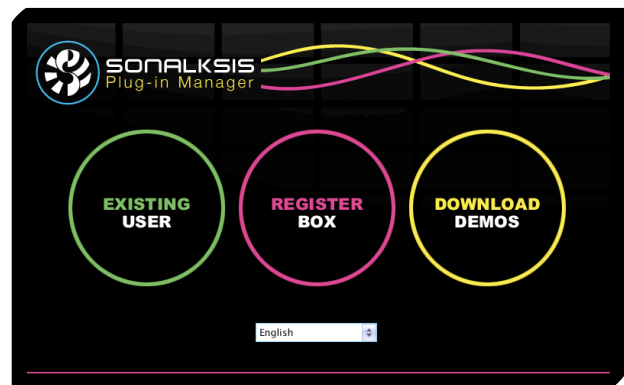
### ...with the *Plug-in Manager*

All Sonalksis plug-ins are installed using the 'Plug-in Manager'. The Plug-in Manager simplifies the task of managing multiple Sonalksis plug-ins, and takes care of downloading, installing, authorising and updating your Sonalksis plug-ins.

Detailed instructions can be found in the *Plug-in Manger User Guide*.



If your audio computer is not internet enabled, you must go to the 'Product Activation' section on the Sonalksis website in order to obtain an authorisation file. You will need the 'Activation Code' that is displayed when you run the Plug-in Manager on your offline system. You can then download your authorisation file which you simply need to drag-and-drop onto the Plug-In Manager window.



### Authorisation

If your computer is internet enabled, all license authorisation takes place automatically. When you install Sonalksis plug-ins, any plug-ins for which you have licenses will be authorised by the Plug-in Manager.

Unlicensed Sonalksis plug-ins will function for 14 days after installation without authorisation, after which the plug-ins will no longer process audio. After this period, you can still reactivate a plug-in by obtaining a valid license.

## Operation

This section describes the functions of the CQ1. You can read more about general features common to all Sonalksis plug-ins in the *Universal Plug-in User Guide*.

The CQ1 has a sophisticated set of controls with which to refine the compression or expansion of up to 4 separate filter bands. You can effectively define a filter, and then compress or expand only the range of frequencies within this filter, using an independently specified range of frequencies to key the compression or expansion process.

The plug-in also uniquely enables the possibility of inverting the compression or expansion, allowing compression both above and below the threshold (upwards and downwards compression), and expansion below and above the threshold (downwards and upwards expansion).

The CQ1 is a dynamics processor first and foremost, designed for frequency-selective dynamics purposes more than dynamic-filtering purposes, and although these two applications are to some extent interchangeable, if greater subtlety is required it can be achieved with the Sonalksis DQ1, the sister product of the CQ1, which is designed first and foremost as a dynamic-equaliser rather than a frequency-selective compressor/expander.

Typical uses of the CQ1 may include:

- High/Low frequency 'enhancement' - when material is lacking low/high end, but a standard EQ sounds too muddy with low frequency boost or too sharp with high boost, use the CQ1 with high/low shelved 'below threshold' compression. The dynamic nature of the boost relieves the sharpness or muddiness.
- Multi-source separation - if you need more Drum kit separation so that sources can be treated individually, try the CQ1 with multi-band 'below threshold' expansion, exaggerating the separation of kick, snare or hi-hat frequency ranges.
- Transient enhancement - When you want to emphasise the percussive nature of an instrument without emphasising the entire mix, use the CQ1 tuned only to the fundamental instrument range, with 'above threshold' expansion
- De-ess, Pop/Squeak reduction - if you want to reduce annoying guitar fret squeaks, tune the CQ1 side-chain filter to the squeak frequency, and centre a hi-Q notch with 'above threshold' compression; this will compress the squeak without removing any other unrelated frequencies.

## Dynamics Sections



There are four dynamics sections, each with a selectable frequency and bandwidth, and a set of compressor / expander parameters. A dynamics band is set up in exactly the same way as a standard compressor / expander, with the addition of controls to select the range of frequencies affected (using normal EQ-type parameters).



The *IN/OUT* button switches the entire dynamics band in or out of circuit. When a dynamics band is switched out, the meters and text displays will dim, giving a clear indication of the excluded status of the band.

### Selecting the frequency range to compress/expand

All compression or expansion for a dynamics band is active only on the frequencies defined by the filter parameters. All dynamics bands can compress/expand 'bell-shaped' [otherwise known as 'parametric'] frequency ranges, and the upper and lower dynamics bands are capable of compressing/expanding 'shelving-shaped' frequency ranges. These filter ranges are set up using standard equaliser type parameters.



