PSP Modules
for
Voltage Modular

Operation Manual

www.PSPaudioware.com

Credits

Modules Design: Mateusz Woźniak & Piotr Dmuchowski

Algorithms: Mateusz Woźniak & Piotr Dmuchowski

Video Tutorials and Manual: Cameron Gorham www.venustheory.com

Table of Contents

PSP Module forVoltage Modular....1
- Credits....2
- Table of Contents....3
- End User License Agreement for PSP software....5
- PSP Classic Collection....6
  - PSP Chorus....7
  - PSP Delay & PSP Delayex....9
  - PSP Flanger....11
  - PSP Plate....12
  - PSP Rotary....13
  - PSP Space....14
  - PSP Spring....15
- PSP Nitro Collection....16
  - PSP nitroADSR....17
  - PSP nitroBQF....19
  - PSP nitroComb....20
  - PSP nitroEnveloper....21
  - PSP nitroFormant....22
  - PSP nitroFREQ shifter....23
  - PSP nitroLFO....24
  - PSP nitroLoFi....25
  - PSP nitroPhaser....26
  - PSP nitroPitch....27
  - PSP nitroSVF....28
- PSP Studio Collection....29
  - PSP VCAcmp....30
  - PSP GEQ 10....31
  - PSP PEQ6....32
- PSP Poly Pack....33
  - PSP poly ADSR & PSP poly ADSRS....34
  - PSP polyAmp....35
  - PSP polyBoing....36
  - PSP polyEnveloper....37
  - PSP polyFilter....38
  - PSP polyFolder....39
  - PSP polyPath....40
  - PSP polyWobbler....41
- PSP eFeMerizer....42
  - General jacks and controls....42
  - Operators jacks and controls....43
- PSP Metering Modules (free)....1
- PSP Metra....1
  - PSP Spectra....1
- PSP Presets for Voltage Modular....2
- Support....2

End User License Agreement for PSP software

PREFACE: This End-User License Agreement ("EULA") is a legal agreement between you and PSPaudioware.com s.c. (PSP) for the PSP product accompanying this EULA, which includes computer software and may include associated media, printed materials, and "online" or electronic documentation ("SOFTWARE"). By installing, copying, or using the SOFTWARE, you agree to be bound by the terms of this EULA. If you do not agree to the terms of this EULA, you may not use the SOFTWARE. The SOFTWARE is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE is licensed, not sold.

LICENSE: You can INSTALL a copy of the SOFTWARE on as many machines as you want so long as you are the direct user or a studio client of those machines. If more users USE the software you must buy an additional license for each workstation. The DEMO VERSION of the SOFTWARE is NOT LICENSED FOR COMMERCIAL USE.

RESTRICTIONS: You may not transfer, modify, rent, lease, loan, resell, distribute, network, electronically transmit or merge the SOFTWARE. You may not reverse engineer, decompile or disassemble the SOFTWARE, or otherwise attempt to discover the SOFTWARE source code. You are not permitted to copy the SOFTWARE or any of the accompanying documentation.

COPYRIGHTS: All title and copyrights in and to the SOFTWARE (including but not limited to any images, photographs, animations, video, audio, music, text, and "applets" incorporated into the SOFTWARE), the accompanying printed materials, and any copies of the SOFTWARE are owned by PSP. The SOFTWARE is protected by copyright laws and international treaty provisions. Unauthorized reproduction or distribution of the SOFTWARE or documentation is subject to civil and criminal penalties.

DISCLAIMER OF WARRANTY: The SOFTWARE is provided "AS IS" and without warranty of any kind. The entire risk arising out of the use or performance of the SOFTWARE and documentation remains with user. To the maximum extent permitted by applicable law, PSP further disclaims all warranties, either express or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose, with regard to the SOFTWARE, and any accompanying hardware. To the maximum extent permitted by applicable law, in no event shall PSP be liable for any consequential, incidental, direct, indirect, special, punitive, or other damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of this EULA or the use of or inability to use the SOFTWARE, even if PSP has been advised of the possibility of such damages.

MISCELLANEOUS: This EULA is governed by Polish law. Should you have any questions concerning this EULA, or if you wish to contact PSP for any reason, please write to:

PSPaudioware.com s.c.
Bugaj 12,
05-806 Komorów,
Poland.

PSP Classic Collection

PSP Classics Modular Collection contains classic effects modules based on our extensive experience in developing high quality "bread and butter" effects and processing plug-ins:

- PSP Spring - three classic spring reverb emulations;
- PSP Plate - three classic plate reverb emulations;
- PSP Space - three classic room reverb emulations;
- PSP Delay (PSP Delay^{ex}) - digital delays with tape modulation and pingpong features;
- PSP Chorus - four voice stereo chorus;
- PSP Flanger - stereo flanger with manual control.
- PSP Rotary - an emulation of a classic mechanical modulation effect created by a rotating speakers' horn and drum.

PSP Chorus

PSP Chorus is a 4 voice stereo chorus module for Voltage Modular.

The **Feedback** control is useful for creating intense, screaming feedback effects. However, with great power comes great responsibility: for the sake of preserving your hearing and not damaging your equipment, this control is limited to 85% to prevent any extreme and unpredictable feedback resonances.

The **Mix** knob allows you to blend the effect from zero to 100%.

The **Output** knob adjusts the output volume of the module.

The **Crossover** knob adjusts the crossover frequency of the chorus unit, allowing you to preserve the signal below a certain point.

The **Bass Boost** knob adds a boost to the signal below the crossover point.

The **Lowpass** knob adds a gentle lowpass filter to the chorused signal.

The **Config** knob adjusts the chorus algorithm. The algorithm in use is described in the tooltip that appears when hovering over the knob.

The **Sat** button enables gentle analog style saturation from the module.

The **Bypass** button allows you to temporarily bypass the effect.

The **Predelay** panel allows you to adjust the predelay for each chorus voice, each of which can also be controlled via CV in the top of the panel.

The **Range** control sets the range of values used to generate the chorus effect. Chorus units work by adding a slight delay to the signal (measured in ms) and by modulating this with the 'range' you can produce more lush chorus effects with less predictability to the modulation and sound.

The LFO will then be used to offset the delay of the voice between 0ms and the defined value in the 'Range' slider in ms.

