

GUIDE TO ASSEMBLY OF ERICA SYNTHS POLIVOKS-INSPIRED VCA

If you are reading this, most probably, you are about to build Erica Synths DIY Polivoks-inspired VCA. This module is 35mm deep, skiff friendly, has solid mechanical construction and doesn't require wiring. The Polivoks VCA has distinctive architecture - two differential opamp (Russian ICs K118UD1B) based VCAs in series each for LFO and ADSR control over signal amplitude independently. Control voltage to attenuation behavior of this VCA is nonlinear and not logarithmic. It is kept authentic to the response of ПОЛИВОКС, and it uses same differential opamps, as used in the original ПОЛИВОКС. Most parts of the VCA have been improved to achieve compatibility with eurorack signal and CV standards, higher dynamic range, better reliability, lower noise, accept higher signal levels, keep consistent behaviour, self-tuning of two internal offsets and higher linearity, though the heart of it is kept the same. Also we redesigned audio signal path, so that you can use it as two independent VCAs or two VCAs in series as in original Polivoks, plus summed signal output.

The DIY Envelope kit comes in three versions:

- 1) 2PCBs + 2xK188UD1 ICs + connectors,
- 2) 2PCBs + 2xK188UD1 ICs + connectors + panel,3) Full kit.
- oʻj i un kiti.

FEATURES:

- Single or Dual VCA mode
- CV level adjustment for each VCA
- Summed audio output (lower signal gain, though)
- Skiff-friendly design

SPECIFICATIONS:

- VCA gain
- CV level

1,2 -10V...+10V

80dB

- Attenuation@0V CV
- Panel width 8HP
- Module depth
- Power consumption

35mm 24mA@+12V, 18mA@-12V



Adjust CV attenuation level for the first VCA! It also sets VCA bias. If you use VCAs in series and no CV is applied to CV1 IN, you must turn CV1 LEVEL knob all way CW to open the first stage. Adjust CV attenuation level for the second VCA! It also sets VCA bias.

Switch between single or dual VCA modes.



These are CV inputs.



6

These are audio signal inputs.

These are audio outputs. On MIX OUT you get mixed signal from both VCAs in dual mode. It's bonus feature, but signal level will be than on regular outputs.



GUIDE TO ASSEMBLY OF ERICA SYNTHS POLIVOKS-INSPIRED VCA

ASSEMBLY

Take precautions with regard to electrostatic discharge (ESD) safety. Handling components should be done in electrostatically safe environment. Use personal and workplace grounding. Any discharge (even a minor one) from body to a component may permanently damage it.

Our PCBs have silkscreened both component values and designators nevertheless we highly recommend you to print out files with component placement before you start assembly of the module. And, please, at least take a look on this manual!

Some components are marked as NU (not used) – leave those unpopulated! Some components are market as OPTION (those are for optional modifications) – leave those unpopulated for now.

Solder horizontally placed resistors and diodes on both PCBs (Controls board and Main board)! Pay attention on orientation of diodes! Use wire jumpers for 0ohm resistors on the main board.





Solder IC sockets on the Main board, ferrite beads on the Control board and capacitors of both boards!





1



GUIDE TO ASSEMBLY OF ERICA SYNTHS POLIVOKS-INSPIRED VCA

3

Solder electrolytic capacitors, transistor and trimpots on the Main board! Mind polarity of electrolytic capacitors and orientation of transistor! Also solder 1x8 male connectors!



Negative lug of electrolytic capacitor is marked with a stripe!



4

Turn the Main board around and solder resettable fuses, 10V voltage regulator and electrolytic capacitors! Electrolytic capacitors should be placed horizontally! Bend resettable fuses down.



Also solder 1x8 female connectors and PSU connector! Use M3x6 screw to fix 11mm spacer.

Connect the PSU and do some control measurements! Make sure, you have +12V and -12V on capacitors C3 and C4 and +10V on capacitor C17!

6

Connect both boards together (white lines on both PCBs have to match) and fix them with M3x6 screw!



5

Install the front panel



Install potentiometers knobs and – congratulations – you have completed building Erica Synths DIY Polivoks-inspired VCA!



CALIBRATION

Calibration is easy. The best way is to do it with oscilloscope, but you can calibrate modules on ear, as well.

- 1. Set MODE switch to DUAL.
- 2. Set CV1 LEVEL potentiometer to 3 o'clock
- 3. Connect 10Vptp (-5V to +5V) saw wave to IN1!
- 4. Connect OUT1 to oscilloscope or amplifier! Adjust trimpot R20 until you get 10Vptp signal on OUT1. If you do not have an oscilloscope, just try to set equal volume of incoming and outgoing signal.
- Activate and envelope generator (0 to +10V envelope); make sure, release is not too long, and envelope falls back to 0V. Connect the envelope generator to CV1 IN! Adjust trimpot R18 to find a point, where VCA closes down completely – when envelope level is 0V audio signal is not present on the output.
- 6. Same goes with IN2 and OUT2. Connect 10Vptp (-5V to +5V) saw wave to IN2, set CV2 LEVEL knob to 3 o'clock and adjust trimpot R21 to have 10Vptp sawtooth wave on the OUT2.
- 7. Connect the envelope to CV2 IN and adjust R19 to to find the point where audio is suspended.
- 8. Calibration complete!