



# Voxengo SPAN Plus User Guide



Software version 1.0

<http://www.voxengo.com/>

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## Introduction

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SPAN Plus 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 GlisseEQ dynamic parametric equalizer and reproduces its spectrum analysis functionality. SPAN Plus is an extended version of the freeware SPAN plug-in: SPAN Plus provides several additional features such as PNG file export, real-time spectrum import/export and static spectrums display.

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

## Features

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- Real-time spectrum import/export
- PNG file export
- Static spectrums display
- Output signal power statistics
- Spectrum smoothing
- User interface window resizing
- Clipping statistics
- Correlation meter
- K-metering
- 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

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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

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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

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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 host audio applications (e.g. Ableton Live) SPAN Plus 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 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 “Save as PNG” button saves current spectrum display to a PNG file.

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

The “Import/Export” button opens the spectrum import/export settings window.

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 Plus 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.

## Import/Export

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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 SPAN Plus 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 SPAN Plus instances.

The group of “Import From” selectors allows you to import real-time spectrums from other SPAN Plus 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.

## Statistics

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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.

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 Plus 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” mode applies no biasing. The “dBFS+3” mode adds 3 dB to level meter indicators, the “RMS” and “Peak” values (peak level indication on the level meter is unchanged in comparison to the “dBFS” mode). 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.

## Correlation Meter

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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 decibel.

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.

## Credits

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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 Stolytko.

This 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, 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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