The **Intensity** adjusts the intensity (range) of the LFOs, and can also be controlled with the CV input above.

The **Phase Spread** adjusts the phase relationships of the active LFOs, allowing you to move between a more static basic chorusing effect and a wide washing chorus.

The **LFO Type** switch is used to change between different LFO shapes. The available shapes are Triangle, Sine, and Random.

The individual **Outputs** allow you to route the individual outputs of each chorus voice in use, as well as the Bass Crossover output.

PSP Delay & PSP Delay^{ex}

PSP Delay and Delay EX are stereo delay modules for Voltage Modular.

The **Feedback** control maxes out at 120% which is a unique value compared to most traditional delays. In classic delay units, due to the filtering and saturation applied, there isn't an exact 100% mark/value. So, the additional feedback range allows you to fine tune the delay to achieve a true 100% feedback range, as well as go beyond 100% to create special effects using strong saturation values.

The **Mix** knob allows you to blend in the delayed signal from 0% to 100%.

The **Output** knob adjusts the output gain of the delay unit.

The **PingPong** knob adds stereo width to the delay by offsetting the feedback taps to the left and right side.

The **Width** knob adjusts the stereo width of the effect.

The **Low and Highpass Filter** knobs filter the signal that is fed into the delay unit, allowing you to create filtered delay sounds.

The **Time slider** controls the delay tap timing, with the Rate adjustable with the toggle in the lower right which can select between Time, BPM, and Sync mode.

The **Time CV input** can be used to control the delay time or create modulated delays with the CV further adjustable with the CV dial below.

The **Sat** knob adjusts the amount of saturation added to the signal to create saturated analog style delays.

The **Wobble** control sets the amount of modulation to the delay for classic analog tape delay style effects, or can be entirely bypassed by setting the knob to 0% for steady delay taps.

The **Bypass** switch temporarily bypasses the effect.

The **PSP Delay^{ex}** module features the same control set, but also offers an **Insert function** that can be enabled with the **IN** button.

The **Insert position** can be adjusted between First, All, and Feedback modes to adjust its position relative to the taps and feedback loop, and can be routed with the Send and Return jacks.

This feature lets you add further custom processing to the delay signal to create your own one-of-a-kind delay effect.

PSP Flanger

PSP Flanger is a stereo flanger module for Voltage Modular.

The **Feedback**: similar to the PSP Chorus unit, the Flanger only allows a feedback value of up to 99% in order to prevent extreme feedback and resonances to preserve your equipment and your ears!

Flanger delay times are quite short, meaning that full 100% feedback would create incredibly loud and piercing tones.

The **Mix** knob adjusts the mix of the effect from 0 to 100%.

The **Output** knob adjusts the output gain of the module.

The **Width** knob adjusts the stereo width of the effect.

The **Filter** knobs allow you to filter the flanger signal with the high and lowpass filters.

The **SoftSat** button enables analog style saturation for the flanger unit.

The **Bypass** button temporarily bypasses the effect.

The **Delay** slider adjusts the amount of delay used to create the flanging effect.

The **delay time** can also be controlled with CV using the input in the upper right, which can be further modified with the CV control knob below.

The **modulation controls** allow for more unpredictable and ‘classic’ flanger sounds by adding a bit of movement or chaos to the flanger delay time.

The Range will set the amount of possible offset to the delay time, while the Rate controls the rate of the modulation being applied. The Spread control then further modifies this by adding an additional offset range allowing for more analog style effects with unpredictability.

Finally, the Type controls allow you to choose between triangle, sine, and wobble (aka: sample and glide waveform) modes for the LFO.

The **Type** switch adjusts the modulation type between Triangle, Sine, and Wobble, which is a randomized shape, for the LFO.

PSP Plate

PSP Plate is a stereo plate reverb module available for Voltage Modular.

The **Input** knob adjusts the input gain of the reverb module.

The **Decay** knob adjusts the decay time of the reverb.

The **Mix** knob adjusts the mix of the reverb effect between 0% and 100%.

The **Type** toggle switches between three plate modes: Shiny (I), Classic (II), and Heavy (III).

The **Mod** knob applies modulation to certain aspects of the reverb algorithm. The modulation parameters are optimized for the reverb algorithm to give the most musical results.

Applying modulation to the reverb allows for subtle shifts to the reverb sound to achieve a livelier sound, or even a 'chorused' effect to the reverb at higher values.

The **Damp** knob adjusts the damping frequency of the reverb.

The **Width** knob is used to adjust the stereo width of the reverb output. This is only audible when both output jacks are in use for stereo output.

The **Highpass** knob sets the highpass signal for the reverb output.

The **Bypass** button temporarily bypasses the effect.

PSP Rotary

Horn:
The Horn controls set the modulation rate of the Horn (high) speaker for the Low and High speed modes, with the Inertia control setting the time it takes to switch between the two modes when the 'change' button is clicked.

Drum:
The Drum controls set the modulation rate of the Drum (low) speaker for the Low and High speed modes, with the Inertia control setting the time it takes to switch between the two modes when the 'change' button is clicked.

The **Distortion** knob applies saturation to the output sound allowing for overdriven speaker effects.

The **Balance** knob sets the balance between the Drum (low) and Horn (high) speakers, allowing you to adjust between a darker or brighter response.

The **Spread** knob controls the stereo width of the output by offsetting the Drum and Horn speakers.

The **Speed** slider allows you to manually control the speed of the rotary speaker emulation. The CV input above the slider allows the speed to be controlled via an external CV source such as an LFO or other source.

The trim dial below the Speed CV Input controls the amount of smoothing applied to speed adjustments from the CV input. This is especially useful when rapid modulation is being applied.

The C**HNG** or 'Change' button allows you to manually switch between Low and High speed modes.

PSP Space

PSP Space is a stereo algorithmic reverb module available for Voltage Modular.

The **Input** knob adjusts the input gain of the reverb module.

The **Decay** knob adjusts the decay time of the reverb.

The **Mix** knob adjusts the mix of the reverb effect between 0% and 100%.

The **Type** toggle switches between three reverb algorithms: Hall, Chamber, and Room.

The **Mod** knob applies modulation to certain aspects of the reverb algorithm. The modulation parameters are optimized for the reverb algorithm to give the most musical results.

