Sound with a soul

Voxengo

Voxengo SPAN User Guide

Version 3.1

http://www.voxengo.com/product/span/

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Introduction

SPAN is a real-time “fast Fourier transform” audio spectrum analyzer plug-in for professional music and audio production applications. For the most part it was derived from Voxengo GlissEQ dynamic parametric equalizer and reproduces its spectrum analysis functionality.

SPAN provides you with a very flexible “mode” system which you can use to setup your spectrum analyzer preferences. You may specify Fourier block size in samples, FFT window overlap percentage, spectrum's visual slope. Beside that you can choose to display secondary spectrum of a desired type (e.g. real-time maximum, all-time maximum). Spectrum can be smoothed out visually for an easier examination.

SPAN supports multi-channel analysis and can be set to display spectrums from two different channels or channel groups at the same time. Spectrum's color can be chosen to taste.

SPAN also features output level metering with adjustable ballistics and integration time, K-system metering (including calibration K-system metering). SPAN displays level metering statistics, headroom estimation and clipping detection. Correlation metering is available as well.

Features

- Output signal power statistics
- Spectrum smoothing
- User interface window resizing
- Clipping statistics
- Correlation meter
- K-system metering (unweighted)
- Stereo and multi-channel analysis
- Mid/side analysis
- Internal channel routing
- Channel grouping
- Preset manager
- Undo/redo history
- A/B comparisons
- Contextual hint messages
- All sample rates support

Compatibility

This audio plug-in can be loaded into any audio host application that conforms to the AAX, AudioUnit, VST or VST3 plug-in specification.

This plug-in is compatible with Windows (32- and 64-bit Windows XP, Vista, 7, 8, 10 and later versions) and Mac OS X (10.6 and later versions, 32- and 64-bit, Intel processor-based) computers (2 GHz dual-core or faster processor with at least 2 GB of system RAM required). A separate binary distribution file is available for each target computer platform for each audio plug-in specification.

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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.

Spectrum

This bigger panel displays the spectrum (in the specified color) of the current channel group. Note that the secondary spectrum is displayed in a darker color. You may use the "narrow-band sweeping" mode by holding the "Ctrl" ("Command" on Mac OS X) key.

The "Hold" switch allows 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.

The "Underlay" selector allows you to add an additional underlying spectrum (in a specified color) from another channel group of the current plug-in instance. If you would like to see spectrums of left and right channels together, please load the "Dual Mono" routing preset and set the "Underlay" selector to "Right".

You may right-click on the spectrum to copy the current frequency pointer value to the clipboard (you may then paste it to an equalizer).

Even though in some audio host applications (e.g. Ableton Live) SPAN in VST format exposes 8 audio inputs, it does not mean it can display more than 2 spectrums at the same time. Please consider using GlissEQ or SPAN Plus if you would like to perform cross-track multi-spectrum analysis.

The "Hide Meters and Stats" switch hides all meters and statistics panels and extends the spectrum analyzer panel.

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.

Note that by default SPAN uses 4.5 dB per octave slope for the spectrum display which makes it look considerably "elevated" towards the higher frequencies in comparison to most other spectrum analyzers available on the market. This setting can be changed in the "Spectrum Mode Editor" window.

Statistics

This pane displays historic (since the last reset or playback start) statistical information for each channel of the currently selected channel group.

The "RMS" indicator displays un-weighted RMS signal power estimation.

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The “Max Crest Factor” indicator shows maximum crest factor (difference) between the RMS and peak RMS values reached. Peak RMS value is not displayed anywhere on the user interface. 50 ms time window is used to estimate the peak RMS value. You may add the “RMS” and “Max Crest Factor” values together to obtain a peak RMS value. Note that when comparing the “Max Crest Factor” value in SPAN to other plug-ins the peak RMS time windows should be matched in the plug-ins in comparison or otherwise the readings will be different, with shorter peak RMS time window (e.g. instant peak value) showing a greater “Max Crest Factor” value.

The clipping indication is useful when using noise-shaping at low bit depth dithering settings since noise becomes powerful enough to go over 0 dBFS.

The “Peak” indicator displays 1-sample output peak level.

The “Reset” button can be used to reset counters and start statistical accumulation over.

The “Metering” selector allows you to choose the meter biasing mode. The “dBFS”, “dBFS.30” and “dBFS.15” modes apply no biasing. These three modes have a differing level meter range. The “dBFS+3” mode adds 3 dB to level meter indicator, the “RMS” values (peak level indication is unchanged in comparison to the “dBFS” modes). The “K-20”, “K-14” and “K-12” modes offer various K-system biasing modes originally offered by Bob Katz. The “K-20 C”, “K-14 C” and “K-12 C” implement level calibration modes. In these “K” modes level meter’s RMS integration and release time constants are fixed to 600 ms as per K-system specification. Weighting is not used in all metering modes.

Correlation Meter

This panel contains meter that shows average real-time correlation between two first input channels.

This panel also shows the average balance (in decibel) between two first input channels during the last 3 seconds. Negative values tell that the first (left) channel is louder by the specified number of decibels.

Please read the topic named the “Knowledge Bit – Correlation” in the “Voxengo Primary User Guide” for a specific information on correlation values and their possible meaning.

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Credits

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.

This plug-in is implemented in multi-platform C++ code form and uses “zlib” compression library (written by Jean-loup Gailly and Mark Adler), LibLZF by Marc Alexander Lehmann, filter design equations by Magnus Jonsson, VST plug-in technology by Steinberg, AudioUnit plug-in SDK by Apple, Inc., AAX plug-in SDK by Avid Technology, Inc., Intel IPP and run-time library by Intel Corporation (used under the corresponding licenses granted by these parties).

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