SONALKSIS

SV-517 EQ

Operation Guide

Contents

Sonalksis SV-517 EQ

Introduction

This operation guide describes the features, operation and applications of the SV-517 EQ. 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 SV-517 EQ

The Sonalksis SV-517 EQ is a seven band tonal equaliser developed for professional audio sound sculpting. It employs unique design methods to provide a tone control with true 'Analogue' characteristics, whilst offering a flexibility that can only be obtained by a digital processor.

Whether you need to add some air to a vocal track, or sweeten an entire mix, the SV-517 EQ is suitable for both mixing and mastering environments. You can choose from a variety of filter styles, modelling many classic and contemporary analogue responses, and simple switches enable selection of the appropriate style for your programme material.

The SV-517 EQ provides variable-slope high and low cut filters, as well as 5 bands of parametric control with switchable low and high shelving sections. Additionally, three styles of band-pass and three two styles of shelving filter are globally selectable, each with a switchable asymmetrical cut/boost characteristic. Thus in combination there are 14 different styles of EQ, across 7 filter bands. Each style provides a unique characteristic, and has been carefully chosen for its particular sonic aesthetic. While some styles are based on traditional designs, others present unique and innovative new models.

The SV-517 EQ is not an 'esoteric' processor, rather it aspires to the highest quality ideals of transparent operation. However, as part of the 'SV' range of products from Sonalksis, it follows a design philosophy that aims to maintain traditional analogue processing qualities. In order to achieve this, the SV-517 EQ uses 'state-space analog' technology, a proprietary algorithm developed by Sonalksis to physically model real analogue circuits.
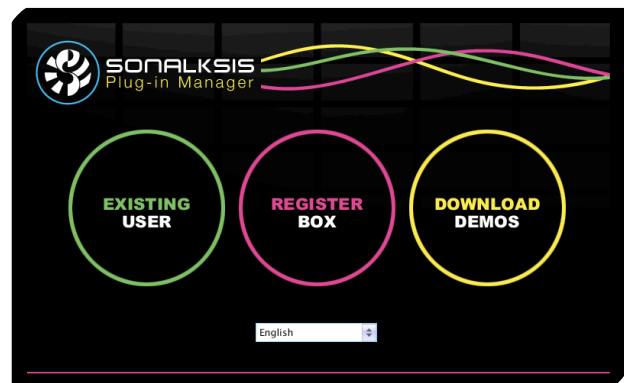
Installation

...with the *Plug-in Manager*

All Sonaksis 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*.

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.

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.

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 SV-517 EQ. You can read more about general features common to all Sonalksis plug-ins in the *Universal Plug-in User Guide*.

The EQ interface consists of several distinct sections:

• Low / high 'Cut' filter sections
• Bell / Shelf [selectable] filter sections
• EQ Style section
• Output section
• Global programme section

The Low / High 'Cut' filters

The high and low 'cut' filters will determine the remaining bandwidth of the signal to be equalised, completely removing any unwanted frequencies at the peripheries of the audible signal.
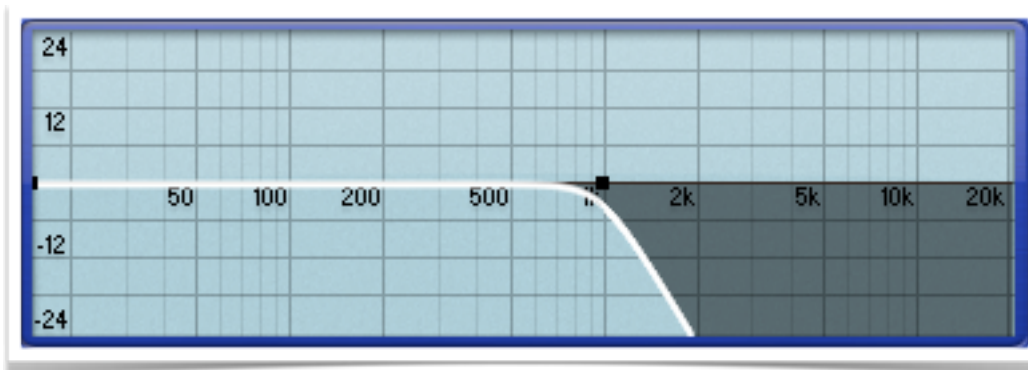
The high and low cut filter sections are fourth order maximally-flat filters, allowing variable roll-off slopes of up to 24dB per octave. There are two available controls:

•The Frequency control sets the corner frequency of the filter.