Applying modulation to the reverb allows for subtle shifts to the reverb sound to achieve a livelier sound, or even a 'chorused' effect to the reverb at higher values.

The **Damp** knob adjusts the damping frequency of the reverb.

The **Width** knob is used to adjust the stereo width of the reverb output. This is only audible when both outputs are used for stereo output.

The **Highpass** knob sets the highpass signal for the reverb output.

The **Bypass** button temporarily bypasses the effect.

PSP Spring

PSP Spring is a stereo spring reverb module available for Voltage Modular.

The **Input** knob adjusts the input gain of the reverb module.

The **Decay** knob adjusts the decay time of the reverb. The Decay can also be modified using CV.

The **Mix** knob adjusts the mix of the reverb effect between 0% and 100%.

The **Mix** can also be modified using CV.

The **Type** toggle switches between three spring reverb modes: Short Spring Tank (I), Long Spring Tank (II), and Necklace Springs (III).

The **Twang** knob modifies the simulated tension of the springs, allowing for washier results at lower settings or tight springing sounds at higher settings.

The **Damp** knob adjusts the damping frequency of the reverb.

The **Presence** control adds an upper midrange boost, combined with low and high frequency attenuation to provide a more 'forward' sound to the spring reverb. When set to 0, the 'wet' spring output has a flat frequency response, and when set to 1 the maximum presence effect occurs.

The **Width** knob is used to adjust the stereo width of the reverb output. This is only audible when both outputs are used for stereo output.

The **Highpass** knob sets the highpass signal for the reverb output.

The **Bypass** button temporarily bypasses the effect.

PSP Nitro Collection

PSP nitroModular Collection includes 12 exciting, creative modules that use algorithms from our flagship multieffect plug-in PSP N2O (formerly PSP Nitro) as a starting point, and take those effects to the next level. Every algorithm has been adapted, tailored, and expanded to take full advantage of the extraordinary possibilities offered by the modular format and flexibility of the Voltage Modular.

- PSP nitroFormant - dual formant filter;
- PSP nitroEnveloper - dual envelope follower;
- PSP nitroLFO - LFO with a choice of ten waveforms or derived waveforms;
- PSP nitroPhaser - phaser with up to 32 stages;
- PSP nitroLoFi - continuously variable bitcrusher with presets;
- PSP nitroBQF - two parallel filters;
- PSP nitroComb - two channel comb filter;
- PSP nitroSVF - dual state-variable filters;
- PSP nitroPitch - pitch shifter;
- PSP nitroNoise - a unique noise generator;
- PSP nitroADSR - an advanced envelope generator module;
- PSP FreqShifter - an analog-like frequency shifter module.

All modules feature full CV controllability for maximum flexibility and integration into your virtual modular rig. Break out of the standard processor rut and energize your modular rig with the **PSP nitroModular Collection!**

PSP nitroADSR

PSP nitroADSR is an advanced envelope generator module

The **Trigger** Input can be used for a trigger or gate CV sign

The **Trigger** button allows you to manually trigger the env

The **Loop** button enables the looping mode for the envelop delay through to the decay and start of the sustain phase.

Continuous mode runs the envelope continuously through the sustain phase, being automatically triggered by the en time base function.

The **Latch On** toggle adjusts between several selectable Hold, and All being available.

The **Trigger On** knob adjusts the trigger on CV threshold triggered with audio rate CV sources.

The **Trigger Off Hysteresis** knob adjusts the amount of hysteresis applied to the release of the trigger signal, this can be useful to adjust the release of the trigger signal for short CV sources.

The t**rigger mode** is selectable between portamento and legato, allowing the envelope to be utilized in multiple patch situations.

The **Output jack** sends out the direct CV output of the module.

The **envelope sliders** adjust the Delay, Attack, Hold, Decay, Sustain, and Release phases of the envelope, with each being CV controllable with a further CV modifier available below the CV input jack.

The **Key Follow** input can be used for key tracked envelope effects for the attack stage of the envelope generator with a further CV modifier available below.

The **Curve Type** selector adjusts the curve of the envelope between Sharp, Soft, Smooth, and Linear.

The **Level** adjusts the overall output level of the envelope generator.

The **Polarity** switch sets the polarity of the output CV signal between Positive, Bidirectional, and Negative.

The **MIDI** Input jack allows MIDI triggering of the envelope generator with the MIDI mode selectable between Mono and Poly.

The **Time Base** selector allows you to adjust the envelope time base between time, note, and host tempo mode.

The **Note Mode** can be used in conjunction with the tempo BPM knob to set the timing values

relative to a specific tempo.

The **VCA In and Out** jacks allow you to use Nitro ADSR as a self contained envelope and stereo VCA module, making patching faster by forgoing the need of an additional VCA module in the patch.

The **Invert** button inverts the output of the VCA signal.

The **Output** Inverted jack sends out the inverted CV output of the envelope.

Trigger Off Hysteresis: Hysteresis is the replication of unpredictable characteristics of analog systems. In nitroADSR, the Trigger Off Hysteresis knob adjust the amount of hysteresis applied to the release phase of the envelope generator.

In simpler terms, this applies some gentle randomization to the value that triggers the release phase/end of the envelope, essentially acting as a random threshold for what is considered the end of a note or trigger.

Note Mode: The Note Mode toggle switches between mono and polyphonic trigger modes for the envelope generator. If you connect the 'MIDI From Host' or any other MIDI generator inside of Voltage Modular, this will retrigger the envelope in different ways. In Mono mode, the envelope is only triggered once - if you play a second note while the first note remains held (ie: legato) the envelope will not be retriggered. In Poly mode, the envelope is retriggered with each new note pressed.

Because nitroADSR is a monophonic module, the polyphonic retriggering via MIDI can be useful for interesting effects or rhythmic patches. Try using it to target a filter cutoff!

PSP nitroBQF

PSP nitroBQF is the module version of the Biquad effect from PSP N2O available for Voltage Modular.

This module offers stereo parallel multimode filters, with four modes available for each filter.

The **Gain In** adjusts the input gain of the filter signal input.

The **Bypass** button allows you to temporarily bypass the effect.

The **Gain Out** adjusts the output gain from the module.

The **SoftSat** button enables subtle analog style saturation for the module.

The **1v/oct** input allows for 1v/oct scaled tracking of the filter frequency with the **CV** further adjustable with the **CV trim** knob below.

