

# BLACK VCO2 AND VCO EXPANDER

## THANK YOU FOR CHOOSING ERICA SYNTHS BLACK SERIES MODULE!

Erica Black Series include high-end, unique functionality and superior quality modules. Only the best, highest quality components are used, all inputs and outputs are protected against undesired overvoltage. Erica Black Series consist of range of modules that are needed to put together entire synth. Enjoy!

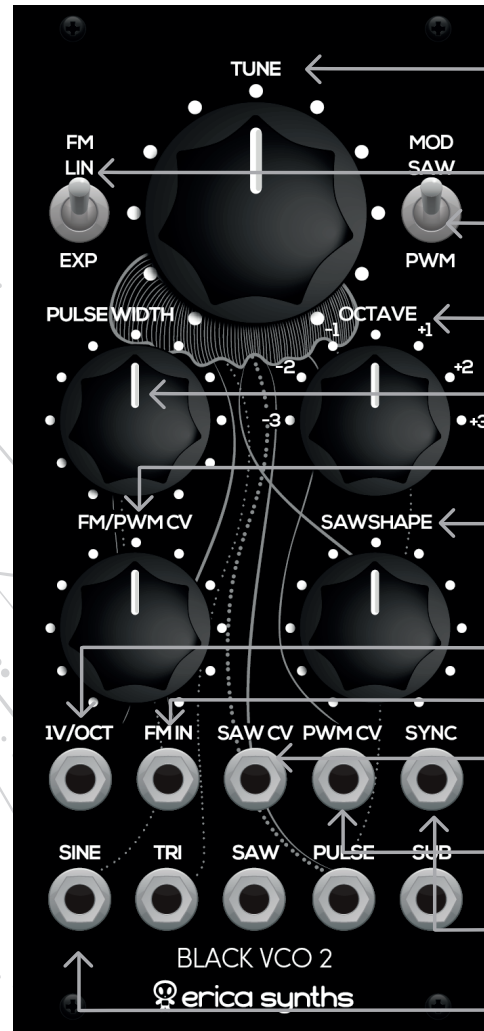
**Erica Synths Black VCO2** is all analogue, highly accurate and stable VCO with four simultaneous waveform outputs, one octave down suboscillator and some unique features. Unlike harsh, logic divider based suboscillators, Black VCO2 transistor-based suboscillator generates distinct, rounded squarewave. Furthermore, the Black VCO2 has built in Saw Waveshaper and two modulation LFOs. Together with Black VCO Expander – waveform mixer you get massive analogue sound source with plenty of patch points for modular use.

### FEATURES:

- Simultaneous sine, triangle, saw and pulse wave outputs
- 1 octave suboscillator
- Highly accurate and stable tracking across 8 octaves
- Saw waveshaper with manual and CV control
- Manually adjustable and CV controlled pulse width
- Exponential/Linear FM input with an attenuator
- 2 built in modulation LFOs
- Synchronization input
- Octave switch – 7 octaves
- Skiff-friendly design

### SPECS:

|                               |                       |
|-------------------------------|-----------------------|
| Audio output amplitude        | 10Vptp                |
| Octave range                  | C0 – C8               |
| Panel width                   | 12HP                  |
| Module depth                  | 35mm                  |
| Power consumption             | 71mA@+12V, 62mA@-12V  |
| Power consumption w. Expander | 102mA@+12V, 87mA@-12V |



### TUNE

The TUNE knob allows precise tuning of the VCO across two octaves. This knob also controls the built in PWM LFO – turning it clockwise and increasing a pitch of the VCO, the LFO frequency will slightly increase.

### FM LIN / EXP

Select between linear or exponential frequency modulation

### MOD SAW / PWM

This is the modulation LFO selector. In the SAW setting, only the saw waveshaper LFO is active, in the mid setting both saw waveshaper and PWM LFOs are active, in the PWM setting only the PWM LFO is active.

### OCTAVE

Use Octave switch to change the tune of the VCO up to 3 octaves up or down instantly.

### PULSE WIDTH

Adjust pulse width manually!

### FM / PWM CV

This is FM and PWM CV attenuator. It affects both CVs simultaneously.

### SAWSHAPE

This is the Saw waveshaper control. By tuning it clockwise, it will simultaneously shape the saw into double and triple saw and increase waveshaper modulation LFO frequency. What the external CV is patched into SAW CV, it acts as CV attenuator. If the modulation LFO is disengaged, it acts as the manual waveshaper.

### 1V/OCT

Patch 1V/oct CV source here. The VCO tracks perfect across at least 8 octaves

### FM IN

Patch the FM CV source here for vibrato effects, or set the FM switch to LIN mode and, combining two VCOs, get into FM synthesis!

### SAW CV

This is saw waveshaper CV input. If no CV is applied, the waveshaper is modulated by the internal LFO

### PWM CV

Patch PWM CV source here! 10Vptp CV signal affects pulse width from ~2% to ~98%. The PWM CV is added to the Pulse Width knob setting.

### SYNC

This is VCO Sync input. Patch another VCO output here to reset VCO circle. This gives you new, interesting waveforms

### SINE/TRI/SAW/PULSE/SUB

These are VCO outputs. All four waves and suboscillator are available simultaneously

## SAFETY INSTRUCTIONS

Please follow the instructions for use of the Erica Synths module below, 'cause only this will guarantee proper operation of the module and ensure warranty from Erica Synths.



Water is lethal for most of the electric devices, unless they are made waterproof. This Erica Synths module is NOT intended for use in a humid or wet environment. No liquids or other conducting substances must get into the module. Should this happen, the module should be disconnected from mains power immediately, dried, examined and cleaned by a qualified technician.



