MultiLimit

Operation Guide

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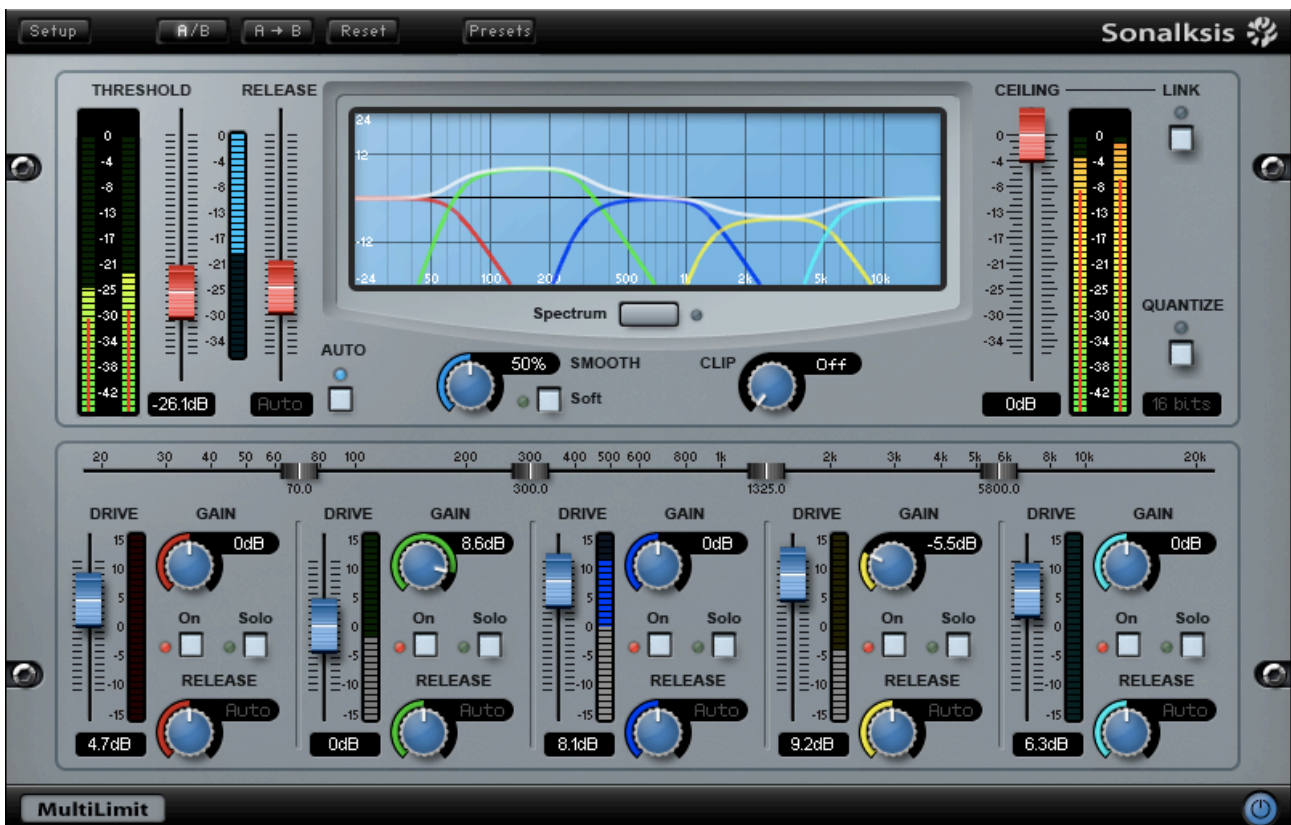# Sonalksis MultiLimit

Introduction

This guide describes the features, operation and applications of the Sonalksis MultiLimit. 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 MultiLimit Interface

MultiLimit provides the absolute pinnacle in limiting, having 5 independent frequency bands separated by flexible linear phase crossovers, providing EQ and dynamics capability finished off with a program maximiser - suitable for the most demanding mastering environment. MultiLimit has applications from subtle frequency dependent limiting to general volume enhancement to ultra hard 'radio- mix' maximisation.