The Resonance can also be controlled with CV and the CV signal can be further modified with the CV trim knob below.

The **Frequency A** knob sets the cutoff frequency of Filter A, while the Resonance sets the resonance of Filter A.

The **Filter Type** can be set between Lowpass, Highpass, Bandpass, and Notch.

The **Filter Slope** can be toggled between 12dB/oct, 24dB/oct, and 36dB/oct. This Slope setting affects both filters.

The **Sat** knob sets the saturation of the respective filter.

These controls and CV inputs are repeated for **Filter B**.

The **Morph** knob allows you to morph between the two filter states, and can be CV controlled with the CV signal further modifiable with the CV trim knob below. This can create many interesting and complex filter effects.

PSP nitroComb

PSP nitroComb is a resonant stereo comb filter module for Voltage Modular

The **Gain In** adjusts the input gain of the filter signal input.

The **Bypass** button allows you to temporarily bypass the effect.

The **Gain Out** adjusts the output gain from the module.

The **SoftSat** button enables subtle analog style saturation for the module.

The **Display** Toggle allows you to display the left or right filter settings on the module screen

The **1v/oct** input allows for 1v/oct scaled tracking of the filter frequency with the **CV** further adjustable with the **CV trim** knob below

The **Depth** of the filter can also be controlled with CV and the CV signal can be further modified with the CV trim knob below.

The **Frequency L** knob sets the cutoff frequency of the left filter, while the Depth L knob adjusts the depth of the left filter.

The filter can then be inverted with the Invert toggle.

These controls and CV inputs are repeated for the right filter.

The filter controls can be linked using the **Link LR** button

The **Feed type** is selectable between FeedBack and FeedForward modes for the comb filter structure.

The **Interpolation** can also be adjusted between Off, Linear, and Cubic, allowing for a wide range of comb filter effects.

PSP nitroEnveloper

PSP Nitro Enveloper is an envelope generator module for Voltage Modular.

The **View Mode** toggle located below the main screen of nitroEnveloper allows you to switch between 'Peak' and 'RMS' signal modes to view the level of the input signal. This can be useful to switch between depending on the type of source material feeding into the module.

The **Feed A/B** input acts as a mono cv input source for the envelope generator - when Input B is used this can be used to create dual envelope signals or stereo envelope signals.

The **Level** adjusts the trigger level between -5 and +5 volts.

The **Feeds Gate** input is used as the gate signal input for the envelope generator.

The **Attack knob** adjusts the attack time of the envelope generator.

The **Hold** toggle adjusts the attack hold function between Off, On, and Boost settings.

The **In Level** adjusts the input level of the module.

The **Threshold** adjusts the threshold of the envelope generator. This can also have different threshold operating types set between Above, Below, or Around.

The **DC Cut** toggle enables a secondary function of nitroEnveloper to cut out the signal using the threshold knob. In 'Below' mode, this applies a DC offset to the output signal, allowing you to fine-tune the response of the envelope generator and it's output.

The **Release** Knob adjusts the release phase of the envelope.

The **Slope** can be adjusted between Sharp, Soft, and Smooth modes.

The **Out Level** adjusts the output of the module.

The **Feed A/B** Link function features a linear relationship between the two signals. With the knob at 100%, the two are equal. Essentially, this acts as a 'crossfade' knob fading in linearly.

The **Out A/B** toggle adjusts the polarity of the output between Positive, Bipolar, and Negative.

PSP nitroFormant

PSP nitroFormant is a formant filter module available for Voltage Modular.

The **Gain In** adjusts the input gain of the module.

The **Gain Out** adjusts the output gain of the module.

The **Bypass** toggle temporarily disables the effect.

The **Pitch A** knob adjusts the pitch of Filter A, allowing for deeper or brighter sounds.

The **SoftSat** button enables analog style saturation for the module.

The **Frequency** knob adjusts the frequency shift of the A and B Vowels which is adjusted between a factor of 0.5x and 2x.

The **Resonance** adjusts the resonance of the filters.

The Pitch, Frequency, and Resonance can all be controlled with CV with further CV modification available using the CV trim knobs below their respective jack.

The **Vowel A** sets the vowel type for the first vowel filter, which can also be controlled via **CV** with the CV further modifiable using the **CV trim** knob. The currently selected Vowel Type is then displayed in the **LED display** box.

Vowel B offers the same features for the second vowel filter.

Pitch B controls the pitch of Filter B, allowing for deeper or brighter sounds and can also be controlled using CV, with the CV further modifiable using the CV trim knob.

The **Morph** knob allows you to morph between the two filters, and can be controlled via CV with the CV further modifiable using the CV trim knob.

PSP nitroFREQ shifter

PSP nitroFreqShifter is a precise frequency shifter module available for Voltage Modular.

The **Frequency** knob allows you to set the frequency shift between the minimum and maximum negative values of the range - with the range being selected using the **Range** toggle to the right side.

The **range** of the frequency shifter can be set between 1k, 3k, and 10k.

The frequency shift can also be controlled with **CV** with the CV being further modifiable with the **CV trim** knob.

The **Reset** button resets the frequency shift knob settings to 0.

The **Mix** allows you to blend in the frequency shifted signal. This can be controlled with CV, with the CV being further modifiable with the CV trim knob.

The **Gain Out** knob adjusts the output gain of the module.

The **Bypass** button temporarily bypasses the effect.

The **Output** jacks offer different output modes from the module. You can choose to use the Inverted (-) shifted output, the Original (0) signal output, or the Positive (+) shifted output.

PSP nitroLFO

PSP nitroLFO is a flexible dual LFO module available for Voltage Modular.

The **Sync** toggle enables or disables tempo based syncing for the module. This can be set between Off, Tempo, and Host Tempo modes.

The **1v/oct** switch allows for scaled tracking of the LFO rate for precise LFO effects. The **CV** can be further modified with the **CV trim** knob.

The **Level** adjusts the trigger level when a trigger signal is received by the **Trigger Input** jack which resets the LFO.

The **Offset** knobs adjust the offset of the LFOs, allowing for a multiphase LFO output.

The **Filter** knob applies a filter to the waveform, with the Smooth toggle then further smoothing out the re-shaped waveform.

The **Tilt/Width** knob adjusts the shape of the LFO by tilting or adjusting the width of the current LFO shape. The Smoothing button applies smoothing to the re-shaped waveform.

