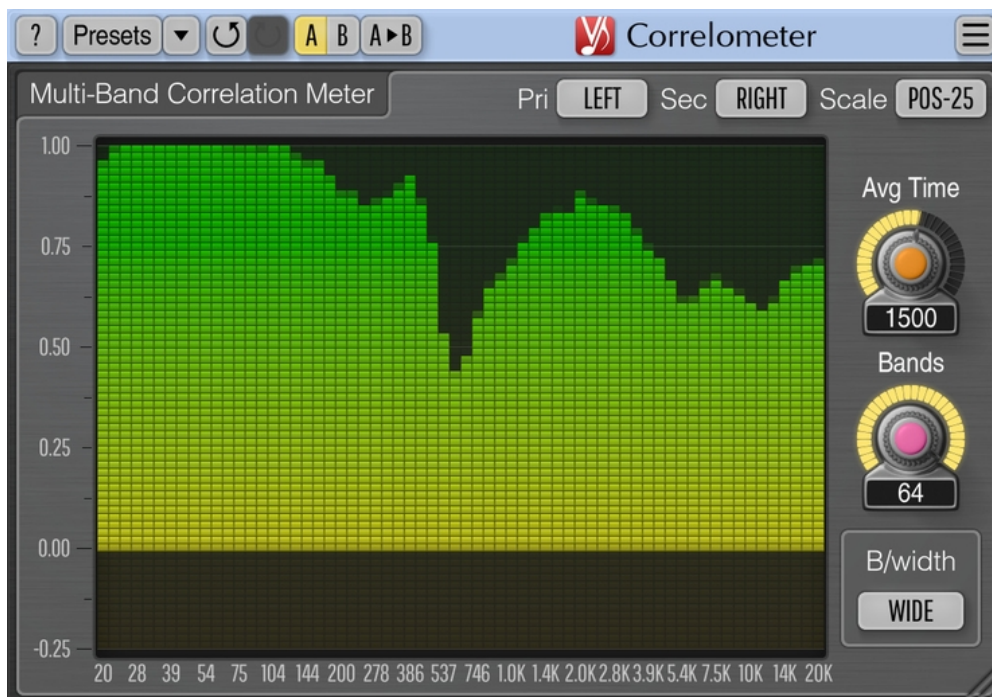


## Voxengo Correlometer User Guide



Version 1.4

<https://www.voxengo.com/product/correlometer/>

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## Introduction

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Correlometer is a free analog-style stereo multi-band correlation meter plug-in for professional music production applications. It is based on correlation meter found in PHA-979 phase-alignment plugin.

Multi-band correlation metering is an advanced way to check for presence of out-of-phase elements in the mix. Broadband correlation metering reports overall phase issues and may misrepresent problems present in select spectral bands, while multi-band correlation meter easily highlights problems present in mid to high frequencies that are not easily heard by ear, but may still reduce clarity of the mix. Another application of multi-band correlation metering is phase- and time-aligning of channels and tracks, especially bass and bass-drum pairs, guitar mic and D.I. source pairs, two-microphone stereo recordings, etc.

Correlometer can display 4 to 64 individual spectral bands, with adjustable band quality factor that controls the degree of band's selectivity. Averaging time of correlation estimator can be adjusted. Correlometer supports side-chain inputs for easy correlation estimation between separate audio tracks.

## Features

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- 4 to 64 band correlation meter
- Adjustable band quality factor
- Adjustable averaging time
- Side-chain input
- Resizable user interface
- All sample rates support
- Zero processing latency

## Compatibility

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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, if not announced otherwise) and macOS (10.11 and later versions, if not announced otherwise, 64-bit Intel and Apple Silicon processor-based) computers (2.5 GHz dual-core or faster processor with at least 4 GB of system RAM required). A separate binary distribution file is available for each target computer platform and audio plug-in specification.

## User Interface Elements

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**Note:** All Voxengo plug-ins feature a highly consistent user interface. Most interface elements (buttons, labels) located at the top of the user interface are the same in all Voxengo plug-ins. For an in-depth description of these and other standard features, and user interface elements, please refer to the “Voxengo Primary User Guide”.

### Parameters

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Correlation meter works by splitting the incoming signal into bands. Band-splitting is performed by means of an array of band-pass filters (the Q factor of the filters depends on the number of bands and the “B/width” parameter). This correlation meter can be called an “analog-style” correlation meter.

The “Pri” parameter selects primary signal source.

The “Sec” parameter selects secondary signal source. You may select side-chain inputs here.

If either “Pri” or “Sec” parameter refers to a non-existent or equal channel the correlation meter will display 1.0 constant for all bands.

The “Scale” selector chooses vertical (correlation value) scale range. The “Full” option displays the full correlation range (-1.0 to 1.0), the “Pos” option focuses on positive correlation values (0.0 to 1.0), the “Neg” option focuses on negative correlation values (-1.0 to 0.0), the “Null” option focuses on null-correlation values (-0.25 to 0.25).

The “Avg Time” parameter specifies correlation estimation averaging, or “window”, time in milliseconds. Note that this is full time required to change from one stationary correlation value to another. Correlation value changes by 80% in half of this time period.

The “Bands” parameter selects the number of spectral bands to split the signal into.

The “B/width” parameter adjusts the quality factor (bandwidth) of each band, affects signal selectivity of the bands. The “Wide” setting is the widest bandwidth and least selectivity, the “Minimal” setting is the narrowest width and most selectivity.

### What is Correlation?

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As you probably already know, correlation between two independent signals is defined in the range between -1.0 and 1.0, inclusive. If correlation is close to 1.0 between any two signals, it can be said that signals are “in-phase” (0 degree phase difference). If correlation is close to -1.0 the signals are “out of phase” (180 degree phase difference). Correlation values close to 0.0 usually tell that any two signals have no correlation and so they may either be 90 degree apart or significantly delayed relative to each other, or both.

Correlation between two sinusoidal signals is equal to mathematical cosine of the phase difference between these signals.

Note that while simple sinusoidal stationary (constant) signals require only phase rotation to change correlation value, musical signals and signals which are complex in

their nature may require time alignment (delaying) as well. Correlation of any signal with any independent (uncorrelated) noise signal is always 0.0 and cannot be changed with phase nor time alignment.

## Credits

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DSP algorithms, internal signal routing code, user interface layout by Aleksey Vaneev.

Graphics user interface code by Vladimir Stolytko. Graphics elements by Vladimir Stolytko and Scott Kane.

This plug-in is implemented in multi-platform C++ code form and uses “zlib” compression library (written by Jean-loup Gailly and Mark Adler), “LZ4” compression library by Yann Collet, 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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