MultiLimit also borrows the unique 'smoothing' feature from the MaxLimit. This allows direct control over the balance between limiting transparency and volume maximisation.

This plug-in enables precision control as you rebalance mix dynamics, with the ability to define how much each band is limited with regard to its own narrow band frequency content, and how much it is limited within the context of the broadband mix. Thus you can control how much broadband and how much narrowband limiting takes place.
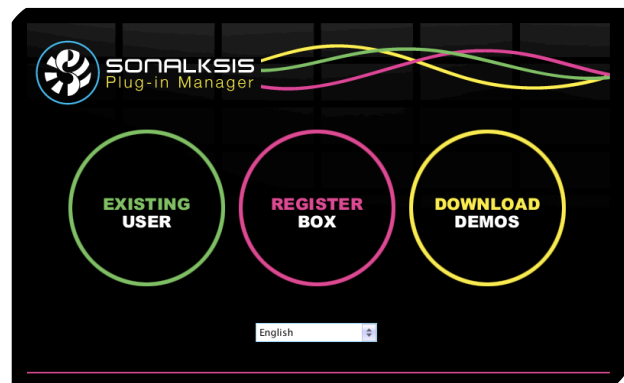
Installation

...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 MultiLimit brickwall limiter. You can read more about general features common to all Sonalksis plug-ins in the *Universal Plug-in User Guide*.

The MultiLimit is a relatively complex processor, but before giving a detailed explanation of all the MultiLimit parameters, it is worth pointing out that the plug-in can be effectively operated with only one control: the **THRESHOLD** fader. You can simply select one of the presets to determine the character of the limiting, and then lower the main **THRESHOLD** fader until a sufficient amount of processing is audible.

There are two main sections to the MultiLimit – an upper section and a lower section. The lower section contains five identical narrowband processing units. The upper section can be thought of a broadband processor, because it affects the signal as a whole, either by directly processing broadband sections of the audio, or because the parameters globally control each of the narrowband processing sections below.

Broadband Components

This section contains a meter to monitor the input signal, and a fader that selects the limiting threshold. The meter and **THRESHOLD** fader line-up together so by lowering the fader to the point at which the meter display is peaking, the limiter will begin to limit.


The **THRESHOLD** fader is the main parameter on the MultiLimit. It controls the internal (hidden) threshold levels of all the individual band limiter sections. Essentially this fader controls the amount of the signal that the multiband sections will process.

As this main limiter threshold is lowered, the signal level 'seen' by each active frequency band below will begin to increase, and eventually limiting will take place. The amount of limiting that takes place is displayed on the meter to the right of the threshold fader. Note that the MultiLimit undertakes a mixture of both broadband and narrowband limiting, and this meter displays the total limiting that is taking place (the total limiting is not simply an addition of each individual band plus the broadband limiting – it is actually equal to the maximum amount of limiting taking place at any instant on any band, added to the maximum amount of limiting of any signal that is not contributing to the narrowband limiting).

Global Limit Parameters

There are three other global parameters that relate to the signal as a whole:
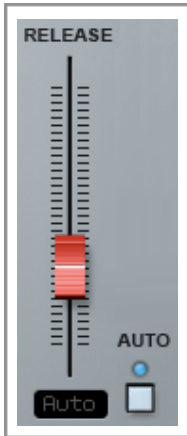
RELEASE – This will perhaps have the greatest impact on the character of the limiting, as it allows anything from transitory 10ms release times up a full 1 second. All individual frequency band release times are relative to this main *RELEASE* parameter. Very short release times (<50ms) are only recommended when taming short transient peaks or when applying minimal limiting, and are not ideally suited to general program maximisation, even though they technically increase the power quotient to higher levels than longer release times. It is almost impossible to transparently achieve large amounts of limiting with very short release times, and a certain 'graininess' may be heard when pushing the limiter hard with a very short release setting. When the *Auto* button is activated, the release times for the entire limiter become program-dependent, and will vary automatically in accordance with the characteristics of the audio.
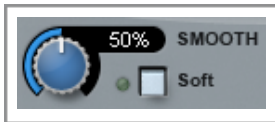
SMOOTH - This unique parameter balances the internal processing either towards volume maximisation (lower settings, approaching 0%), or towards greater transparency (higher settings, approaching 100%). The smooth parameter is very useful when attempting to limit with faster release times, as increasing the smooth setting can allow a greater amount of limiting to take place before the process looses transparency. The *Soft* button introduces a soft knee characteristic into the processing that will further enhance the perceived smoothness and transparency of the limiting.