The **Rate** knob adjusts the rate of the LFO. If the LFO is set to use Tempo or Host Tempo mode, the value will be displayed relative to the tempo.

The **Modes** allow you to select between various LFO shapes.

The **Derived** button changes the LFO output to derived mode, and the derived output level can be adjusted with the Makeup knob.

The **Out A/B Range** trim adjusts the output value range for the LFOs.

The **Polarity** toggle allows you to adjust the polarity of the LFO between Positive, Bidirectional, and Negative.

RND: The RND or 'Random' mode of nitroLFO generates a random stepped output generated by an internal noise generator. This is a self contained 'sample and hold' mode, with the Rate knob controlling the frequency.

S&H: S&H or 'Sample and Hold' mode allows you to create a 'sample and hold' LFO using an external signal as the input source. With nothing connected to the 'S&H In' jack, the LFO will not provide any output. However, once you connect a source, it will sample and hold that source to generate the LFO with the Rate knob controlling the frequency.

PSP nitroLoFi

PSP nitroLoFi is a stereo bitcrushing and sample rate reduction module available for Voltage Modular.

The **Gain In and Gain Out** knobs adjust the input and output gain of the module.

The **Bypass** button temporarily bypasses the effect.

The **Sample Rate** knob adjusts the output sample rate from the module. The sample rate can be further modified using the Antialias and Smoothing toggles.

The Sample Rate can be modified with CV, with the **CV** being further adjustable with the **CV trim** knob.

The **Bit Depth** knob adjusts the bit depth. The Integer toggle forces the bit depth to integer values.

The Bit Depth can be modified with CV, with the **CV** being further adjustable with the **CV trim** knob.

For further flexibility, you can enable Nonlinear mode with the **Nonlinear** toggle.

The **Dither** and **Noise Shaping** toggle controls the dithering and noise shaping applied to the output signal.

The **Type** toggles allow you to access a variety of presets emulating different devices or formats.

PSP nitroPhaser

PSP nitroPhaser is a stereo phaser module available for Voltage Modular.

The **Gain In** and **Gain Out** knobs adjust the input and output gain of the module.

The **Bypass** toggle temporarily bypasses the effect.

The **SoftSat** button enables analog style saturation for the module.

The **Display** toggle adjusts the screen display between the Left and Right phasers.

The F**requency** knobs set the frequency of the phaser for the left and right sides. This can be modified using CV, with the **CV** being further adjustable with the **CV trim** knob.

The **Depth** knob adjusts the depth of the phaser effect. This can be modified using CV, with the cv being further adjustable with the cv trim knob.

The **Negative Right** button inverts the phaser depth for the Right signal.

The **Link** button links the Left and Right frequency for the phaser.

The **Order** knob adjusts the number of stages for the phaser effect between one stage and up to 32 stages.

The **Resonance** knob adjusts the overall resonance of the phaser effect. This can be modified using CV, with the **CV** being further adjustable with the **CV trim** knob.

The **Negative Right** button inverts the resonance for the Right signal.

PSP nitroPitch

PSP nitroPitch is a stereo pitch shifting module available for Voltage Modular.

The **Gain In** and **Gain Out** knobs adjust the input and output gain of the module.

The **Bypass** toggle temporarily bypasses the effect.

The **Mix** knob adjusts the mix of the module effect between 0% and 100%.

The **Semitones** knob adjusts the pitch shifting of the signal in semitones with a total range of 12 semitones in either direction.

This can be modified using CV, with the **CV** being further adjustable with the **CV trim** knob.

The **Cents** knob adjusts the fine tuning of the effect in cents. This can be modified using CV, with the **CV** being further adjustable with the **CV trim** knob.

The **Tune L** and **Tune R** knobs adjust the fine tuning of the left and right signals, and these can be linked together with the **Link** toggle below.

These can be modified using CV, with the **CV** being further adjustable with the **CV trim** knob.

The **Resolution** adjusts the resolution of the pitch shifting algorithm allowing for a variety of creative pitch shifting effects.

The **Phase Reset** button resets the phase of the pitch shifted signal.

The **Overlap** toggle adjusts the overlap of the pitches between Standard, High, and Very High.

The **Window** control allows you to select between 19 different window types for the pitch shifting algorithm.

PSP nitroSVF

PSP nitroSVF a stereo multimode state variable filter module available for Voltage Modular.

This module offers stereo parallel multimode filters, with five modes available for each filter.

The **Gain in** and **Gain Out** knobs adjust the input and output gain for the module.

The **Bypass** button allows you to temporarily bypass the effect.

The **SoftSat** button enables subtle analog style saturation for the module.

The **1v/oct** input allows for 1v/oct scaled tracking of the filter frequency with the CV further adjustable with the **CV trim** knob below.

The Resonance can also be controlled with CV and the **CV** signal can be further modified with the **CV trim** knob below.

The **Frequency A** knob sets the cutoff frequency of Filter A, while the Resonance sets the resonance of Filter A.

The **Filter Type** can be set between Lowpass, Highpass, Bandpass, Notch, and Peak.

The **Filter Slope** can be toggled between 12dB/oct, and 24dB/oct. This Slope setting affects both filters.

The **Sat** knob sets the saturation of the respective filter.

These controls and CV inputs are repeated for Filter B.

The **Morph** knob allows you to morph between the two filter states, and can be CV controlled with the CV signal further modifiable with the **CV trim** knob below. This can create many interesting and complex filter effects.

PSP Studio Collection

PSP Studio Modular Collection for Voltage Modular includes 3 modules based on classic processors, and on our experience in developing high quality plug-ins. This bundle consist of:

- PSP VCACMP - classic VCA style compressor,
- PSP GEQ10 - a classic ten-band graphic equalizer,
- PSP PEQ6 - an analog-style parametric equalizer.

PSP VCAcmp

PSP VCAcmp is a stereo classic VCA style compressor module available for Voltage Modular.

The **SCext** button enables the option to use an external sidechain signal, with the stereo input jacks available below.

The **Topology** toggle allows you to select between different compression modes. The options available are Feedforward (FF), Feedforward + Feedback (FF+FB), and Feedback (FB).

The **Sidechain Highpass** toggle enables the sidechain highpass filter, with the Filter Cutoff being adjusted with the trim knob below.

