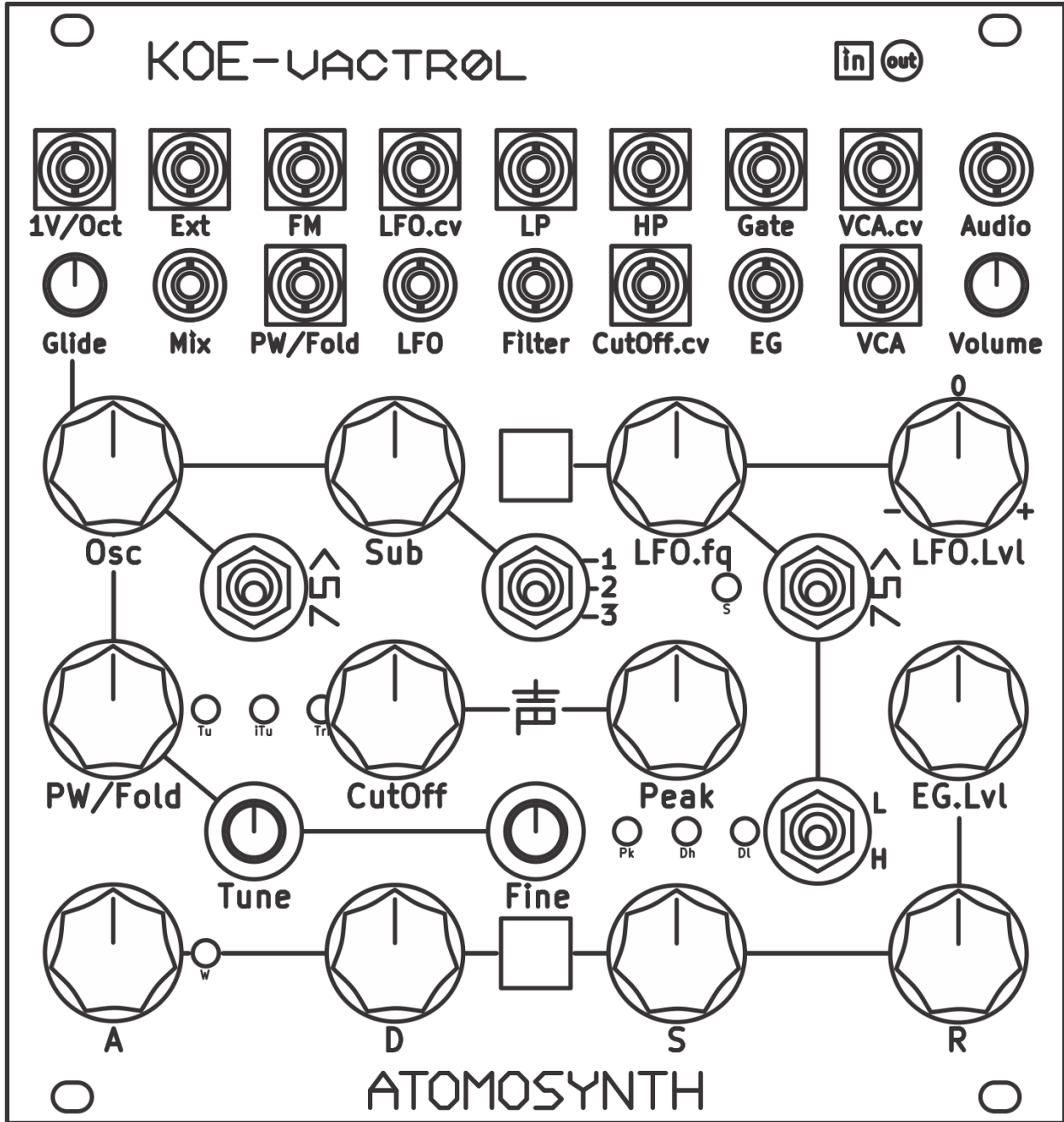


AtomoSynth KOE 7 Vactrol / Ladder User Manual



The KOE 7 is a complete synthesizer voice in one module, featuring all the basic submodules like an oscillator, low-frequency oscillator, filter*, and envelope generator, these are internally pre-connected so it produces a classic synth sound with the minimum patching (only CV and gate signals), however, each submodule can be used individually thanks to its extensive patch bay.

*There are two versions of the KOE 7: the KOE Vactrol with 12db/oct vactrol HP, and LP filter. and KOE Ladder with 24dB/oct ladder LP filter.

Specs:

- One voltage-controlled oscillator VCO, with Triangle, Pulse, and Saw waveforms.
- Folding effect control knob for the triangle waveform and pulse width, for the pulse waveform, also controllable by CV.
- Square wave sub-oscillator with 1, 2, or 3 octaves below the main oscillator.
- Tune and Fine Tune knobs for the main oscillator.
- Glide effect knob.
- One LFO with triangle, positive square, and saw waveforms, with attenuverter and frequency range switcher.
- 12dB/oct Vactrol-based filter with low pass and high pass independent inputs. (KOE Vactrol version only).
- 24dB/oct Low Pass ladder filter (KOE Ladder version only).
- One ADSR-type envelope generator.
- Current draw: 55mA +12V. 16mA -12V. 0mA +5V.
- 24HP wide.
- 25mm deep.

