

Voxengo GlissEQ User Guide



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Introduction

GlissEQ is a parametric equalizer plug-in for professional music production applications. The most interesting and unique feature GlissEQ offers you is its filters with dynamic behavior. While when using a normal equalizer you always get what you have set: if you specify 6 dB boost at 100 Hz you get exactly 6 dB boost at 100 Hz. GlissEQ offers you a slightly different approach: when you specify +6 dB at 100 Hz, you don't necessarily get 6 dB of gain, filter's effective gain is adjusted dynamically according to the sound material you are filtering.

Such “dynamic behavior” of GlissEQ's filters gives you a friendly, assisting equalization experience. Boosting up the highs will not create the fatiguing effect of overload; boosting up the lows will not make things sound mushy. Instead, you will get a pleasant transient-emphasizing effect bringing life and dimension to your tracks. The pronunciation of the dynamic behavior can be controlled via special “Dyn” parameter. In reality, this “Dyn” parameter adds a whole new dimension to the equalizer as you know it!

Beside this wonderful “dynamic behavior”, GlissEQ features real-time spectrum analyzer. Moreover, the spectrum of a track can be exported to any other instance of GlissEQ thus making real-time inter-track spectrum comparisons possible. This can help you free frequency ranges in one track to allow the instrument in another track occupying same frequencies breathe.

Features

- Filters with dynamic behavior
- Real-time spectrum analysis
- Real-time spectrum import/export
- Up to 32 parametric filter bands
- 16 filter types
- Harmonically-enhanced filter type
- Narrow-band sweeping
- EQ area highlight
- Static spectrums display
- User interface window resizing
- Stereo and multi-channel processing
- Internal channel routing
- Channel grouping
- Mid/side processing
- Up to 8x oversampling
- 64-bit floating point processing
- Preset manager
- Undo/redo history
- A/B comparisons
- Contextual hint messages
- All sample rates support
- Zero processing latency

Compatibility

This audio plug-in can be loaded into any audio host application that conforms to the AudioUnit or VST plug-in specification.

This plug-in is compatible with Windows (32- and 64-bit Windows 7, Vista, XP) and Mac OS X (10.5 and later versions, 32- and 64-bit, Intel processor-based) computers (2 GHz dual-core or faster processor with at least 1 GB of system RAM required). A separate binary distribution file is available for each target computer platform for each audio plug-in specification.

User Interface Elements

Note: Most interface elements (buttons, labels) located on the top of the user interface and on the bottom are standard among all Voxengo plug-ins and do not require much learning effort. For an in-depth description of these and other standard user interface elements and features please refer to the “Voxengo Primary User Guide”. Learned once it will allow you to feel comfortable with all pro audio plug-ins from Voxengo.

Equalizer

This panel displays parametric equalizer’s control surface. Please refer to the “Voxengo Primary User Guide” for in-depth information about this control surface’s functions.

However, GlissEQ features important enhancements over the standard functionality: you may double-click the control surface anywhere to insert a new control point (filter type is set automatically depending on the frequency position this point was added at: the “low-shelf” filter type is set on frequencies below 100 Hz, the “high-shelf” filter type is set on frequencies above 7 kHz, the “peaking” filter type is set on all other frequencies).

A double-click on an existing control point enables/disables the control point. A disabled control point will be re-enabled whenever you move it. An existing control point can be deleted by pressing the right mouse button on it and selecting the “Remove filter” option from the presented list.

The numbers on the control points correspond to the host automation parameters, their on-screen position (ordering) does not affect the sound of the equalizer.

The “Range” selector allows you to set the accessible EQ gain range, which you think is most suitable for the sound material you are working with.

The “Underlay” selector allows you to add an additional underlying EQ curve and spectrum (in a specified color) from another channel group of the current plug-in instance.

The “Dyn Mode” selector specifies dynamic behavior mode of the filter types that use the “Dyn” parameter which was set above 0%:

- The “Normal” mode offers a normal dynamic behavior offering a moderate amount and swiftness of gain swing.
- The “Instant” mode features a quicker and deeper gain swing which usually creates a “dirtier”, “busy” sound. This mode may produce an audible warble on EQ cuts.
- The “Relaxed” mode produces a controllable “round” sound with a slow gain swing, but with a bit swishy sound.

The “Static” button opens the “Static Spectrums Editor” window – for an in-depth information, please refer to the “Voxengo Primary User Guide”.

The “Areas” selector allows you to highlight areas of the spectrum display. Press the “Edit” button to define your own areas.