The **Link** button links the Left and Right channels together for equal compression. This is only audible when both inputs are utilized.

The **Bypass** button temporarily bypasses the effect.

The compressor offers all standard compression settings for **Attack, Release, Threshold, Ratio, and Mix** which allows for parallel compression effects.

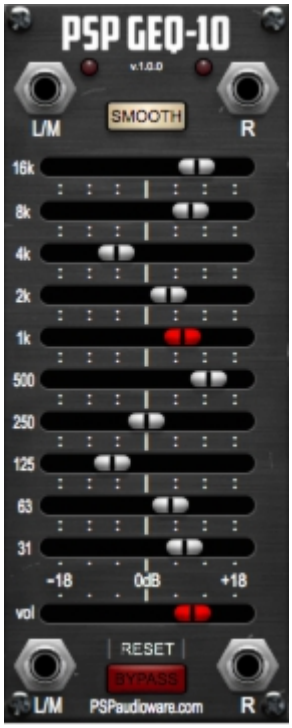
The RMS toggle enables RMS compression mode, offering more classic glue style compression.

The **Meter** toggle changes the **Meter Display** between **Input** (IN), **Gain Reduction** (GR), and **Output** (OUT) modes.

The **Auto** toggle enables or disables automatic Release timing for the compressor.

The **Auto Makeup** toggle enables or disables automatic gain compensation for the module.

PSP GEQ 10



PSP GEQ 10 is a ten band stereo graphic EQ module for Voltage Modular.

The individual bands allow you to adjust the gain of a specific fixed frequency band, noted to the left hand side, between -18 dB and +18 dB.

The **Smooth** toggle can be used to emulate the soft and cohesive response of analog style processing.

The **Volume** slider at the bottom adjusts the output gain of the module with a range of -18 dB and +18 dB.

The **Reset** button allows you to quickly reset the EQ by clicking and holding the button.

The **Bypass** button temporarily bypasses the effect.

PSP PEQ6

PSP PEQ6 is a stereo six band parametric EQ module available for Voltage Modular.

The **High Band Mode** adjusts the mode of the high band filter between a Soft Shelf, Steep Shelf, or Peak. The High band button is used to enable or disable the high band filter.

The **HiMid band** button enables or disables the High Mid Filter.

The **LoMid band** button enables or disables the Low Mid Filter.

The **Low Band Mode** adjusts the mode of the low band filter between a Peak, Steep Shelf, or Soft Shelf. The Low band button is used to enable or disable the low band.

Each band offers standard parametric EQ functions to adjust the **Frequency, Gain, and Resonance (Q)** of the respective filter band.

The **Lowpass** button is used to enable the Lowpass Filter, with the Frequency set by the knob below.

The **Highpass** button is used to enable the Highpass Filter with the Frequency set by the knob below.

The **Output** knob adjusts the output gain of the module.

The **Smooth** button enables analog style responses for the EQ filter bands.

The **Bypass** button bypasses the effect.

The **Reset** button (when held) resets all bands of the module.

PSP Poly Pack

PSP PolyPack is a set of PSP modules for Voltage Modular designed to assist you to help you build polyphonic instrument racks. The wide set of features included in these modules combine flexibility and creativity within simple to use modules.

- PSP PolyADSR - classic ADSR generator & PSP PolyADSR-S;
- PSP PolyAmp - a polyphonic voltage controlled amplifier;
- PSP PolyBoing - a unique signal generator that reacts resonantly to the rising or falling edges of a trigger signal;
- PSP PolyEnveloper - a multi stage envelope generator;
- PSP PolyFilter - a fourth order ladder-type resonant filter;
- PSP PolyFolder - a multi-stage (0 to 6) signal folder;
- PSP PolyPatch - a polyphonic patch bay;
- PSP PolyWobbler - a signal generator designed to emulate analog instabilities.

PSP poly ADSR & PSP poly ADSRS

PSP PolyADSR and ADSRS are envelope generator modules with included VCAs available for Voltage Modular.

The **Expression** inputs offer **mono and poly CV** inputs that can be used to assign an expression parameter to any expression destination. The amount of CV can be modified with the **CV trim** knob.

The **Key Follow** input offers a **poly CV key** follow expression, with the amount of key tracking CV being modified using the **CV trim** knob.

The **CV Out** outputs the CV of the envelope generator - the **Defeat** button disables the envelope generator.

The envelope offers knobs to control the **Attack, Decay, Sustain, and Release** phases. Each stage of the envelope also features an expression **CV trim** knob to assign the amount of expression for that stage.

The **Shape** knob for the Attack, Decay, and Release phases adjusts the slope of that stage for further fine control of the envelope shape.

The **Loop** button toggles looping of the envelope between the Attack and Sustain phases.

The right side of the module acts as a self contained VCA, allowing for mono or poly gain CV with an available CV trim knob.

The **Gain** knob adjusts the output gain of the module.

The **Output** offers mono and poly outputs for the VCA, and the Mute button mutes these outputs.

PSP PolyADSR offers all the same features, but features **a stereo VCA section**.

PSP polyAmp

PSP polyAmp is a polyphonic VCA module for Voltage Modular.

The **CV inputs** allow for **mono or poly CV** to be used for the amplifier, with each having adjustable CV using the **CV trim knob**.

The **EXP** knob adjusts the shape of the amplification stage between Linear (0%) and Exponential (100%).

The **Shift** knob applies an offset to the amplification stage.

The **Gain** knob adjusts the output gain level of the module.

The **Defeat** button bypasses the module.

The **output** section offers both mono and poly CV outputs from the module.

PSP polyBoing

PSP polyBoing is a control module that reacts resonantly to the rising or falling edges of a polyphonic CV triggering signal for Voltage Modular.

The **Up, Plus, and Down Selector** toggles which edge of the signal triggers the module. This can be toggled between Up, Up and Down (+), or Down.

The **Frequency** knob adjusts the frequency of the resonance, and can be controlled via **mono or poly CV**, which also offer individual **CV trim** knobs.

The **Control to Freq Feedback** knob trims the amount of internal CV going to the frequency, allowing for a dynamic effect without any external CV sources.