CLIP - it is recognised that some users occasionally apply a minimal amount of digital clipping under certain circumstances, either for effect or to obtain a theoretically maximal limit on some material. The *MultiLimit* allows you to achieve this very simply with the *CLIP* parameter. Furthermore, also included is a true-analogue mode for the *CLIP* parameter, selectable via a preference, which may be useful if using the limiter for tracking or effect purposes. When not in digital mode, the clip uses Sonalksis' analogue modelling technology to replicate the performance of a true analogue clipper.

Output Section
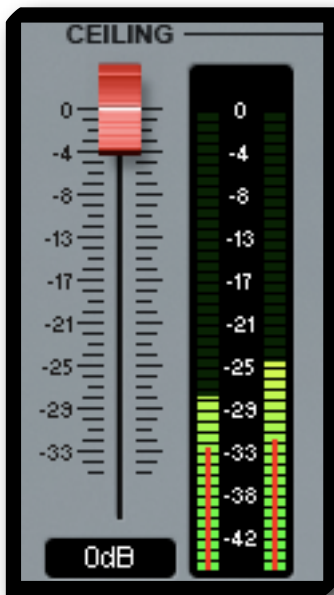
The ***CEILING*** fader sets the maximum possible output level of the limiter. The meter next to this fader displays the output audio signal.

When the ***LINK*** button is activated, the threshold and ceiling faders will be linked IN ONE DIRECTION ONLY – when the threshold fader is moved, the ceiling fader will move by a corresponding amount. This feature is useful when attempting to set up the amount of limiting, as it prevents the overall level from increasing as the limiting increases. In this way, the ear is more able to hear any changes taking place in the character of the audio, which allows for a more precise determination of how much limiting to apply using the threshold fader. Once this is done, the ceiling fader may be raised again up to the required level.

If the MultiLimit is used as a final stage mastering tool, the output can be quantized for the end medium by activating this button and setting the bit-depth accordingly (the depth can be set by clicking on the text display box below the ***QUANTIZE*** button and then selecting an appropriate option).

If the quantization is activated, a proprietary Sonalksis dither and noise shaping process is applied internally to ensure the end signal retains the ultimate possible resolution. If more control is required over the quantization, the Sonalksis Ultimate-D advanced resolution enhancement plug-in can be used instead.

The MultiBand Sections

The 5 individual band sections each contain a limiter which will process only the frequency content within that band.

These multiband sections are all identical in operation, the only difference being the frequencies they process. The division of the broadband signal into sub-frequency bandsis specified by the crossover faders in the horizontal centre section of the interface.

The MultiLimit can operate with less than five limiting bands if desired. Any band may be turned off simply by deactivating the **On** switch. The content of an individual band can be listened to in isolation by activating the **Solo** button.

The meters within each band section display the signal level 'seen' by each narrowband limiter. The limiting threshold of each band is always displayed centrally at '0' on the band meters, even though internally the threshold of each band is always relative to the main broadband threshold. This makes it simple to determine how much narrowband limiting is taking place, as any limited signal (above the zero marker) is highlighted in the respective colour of the band.

Drive
Increasing the **DRIVE** within a frequency band will push that band further into narrowband limiting, meaning that the frequency content of that band will have less influence on the limiting of the other bands (and the overall signal). Decreasing the *Drive* within a frequency band will reduce narrowband limiting of those frequencies, and that band will have greater influence on overall broadband limiting.

Note that reducing the **DRIVE** does not actually reduce the level of the signal within a band, but merely increases the relative band threshold so that the signal is less driven into limiting. Increasing the **DRIVE** may however actually increase the signal level if it is well below the limiting threshold.

To compensate for potential level changes when altering the **DRIVE***,* it may also be necessary to reduce (or in some cases increase) the Gain of the band in order to maintain an even spectral balance.

