

Vampire Quick Info Sheet

Quick Road Map:

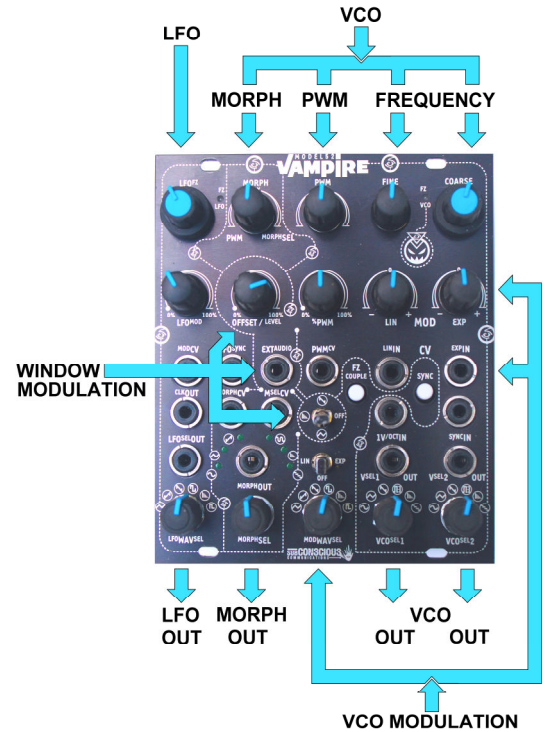
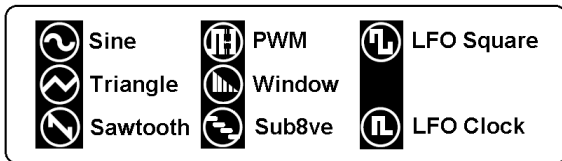
The Vampire is comprised of:

- ⇒ a VC-LFO with 5 output waveforms,
- ⇒ a VCO with Six output waveforms,
- ⇒ a VC-Cross-fader between PWM and a selected alternate VCO waveform,
- ⇒ VC-Selection of VCO waveform to cross-fade with PWM,
- ⇒ Amplitude Modulated channel for External Audio or VCO Sin² signals at the LFO frequency rate.

These elements are variously available to some or all of four output channels.

Vampire Lore

The front panel uses symbols to indicate individual waveforms



External Outputs:

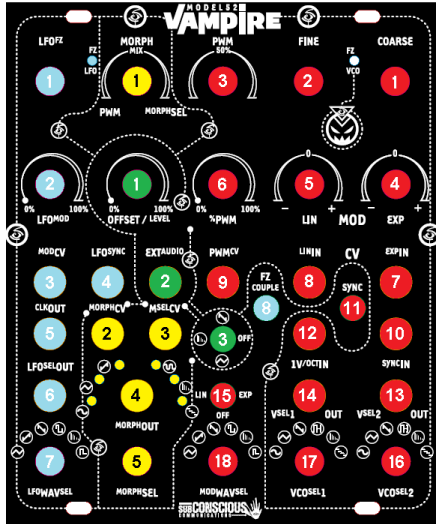
Vampire output occurs on any of four output jacks.

LFO ^{SEL} OUT	Externally the LFO ^{WAVSEL} output provides Triangle, Saw, Reverse-Saw, Square, and logic level square LFO Clock. The windowed wave is also available.	
MORPHOUT	Voltage controlled or manual cross-fade between VCO PWM waveform and a VC or manually selected VCO waveform occurs to the MORPH Output.	
V ^{SEL} 1OUT & V ^{SEL} 2OUT	VCO output waveforms can be manually selected for output on either VCOSEL 1 or 2. There is no restriction on wave selection. Like waveforms can be selected.	
CLKOUT	LFO 0/+5V "TTL" compatible 50% pulse at LFO frequency rate.	

Vampire Quick Info Sheet

Who belongs to What?