•The Slope buttons control the gradient of the filter roll-off. When the Slope is set to '0', the filter is effectively switched off.

The maximally-flat design of the filters ensures the roll-off slope can be altered without introducing abrupt phase inconsistencies into the response. This means that standard operations - such as cutting microphone 'rumble' - can be carried out completely transparently with minimal impact on the audio signal.

*High-Cut filter with 24 dB per octave slope and corner frequency of 1kHZ*

The Bell / Shelf filter sections

There are five Bell filter sections in the SV-517. Buttons on the high and low Bell sections enable these circuits to be switched to Shelf filters. Several different 'styles' of Bell and Shelf filter are provided, with the ability to model some classic responses. Each style offers unique qualities appropriate for different types of programme material.

Bell filters

The 'Bell' filter is also known as a 'parametric' or 'Band-pass' filter. The term 'Bell' is perhaps the most descriptive, as the frequency response curve is bell-shaped.
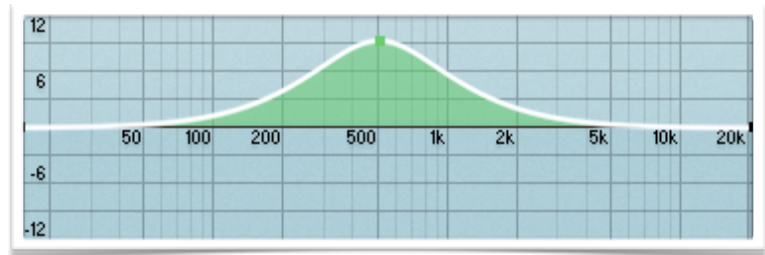
There are three main parameters that control the Bell filter sections:

•Frequency – selects the centre frequency of the filter.

•Gain – sets the amount of boost or attenuation of the affected frequencies.

•Q– controls the bandwidth of the filter frequency range.

A fourth control, the in/out switch, allows the individual Bell filters to be switched on or off.

> Bell filter types are prolific in the world of equalisers, although control laws and other factors mean that sonic differences exist between them. Some Bell filter types exhibit a clinical accuracy, while others are renowned for their gentler characteristics. Different Bell types are appropriate for different uses, and for this reason the SV-517 EQ allows the global Bell characteristics to be altered via settings in the 'Style' section. In this way, different classic and contemporary Bell responses can be modelled. For more details see The Style Section.

Shelf filters

The high and low frequency equaliser sections can be switched, via the *Shelf-Select* button, from a Bell response to a Shelf-type response.

The vast majority of existing analogue shelf-type equalisers supply the user with frequency and gain controls only. There is another parameter that greatly affects the sound of the shelving filter: the 'slope' of the shelf. This parameter is fixed in different ways in many classic equaliser units, with some shelf filters giving a very gradual slope, while others exhibit a very steep transition.
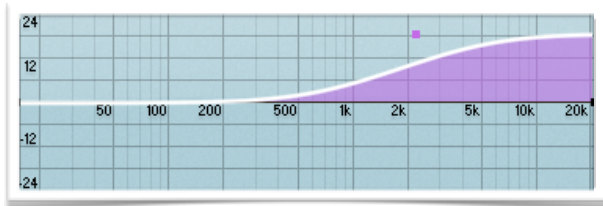
Shelf- response exhibiting gradual slope
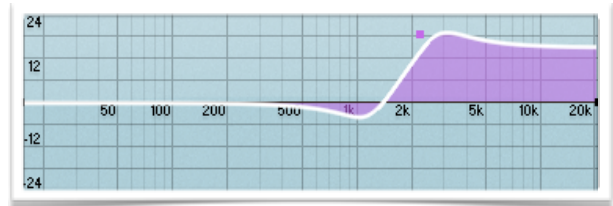
Shelf-response exhibiting steeper slope

The SV-517 supplies controls for the standard shelf frequency and gain parameters. However the equaliser also allows control of the shelf 'Slope' parameter.

