Rave Generation *presents*

SYMPHONIC

Modulation Multi-Effects Processor

User Manual

1. Overview

Symphonic is a faithful emulation of the Yamaha SPX90 Multi-Effects Processor's modulation algorithm. Rather than approximating the hardware with generic DSP building blocks, Symphonic recreates the original SPX90 processing at the hardware's native 31.25 kHz internal clock with a 12 kHz passband. The result is a faithful recreation of the SPX90's warmth, character, and bandwidth-limited stereo image.

Seven modulation effects are available from a single Preset knob: Stereo Flange A and B, Chorus A and B, Stereo Phasing, Tremolo, and the classic Symphonic patch. All seven run on the same processing engine, and each one recalls its original factory settings from the SPX90 the moment you select it.

2. Signal Flow

Input Gain → Anti-Alias Filter (12 kHz) → SRC to 31.25 kHz → SPX90 Effect Engine → SRC to Host Rate → DAC Reconstruction Filter (12 kHz) → Dry/Wet Balance → Output Gain

Audio enters the plugin and is scaled by the In Lvl control, then passed through a 12 kHz anti-alias low-pass filter that mirrors the original hardware's analog input stage. The signal is converted to the SPX90's native 31.25 kHz sample rate using linear interpolation, then fed to the selected effect engine.

The SPX90 hardware is mono-in, stereo-out: stereo input is summed to mono before entering the effect, and the stereo image is created by the effect itself. After processing, the output is resampled back to the host session rate and passed through a 12 kHz reconstruction filter.

The final stage blends the processed wet signal with the input dry signal according to the Balance knob, then applies Out Lvl gain.

3. The Seven Effects

All seven effects are sourced from slot-2 of the SPX90 ROM. The Preset knob steps through them in the order they appear in the hardware's factory memory. The active knobs on the panel change automatically when you switch presets, showing only the controls that are relevant to the selected effect.

Stereo Flange A

A classic through-zero flanger using a short, LFO-modulated delay. The Mod Dly knob sets the base delay time, Mod Frq controls the sweep rate, and Mod Depth controls the sweep width. FB Gain feeds the delayed signal back into the input for a sharper, more resonant comb-filter character. Flange A uses a unique 202.5-degree phase offset between the two LFO channels, giving it a slightly asymmetric, lively sweep compared to Flange B. Factory defaults: Mod Frq 2.5 Hz, Mod Depth 50%, Mod Dly 1.2 ms, FB Gain 35%.

Stereo Flange B

Identical architecture to Flange A, with a standard 180-degree inter-channel LFO offset. The result is a more symmetrical, even sweep. Flange B defaults to a faster rate with higher feedback, making it a more aggressive flanger out of the box. Factory defaults: Mod Frq 0.5 Hz, Mod Depth 90%, Mod Dly 1.0 ms, FB Gain 40%.

Chorus A

A warm, thick chorus combining delay modulation (controlled by Mod Frq and Mod Depth) with simultaneous amplitude modulation of the wet signal (AM Depth). This dual-modulation approach gives Chorus A its characteristic organic shimmer. The AM Depth knob appears only for this preset and Chorus B. Factory defaults: Mod Frq 0.2 Hz, Mod Depth 50%, Mod Dly 5.0 ms, AM Depth 40%.

Chorus B

A brighter, more forward chorus. It uses the same delay-and-amplitude modulation as Chorus A but moves less, giving a subtler shimmer. Use Chorus B when you want the thickening quality of chorus without as much of the amplitude pulsing. Factory defaults: Mod Frq 0.6 Hz, Mod Depth 50%, Mod Dly 5.0 ms, AM Depth 10%.

Stereo Phasing

A modulated allpass-based phaser. In the SPX90, phasing is implemented using the same delay-modulation engine as flanging, but at a longer base delay time that produces the characteristic swooping phase cancellations rather than comb filtering. FB Gain is not available for Phasing. Factory defaults: Mod Frq 1.1 Hz, Mod Depth 100%, Mod Dly 3.0 ms.

Tremolo

A smooth amplitude modulator driven by the SPX90's original LFO waveform. The waveform never fully cuts out, staying above half amplitude at its minimum, for a natural musical tremolo rather than a hard gate. Mod Frq controls the rate and Mod Depth controls how deeply the amplitude is modulated. Factory defaults: Mod Frq 6.0 Hz, Mod Depth 50%.

Symphonic

The Symphonic patch is the most distinctive effect in the SPX90's modulation bank. Where the chorus and flanger move a single delayed voice, Symphonic layers several, each drifting at a different point in the modulation cycle. One voice stays common to both outputs while the others separate left and right, and that is what opens the sound out into a wide ensemble rather than an obvious chorus. The movement is slow and shallow by design: it thickens and widens without the pitch wobble of a conventional chorus. Factory defaults: Mod Frq 0.7 Hz, Mod Depth 50%.

4. Controls Reference

4.1 Preset

The Preset knob is a seven-position stepped control. Turning it to a new preset loads the corresponding effect and resets all knobs to that preset's factory default values from the SPX90 ROM. The panel controls change to reflect the parameters available for the selected effect.