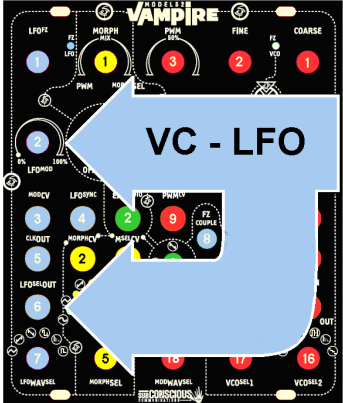
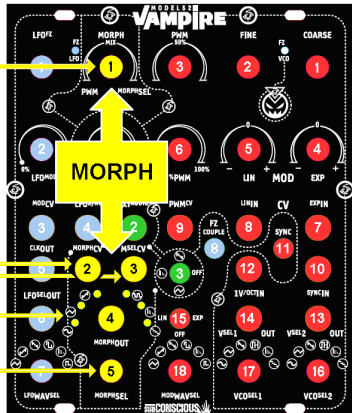
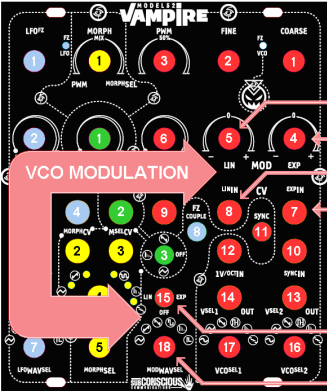
The graphic below color associates the jacks and controls for the separate functions that comprise the Vampire.



- LFO
- Morph/Wave Scan
- Windowed Wave
- VCO

Blue – LFO	
1	LFO Frequency control.
2	LFO modulation input attenuator for signals plugged into Blue 3
3	MODCV LFO modulation input jack.
4	LFO Synchronization Input
5	"TTL" (0–5Vdc) LFO Square wave output
6	Output jack for the LFO output waveform selected by Blue 7
7	LFO output waveform select.
8	Switch: 1V/8ve Input connect/disconnect to LFO
Yellow – MORPH	
1	Degree of cross-fade between (left) PWM and (right) MorphSel Waveform.
2	CV input for modulating the Morph cross-fade
3	CV input for modulating the Morph waveform select.
4	Morph audio output jack
5	Morph Waveform Select panel control/attenuator.
Green – WINDOWING (VSG)	
1	Window CV offset. With no LFO waveform, performs like amplitude control
2	Allows patching alternate to normalised Sin2 waveform enveloped by Wave Window circuit.
3	Selects waveform window envelope shape or no envelope shape.
Red – VCO	
1,2	VCO Frequency Control Coarse and Fine controls.
3	PWM On/Off time spacing (adds with Red 6)
4,5	Bi-polar attenuators for (4) exponential; (5) linear modulation inputs and/or <i>normalised</i> MODWAVSEL waveform
6	Attenuator for PWM modulation input jack (Red 9).
7	Exponential modulation input jack. Jack's over <i>normalised</i> MODWAVSEL.
8	Linear modulation input jack. Jacks over <i>normalised</i> MODWAVSEL.
9	PWM modulation input jack drive
10	External VCO synchronization (when selected by Red 11)
11	Synchronization Switch select (Internal/External)
12	1 volt per octave input to VCO and switch coupled to LFO.
13,14	VCO waveform output selected by companion rotary switch. Red13–Red16 / Red 14–Red17
15	Route MODWAVSEL to VCO Linear or Exponential input.
16,17	Selects waveform to output. Red16 selects Red13. Red17 selects Red14.
18	Select LFO output waveform routing through RED15 to Red 7 or Red (center OFF)

Panel Matrix: The panel distributes LFO, Morph, Window and VCO in 5 basic columns across.					
LFO Freq	MORPH Fade		VCO Pulse – Width	VCO Fine Freq	VCO Coarse Freq
% of LFO–MOD	Window amplitude CV 0–5V level (constant)		% of PWM CV	% and Direction Of Linear Mod	% and Direction Of Expo Linear Mod
LFO Mod Input jack	LFO Sync In	Ext Audio Input	PWM CV input jack	Linear Mod Input Jack	Expo Mod Input Jack
LFO CLOCK Output jack	MORPH Fade CV	MORPH WaveSel	Window Amp–Mod WaveSel	Calibrated 1/Voct Input Jack	VCO Sync Input Jack
LFO External Output jack	MORPH OUTPUT jack		Mod Channel Sel	VCO Output 1 Jack	VCO Output 2 Jack
Waveform Select	MORPH SEL/VC Atten		MOD LFO WaveSel	VCO Output Wave Sel1	VCO OUTPUT WaveSel 2