The **Freq** and **Q** parameters determine the range of frequencies affected by the respective dynamic band.

Dynamics Band 1 and Band 4 both have **'bell / shelf'** selectors to switch between standard parametric and shelving filter styles.



### Setting up the compression / expansion

Once the frequency range to be compressed/expanded is selected, a threshold level must be set. Depending on whether above or below threshold processing is to be applied, the **Above/Below** switch should be set accordingly



The **'Above/Below'** switch underneath the **Thresh**'fader determines whether the dynamics process is activated above or below the set threshold.



The 'input meter' monitors the signal used to key the dynamics band. The slider beneath this meter can be used to set the threshold for the dynamics band. If 'above threshold' compression/expansion is selected, the dynamics band will only become active when the input meter exceeds the level of the threshold fader. If 'below threshold' compression/expansion

is selected, the dynamics band will only become active when the input meter is below the level of the threshold fader.

Threshold levels may be linked across dynamics bands: when the 'Link' button is activated, the threshold of any other dynamics band with a Link also activated will be set identically to this band.



When the filter is set up and the threshold selected, the amount of compression or expansion can be defined, and the attack and release times set.

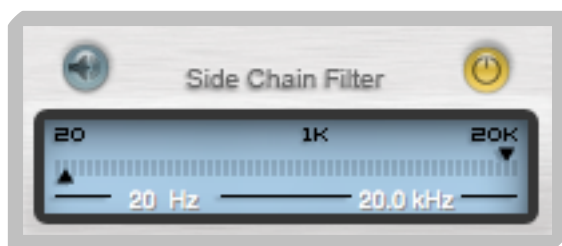


The large circular knob sets the 'Ratio' for compression or expansion – turning it towards the 'Exp' label results in expansion and turning it towards the 'Comp' label results in compression; the exact ratio setting is displayed beneath the control. The circular LED's surrounding the 'Ratio' knob actively display the amount of compression or expansion.

The Attack and Release parameters allow control over the level detection time-constants. The attack-time always controls the time taken to initiate the compression or expansion, regardless of whether above or below threshold processing is activated.




## Side-Chain filter section



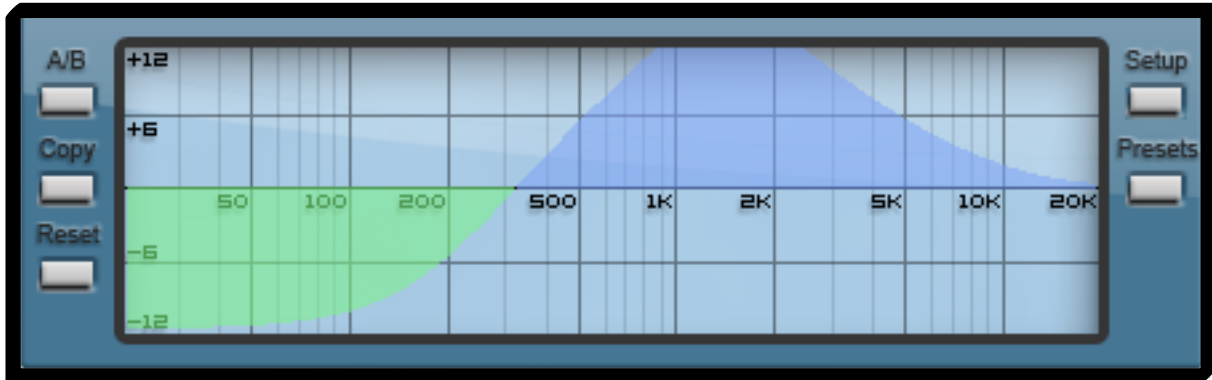
The side-chain filter section can be switched in circuit, allowing the user to select or remove a particular frequency band from the dynamics sections' level-detection circuits. Therefore with careful use of the side-chain filter, the dynamic compressor/expander sections can be activated by a specific frequency band, as well as acting on an independent selected frequency band.

This feature is enormously flexible, as it effectively allows any frequency to determine the dynamic behaviour of any other frequency.

- The left hand side and right hand side black 'pointer' sliders control the cut-off frequencies of the low cut and high cut filters respectively.
- The **in/out** control switches the filters in and out of circuit
- The **listen**  button allows you to hear the currently filtered side-chain signal.

