

# PITTSBURGH MODULAR

## VOLTAGE INFLUENCED LOW FREQUENCY OSCILLATOR (VILFO)



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# What is the VILFO?

The VILFO is an analog triangle waveform based low frequency oscillator. It outputs a triangle wave and a variable waveform that shifts from a triangle to something close to a square.

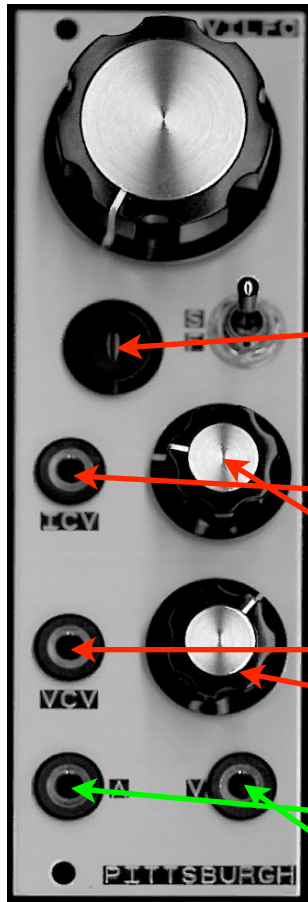
The VILFO also includes a unique voltage influence circuit. The influence works differently than standard control voltage inputs, it allows the incoming CV to mingle with the LFO waveforms in interesting ways, creating unique modulations and patterns.

## The Voltage Influence Circuit

A typical Voltage controlled oscillator works by using a CV input to directly control the oscillation frequency. The more voltage sent to the CV input, the higher the frequency of the oscillator. The lower the voltage, the lower the frequency of the oscillator.

Voltage Influence works by using the CV input to attenuate the frequency of the oscillator while at the same time injecting some of the voltage from ICV Input to the feedback loop of the oscillator. Results can vary from subtle to chaotic. Subtle results can be similar to tremolo, shuffle, or soft reset while more extreme settings produce glitchy, rhythmic, chaotic fluctuations in the frequency of the VILFO. At the most extreme the VILFO can be stopped using Voltage Influence.

## VILFO User Interface



Frequency Knob

(S)low / (F)ast Frequency Range Switch

Voltage Influence Controls:

Influence Control Voltage Input (ICV Input)

Influence Control Voltage Attenuator Knob (ICV Knob)

Voltage Controlled Variable Waveform Controls:

Variable Control Voltage Input / Output (VCV Input)

Variable Waveform Shift / Variable CV Knob (VCV Knob)

Outputs:

Triangle Wave Output ( $\Delta$ )

Variable Wave Output (V)

# VILFO Control Descriptions

## **Rate:**

Frequency Knob: Controls the rate of the VILFO

S/F Switch: Controls the range of the Frequency Knob

## **Influence Controls:**

The two controls for the Influence circuit are the ICV (Influence Control Voltage) Input and the ICV Knob: The ICV Input is wired directly to this attenuator. Turn the knob left to reduce the amount of ICV to 0 and right to increase the amount of ICV fed to the VILFO. A VCA can be used before the ICV Input to automate the amount of CV sent to the Influence circuit.

## **Variable Waveform Controls:**

The two controls for the Variable Waveform are the VCV (Variable Control Voltage) Input and the VCV Knob. The shape of the Variable Output can be modified using the VCV Input and the VCV Knob.

Turned all the way left, the VCV Knob sets the Variable Output to a triangle wave. As the knob is turned clockwise, the Variable Output shifts towards a square.

The VCV Knob also acts as an attenuator for the VCV Input. Turning the knob to the right will increase the amount of control the VCV Input has over shifting the waveform.

Not to make things too confusing, but the VCV Input can also be used as an output. The output is a Triangle wave heavy mix of the Variable Output.

# VILFO Patch Examples

## Double Tremolo

Set the Frequency Knob to 12 o'clock, the ICV Knob full clockwise, and the VCV Knob full counterclockwise. Switch the S/F Switch to (S)low.

Patch the Triangle Output of the VILFO to an oscillator, filter, or other module that accepts CV modulation. Patch an external LFO to the ICV Input. Adjust the Frequency Knob and ICV Knob to taste.

## Basic Influence Modulation

Set the Frequency Knob to 11 o'clock, the ICV Knob full counterclockwise, and the VCV Knob full counterclockwise. Switch the S/F Switch to (F)ast.

Patch the Triangle Output of the VILFO into an oscillator, filter, or other module that accepts CV modulation. Patch the output of another LFO running much slower than the VILFO into the ICV Input of the VILFO. Adjust the Frequency Knob to the desired speed and adjust the ICV Knob until the Influence affects the output of the VILFO.

## Basic Variable Control Voltage Modulation

Set the Frequency Knob to 12 o'clock, the ICV Knob full counterclockwise, and the VCV Knob full counterclockwise. Switch the S/F Switch to (S)low.

Patch the Variable Output of the VILFO into an oscillator, filter, or other module that accepts CV modulation. Patch the output of another LFO into the VCV Input of the VILFO. Adjust the Frequency Knob to the desired speed and adjust the VCV Knob to taste. Setting the VCV Knob full counterclockwise will produce a Triangle wave from the Variable Output and allow no control from the VCV Input. Setting the VCV Knob full clockwise will produce a square-type wave without VCV Input modulation and permit the full range of control to the VCV Input.

## **VILFO Patch Examples Continued...**

### **Skipping Beats with the VILFO as a Clock Source**

Set the Frequency Knob to 8 o'clock, the ICV Knob full counterclockwise, and the VCV Knob full clockwise. Switch the S/F Switch to (F)ast.

Patch the Variable Output of the VILFO into the clock input of a sequencer. Patch the output of another LFO into the VCV Input of the VILFO. Adjust the Frequency Knob to the desired tempo and the adjust the VCV Knob until the VCV Input affects the output of the VILFO.

### **Using the VCV Input as an Output**

Set the Frequency Knob to 11 o'clock, the ICV Knob full counterclockwise, and the VCV Knob full counterclockwise. Switch the S/F Switch to (F)ast.

Patch the VCV Input of the VILFO into an oscillator, filter, or other module that accepts CV modulation. Adjust the Frequency Knob to the desired speed and adjust the VCV Knob to taste. Setting the VCV full counterclockwise will produce a Triangle wave from the VCV Input. Setting the VCV full clockwise will produce a different version of the Variable Output.

### **Influencing Reset**

Set the Frequency Knob to 8 o'clock, the ICV Knob full counterclockwise, and the VCV Knob full counterclockwise. Switch the S/F Switch to (F)ast.

Patch the Triangle Output of the VILFO into an oscillator, filter, or other module that accepts CV modulation. Patch the output of another LFO into the ICV Input of the VILFO. Adjust the frequency of the other LFO to the desired rate and adjust the VILFO Frequency Knob to the desired rate. Slowly adjust the ICV Knob until the Influence creates the desired Reset effect.

## **VILFO Specs**

Frequency Range: Minutes to audible mid bass range

Size: 8hp

Depth: 53mm

Power: +-12v or +-15v

Power Usage: 30mA

The VILFO was designed by Richard Nicol.