

## VCO MODE ALGORITHMS

Icon	Algorithm	Parameter
	Sine	Phase distortion
	Sqr/Pulse	PWM
	Saw/Tri	Wave shape
	Quad saw	Phase spread
	Additive even (7 osc)	Harmonics
	Additive odd (7 osc)	Harmonics
	Additive all (7 osc)	Harmonics
	Unison square (3 osc)	Spread
	Unison saw (5 osc)	Spread
	Bit-crushed saw	Bit resolution
	Bit-crushed sine	Bit resolution
	Self-sync sqr	Carrier Frequency
	Self-sync pulse	Carrier Frequency
	Self-sync saw	Carrier Frequency
	Self-sync tri	Carrier Frequency
	Self-sync sine	Carrier Frequency

	Ring modulator	Carrier Frequency
	Noise + low-pass	Filter resonance
	Noise + bandpass	Filter bandwidth
	Noise + resonator	Filter gain

## LFO MODE ALGORITHMS

Icon	Algorithm	Parameter
	Saw/triangle	Slope
	Square/pulse	PWM
	Sine	Phase distortion
	Brownian S/H	Random level maximum deviation
	Randomly timed S/H	Time randomness
	Brownian vectors	Random level maximum deviation
	Randomly timed vectors	Time randomness

## VCO QUANTIZER

Quantize	Icon
Quarter tones	¼
Semitones	½
Diatonic	Di
Major	M
Minor	m
Natural Minor	nm
Pentatonic	Pe
Spanish	Sp
Gamelan	Ga
In Sen	IS
Hirajoshi	Hi
Blues	BL
Chinese	Ch
Hungarian	Hu
Octatonic	8n
Hexatonic	6n
Thirds	3"