Do not expose the module to temperatures above +50° C or below -20° C. If you have transported module in extreme low temperatures, leave it in room temperature for an hour before plugging it in.



Transport the instrument carefully, never let it drop or fall over. Warranty does not apply to modules with visual damages.



The module has to be shipped in the original packaging only. Any module shipped to us for return, exchange and/or warranty repair has to be in its original packaging. All other deliveries will be rejected and returned to you. Make sure you keep the original packaging and technical documentation.



This device complies to the EU guidelines and is manufactured RoHS conforming without use of lead, mercury, cadmium and chrome. Nevertheless, this device is special waste and disposal in household waste is not recommended.

User manual by Girts Ozolins@Erica Synths.

Design by Ineta Briede@Black8.

Copying, distribution or any commercial use in any way is prohibited and needs the written permission by Erica Synths. Specifications are subject to change without notice. In case of any questions, feel free to contact us through [www.ericasynths.lv](http://www.ericasynths.lv).

You will find Erica Synths terms of warranty at

[www.ericasynths.lv](http://www.ericasynths.lv)

Items for return, exchange and/or warranty repair have to be registered at SUPPORT on [www.ericasynths.lv](http://www.ericasynths.lv) and send back to us according to instructions in the support page.

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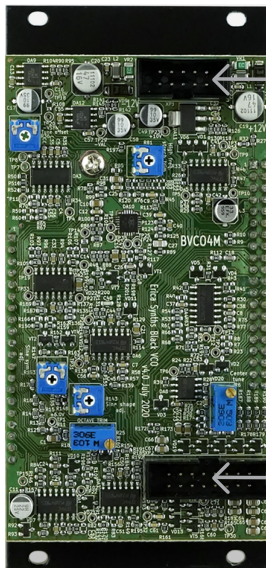
Erica Synths Black VCO Expander essentially is advanced waveform mixer plus two octaves down suboscillator, and it allows you to explore wave design in brand new areas.

**NB! This is expander module that can be connected only to the Black VCO via ribbon cable supplied with the module. It will not work as standalone eurorack module and connecting it to the eurorack PSU or to any other module will permanently damage the Expander.**

## FEATURES:

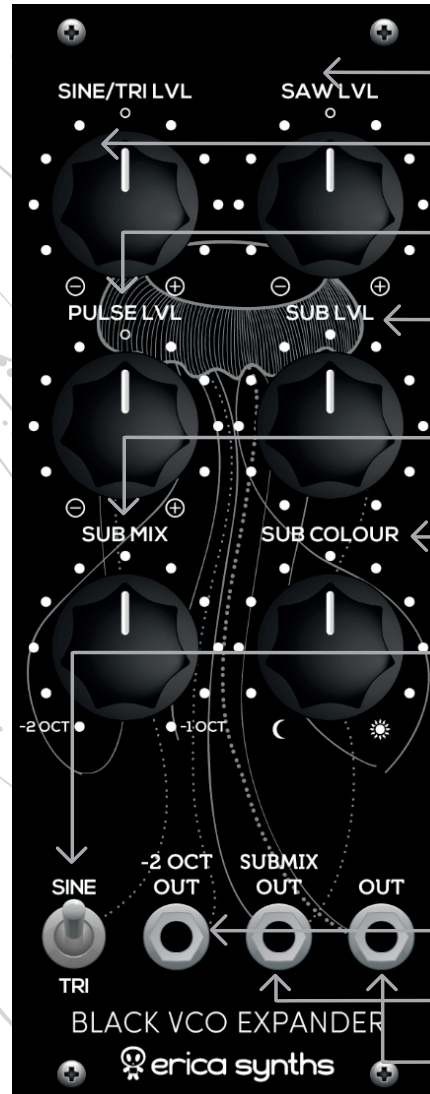
- Waveform mixer/inverter
- Sine/Triangle/"Tits" waveform switch
- Transistor-based -2 octave suboscillator
- 1 and -2 octave suboscillator crossfade
- Suboscillator lowpass filter
- Diode limiter on output signal amplitude
- Three simultaneous outputs

Use ribbon cable supplied with the module to connect it to the Black VCO!



This is eurorack PSU connector

Connect the VCO Expander here!



### SAW LVL

This knob sets direct or inverted sawtooth waveform level

### SINE / TRI LVL

Turn this knob CW to set sine/triangle/"tits" waveform level. Turn this knob CCW to set inverted waveform level

### PULSE LVL

This knob sets direct or inverted pulse wave level. Apply VCO PWM CV and get cool waveshaping on the main output

### SUB LVL

Turn this knob CW to increase suboscillator level! This knob is assigned to filtered -1/-2octaves suboscillator mix

### SUB MIX

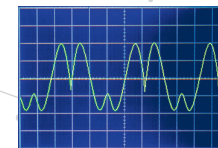
Use this knob to fade between -1 and -2 octaves suboscillators

### SUB COLOUR

This is suboscillator mix lowpass filter cutoff frequency knob. In full CW setting no filtering is applied, in full CCW setting you have almost sinewave at very low frequencies

### SINE/TITS/TRI SWITCH

Use this three position switch to select, which waveform is routed to the top left mixer knob! Top position is sinewave, bottom position is triangle, and mid position give you distinct "tits" waveform present in some FM synths



### -2 OCT OUT

This dedicated -2 octaves suboscillator output

### SUBMIX OUT

This is suboscillator mix output - filtered suboscillator waves are present here

### OUT

This is master mix output - all waveforms are present here.