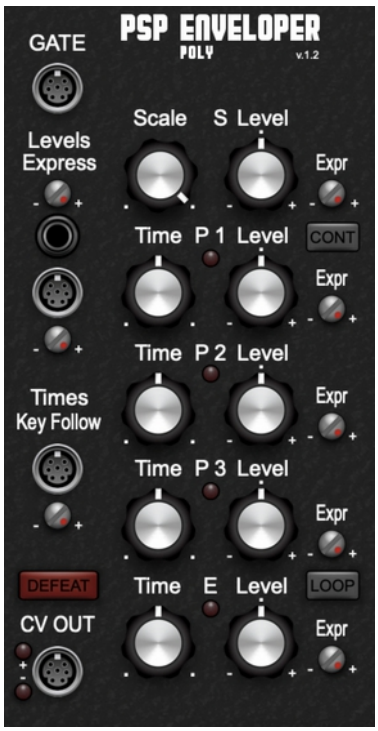
The **Length** knob adjusts the decay length of the signal. This can be modified by CV, which can be further adjusted with the **CV trim** knob.

The **Range** knob sets the output CV range of the module, and can also be used to output the inverted signal.

The **Defeat** button bypasses the module.

The available **Outputs** allow you to output the Boing signal, or the Control Level signal as poly CV outputs.

PSP polyEnveloper



PSP polyEnveloper is a 5 stage polyphonic envelope generator for Voltage Modular.

The **Scale** knob sets the scale between 0% and 100%.

The **S Level** sets the start level CV between -5v and +5v.

The **Time** knobs adjust the time of each of the three inner stages - their respective Level knobs set the level of that stage.

The **final Time** control adjusts the time of the Release phase, with the Level setting the level of the release phase.

The **Levels Expression** inputs allow for mono or poly CV sources to be used to tie expression to any of the expression trim knobs.

The **Times Key Follow** offers a polyphonic CV input for key tracking which can be further controlled with the CV trim knob.

The **Cont.** button enables continuous response on legato playing.

The **Loop** button enables looping between the three internal stages.

The **Defeat** button bypasses the module.

PSP polyFilter

PSP polyFilter is a polyphonic multimode fourth order ladder type filter for Voltage Modular.

The **Type** selector allows you to choose between three filter modes: Lowpass, Bandpass, and Highpass.

The **Frequency** knob sets the cutoff frequency of the filter. This can be modified with mono or poly CV, with the CV being further adjustable with the respective CV trim knob.

The **Makeup** knob allows you to add makeup gain to compensate for any volume reduction from the filter.

The **Resonance** knob adjusts the resonance of the filter. This can be modified with CV, with the CV being further adjustable with the CV trim knob.

The **Gain** knob adjusts the output gain of the module. The Defeat button bypasses the module.

The **Output** section offers poly and mono CV outputs.

PSP polyFolder

PSP polyFolder is a polyphonic wavefolding module for Voltage Modular.

The **Stages** knob adjusts the number of wavefolding stages applied to the signal. The Saturation button enables or disables saturation applied to the final stage.

The **Drive** knob adjusts the amount of drive applied to the signal. This can be modified with CV, with the CV being further adjustable with the CV trim knob.

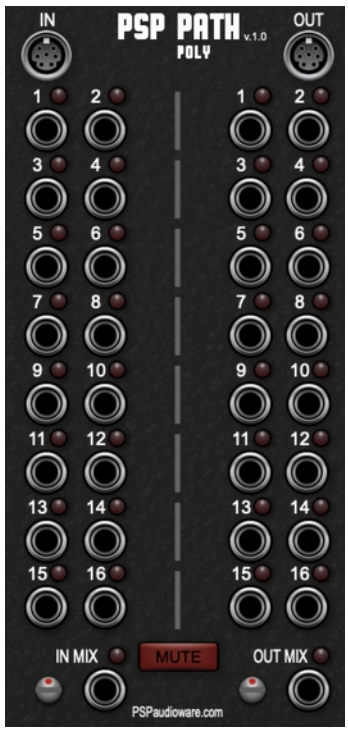
The **Bias** knob applies an offset to the signal. This can be modified with CV, with the CV being further adjustable with the CV trim knob.

The **Gain** knob adjusts the output gain of the module.

The **Defeat** button bypasses the module.

The **Output** section offers both poly and mono CV outputs.

PSP polyPath



PSP polyPath is a unique polyphonic patchbay module for Voltage Modular.

PolyPath accepts a **polyphonic CV input**, and converts it to up to 16 mono CV sources. These can then be routed to the output matrix, or to an external destination.

Each Source has its own **LED** to indicate the currently active mono CV source.

The **In Mix** can be used to output the summed signal of all active sources on the input side, which can then be trimmed using the Gain CV trim knob.

The **Output** acts as a polyphonic through output, allowing you to stage the patchbay at any point in a polyphonic signal chain and continue through the module.

The **Output** side features 16 monophonic CV inputs which can accept mono CV sources from the Input side of the matrix, or from external sources.

The **Out Mix** can be used to output the summed signal of all active sources on the output side, which can then be trimmed using the Gain CV trim knob.

The **Mute** button mutes the output of the matrix.

PSP polyWobbler

PSP polyWobbler is a polyphonic random CV source and processor for Voltage Modular, designed to assist with adding analog style instabilities.

The **CV input** allows you to input an external polyphonic CV source to be processed by the module.

The **Distribution** switch toggles between Uniform (U), Triangular (T), and Gaussian (G) distribution modes for the CV generator and processor.

The **Rate** knob adjusts the rate of the output voltage changes. This can be modified with CV, with the CV being further adjustable with the CV trim knob.

The **Range** knob adjusts the output range of the voltage. This can be modified with CV, with the CV being further adjustable with the CV trim knob.

The **Defeat** button bypasses the module.

The **CV outputs** allow you to output the positive (+) or inverted (-) polyphonic CV generated by the module.

PSP eFeMerizer

PSP eFeMerizer (Frequency Modulation Engine) is a Frequency modulation synthesizer consisting of four operators. Each operator is independently configurable, resulting in unprecedented sound design flexibility.

General jacks and controls

Transpose - sets up the overall transposition for all operands in reference to the provided Pitch CV for each of them. The Transpose can be set to operate in quantized semitones (Q mode of the switch) or smoothly (S mode of the switch).

Bend (monophonic jack) - controls the overall pitch bend. The range of the pitch bend is adjustable with the trim pot underneath the jack.