When the 'listen' mode is activated, the side-chain filters will automatically be switched in circuit (otherwise there would be no side-chain signal to hear). When the side-chain circuit is in 'listen' mode, the icon on the 'listen' button will flash, indicating that the side-chain signal is being routed directly to the plug-in output. The graph in the LCD window will also display the (static) frequency response of the side-chain filter section while in 'listen' mode.

## Global Programme Section



This section includes the graphical 'LCD' display, the **Setup** and **Presets** buttons, and three buttons that affect global parameter settings: **A/B**, **Copy**, and **Reset**.

In general use, the graphical display provides real-time visual feedback on the dynamic amplitude-frequency response of the plug-in. A graph shows the response across the audible spectrum – from 20Hz to 20kHz. It is important to note that the response shown on this graph represents the real attenuation or gain across the frequency range, unlike the dynamics band meters which represent gain or attenuation with respect to the process taking place

The **Setup** button is used to access the global preferences for the plug-in. One of these preferences allows the user to set the scale of the graphical display. See [Preferences](#) for further details on the application of preferences.



The **A/B**, **Copy**, and **Reset** buttons relate to a snapshot of the plug-in parameters as a whole. The collection of all parameter settings is known as a 'programme'. The CQ1 is equipped with a temporary programme buffer [buffer 'B'] that can store an entire set of control parameter values at the touch of a button. The active parameter storage buffer [buffer 'A'] can be copied to or swapped with buffer 'B' with one click of the mouse. This is particularly useful when auditioning two different settings in quick succession in order to decide on the most appropriate sound.

Clicking the **Reset** button will set all plug-in parameters to their default values.



## Output Section

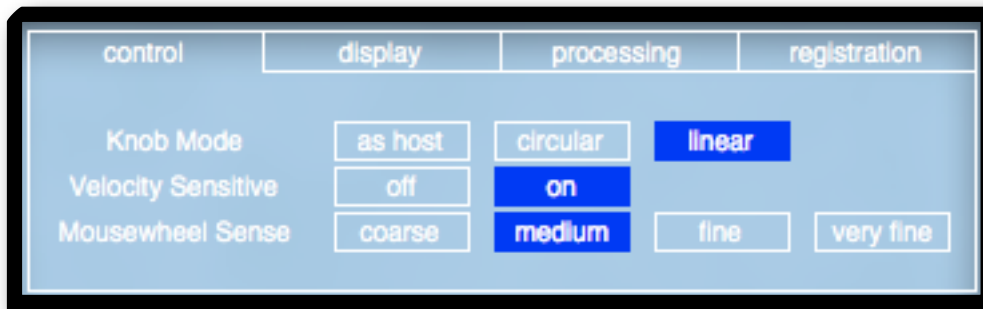


The 'Output Section' consists of a master **Power** (on/off) switch, a meter that monitors the signal level at the output of the processor, and a control to change the gain of this output level.

The Output meter defaults to a PPM ballistic, with a range from –96dBFS to 0dBFS. An 'Over' indicator LED illuminates when the output signal reaches 0dBFS. Ideally the output signal should not exceed 0dBFS, hence the **Output** gain control should be used to attenuate the signal when high levels of upwards compression or upwards expansion are applied.

The master **Power** button is an effective 'bypass' control that may be used for simple 'In/Out' comparisons. When the plug-in is switched off, the numerical parameter displays will disappear and the meters and graphical display will darken, giving a clear visual indication of the bypassed status of the plug-in. Your host software may also provide a bypass to the plug-in, however using the bypass on the CQ1 can provide superior results, as it guarantees a glitch-free on/off transition. This is imperative if you are automating the control.

## Preferences



There are a number of setup options and preferences that are user-definable. The preferences are accessed with the **Setup** button on the right of the graphical display. Click the button first to access the preferences, and again to exit the setup screen once the preferences are set.

### Control Preferences

These preferences relate exclusively to mouse control settings.

- **Velocity Sensitive Mode** – Selecting this preference enables the size of any knob/slider control adjustments to be relative to the speed of mouse movement. Thus when enabled, a very slow mouse movement will induce a very small change in the respective parameter value, while a fast movement will induce a large change.
- **Knob Mode** - sets the default knob mode. When 'as host' is selected, the knob mode is requested from the host software (assuming the host supports this feature). Otherwise the knob mode defaults to the selected setting.
- **Mousewheel Sense** - controls the sensitivity of the mouse wheel. When set to 'very fine', a large move of the mouse wheel will introduce a very small change in the respective parameter. When set to 'coarse', a small movement will introduce a relatively large change in the parameter.