<p style="text-align: center;">The VC- LFO</p>  <p>LFO frequency control → 1</p> <p>LFO % of External Modulation Attenuator → 2</p> <p>LFO Modulation input jack → 3</p> <p>LFO Clk Output → 4</p> <p>LFO output wave select → 5</p> <p>LFO external output jack → 6</p> <p style="text-align: center; font-size: 2em; color: blue;">VC - LFO</p>	<p style="text-align: center;">MORPH</p>  <p>Manual Cross-fade PWM to MORPHSEL Wave → 1</p> <p>VC-Crossfade Input PWM to MORPHSEL Wave → 2</p> <p>VC- Select of wave that PWM crossfades to → 3</p> <p>MORPH Audio Output → 5</p>
<p>LFO Output waveforms: http://subsamples.skylab.it.com/lfo_waves.html</p>	<p>Morph Crossfade: http://subsamples.skylab.it.com/morph_waves.html</p> <p>WaveSelect Examples: http://subsamples.skylab.it.com/mse/waves.html</p>
<p style="text-align: center;">VCO Modulation</p>  <p>Bi-Polar Attenuators → 1</p> <p>VCO Linear FM → 2</p> <p>VCO Exponential (1V/oct) FM → 3</p> <p>Linear FM input jack → 4</p> <p>Expo FM input jack → 5</p> <p>Lin/Expinput jacks patch over Internal LFO Modulation → 6</p> <p>Internal LFO Modulation Routing Switch → 7</p> <p>Internal Modulation LFO Waveform Select → 8</p> <p style="text-align: center; font-size: 1.5em; color: red;">VCO MODULATION</p>	<p style="text-align: center;">Windowed Waves</p>
<p>Internal LFO Modulation of VCO: http://subsamples.skylab.it.com/mod_waves.html</p>	

Sample Patches



In-Panel Patches

- ⇒ Listen from either $V^{\text{SEL}1}\text{OUT}$ or $V^{\text{SEL}2}\text{OUT}$ (panel bottom right)
- ⇒ Set SYNC switch so that FZVCO LED glows green.
- ⇒ Select a Sine, Triangle or Sawtooth waveform using $V\text{CO}^{\text{SEL}1}$ or $V\text{CO}^{\text{SEL}2}$ rotary switch.

Modulation

Set LIN/OFF/EXP switch (panel lower center) to its middle position.
Set LFO^{FZ} (panel top left) to slow rate alternating the FZLFO LED illumination.
Set VCO frequency COARSE/FINE (panel top right) to a pleasant pitch
Set $\text{LFO}^{\text{WAV}^{\text{SEL}}}$ to the Sawtooth wave.

- ⇒ Set LIN/OFF/EXP switch to EXP (right position)
- ⇒ Rotate EXP panel control from center right and then center left.

The degree of VCO frequency modulation *increases* ...
... positively as the control moves center-right
... negatively as the control moves center-left.

- ⇒ Set LIN/OFF/EXP switch to LIN (right position)
- ⇒ Rotate LIN panel control from center right and then center left.

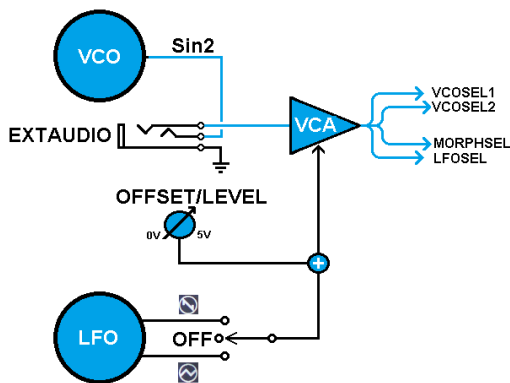
The degree of VCO frequency modulation *increases* ...
... positively as the control moves center-right
... negatively as the control moves center-left.