The dynamic activity of a currently selected filter is displayed by means of a dark red EQ curve that reflects the dynamic gain level changes of the filter.

GlissEQ features the following filter types:

- Peaking – peaking (parametric) filter with dynamic behavior.
- Peaking Inv – peaking (parametric) filter with inversed dynamic behavior. While normal (non-inversed) dynamic behavior usually emphasizes transients, the inversed behavior emphasizes sustain part of the sounds. Dynamically, this filter works oppositely to the “Peaking” filter.
- Peaking Hrm – peaking (parametric) filter with dynamic behavior and a non-linear operation which produces moderate harmonic distortion. Useful for adding more “body” to sterile-sounding tracks. Harmonic content is mainly added on frequency boosts – cuts produce lesser amount of harmonic enhancement.
- Peaking Plain – peaking (parametric) filter without dynamic behavior. Designed for efficient (CPU load-wise) processing. This filter is not affected by the “Dyn Mode” setting.
- Lo-shelf, Hi-shelf – low-shelving and high-shelving filters with dynamic behavior.
- Lo-pass 6, Hi-pass 6, Lo-pass 12, Hi-pass 12, Lo-pass 24, Hi-pass 24 – low-pass and high-pass filters with the specified slope in decibels per octave. These filters are not dynamic. The “bandwidth” affects transition band of these filters. The filter’s slope is fixed: for example, you can't use the “bandwidth” parameter to turn the 24 dB/oct filter into the 48 dB/oct one – you have to use two 24 dB/oct filters to get the 48 dB/oct slope. The optimal bandwidth for these filters is around 1.9 – it provides minimal transition band without resonance boost appearing.
- Notch – band-rejection filter: filters out a narrow spectral area completely (minus infinity gain at center frequency).
- Notch 4, Notch 8 – a battery of “Notch” filters, with each filter spaced at 2x, 3x, 4x, etc. distance from the center frequency. Can be useful for removing power line “buzz” around 50-60 Hz.
- Peaking 4, Peaking 8 – a battery of “Peaking” filters, similar to “Notch” filter batteries.
- Bandpass – a standard band-pass filter. This filter type is usually used for “telephone line” sound effects. This filter can be also used for monitoring of a narrow spectral band.

Selected Filter



This panel allows you to precisely adjust parameters of a single selected filter. Before this panel can be used, you should select a control point in the “Equalizer” panel, or use the provided scrolling buttons to select the required filter.

The “Type” selector allows you to select the type of the selected filter. You may right-click the selector to temporarily disable the filter; second right-click will return the selector to its initial filter type selection.

The “Freq” parameter selects center (or corner) frequency (in Hertz) of the filter. Note that the specified frequency may extend the visual display range. The displayed frequency range can be adjusted in the “Spectrum Mode Editor” window.

The “B/W” parameter selects “bandwidth” of the filter (in octaves). This parameter has a different meaning for each filter type.

The “Gain” parameter (if available) adjusts the peak gain of the filter (in decibels).

The “Dyn” parameter (if available) specifies strength of dynamic behavior (in percent). Values near 0 effectively disable the dynamic behavior of the filter.

Note that default parameter values (bandwidth, etc.) assigned to the filter whenever you add a new control point or double-click the parameter knob to reset it, can be specified by first setting the desired values for the control point “1” in the first channel group and then using the “Set as Default” preset manager function. Until you do so, parameters in all newly added filters will be set to the “factory” default values.

Spectrum



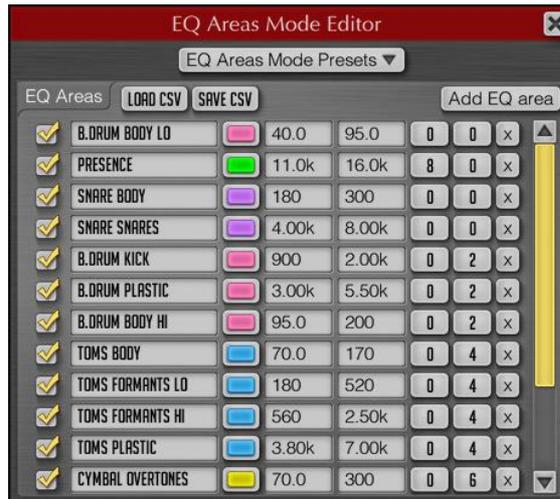
The “Export To” selector specifies destination slot where the real-time spectrum of the current channel group should be exported to. If you do not plan to import this real-time spectrum in other GlissEQ plug-in instances it is suggested to leave the “Export To” setting at “---” (off) so that this feature does not tax the CPU. When using the export function it is suggested that you give a distinctive name to plug-in’s instance (e.g. “Bass Guitar”, “Vocals”, “Drums”) so that this name is recognizable in the “Import From” lists within other GlissEQ instances.

