Audiophile Circuits League
Musical Instruments Manufacture

Variable Sync VCO

User´s Manual

Eurorack Synthesizer Modules

16 HP

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1. INTRODUCTION

Audiophile Circuits League. -Variable Sync VCO module consists of one ramp core oscillator with several wave shaper subcircuits, all having that classical vintage tone, loved by a lot of musicians and soundsynthesists. The VCO is capable of delivering that without sacrificing tracking precision and low temperature drift. Available waveshapes are saw, inverted saw, triangle, sine and PW rectangle, which uses the saw wave from the waveshaper as a carrier for the PWM. It can be varied by CV and manually within a range from 0% to almost 100%.

The possibility to play VCO in low, middle and high modes, together with the 10 turn precision Tune pot results in a very convenient "on the fly" way of tuning the module. It's core can be frequency modulated exponentially from two inputs, both CV controlled. When fully open the input attenuators are calibrated for 1 V/Oct. There is one more input - for linear modulation with manual amount control, AC coupled and configured like differentiator. In this way it is sure no detuning caused by DC, will take place when modulation signal is presented at the FM Input, but only frequency modulation, centered around the already played tone.

Syncing the core to outside source makes a whole lot of difference, when there is the additional option to vary continuously by CV and manually the threshold of synchronization from no sync, soft sync and hard sync. This input is configured as attenuverter for even more flexibility. Note when the Treshold pot is fully CW there will be no sound output anymore. The reference wave source for the soft sync is the saw from the oscillator. Sync input itself reacts to every repeatable waveform with amplitude higher than 1,2 Vpp.

2. WARRANTY

In the event of a fault in use, we will repair or replace it free of charge under the warranty terms stated below. The warranty period is valid for one year from the day of purchase. If repair is necessary, please ask the dealer you purchased it from.

We can not guarantee the incidental damage caused by the breakdown or damage that occurred during use of this product. In addition, warranty will expire in the following cases:

· Failure / damage caused by use of unspecified power supply / accessories.
· Failure / damage caused by incorrect connection or use of power cable.
· Failure / damage caused by improper handling method.
· Failure / damage caused by natural disasters (fire, flooding etc.) and pollution.
· When the cause of breakdown or damage lies in equipment other than this product.
· Failure / damage caused by improper modification, adjustment, parts replacement.
· Failure / damage when used under particularly severe conditions, when loaned/rental/hired out to 3rd party.

Is it a malfunction?

Please read the user's manual carefully and check again. If you think that there is still a problem, please consult the dealer you purchased from or contact us (English) .

support@audiophilecircuitsleague.com

3. INSTALLATION

⚠WARNING

*Always turn the Eurorack unit off and unplug the power cord before pluging the Eurorack power cable.

*When attaching the Eurorack power cable, please be careful not to touch the terminal part.

Connect to the Eurorack's system power supply (+ 12V) using the supplied Eurorack power cable.

Connect the 16-pin connector to the Eurorack power connector. Connect the red mark on the power cable so that it matches the pin on the (- 12 V) side of the power connector.

Connect the 10 pin connector to the shrouded header on the back of the module. The header is protected against reverse-plugging.