When Shelf Select is activated, the frequency knob becomes the controller for the shelf corner frequency. The gain knob retains control of the boost/attenuation, and the respective Q control becomes the slope adjuster. Note that the Q parameter retains its 'slope' value even when the filter is switched from Bell-response to Shelf-response. This can be useful when auditioning both filter types to select the most appropriate one.

In standard analogue filter designs, a side effect of altering the shelf slope is that peaks and dips are created around the shelf transition frequencies. Exactly How these occur differs with equaliser design, thus the SV-517 allows the peak/dip characteristic to be altered via the 'Style' parameters, in order to model the established classic shelf styles. For more details see The Style Section.

The Style Section

The 'Style' section provides fundamental control over the characteristics of the Bell and Shelving filters. There are four controls in this section: the upper button and knob modify the characteristics of the Bell filter sections, while the lower knob and button influence the characteristics of the Shelf filters.

Bell Styles

The upper *Type* control primarily affects the gain-bandwidth control law of the Bell filters. There are three selectable types:

I.   *a classic gentle curve, with a bandwidth that sharpens at greater boost settings.*

II.   *an extremely soft response at low boost settings, with a bandwidth that narrows rapidly as the gain approaches its maximum.*

III. *a clinical style capable of precision sculpting; when used in conjunction with the 'symmetrical response' setting, this is the most contemporary sounding model, with a bandwidth that is truly independent of the gain.*

The Symmetrical/Asymmetrical switch below the Bell Type'control can be used to ensure the attenuating response curve is symmetrical with the boosting curve (switch on or 'down').

The normal state of the equaliser is asymmetrical (switch 'up'). With regard to the Bell filters, this type of response is a natural consequence of analogue filter design, and is typical of some classic equalisers. Generally, this asymmetry results in a relatively sharp attenuating bandwidth that becomes even narrower as more attenuation is applied. If a standard symmetrical response is required, make sure the 'Symmetrical Bell' switch is down.

The actual asymmetry of the Bell filters differs according to the selected *Type*. The attenuating response of *Type I* and *Type II* is a little broader than the 'true-Q' response of *Type III*. This character is unique to the Sonalksis SV-517, and is the result of extensive research and listening tests, which suggest that psycho-acoustically this ratio of cut to boost bandwidth is sonically appealing.

Shelf Styles

The *Shelf* control primarily affects the peak/dip response of the Shelf filters. There are three selectable types:

I.   When boosted, as the shelf slope is made steeper, an increasing 'dip' is introduced in the response curve around the shelf transition frequency [the frequency at which the shelving begins]. At the most gradual slope settings, this type retains a subtle increase in gradient towards the corner frequency.
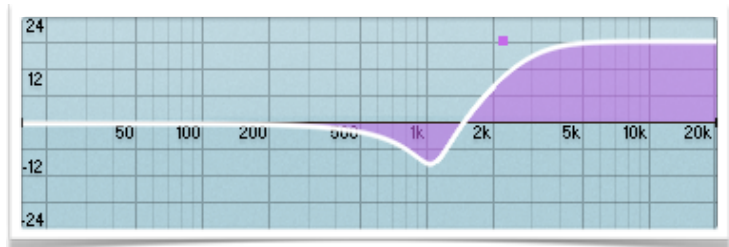
II. When boosted, as the shelf slope is made steeper, an increasing dip is introduced in the response curve around the shelf transition frequency, and an increasing 'peak' is introduced around the shelf corner frequency. At its most gradual, the slope of this shelf is slightly more even than type I.
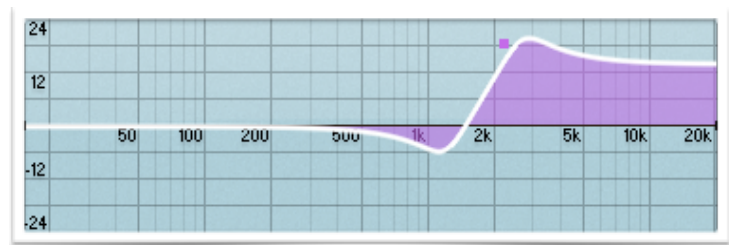
III. When boosted, as the shelf slope is made steeper, an increasing peak is introduced in the response curve around the shelf transition frequency.
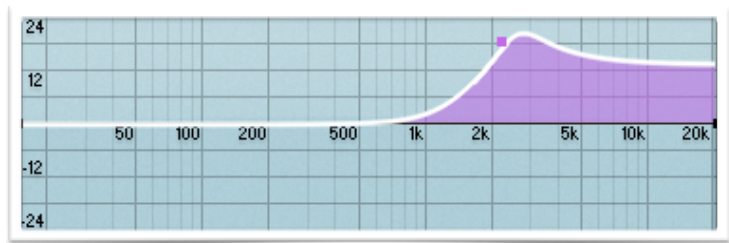
In conjunction with the *Slope* parameter, the response produced by shelf *Type I* will match many highly regarded analogue equalisers. The responses attainable using shelf *Type II* are not so prolific, however there are a small number of highly regarded classic units that achieve their unique sound with this style of shelf. Shelf *Type III* is naturally more resonant than the other types and is audibly less subtle in character.

The Symmetrical/Asymmetrical Shelf button below the Shelf Type control can be used to ensure the attenuating shelf response is symmetrical with the boosting response (switch in the 'down' position).

As with the Bell filters, the normal state of the shelving filters is asymmetrical. This asymmetry in the shelving filters is unique to the SV-517. When the shelf is symmetrical, the dip in the response becomes a 'peak' during attenuation. This can be obtrusive when cutting low or high frequencies, as it produces a small amount of unwanted boost around

the transition frequency. A resonant 'peak' or 'dip' is required in order to increase the shelf slope, however the asymmetrical shelf function maintains the slope by ensuring a 'dip' occurs at the corner frequency, rather than a peak at the transition frequency.
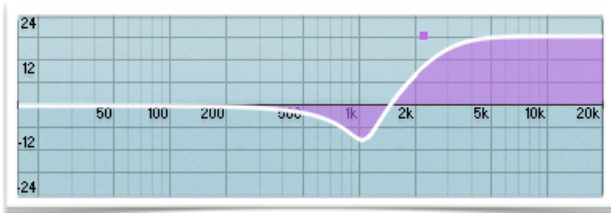
Shelf type-I with symmetric style attenuation
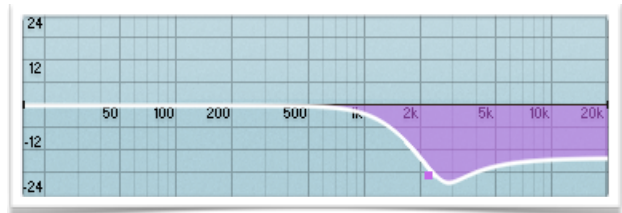
Shelf type-I with asymmetric style attenuation

Suggesting which Bell or Shelf styles are the most appropriate for specific types of programme material is not necessarily straight forward, and professional users will no doubt have formed their own opinions from extensive experience. There are no hard and fast rules, and in many cases the choice will come down to individual preference.