Gain
This function increases or decreases the dominance of the respective band. This parameter will effectively alter the frequency balance of the signal, and can be used to either to maintain an even spectral balance during the limiting process, or to creatively equalise the signal to improve the mastered sound.

Release
Each band limiter section may have an independent release time. The release time of each band is relative to the global limiter release time as set with the **RELEASE** fader in

the upper section. For example if the main release time is set to 50ms and the band release is set to 200%, then the release time for that band is 100ms.

When the **Auto** release mode is active, individual band release times can not be directly specified. When **Auto** mode is active, the band release times vary according to both the frequency content of the signal and the dynamic nature of the signal.

Display / Monitor Section
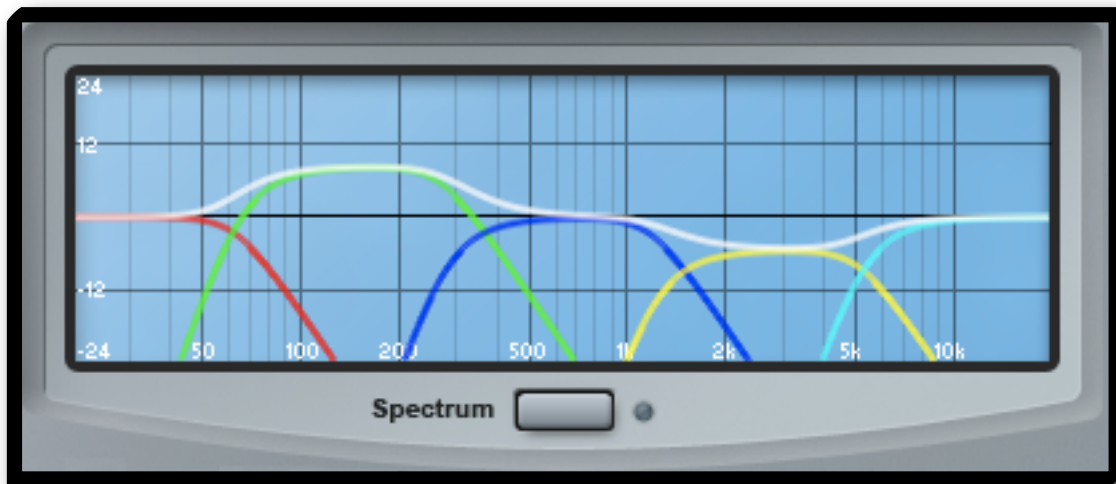
The main purpose of the graphical display in the top centre of the interface is to provide a clear indication of the division of the individual bands, and the relative dominance of these bands. The multicoloured graph colours relate directly to the multiband sections below.

A spectrum analyser can be activated using the '**Spectrum**' button directly below the graph. This is useful to display the amplitude of the overall frequency content, to help evaluate the impact of the multiband limiting.

Global Programme Controls
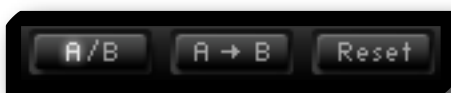
The **A/B, A->B** and **Reset** buttons relate to the plug-in parameters as a whole. The collection of all parameter settings is known as a 'programme'. The MultiLimit is equipped with two programme buffers ['A' and 'B'] that can store an entire set of control parameter values at the touch of a button. The active parameter buffer is highlighted on the **A/B** button and can be copied to or swapped with the inactive one using the **A->B** button. This can be useful for auditioning comparisons of different plug-in setups, or automating a complete change of parameters.

Clicking the **Reset** button will set all plug-in parameters to their default values. Setup preferences will remain unaffected however.

