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Discover modular Synthesizers with VCV-Rack 2



Foreword by
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VCV-Rack-Book Topics - Status: 2022-01-09

Chapter	Themes
1. Introduction	<ul style="list-style-type: none">• Non-modular and modular synthesizers• Signal flow (oscillator, filter, amplifier)• Modular hardware synthesizers• The four classic waveforms (sine, triangle, rectangle, sawtooth)• CV control signals• Patchkable
2. VCV Rack handling	<ul style="list-style-type: none">• What means VST• The installation of VCV-Rack 2• The start of VCV-Rack 2• The template• Add modules• Mark a module as Favorite• The empty VCV Rack• Move + position modules• Remove modules• Connecting modules to each other• Module input and output sockets• Color choice of the connection cables• Extended colors via plugin WM-101 from Submarine• Correct and remove connections• Multiple connections on one socket• Change visible section in VCV Rack (scroll, zoom, move)• Change patch cable parameters (opacity and tension)• The context menu of the modules• The installation of foreign plugins• Registration with VCV-Rack• The local authentication• The local plugin folder• The subscription to plugins• The cancellation of plugins• Regular updates
3. VCV Rack Introduction	<ul style="list-style-type: none">• The launch of VCV-Rack• The Start-Template• The terminology used• The communication between the modules• The signal flow• The input - The keyboard<ul style="list-style-type: none">○ What is a master keyboard○ The MIDI-CV-Module• What means MIDI• The Notes-Module• The output - The speakers<ul style="list-style-type: none">○ The Audio-8-Module• What means latency• The ASIO driver

	<ul style="list-style-type: none"> • What does sample rate mean • What means block size • The VCO module - The oscillator • What means octave and what are semitones • Notes and their voltage values • What means oscillation • What is a waveform • The VCA module - The amplifier?! • What is an amplifier • The VCA MIX module • What means modulation • What means velocity • The ADSR module - The envelope control • What is an envelope (curve) • The VCF module - The filtering • What are harmonics or overtones • What is a low-pass filter • What is a high pass filter • The summary of voltage levels (audio, CV)
<p>4. Oscillators</p>	<ul style="list-style-type: none"> • What is an oscillator • The VCO-Module • The difference between analog / digital waveform generation • The four basic waveforms (sine, triangle, sawtooth, square) • Harmonic spectrum of the four basic waveforms • Plugin provider Bogaudio • Inner socket colors at different voltage levels (negative, positive, AC, 0V) • What means Hertz • How are voltage and frequency related • The manual modulation of the frequency • What means Pulse Width Modulation - PWM • What does SYNC do at the VCO • What is cross modulation • The WT-VCO-Module • What is a wavetable • What means morphing
<p>5. Sound synthesis</p>	<ul style="list-style-type: none"> • What means sound synthesis <ul style="list-style-type: none"> ○ Additive sound synthesis ○ Subtractive sound synthesis • What are harmonics • Sound synthesis for a square wave signal • Sound synthesis for a sawtooth signal • Sound synthesis for a triangle signal • What means decibel • Other sound synthesis <ul style="list-style-type: none"> ○ Wavetable ○ FM ○ Cross-Modulation ○ PWM ○ Granular • Plugin provider Erica-Synth

6. LFO	<ul style="list-style-type: none"> • What is an LFO • The difference between unipolar and bipolar oscillation • The vibrato effect • The tremolo effect • The frequency modulation of the LFO • The pulse width modulation further explained • What does phase inversion of an oscillation mean • The PULSES-Module • The CLK input on the LFO
7. Filter	<ul style="list-style-type: none"> • What is a low-pass filter (LP) and what is a high-pass filter (HP) • What means damping / attenuation • What means slope • The VCF-Module • What is the cutoff frequency • What is resonance • What means self-oscillation • What means legato • Other types of filters <ul style="list-style-type: none"> ○ Bandpass-Filter (BP) ○ Notch-Filter
8. ADSR	<ul style="list-style-type: none"> • The ADSR-Module • What is an envelope curve • When is an envelope triggered • What does attack, delay, sustain and release mean? • The volume envelope (amp envelope) • The filter envelope • The pitch envelope • What causes a gate pulse that is too short
9. VCA	<ul style="list-style-type: none"> • The VCA-Module • The VCA-MIX-Module • What does envelope shaping mean • The tremolo effect once again explained • What is an attenuverter • What is a phase shift • The plugin provider Befaco
10. Mixing	<ul style="list-style-type: none"> • What means mixing • What means mastering • What is an equalizer • What is a compressor • Mixing with the VCA MIX module • The summation of signals • Invert a signal • Phase cancellation made visible • The 8VERT-Module • The MUTES-Module • Mixers from MindMeld • Equalizer from MindMeld
11. Frequency modulation	<ul style="list-style-type: none"> • What means frequency modulation • What is an algorithm • The interaction between modulator and carrier