The “Mode” selector allows you to select and edit spectrum’s display mode. Please refer to the “Voxengo Primary User Guide” (namely, the topic called “Standard Controls – Spectrum Mode Editor”) for in-depth information about spectrum mode settings.

The group of “Import From” selectors allows you to import real-time spectrums from other GlissEQ instances. If no plug-in instances are exporting their spectrums the “Import From” list will be empty. Imported spectrum’s color will be the same as selected in the exporting plug-in’s instance. Note that imported spectrum’s resolution and type (average, maximum, etc.) solely depends on the spectrum mode selected in the plug-in instance that exported this spectrum.

The “Hold” switches allow you to hold spectrum updates temporarily for the purpose of visual comparison. Note that spectrum updates will be automatically resumed whenever you switch between channel groups.

EQ Areas



This window allows you to define your own highlight areas on the spectrum display. Highlighted areas can be used as helpers to remind you of the signal types present in specific frequency ranges.

You may define up to 32 areas. Each defined area can be deleted or hidden. You may define area's name, color, frequency range, vertical position and height.

The areas can be saved to and loaded from a text "CSV" file.

Load CSV/Save CSV

These functions allow you to load and save the currently visible EQ curve to a textual file, readable by spreadsheet software. The EQ curve is stored as a series of "frequency, gain, bandwidth, dyn, filter type" set of values, one per line, in the following form:

```
31.00,0.00,2.500,100.0,Off
152.71,-8.28,0.560,100.0,Peaking Hrm # comment
545.77,7.37,2.500,150.0,Peaking
2102.66,-6.37,2.500,100.0,Peaking
7609.41,-4.22,2.500,100.0,Hi-shelf
```

Each set of values defines position of a single control point on GlissEQ's control surface. Note that decimal point should be written as a period, not a comma. Comments can be written in any position of the file, starting with a hash character.

The "Load CSV" function permits you to load a previously saved CSV file or any externally-generated EQ curve specification. Note that the file can also contain partial information (e.g. excluding "dyn" and "filter type" values):

```
31.00,0.00,2.500
152.71,-8.28,0.560
545.77,7.37,2.500
```

Wide View Mode

When this mode is enabled, equalizer's control surface becomes wider, but the knobs, spectrum import/export and meter panels become hidden.

To adjust filter's "dyn" parameter in this mode you may hold down the "Ctrl" ("Command" on Mac OS X) button while dragging the control point with the left and right buttons simultaneously (this is the bandwidth adjustment mode).

Dynamic Behavior

This topic provides you additional information about dynamic behavior of GlissEQ's filters.

First of all, it is important to understand that dynamic behavior of GlissEQ's filters does not depend on the absolute loudness level of the signal being processed. Even if you apply an overall gain change to the sound before applying GlissEQ the sound will not change: the dynamic behavior is level-independent.

Secondly, dynamic behavior does not depend on whether you are using frequency boost or cut filters: in both cases the dynamic behavior will be taking place.

As was already noted in the introduction, the actual filter's gain depends on the sound material you are filtering. For example, if you have set +6 dB dynamic peaking filter at 5kHz and the signal you are filtering has a lot of energy in the same 5kHz frequency band, the actual filter's gain will be lower – it may reach +3 dB only (at 100% “Dyn” setting). The same concept applies to cutting filters, symmetrically: -6 dB peaking filter will not reach the full gain reduction if the frequency band you are filtering contains a lot of energy. Note that when using negative gains and if you would like the filter to reach full gain reduction when there is a lot of energy in a frequency band of interest you should consider using the “Peaking Inv” filter type.

The main benefit this dynamic behavior offers you is transient emphasis. Since the filter's gain is changing with a slight delay relative to the signal's loudness changes, such delay automatically produces a transient emphasis effect: the filter “does not see” the raising front of the sound, but it “sees” the body of the sound. This works for all frequencies. Note, however, that since high-frequency events are usually short in duration (e.g. high hat hits), the dynamic swing of the filter tuned to boost or cut higher frequencies will be small; on the other hand, when a prolonged event happens like a crash cymbal hit, filter's gain change will be stronger. While boosting a frequency works as transient emphasis, cutting a frequency works more as transient suppression in that frequency's region which automatically increases relative dynamics of unaffected frequencies.