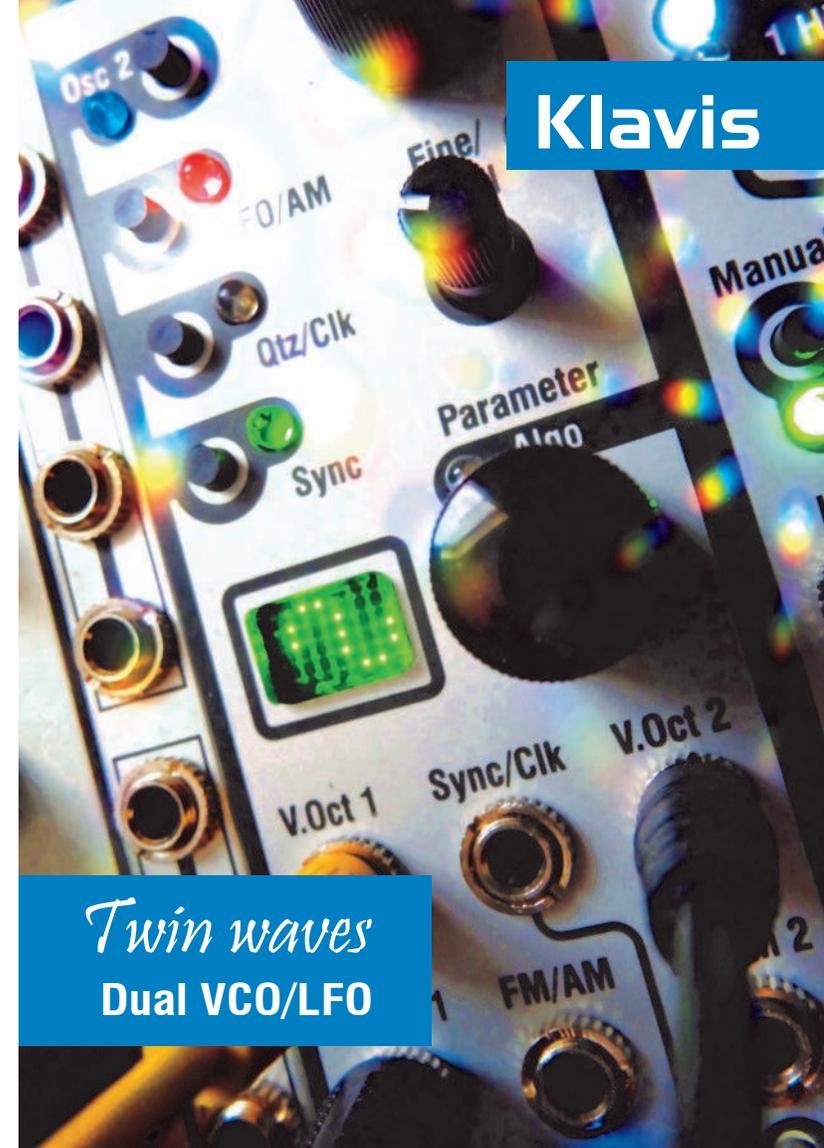
## LFO div/mult

LFO ctrl + CV	
16x	/1.5
12x	/2
9x	/3
8x	/4
6x	/6
4x	/8
3x	/9
2x	/12
1.5x	/16
1x	/32
	/48
	/64

Fifths	5"
Octaves	0c
Just intonation	12
19 tones	19

Klavis

*Twin waves*  
Dual VCO/LFO



## INSTALLATION

Ensure that there is enough power left to supply this module.

Beware of the orientation; the stripe on the ribbon cable should match a similar stripe for the -12 (minus 12 Volts) indication on your supply board connector.

Supply rail	Current draw
+12V	46 mA
-12V	18 mA
+5V	0 mA

READ ME FIRST

## SUPPORT & ADDITIONAL INFO

The complete users manual is available at:  
[www.klavis.com/support](http://www.klavis.com/support)

Contact us: [modular@klavis.com](mailto:modular@klavis.com)

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## USAGE

The module contains two sections/oscillators, each individually set as VCO or LFO. VCO and LFO modes have their dedicated selection of synthesis algorithms.

Each algorithm has a specific dynamic parameter that can be changed with the encoder and via CV from the Param jack.

White LEDs next to the potentiometers tell when the knob is active and its cursor reflects the actual setting.

Pressing a button brings on the editing, which is done with the encoder. Validation is done by pressing the encoder.

Settings are maintained and recalled after power cycle.

Within a section in LFO mode, Sync and Clk control are exclusive, but each section can activate any one of these. In VCO mode there is no Clock setting; instead comes a quantizer with various scales. Sync restarts the wave.

With both sections in VCO mode, a long press on Osc2 offers 3 uses of the V.Oct inputs:

- Separate - each input drives its own oscillator
- Added - the sum of both inputs is sent to both oscillators
- Offset - V.Oct 1 drives both oscillators; V.Oct 2 comes in addition on oscillator 2.

## FRONT PANEL

### Controls

**OSC2** Switches between Osc 1 & 2 and allocates buttons, knobs and display to the first or second oscillator. When Osc2 LED is on, the second oscillator is selected.

**LFO/AM** sets the LFO/VCO mode. When on, the current oscillator is in LFO mode and the FM jack becomes AM (VCA).

**Qtz/Clk** accesses the quantizer when in VCO mode or external clocking when in LFO mode. When LED is on, quantize or external clocking is active.

**Sync** is about VCO or LFO wave sync (restart). When LED is on, sync is enabled.

**Algo** when encoder is pressed, the LED flashes; if then turned, it selects one of the algorithms. When turned with LED off, it changes the **Parameter** related to the current algorithm.

**Coarse** sets the VCO pitch or LFO rate. With external LFO clocking active, it controls the mult/div ratio.

**Fine/Level** sets the tuning in VCO mode or output level in LFO mode.

A long press on the encoder brings a scrolling **help** text !



### Inputs & outputs

**V.Oct 1 & 2** drive the pitch in VCO mode, and rate or clock ratio in LFO mode.

**Param 1 & 2** control the dynamic parameter relating to the current algorithm.

**Sync/Clk** can be Sync or clock input for osc 1 and/or 2. This jack is shared by both sections and enabled separately.

**Out 1 & 2** wave outputs.

*Section 1 only:*

**FM/AM** can be set into BZX-FM, Lin-FM, VCA, algorithm selection or quantizer base note setting.

The **[square] 1** out is a sub-octave in VCO mode or trigger pulse at LFO rate.