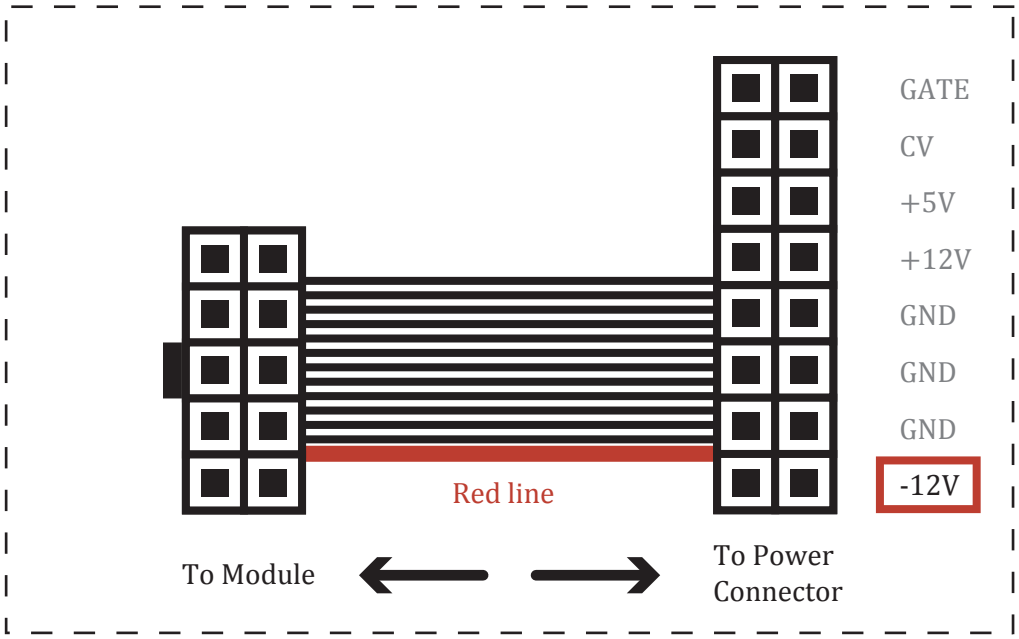

FIG.1：Eurorack power cable

4. FUNCTION OF PANEL COMPONENTS

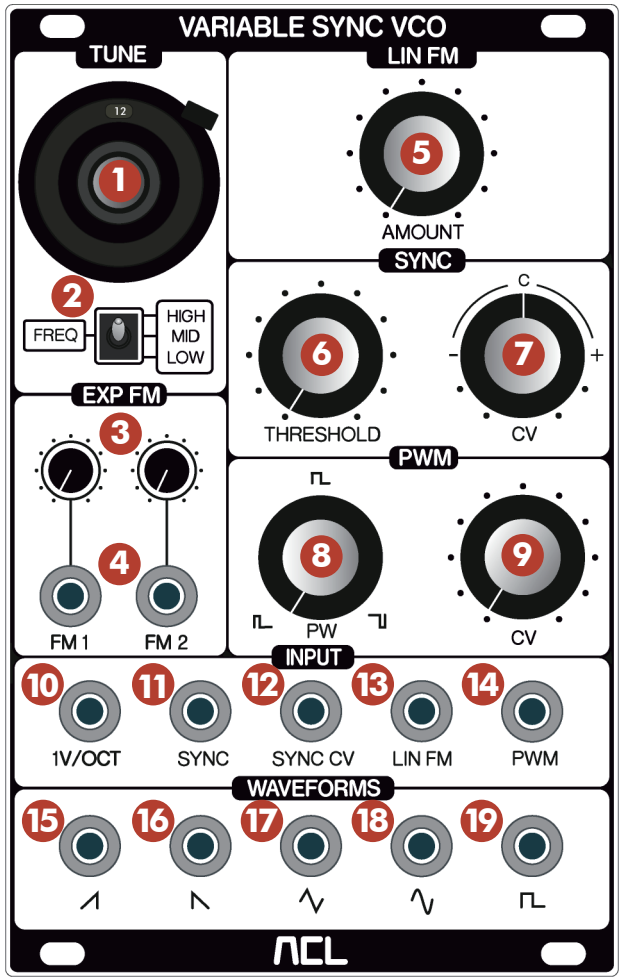

FIG.2 : Front Panel

① "TUNE" dial

Fine tune with 10 turn precision pot approximately 4&1/2 octaves.

② "FREQ" selector

Three frequency ranges – with a little bit more than 2 octaves apart.

③ "EXP FM 1&2" knob

Two independent exponential type attenuators for CV signal input from ④ "FM1&2" jacks. When fully open the knob clockwise, it works the same as 1V /OCT.

④ "FM 1&2" input jacks

They are CV signal input jacks. Attenuated by ③ "MOD 1&2" knob.

⑤ "LIN FM AMOUNT" knob

This attenuator knob sets the amount of the signal input from the ⑬ "FM" jack.

⑥ "SYNC THRESHOLD" knob

It is possible to blend the type of oscillator sync continuously, No sync → Soft sync → Hard sync. External source for sync function is input from ⑪ "SYNC" jack. However, if you fully open the TRESHOLD knob clockwise, possibly no sound will be output.

⑦ "SYNC CV" knob

It is an attenuverter for the CV signal to control the "THRESHOLD" of the sync type. Input a CV signal from the ⑫ "SYNC CV" input jack.

⑧ "PW" knob

Adjust manually the Pulse Width Modulation.

⑨ "PWM CV" knob

This is the attenuator for the CV signal from the ⑭ "PWM" input jack.

⑩ "1V/OCT" input jack

Input for the "PITCH" CV signal of a keyboard or sequencer.

⑪ "SYNC" input jack

This input jack is for an external signal to synchronize the VCO. On positive zero crossing of the incoming signal, the VCO-core will reset.

⑫ "SYNC CV" input jack

The incoming CV signal blends the type of oscillator sync continuously from No Sync → Soft Sync → Hard Sync. ⑦ "SYNC CV" knob acts as an Attenuverter for the incoming CV signal.

⑬ "LIN FM" input jack

For linear modulation with manual amount control, AC coupled and configured like a differentiator. This prevents detuning, caused by a DC-component in the modulation signal to a big extent since the input is AC-coupled, input cannot be used for liner tune of VCO.

⑭ "PWM" input jack

This is an input jack for controlling Pulse Width Modulation (PWM) with a CV signal. ⑨ "PWM CV" knob is an attenuator.

⑮ "Saw Wave" output jack

Output jack for sawtooth wave.

⑯ "Inverted Saw Wave" output jack

Output jack for inverted sawtooth wave.

⑰ "Triangle Wave" output jack

Output jack for triangle wave.

⑱ "Sine Wave" output jack

Output jack for sine wave.

⑲ "Pulse Wave" output jack

Output jack for Pulse wave. Adjust the Pulse Width Modulation manually with the ⑧ "PW" knob or adjust with a CV signal from ⑭ "PWM" input jack.

5. SPECIFICATIONS

Power

Eurorack system power supply

Width

16 HP

Depth

22 mm

Power consumption

Ca. 35mA on -12V / ca. 40mA on +12V

Accessories

· Eurorack power cable x1

· Mounting screws x4