Control	Range	Description
Preset	*7 positions*	Selects one of seven effects: Stereo Flange A, Stereo Flange B, Chorus A, Chorus B, Stereo Phasing, Tremolo, Symphonic. Each preset change loads the original SPX90 factory settings for all knobs.

4.2 Modulation Controls

These knobs are shown or hidden depending on the active preset. Controls marked with the applicable presets in parentheses.

Control	Range	Description
Mod Frq	*0.1 to 40 Hz*	LFO rate for the selected effect. Lower settings produce a slow, sweeping movement. Higher settings move into fast vibrato or tremolo territory. Available for Stereo Flange A/B, Chorus A/B, Stereo Phasing, and Tremolo.
Mod Depth	*0 to 100%*	Depth of the delay modulation sweep (or amplitude modulation for Tremolo). At 0% there is no modulation. At 100% the LFO sweeps the full range. Available for Stereo Flange A/B, Chorus A/B, Stereo Phasing, and Tremolo.
Mod Dly	*0.1 to 100 ms*	Base delay time before modulation is applied. Shorter times (1 to 3 ms) give flanging; longer times (5 to 30 ms) give chorus. Available for Stereo Flange A/B and Stereo Phasing only.
FB Gain	*-99 to +99%*	Feedback amount. Positive values reinforce the comb filter peaks for a sharper, metallic flange. Negative values create an inverted feedback character. Available for Stereo Flange A/B only.
AM Depth	*0 to 100%*	Amplitude modulation depth applied on top of the delay modulation. Higher values add more of the tremolo-like pulsing that characterises classic hardware chorus units. Available for Chorus A/B only.

4.3 Symphonic Controls

When the Preset knob is set to Symphonic, the modulation controls above are replaced by the following two controls specific to the Symphonic algorithm.

Control	Range	Description
Mod Frq	*0.1 to 40 Hz*	LFO rate for the Symphonic algorithm. Slower rates (0.3 to 1.5 Hz) produce the most natural ensemble quality. Factory default: 0.7 Hz.
Mod Depth	*0 to 100%*	How far the Symphonic voices drift apart. Higher settings widen and thicken the effect. Beyond roughly three-quarters of the range the sound stops deepening, exactly as it does on the original hardware. Factory default: 50%.

4.4 Global Controls

These controls are always visible regardless of the selected preset.

Control	Range	Description
In Lvl	*-20 to +6 dB*	Input gain applied before the effect processing. Increasing this level drives the 16-bit signal path harder, which can introduce audible saturation at extreme settings, as on the original hardware. Keep near 0 dB for clean operation.
Out Lvl	*-20 to +6 dB*	Output gain applied after the dry/wet balance. Use this to match the processed level against the bypassed signal when comparing settings.
Balance	*0 to 100% (Dry to Wet)*	Blends the dry input signal and the processed wet output. At 0% only the dry signal is heard. At 100% only the wet signal is heard. For send/return use, set Balance to 100%. For insert use on a track, lower settings preserve the direct signal.
Bypass	*Off / On*	Bypasses all processing and passes the input signal through unchanged. The red LED above the button illuminates when Bypass is active.

5. Quick Start

Recommended Starting Points

The presets recall factory defaults from the SPX90 ROM when selected, so each one is already tuned for a usable starting point. The following tips build on those defaults.

Lush ensemble on strings or pads

Set Preset to Symphonic. Leave Mod Frq at the factory default of 0.7 Hz and Mod Depth at 50%. Set Balance to 70-80% for a blend that still retains some directness from the dry signal. Increase Mod Depth gradually if you want more shimmer. Reduce Mod Frq to 0.3-0.5 Hz for a slower, more stately movement.

Classic 1980s flanger on electric guitar or synth

Set Preset to Stereo Flange A. Set Balance to 50% so the dry signal sits alongside the flanged signal for a more natural comb effect. Try pushing FB Gain to 50-65% for a more pronounced metallic character. Increase Mod Frq to 3-5 Hz for a faster jet sound. Drop Mod Dly to 0.8-1.0 ms to bring the flange deeper into through-zero territory.

Warm chorus on vocals or acoustic guitar

Set Preset to Chorus A. Leave Balance at 100% and set the plugin on an aux send. The factory defaults of Mod Frq 0.2 Hz and AM Depth 40% give a gentle, organic shimmer. Increase AM Depth to 60-80% for a more pronounced doubling quality. Try increasing Mod Frq to 0.6-1.0 Hz for a more active movement without losing the sense of width.

Subtle thickening on a mix bus

Set Preset to Chorus B or Symphonic. Set Balance to 20-40% for a light blend. Lower Mod Depth to 20-30% so the movement is felt rather than obviously heard. A gentle wet blend adds dimension and stereo spread without changing the character of the source material.

Slow phasing on synth pads

Set Preset to Stereo Phasing. Lower Mod Frq to 0.3-0.5 Hz and set Balance to 80-100%. The phaser will sweep slowly through the harmonic content, adding an evolving, animated quality. Increase Mod Dly slightly (to 4-5 ms) if the sweep feels too shallow.