Synchronization

Set LFO Frequency to its audible pitch range
Press the SYNC push-button switch so that FZVCO LED illuminates RED.
⇒ Rotate LFO Frequency control (panel top left)
⇒ Rotate VCO COARSE and FINE Frequency controls (panel top right)
LFO frequency should equal or be less than VCO frequency for maximum output.
Differing frequency ratios produce different timbral effects.
⇒ Set LIN/OFF/EXP switch to center position
LFO frequency should equal or be less than VCO frequency for maximum output.
Without Frequency modulation Sync produces a different range of timbral effects.

Vampire Quick Info Sheet

How does Waveform Windowing Work ?



The figure left depicts how the VCO Sin² waveform inputs to a VCA to be enveloped by either LFO Reverse Sawtooth or Triangle waveforms.

A lever-switch (with a middle OFF position) selects between to modulate the amplitude of the input signal (typically Sin²).

Signals input to EXTRAUDIO jack override Sin² and input directly to the VCA.

The OFFSET/LEVEL panel control adds to Input level setting regardless of switch position (including OFF).

With no LFO modulating waveform, OFFSET/LEVEL is a manual volume control especially useful when processing external audio.

With active LFO modulation the OFFSET/LEVEL reduces waveform spacing and asymmetrically distorts the waveform.

How does Morph Work ?

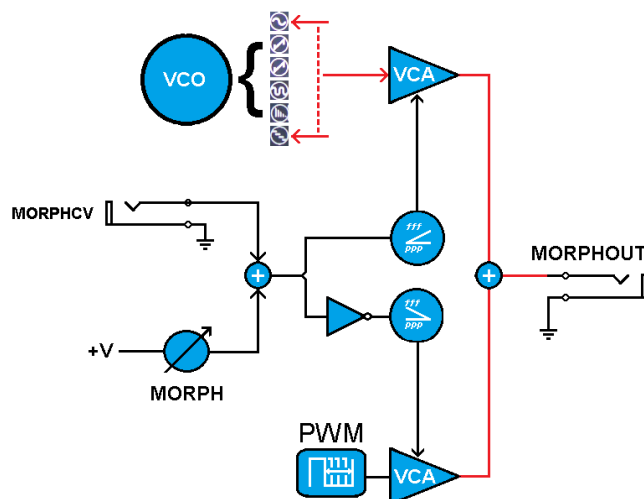
Cross-Fade

Morph cross-fades the VCO PWM square wave with an alternate waveform manually, or with voltage control.

The figure right depicts how the MORPH panel control and MORPHCV combine to set the degree of fade between PWM and an alternate waveform.

Wave Select

The alternate Morph waveform is set by the MORPHSEL panel control.



The MORPH panel control is an attenuator.

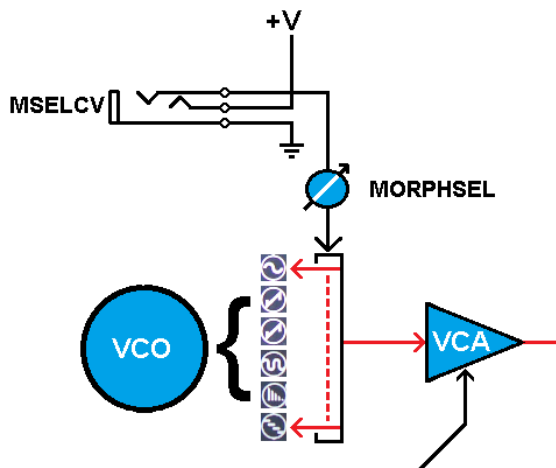
With no signal plugged to MORPHCV, a reference is supplied so the MORPH control performs as Manual Rotary Waveform Select.

Signals input to MORPHCV jack override the reference with the MORPH panel control acts as an attenuator.

Increasing positive voltage move waveform selection from Sine to Sub-Octave.