### Display Preferences

These preferences relate exclusively to settings that directly affect the interface display.

- **Graph Range** - The graph (displaying the overall gain reduction or expansion with respect to frequency) is drawn to scale, with a maximum or minimum gain set via this preference. So when set to '12' dB, the graph is drawn showing a maximum gain or attenuation of 12dB, and when set to '24' dB the graph is drawn showing a maximum gain or attenuation of 24dB.
- **Meter Type** - allows the user to set the ballistic of the output meter. The PPM meter type gives a fairly accurate indication of peaks while preserving a visual signal dynamic that reasonably resembles the audible dynamic. The 'True Peak' setting will ensure that the meter displays an entirely accurate depiction of the signal peaks, however this meter type may appear visually less coupled with the audio.

- **Clip Led** - When set to 'instant', the clip LED will illuminate only when the output signal exceeds 0dBFS, switching off the instant the signal falls below this level. When set to '5 Sec', the clip LED will stay illuminated for a minimum of 5 seconds, regardless of how briefly the signal exceeds 0dB. When set to 'clicked', the clip LED will remain illuminated once the signal exceeds 0dBFS, and will only switch off when the user clicks on it.

## Processing Preferences

These preferences relate exclusively to settings that directly affect the audio processing.

- **Max Compression** – Determines the maximum amount of upwards or downwards compression that can be applied to any dynamics band.
- **Max Expansion** – Determines the maximum amount of downwards of upwards expansion that can be applied to any dynamics band.

Note that upwards (below threshold) compression technically results in positive gain (when the signal is below the threshold), while downwards compression results in attenuation when the signal is below the threshold [and vice versa with respect to expansion]. Therefore when the maximum expansion is set to '6dB', it is still possible for the signal to be boosted by more than 6dB if upwards compression is used and the 'max compression' setting is 12dB or greater.

Similarly downwards expansion results in signal attenuation, while upwards expansion results in positive gain. Thus setting the 'maximum compression' to 12dB does not guarantee the signal is never attenuated by more than 12dB, assuming the 'max expansion' is set to 18dB or more and 'below threshold' expansion is used.

Bearing this in mind, the Max Compression/Expansion settings should not be thought of as methods to limit the gain reduction or increase, but as methods to limit the maximum compression or expansion of dynamic range.

## Support



You can visit the [Sonalksis website](#) to find the latest product information. If you are a registered user you will automatically receive relevant information about new releases and updates, unless you unsubscribe from this service.

All Sonalksis plug-ins are installed, authorised and updated using the 'Plug-in Manager' application. You can download this application from the Sonalksis website.



If you encounter any difficulties when installing or using our products, please ensure that you have read all appropriate documentation, including the relevant user guides and FAQ on our website before contacting us.



If you are unable to resolve your issue after reading all appropriate documentation, you can log in to your Sonalksis user account on our website, and access the 'Support' section where you can request direct assistance.

[www.sonalksis.com/support](http://www.sonalksis.com/support)

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## Appendix: Technical Specifications

### CQ1 Supported Sample Rates:

- 44.1 kHz
- 48 kHz
- 88.2 kHz
- 96 kHz
- 176.4 kHz
- 192 kHz

### CQ1 Control Ranges:

Band No.	Filter Response Type/s	Ratio Range	Frequency Range	'Q' / Slope	Attack Range (ms)	Release Range (s)	Min/Max Thresh (dBFS)
1	Bell / Shelf	10:1 to 1:3.5	15 Hz - 510 Hz	0.4 - 10.0 / 0.5 - 5.0	1.0 - 50.0	0.05 - 2.5	-60 - 0
2	Bell	10:1 to 1:3.5	50 Hz - 8.5 kHz	0.4 - 10.0	1.0 - 50.0	0.05 - 2.5	-60 - 0
3	Bell	10:1 to 1:3.5	100 Hz - 18.0 kHz	0.4 - 10.0	1.0 - 50.0	0.05 - 2.5	-60 - 0
4	Bell / Shelf	10:1 to 1:3.5	1.0 kHz - 22.0 kHz	0.4 - 10.0 / 0.5 - 5.0	1.0 - 50.0	0.05 - 2.5	-60 - 0

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