GATE SYNC 1...4 (polyphonic jack) - engages each operators' synchronization for a given polyphonic SYNC CV. Attaching a proper gate signal to this jack is necessary for proper operation of operators' wave scopes.

Operators jacks and controls

ON button - enables or disables the given operator.

Pitch (polyphonic CV Jack) - controls the pitch of the operator. The trim pot underneath sets the scaling of the pitch CV. When this jack is not connected the operator works with the constant frequency set up by the Freq-Shift knob.

Freq-Div - sets the frequency ratio between the provided pitch and the operator. For example, a ratio of 1:2 indicates that the frequency of the operator is an octave higher than the provided pitch. The switch underneath the knob switches between preset integer dividers and multipliers (Q) and smooth set values (S).

Freq-Shift - sets up the frequency shift in reference to the pitch of the operator. Freq-Shift directly controls the frequency of the operator when the Pitch jack is disconnected and the operator can be used as an LFO source.

Waveform (knob and buttons) - select the type of the operator's waveform. There are 63 waveforms of various types to choose from. The basic sinusoidal waveform is repeated as W1 of the W1 to W8 group.

Waveform Display - shows the single cycle of a select waveform (not applicable to random signals and noise). The display is off when the operator is disabled.

Bias trim pot - controls the amount of bias for the operator. This can be a useful tool to fine-tune the timbre of complex modulated waveforms or to adjust the DC of the resulting waveform.

Phase trim pot - adjusts the initial phase of the operator's waveform.

FM (polyphonic jack) - together with the trimpot underneath controls the amount of frequency modulation of the operator. Keep in mind that we use the term 'frequency modulation' here similarly to other synthesisers' designers. The technique used under the hood in most FM synthesisers is actually phase modulation. To achieve frequency modulation directly, the input of the pitch jack should be modulated which in general make sense only in instances with low frequency modulation.

Operator's Output Display - display the operator's output waveform before all output CV and trim pots.

Operator Description Box - contains a user's text describing the operator for example Carrier1, Modulator2.

CV 1 (polyphonic input) - together with the trimpot underneath controls the amount of the signal on the Out 1 waveform output.

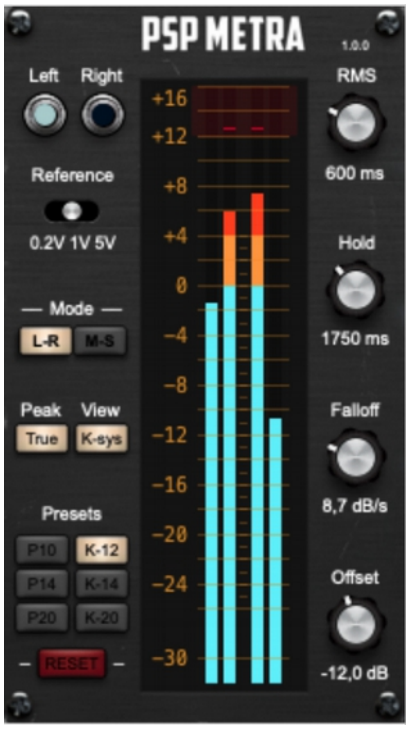
Out 1 (polyphonic output) - is the first waveform output of the operator controlled by the trimpot underneath and CV 1 control voltage.

CV 2 (monophonic input) - together with the trimpot underneath controls the amount of the signal on the Out 2 waveform output.

Out 2 (polyphonic output) - is the first waveform output of the operator controlled by the trim pot underneath and CV 2 control voltage.

PSP Metering Modules (free)

PSP Metra



PSP Metra is a stereo metering module available for Voltage Modular.

The **Reference Level** sets the voltage value used as a reference for 0dB.

The **Mode Functions** allow you to adjust the meter view between Left/Right to Mid/Side.

The **Peak** toggle adjusts the peak mode. Sample Peak (button disengaged) shows only peak sample values. True Peak mode (button engaged) shows the peak meter oversampled by a factor of four.

The **View** can also be set to use K-System style metering using the K-Sys button.

The **Preset options** give you access to a variety of standard measuring modes.

The **RMS Integration Time** knob allows you to adjust the timing of RMS measurements.

The **Hold** knob adjusts the hold time of the signal peaks.

The **Falloff** knob adjusts the falloff time of the signal peaks.

The **Offset** knob allows you to add an offset to the signal between -24dB and +4dB.

The **Reset** button instantly resets all parameters for the meter.

PSP Spectra

PSP Spectra is a ⅓ Octave 30 band stereo spectrum analyzer module available for Voltage Modular.

The **Range** toggle sets the range between 24dB and 48dB.

The **Spectrum graph** represents the signal spectrum split across 30 bands.

The **Peak** modes adjust the peak release time between Short, Medium (MED) and Long, displaying the spectrum based on peak signals.

The **RMS** toggles adjust the RMS falloff time between Short, Medium (MED) and Long, with the spectrum in turn representing the RMS signal.

The **Input** toggle changes the displayed signal between the Left (L/M), Left and Right (L+R), and Right (R) channels. For Left and Right mode, both input jacks must be used.

The **Reference** toggle sets the 0dB reference level CV between 0.2v, 1v, and 5v.

The **Level** slider applies a level offset to the signal between -12dB and +36dB.

The **Precise** toggle enables the precision display mode for the analyzer, offering a more detailed representation of the frequency spectrum.

The **Defeat** toggle temporarily disables the analyzer.

PSP Presets for Voltage Modular

We offer two sets of presets:

- A preset collection of 165+ presets designed with PSP modules as well as the Cherry Audio Core+Electro Drums collection;
- Almost 100 presets build with PSP eFeMerizer and other PSP modules (mainly PSP poly modules).

Support

If you have any questions about any of our modules, please visit our website http://www.PSPaudioware.com where you can find the latest product information, free software updates, and answers to the most frequently asked questions.

Please also visit our YouTube channel where you can find video tutorials showing PSP modules for Voltage Modular in action.

You can also contact us by e-mail: support@PSPaudioware.com. We will gladly answer all of your questions.

PSPaudioware.com s.c.
Bugaj 12, 05-806 Komorów, Poland.
ph. +48 601 96 31 73
www.PSPaudioware.com
contact@PSPaudioware.com