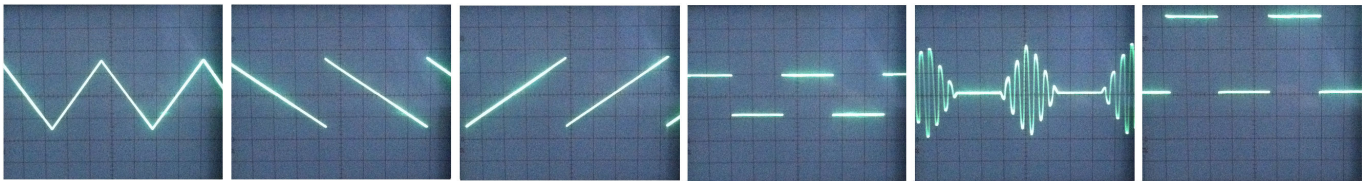
Control Voltages more negative than 0V are ignored.

Selecting Windowed Waveforms assumes it is set to sounding.



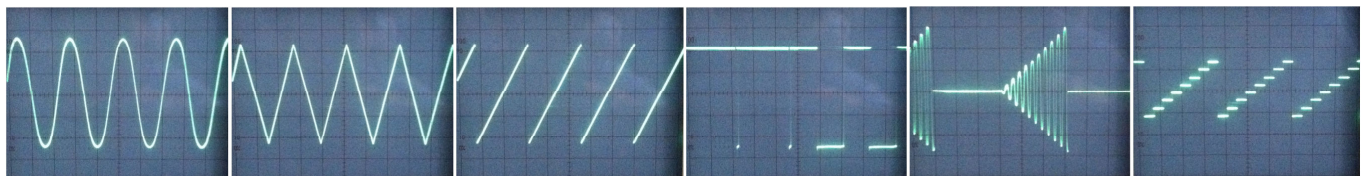
VCO 1

- Frequency Range:** .04Hz to 16kHz
 Frequency adjusted using the manual **LFO^{FZ}** control and (when the **FZCOUPLE** switch is activated) by external signals plugged into the **1V/^{OCT}IN** jack.
 Frequency rate indicated by the **FZLFO** LED flashing green when Frequency is coupled and red when Frequency control is un-coupled.
- External Modulation:** Input attenuator / Exponential response.
- Synchronization Input:** Resets Waveform low.
- Synchronization Output:** Unipolar Pulse 0–12V emits from **CLK^{OUT}** jack.
- Output Waveforms:** Manual Rotary selection for waveform emitted from **LFO^{SEL}OUT** jack. +/-5Vac C Triangle, Sawtooth, Ramp, Square, Windowed and Uni-polar Pulse waveforms.



VCO2

- Frequency Range:** .5Hz to 24kHz.
 Frequency adjusted using the manual **COARSE** and **FINE** panel controls and by external signals plugged into the **1V/^{OCT}IN** jack.
 Frequency rate indicated by the **FZVCO** LED flashing GREEN when VCO2 is not internally synchronized to VCO1 and flashes RED when internally synchronized.
- External Modulation:** Linear and Exponential input response with two modes:
Internal Mode: Any of six VCO1 waveforms, manually selected by **MOD^{WAV}SEL** rotary switch routes to modulation select switch. Placed left, VCO1 drives the VCO2 **LIN MOD** attenuator. Placed right VCO1 drives VCO2 **EXP MOD** attenuator. Centered, VCO2 is not internally modulated.
External Mode: External signals plugged into either **LIN** or **EXP MOD** jacks overrides any internally routed modulation.
- Synchronization:** Resets Waveform low with two modes:
Internal Mode: With white **SYNC** button pressed, VCO1 **CLK^{OUT}** is the source of Synchronization. The **FZVCO** indicates RED.
External Mode: with white **SYNC** button not-pressed any signal plugged into the **SYNC** jack is the source of synchronization.
- Output Waveforms:** VCO2 employs two output modes, manual and voltage controlled. Six waveform types emit from manual waveform outputs. Sine, Triangle, Ramp, PWM Pulse, Windowed and Sub-Octave Staircase.



Manual Outputs: Two Rotary switches (**VCO^{SEL1}**; **VCO^{SEL2}**) select one of six possible output waveforms to emit from **VCO^{SEL1} OUT** and **VCO^{SEL2} OUT** jacks.