	<ul style="list-style-type: none"> • What are sidebands • The establishment of feedback • Different algorithms • The MIX-Module
12. Sample & Hold	<ul style="list-style-type: none"> • What does Sample & Hold mean • The Kinks-Module (Audible Instruments) • Generate random values • The Clock-Module (JW-Modules) • The Delay-Module (used briefly) • The Sample&Hold-Modules of Count-Modula
13. Quantize	<ul style="list-style-type: none"> • What means quantize • The QNT-Module • What is the C major scale • What means harmonization • The LFO controls the VCO with the QNT • Two quantizers control tone sequence
14. Tone sequences	<ul style="list-style-type: none"> • What is a sequencer • The SEQ-3-Module • What are Steps • What is the difference between trigger and gate • The DGATE-Module from Bogaudio • What triggers a sequencer • The adjustment of the step length • The triggering of a reset • An external clock • What are patterns • The 4-1-Module • What does pattern chaining mean • Create your own waveforms • What does Portamento / Glide mean • The Befaco Slew Limiter Module • The RANDOM-Module • The GRID-SEQ module from JW-Modules
15. Adjust octaves	<ul style="list-style-type: none"> • The OCT-Module • Manual adjustment of the octave • Automatic adjustment of the octave • The 8VERT module - BIAS control • The Fixed Voltage Source Module
16. Delay	<ul style="list-style-type: none"> • The Delay-Module • How the Delay effect works • What is a decaying vibration • What does WET and DRY mean respectively • The Plateau Module from Valley
17. Noise	<ul style="list-style-type: none"> • What means noise • What does sound synthesis mean in terms of noise • What does decibel mean (subjective volume perception)? • The NOISE-Module • How to simulate ocean noise
18. Macro-Oscillator	<ul style="list-style-type: none"> • What are Macro Oscillators • What means wavefolding

	<ul style="list-style-type: none"> • What does waveshaping mean • The Braids and Plaits modules from Audible Instruments • What means soft clipping • The wavefolding module from MSM • The Wolv waveshaper module Vult • What means ring modulation • The Ring-Mmod module from Bogaudio • The Macro Oscillators Braids and Plaits • What is a clock divider • The GRID-SEQ module from JW-Modules
19. Polyphony	<ul style="list-style-type: none"> • What means Monophonic • What means Polyphonic • The different polyphonic modes • The VIZ-Module • The SPLIT-Module • What is a chord • Diphthong, triad, tetrachord • The C major triad • What is an arpeggiator • The Sequential-Switch module from the ML-Modules • The MERGE-Module • The MIX-4 module from Bogaudio
20. Drums	<ul style="list-style-type: none"> • What are percussive sounds • What is a bass drum • What are transients • What is a snare drum • The paid drum modules of VCV-Rack 2 • The Drum-Modules of Hora-Music • The Step-Trigger-Sequencer-Modul of Count-Modula • The Oscilloscope-Module of Count-Modula • The Drum-Kit of Autodafe
21. Sidechain	<ul style="list-style-type: none"> • What means sidechaining • What means ducking
22. Midi-Mapping	<ul style="list-style-type: none"> • What is MIDI-Mapping • What is a Byte or a Bit • The three bytes of a MIDI transmission • What are status byte, data byte 1 and data byte 2 • What does a MIDI Control Change (CC) mean • The MIDI-Monitor-Program MIDIView • The MIDI-MAP-Modul • Setting up a MIDI mapping • Solving a MIDI mapping
33. Logic-Modules	<ul style="list-style-type: none"> • What does binary logic mean • What is a binary code • What is Boolean Algebra • What is an AND function • What is an OR function • What is an exclusive OR function • What is a NOT function • The Triggers MKI module from AS

	<ul style="list-style-type: none"> • The BOOL-Modul from Bogaudio • The Logik-Modules from Submarine • The Logik-Module from NYSTHI
24. Sound-Input	<ul style="list-style-type: none"> • How to get external sounds into the VCV Rack • The configuration of the audio module • A microphone is connected • The use of an external audio interface • The REC-Module • The WT VCO loads a sound file • The Simplificiter module from NYSTHI
25. Control hardware	<ul style="list-style-type: none"> • The control of hardware • The CV-to-MIDI-Module • The control of a real synthesizer • MIDI or USB • Recording an audio stream from an external audio interface
26. VST	<ul style="list-style-type: none"> • What is a DAW • What does VST mean for the DAW • The Installation of the VST • Adding a VCV VST to the DAW • The VST receives MIDI from the DAW • CV information from the DAW • The Clocked-Modul from Impromptu • The automation with the DAW • Multitrack recording in the DAW • What means routing • Send CV from VCV via MIDI
27. Performance	<ul style="list-style-type: none"> • VCV-Rack Performance • The Performance-Meter • The Block-Size • The Sample-Rate • The number of threads • The Frame-Rate
28. VCV-Plugins-Overview	<ul style="list-style-type: none"> • Interesting VCV Rack Plugin Brands