Generally speaking, filter's gain change depends on the ratio between input (before the filter) and output (after the filter) signal power. This means that filters with a high user-specified gain setting naturally exhibit a higher dynamical swing. This fact assists you greatly during equalizing – it means that when using small (e.g. 2-3 decibel) gain changes the dynamic behavior will be minimal unless the “Dyn” parameter is increased.

Credits

This plug-in was produced by Aleksey Vaneev in Syktyvkar, Komi Republic, Russia.

DSP algorithms and internal signal routing code were created by Aleksey Vaneev.

Graphics user interface code and the “standard” graphics design were created by Vladimir Stolypko.

Plug-in is implemented in multi-platform C++ code form and uses “zlib” compression library (written by Jean-loup Gailly and Mark Adler), filter design equations by Magnus Jonsson and Robert Bristow-Johnson, VST plug-in technology by Steinberg, AudioUnit plug-in SDK by Apple, Inc. (used under the corresponding licenses granted by these parties).

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Questions and Answers

Q. Would you recommend the GlissEQ for mastering? Or is it more suited for single track usage?

A. GlissEQ can be used for both in-track and mastering processing. However, at the mastering stage it is suggested to use lower Dyn parameter values (below 100%) to reduce any possible excessive filter gain swinging.

Q. Can you explain the differences and definitions of “Shelving”, “Peaking” and “Band-pass” filters?

A. “Shelving” is a filter that looks like a shelf (or a stairway step). “Peaking” filter has a single peak and looks like a bell shape. “Band-pass” filter passes a single selected frequency band only (width of this band is adjustable) – the passed frequency band looks like a cone.

Q. Would a “High-shelf” filter, mute or expose the highs?

A. It can do both. “High-shelf” means it adjusts the higher frequencies (above the center frequency) – on EQ curve window this filter looks like a stairway step up or down.

Q. I would like to use -6 dB/oct low-pass/high-pass filters. Can GlissEQ offer me such filters?

A. You may use -12dB/oct low- and high-pass filters: they have the same slope as -6dB/oct filters when you set their bandwidth to a value around 4.0.

Q. Does GlissEQ use some kind of compression?

A. No, it does not. The dynamic behavior of GlissEQ’s filters cannot be compared to compression directly, because it is level-independent.

Q. I want to monitor the output of this plug-in on the spectrum analyzer.

A. GlissEQ always shows output signal’s spectrum, after all defined filters were applied. So, you are always seeing the effect of the equalizer.

Q. I have a loud input signal and the spectrum analyzer plot frequently goes off-screen. How can I overcome this inconvenience?

A. To handle this situation, please open the “Spectrum Mode Editor” window and adjust the “Range Low” and “Range High” parameters to achieve a better visual fit.

Q. I'm trying to understand the “spectrum export/import” capability in GlissEQ. Does this mean you can put it on, say a vocal and a guitar and see which frequencies are fighting, in order to better carve out each their space in the mix?

A. Yes, exactly, the “spectrum export/import” function was designed to be used for the purpose you have mentioned. You may see the overlapping frequencies present in both vocal and guitar, and reduce these frequencies in the track where they are less important.

Q. I saw on the web site screenshot that there are 3 differently-colored spectrums shown. I manage to see only one on my setup... What special trick do I need to do to see all of them?

A. To be able to see (import) another spectrum you should insert an additional GlissEQ instance to another audio channel in the same project. In that additional GlissEQ instance you should set the “Export To” selector to any available slot. After doing so, you can import data of this slot in any other GlissEQ instance via the “Import From” selectors.

Q. Is GlissEQ somehow different from CurveEQ?

A. GlissEQ differs vastly from CurveEQ. GlissEQ is an analog-style (minimum-phase) equalizer, with zero latency processing (whereas CurveEQ is a linear-phase equalizer and has a considerable processing latency). GlissEQ's filters also feature dynamic behavior.

Q. Isn't it true that when filtering the lower frequencies one should use linear-phase filters?

A. When filtering musical signals, the choice between linear-phase and minimum-phase (analog) filtering is not predefined: this is mainly a question of your artistic taste. When using GlissEQ to equalize the lower frequencies you may just try using softer EQ shapes: steep EQ curve changes may sound a bit “boxy” due to a higher “group delay” produced by such curves.

Q. Why does the "Peaking Inv" filter not working as normal peaking filter like all the other peaking filters at Dyn=0?

A. The “Peaking Inv” filter works in inverse to how the “Peaking” filter works – that is why at Dyn=0 it always stays at “full off”. This is a correct behavior.

Happy Mixing!