The Global Programme Section
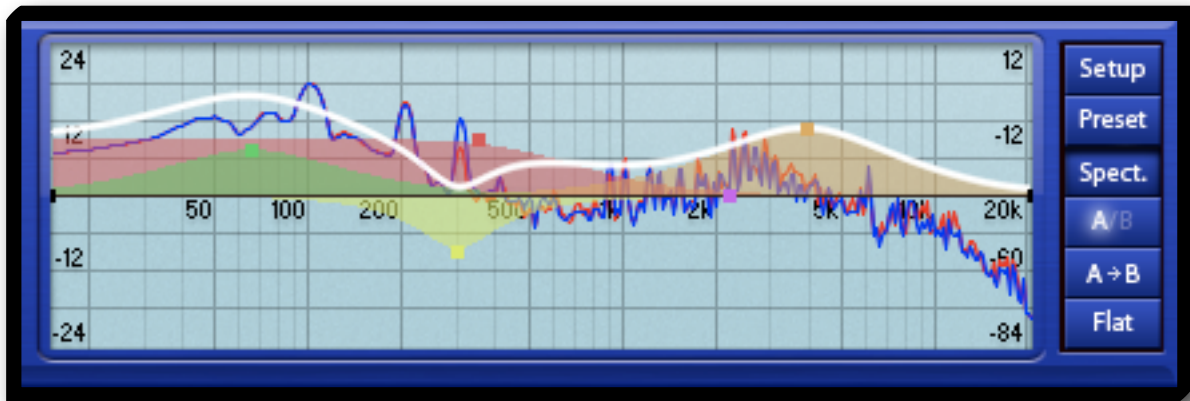
This section includes the graphical display, a *Setup* button, a *Preset* button, a *Spect* button, and three buttons that affect global parameter settings: *A/B* , *A->B* and *Flat*

In general use, the graphical display provides visual feedback on the response of the equaliser. A graph shows the frequency-amplitude response over the audible spectrum – from just below 20Hz to just above 20kHz. Each EQ band is denoted by a different colour (represented by the individual band on/off LED switch colours), while the overall response is shown by a white line.

A Spectrum Analyser can be activated by pressing the *Spect.* button, to monitor the frequency response of the audio in real-time. This can be configured to monitor either 'Pre' or 'Post' EQ, via a user preference (see Preferences).

The displays of both the response graph/s and the analyser are configurable via several options in the user preferences (see Preferences), accessed by pressing the *Setup* button.

The *A/B* button toggles between two programme banks, enabling simple *A/B* comparisons.

The A->B button will copy all parameters from bank A to bank B

Clicking the *Flat* button will set all EQ gain parameters to '0dB', and switch off the high and low pass filters. In this way the frequency response of the equaliser is 'flattened', and the response graph will reflect this. All other parameters will remain unaffected. This is simple method of re-starting an EQ programme without affecting the existing set-up of the frequency, bandwidth and style parameters.

The 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.

There is no input stage to the SV-517, or rather no input stage that requires user control. The very high precision internal processing of this plug-in assures a headroom large enough to avoid internal clipping, thus it is not necessary to monitor or alter the input level directly.

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 equaliser gain are applied. Conversely the *Output* gain may be used to increase the signal level if significant equaliser cut is applied.