Send/return versus insert routing

For classic hardware-style reverb-send routing, place Symphonic on an aux channel and set Balance to 100% wet. Your source tracks feed into it through sends, and you control the effect amount at the send level. For insert use directly on a track, set Balance to taste and use Out Lvl to compensate for any level change.

6. Installation and Troubleshooting

6.1 System Requirements

Before installing Symphonic, ensure your system meets the following requirements:

- Operating system: macOS 10.13 or later, or Windows 10 or later.
- Plugin formats: VST3 and AU.
- Processor: Intel Core i5 or Apple Silicon equivalent.
- RAM: 4 GB minimum (8 GB or more recommended).
- Disk space: 50 MB free.

6.2 Installation

- Download the installer from ravegeneration.io or the platform where you purchased the plugin.
- Run the installer and follow the on-screen instructions.
- Launch your DAW and locate Symphonic in your plugin list.
- If prompted, activate the plugin using the licence key provided with your purchase.

6.3 Troubleshooting

Control	Range	Description
Plugin not showing in DAW		Check that the correct plugin folder path is enabled in your DAW's plugin manager, then rescan the plugin folders. On macOS, VST3 plugins install to /Library/Audio/Plug-Ins/VST3. AU plugins install to /Library/Audio/Plug-Ins/Components.
Activation issues		Verify your internet connection and enter the licence key exactly as provided, including any hyphens. If the problem persists, contact support@ravegeneration.io with your order reference.

7. Factory Defaults Reference

The following table lists the original factory value for every parameter on every preset. These values are recalled automatically each time you change the Preset knob. Controls marked n/a are not applicable to that preset and are hidden from the panel.

Parameter	Flange A	Flange B	Chorus A	Chorus B	Phasing	Tremolo	Symphonic
Mod Frq	2.5 Hz	0.5 Hz	0.2 Hz	0.6 Hz	1.1 Hz	6.0 Hz	0.7 Hz
Mod Depth	50%	90%	50%	50%	100%	50%	50%
Mod Dly	1.2 ms	1.0 ms	5.0 ms	5.0 ms	3.0 ms	*n/a*	*n/a*
FB Gain	35%	40%	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
AM Depth	*n/a*	*n/a*	40%	10%	*n/a*	*n/a*	*n/a*
Balance	50%	75%	100%	100%	100%	100%	100%
In Lvl	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
Out Lvl	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB

Sym Mod Frq and Sym Mod Depth (the Symphonic-specific controls) always reset to 0.7 Hz and 50% respectively whenever any preset change is made, including when switching back to the Symphonic preset from another effect

8. Control Visibility by Preset

Symphonic shows only the controls that are relevant to the active preset. The table below gives a complete overview of which panel knobs appear for each of the seven presets. In Lvl, Out Lvl, Balance, and Bypass are always visible and are not listed here.

Control	Flange A	Flange B	Chorus A	Chorus B	Phasing	Tremolo	Symphonic
Mod Frq	✓	✓	✓	✓	✓	✓	–
Mod Depth	✓	✓	✓	✓	✓	✓	–
Mod Dly	✓	✓	–	–	✓	–	–
FB Gain	✓	✓	–	–	–	–	–
AM Depth	–	–	✓	✓	–	–	–
Sym Mod Frq	–	–	–	–	–	–	✓
Sym Mod Depth	–	–	–	–	–	–	✓

9. Historical Context

The Yamaha SPX90 was released in 1985 as a compact, affordable multi-effects unit aimed at studio engineers and live sound professionals who needed a single rack space to deliver reverb, chorus, flanging, and other effects without the cost of multiple dedicated units. The unit processed audio at 31.25 kHz with a 12 kHz passband, which gave it a noticeably darker, slightly band-limited quality compared to later high-fidelity processors. That quality became part of its sound.

The Symphonic preset in particular became a signature of the era. It appears on recordings across the second half of the 1980s and into the 1990s: on string pads, synth leads, backing vocals, and electric piano. Its layered, independently drifting voices produce a thickening effect that sits between a chorus and a reverb pre-delay, adding spaciousness and width without the obvious pitch wobble of a conventional chorus. Part of what makes Symphonic distinctive is that the modulation is slow enough to be felt rather than heard as separate pitch movement, giving each note an ensemble-like bloom.

The other effects on the SPX90 were equally well-regarded. The flangers were characterised by their feedback resonance and slightly rough edges, the chorus units had a warmth that came partly from the 16-bit processing and the bandwidth limiting, and the tremolo's ROM waveform gave it a smooth, musical pulse that many later digital tremolo units failed to replicate. These subtleties are what this plugin is designed to preserve.

Symphonic the plugin is not a sample-based recreation or an impulse-response capture. It runs a faithful emulation of the SPX90's modulation algorithm, operating at the original 31.25 kHz clock rate. The result is a faithful recreation of the SPX90 modulation bank that responds to parameter changes the way the hardware does.

Support

For technical support, updates, and additional information:

Website: ravegeneration.io
Email: support@ravegeneration.io

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