Sub-Module controls.

Oscillator:

1. **OSC** knob: Sets the volume level of the oscillator.
2. **GLIDE** knob: Controls the time of the glide effect (portamento).
3. **Waveform** Switcher: This sets the oscillator output waveform to Triangle (upper position) Pulse (mid position) and Sawtooth (lower position).

4. **SUB** knob: Sets the volume level of the square wave sub-oscillator.
5. **Sub-Octave** Switcher: This sets the octave of the sub-oscillator to -1, -2, or -3 octaves below the main oscillator.
6. **PW/Fold** knob: This knob sets the depth of the Folding effect when the Waveform Switcher is set to triangle wave. And when the Waveform switcher is set to Pulse wave, it sets the pulse wave's width.
7. **TUNE** knob. Sets the Tune of the oscillator.
8. **FINE** knob. Sets the fine tune of the oscillator.

Low Frequency Oscillator.

1. **LFO.fq** knob: Sets the Frequency of the Low frequency oscillator.
2. **LFO.Lvl** knob: Controls the level of the Low frequency oscillator. This is an attenuverter (attenuator-inverter), meaning that in the middle setting, the level is zero and increases moving it clockwise. Moving it counterclockwise it inverts the signal and increases its level.
3. **LFO Waveform** Switcher: This sets the LFO output waveform to Triangle (upper position) Positive Square (mid position) and Sawtooth (lower position).
4. **LFO Range** Wsitcher: It sets the Frequency range of the LFO to LOW frequency (upper position) or HIGH frequency (lower position).

Filter

1. **CUTOFF** knob: sets the cut-off frequency of the filter.
2. **PEAK** knob: Sets the peak or resonance level of the filter.

Envelope Generator

1. **A** knob: Sets the attack time of the envelope generator.
2. **D** knob: Sets the decay time of the envelope generator.
3. **S** knob: Sets the sustain level of the envelope generator.

4. **R knob**: Sets the release level of the envelope generator.
5. **EG.Lvl knob**: Sets the level of the output of the envelope generator.

Patch bay connectors

1. **1V/Oct jack**: It is a voltage input and controls the pitch of the oscillator, it is calibrated to 1 volt per octave. This input goes to the Glide module first and its output is fed to the oscillator.
2. **EXT jack**: It is an external audio input, it will be mixed with the oscillator and sub-oscillator signals.
3. **MIX jack**: It is a CV/audio output, it presents the mix of the oscillator, sub-oscillator, and external input mix.
4. **FM jack**: it is a Voltage input, and directly controls the oscillator's frequency.
5. **PW/Fold jack**: It is a Voltage input. It controls the depth of the folding effect when the oscillator waveform is set to triangle wave. When the oscillator waveform is set to pulse, it controls the pulse width.
6. **LFO.cv jack**: It is a voltage input, it controls the frequency of the LFO (low-frequency oscillator).
7. **LFO jack**: It is a voltage output, it presents the signal of the low-frequency oscillator attenuated/inverted by the LFO.Lvl knob.
8. **LP jack**: it is an audio input, it is the input of the low pass section of the filter. It is internally connected to the MIX jack output signal, when a cable is connected to the LP jack it disconnects for the MIX signal.
9. **HP jack** (KOE Vactrol version only): it is an audio input, it is the input of the high pass section of the filter.
10. **PEAK.cv jack** (KOE Ladder version only): it is a voltage input and controls the peak or resonance level frequency of the filter.
11. **CUTOFF.cv jack**: it is a voltage input and controls the cutoff frequency of the filter.
12. **FILTER jack**: It is the audio output of the filter, here is presented the mix of the HP and LP sections. In the KOE ladder version, this jack presents the low-pass output signal only.
13. **GATE jack**: it is a voltage input from 5Volt to 10Volt used to trigger the envelope generator.

14. **EG** jack: It is a voltage output, it presents the output of the envelope generator attenuated by the EG.Lvl knob. It is internally connected to the filter to control the CutOff frequency. When a cable is connected to the EG jack it disconnects from the filter.
15. **VCA.cv** jack: It is a voltage input and controls the level of the VCA voltage-controlled amplifier. It is internally connected to the output of the envelope generator. When a cable is connected to the VCA.cv, it gets disconnected from the envelope generator.
16. **VCA** jack: It is the audio input of the voltage-controlled amplifier VCA. It is internally connected to the filter output. When a cable is connected to the VCA jack, it gets disconnected from the filter.
17. **AUDIO** jack: It is the audio output of the VCA and is attenuated by the VOLUME knob.

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