The master *Power* button is an effective 'bypass' control that may be used for simple 'In/Out' comparisons. When the equaliser 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 SV-517 can provide superior results, as it guarantees a glitch-free on/off transition. This is imperative if you are automating the control.
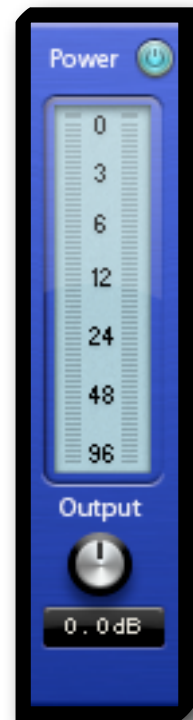
Preferences
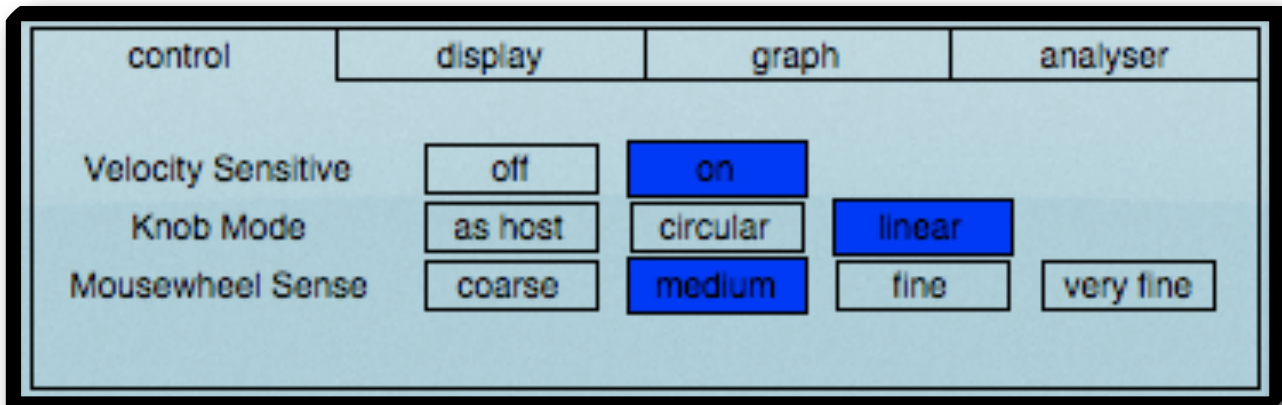
There are a number of setup options and preferences that are user-definable. The preferences are accessed with the *Setup* button on the right of the graphical display. Click the button first to access the preferences, and again to exit the setup screen once the preferences are set.

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.

• **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.

Graph Preferences

These preferences relate exclusively to settings that affect the graphical display.

- **Graph Handles** - enables/disables the handles on the graphical display. Note that the 'Graph Range' should be set to '24dB' when graph handles are enabled, to ensure handles remain visible at all times.

- **Graph Range** - when set to '12' or '24' the graph is drawn showing a maximum gain or attenuation of 12 or 24 dB respectively. When set to 'Auto', the range of gain and attenuation displayed will change with respect to the actual maximum response gain or attenuation.

- **Response Display** – The graphical display can show individual EQ band responses (Bands), the overall response (Total EQ), or it can display these responses together (Both).

Analyser Preferences

These preferences relate exclusively to the spectrum analyser function of the EQ

- **Hide EQ** – When the spectrum analyser function is activated, if 'Hide EQ' is set to 'Yes' then the graphical EQ band response will not be shown, If this preference is set to 'No' then the spectrum analyser will be overlaid on the graphical EQ band response display.

- **Default State** – This sets the default state of the spectrum analyser; If the default state is 'On', every time an instance of the SV-517 plug-in is opened the analyser function will be active. When set to 'Off' the user must manually activate the analyser,

- **Analyser Pre/Post** – This sets the spectrum analyser to monitor the signal either at the input (Pre) or the output (Post) of the SV-517.

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

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Appendix A: Technical Specifications

SV-517 Supported Sample Rates:

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

SV-517 Control Ranges:

EQ Band	Filter Response Type/s	Gain	Frequency Range	'Q' / Slope
LF Filter	High pass Filter (Variable slope)	6dB/o 12dB/o 24dB/o	15 Hz - 2.0kHz	-
LF EQ	Bell / Shelf	+/- 18 dB	15 Hz - 350 Hz	0.4 – 4.0 / 0.5 – 5.0
LMF EQ	Bell	+/- 18 dB	50 Hz - 1.17 kHz	0.4 – 4.0
MF EQ	Bell	+/- 18 dB	100Hz – 12.0kHz	0.4 – 4.0
HMF EQ	Bell	+/- 18 dB	570 Hz - 18.0 kHz	0.4 – 4.0
HF EQ	Bell / Shelf	+/- 18 dB	2.15 kHz - 20.5 kHz	0.4 – 4.0 / 0.5 – 5.0
HF Filter	Low pass Filter (Variable slope)	6dB/o 12dB/o 24dB/o	100 Hz - 20.5 kHz	-

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