Preferences
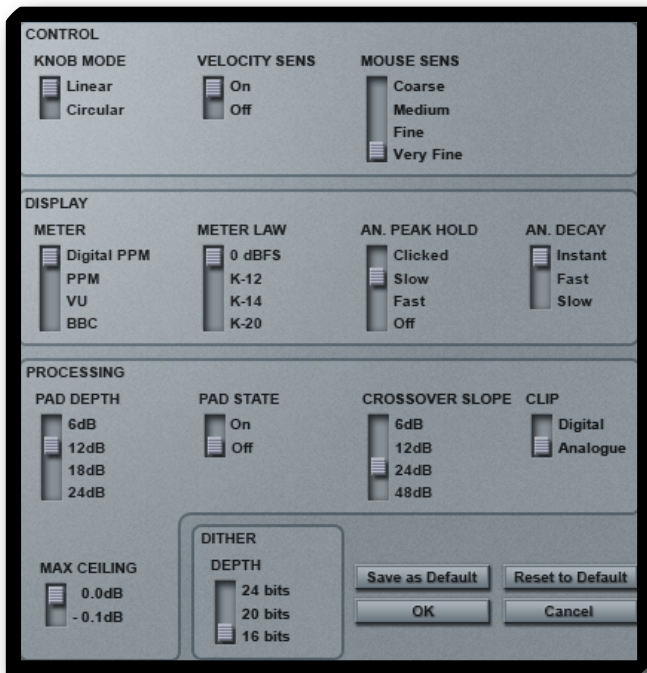
A number of setup options for the MultiLimit are user-definable. These preferences are set via a number of switches on the 'backplate', which is accessed by selecting the Setup button in the top left corner of the interface. Once you have accessed the preferences, you can exit the backplate either by selecting *OK*, which saves any changes you have made, or Cancel which ignores any changes you have made.

Note that unless you select *Save as Default* after making changes, the alterations you make will not overwrite the general default setup, which will be used again when you open a new instance of the plug-in.

Most preferences are global, in that they affect every instance of the plug-in. Global preferences, such as the 'Control' settings, are stored and recalled according to the user logged in to the host system. However settings that affect the audio processing are 'instance specific', and will be stored with each session just like standard plug-in parameters.

Control Preferences

• **Knob Mode** - sets the default method of mouse control for knob style controls.

• **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.

• **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.

Metering Preferences

• **Meter** - 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.

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- **Meter Law** – sets the meter scale according to either a standard digital 0dBFS scale or one of three 'K-meter law' scales. For users unfamiliar with K-system metering, this is an emerging standard originally proposed by mastering engineer Bob Katz. When practised in conjunction with monitor calibration this system encourages better dynamics and standardised loudness levels in mastering production. More information on this subject is widely (and freely) available on the internet.

- **An Peak Hold (not MaxLimit)** – sets the hold time for the spectrum analyser peak-hold function, which determines the amount of time the frequency peaks are displayed. (When set to 'Clicked', the maximum peak values are held indefinitely or until the graph is clicked with the mouse).

- **An Display (not MaxLimit)**– sets the speed of the spectrum analyser graph response. The faster the setting, the faster the display will decay from high to low amplitude representations.

Processing Preferences

- **Max Ceiling** – sets the default maximum ceiling level for the limiters either to standard 0dBFS or -0.1dBFS. A output ceiling of slightly lower than the 0dBFS can be useful to prevent overload if external dither post-processing will be used.

- **Clip** - selects the clipping algorithm of this limiter feature, either to Digital or Analogue. Digital clipping will introduce aliasing and should be used either for effect or else very sparingly (for example only on short transients, where psychoacoustically the artefacts will not be perceptible). The Analogue clipper uses Sonalksis true analogue modelling technology and introduces only analogue harmonic distortion artefacts.

- **Dither Depth** – selects the default quantisation resolution of the plug-in.

- **Pad Depth** – there is no input trim on the MultiLimit, as this feature should not be necessary under normal circumstances. However if the MultiLimit is inserted on a highly overloaded main buss, it is possible that the signal level will need to be attenuated in order to maintain subtle control over the limiting process. This preference can be used to Pad, or attenuate, the input signal by a set amount.

- **Pad State** – if the input attenuating Pad is required, set this preference to 'On'. Otherwise this should remain set to 'Off'.

- **Crossover Slope** – this will affect the amount of overlap between the individual bands when they are divided for limiting. Higher values will allow better separation between each audio band, however this may also produce a less transparent sounding effect.

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.

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Appendix: Technical Specifications

MultiLimit Supported Sample Rates:

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

MultiLimit latency (audio throughput delay): 3583 samples

NOTICE

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