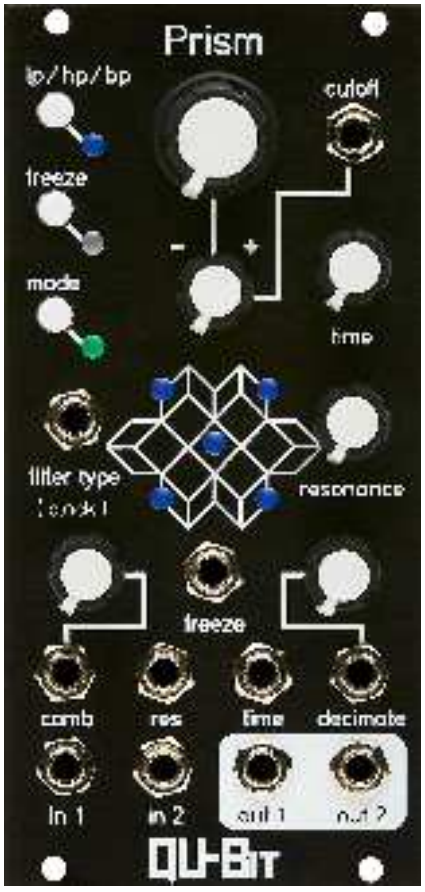
Prism


Prism
lp/hp/bp
cutoff
freeze
mode
time
filter type
resonance
freeze
comb
res
time
decimate
in 1
in 2
out 1
out 2
QU-BIT

Contents

Description 3

Specifications 4

Installation 5

Marked Diagram 6

1. Cutoff Frequency 7
    - 1a. Cutoff Frequency Knob 7
    - 1b. Cutoff Frequency Attenuverter 7
    - 1c. Cutoff Frequency CV 7

2. Resonance 7

3. Time 8

4. Comb 8

5. Decimate 8

6. Filter Type 8

7. Freeze 9

8. Mode 9

9. In 1 9

10. In 2 9

11. Out 1 10

12. Out 2 10

Edit Functions 10
    - Latching / Momentary Freeze behavior 10
    - Clocked Delay Times 10
    - Input Level Adjustment 11

Description

Prism is a multidimensional signal processor that creates a framework for the spectral metamorphosis of any input signal. This stereo audio buffer can be navigated through on 3 axes, each of which provides a different sonic journey through its array of time based controls.

The X and Z planes are home to a flexible delay line capable of long clocked delays, slapback echo, or comb filtered vocoder-esque timbres. On the Y axis is the decimate control. This sets the audio fidelity of the buffer by manipulating the sample rate and bit depth of the output. A state variable filter with configurable low pass, high pass, and band pass outputs can be enabled at the beginning or end of the signal chain providing yet another dimension of spectral transformation. And thanks to its digital architecture, the current buffer contents can be locked in place with the Freeze control, creating glitch and beat repeat effects which can be synced to an external clock source. The Prism blurs the lines between DSP effect, filter, and looper and transcends into a new realm of uncharted audio processing.

- Multidimensional signal processor
- Stereo inputs and outputs
- Flexible delay line providing long delays, and comb filtering
- Bit depth and sample rate manipulation
- State variable filter with LPF, HPF, and BPF
- Freeze control locks buffer in place for glitch and beat repeat effects
- Aluminum front panel

Specifications

Depth: 22mm

Width: 12HP

Current Consumption:

- **+12V: 90mA**
- **-12V: 10mA**

Installation

To install, locate 12HP of space in your Eurorack case and confirm the positive 12 volts and negative 12 volts sides of the power distribution lines. Plug the connector into the power distribution board of your case, keeping in mind that the red band corresponds to negative 12 volts. In most systems, the negative 12 volt supply line is at the bottom. The power cable should be connected to the module with the red band matching the white stripe on the PCB.

Marked Diagram



1. Cutoff Frequency

Sets the cutoff frequency of the state variable filter.

1a. Cutoff Frequency Knob

Knob for manually setting the cutoff frequency of the state variable filter.

1b. Cutoff Frequency Attenuverter

Attenuater and inverter for the cutoff frequency CV input.

At full counter-clockwise, CV will be inverted and full-scale.

At center, CV will disabled.

At full clockwise, CV will be full-scale.

This knob can also be used to attenuate the audio input.

See Edit Functions for details.

1c. Cutoff Frequency CV

CV input for cutoff frequency of state variable filter.

CV Range: -8V to +8V.

Scaled by Attenuverter position.

CV is added to current knob position.

2. Resonance

Controls the resonance of the state variable filter.

CV Range: -5V to +5V.

CV is added to current knob position.

3. Time

Controls the size of the audio buffer in the delay line. The delay line is the foundation of the comb filter, and freeze control.

Range: 1.5 seconds to 0.5 milliseconds.

CV Range: -5V to +5V.

CV is added to current knob position.

4. Comb

Controls the amount of comb filtering/delay being applied to the signal.

CV Range: -5V to +5V.

CV is added to current knob position.

5. Decimate

Sets the fidelity of the audio buffer by controlling the amount of downsampling, and bit-depth reduction being applied to the signal.

CV Range: -5V to +5V.

CV is added to current knob position.

6. Filter Type

Controls the topology of the state variable filter.

- LPF (low pass filter) - Blue
- HPF (high pass filter) - Green
- BPF (band pass filter) - Red
- Disabled - Off

CV Range: -5V to +5V.

CV is added to current knob position.

The state of this behavior is stored between power cycles.

This CV input can be configured as a clock input for the delay line.

See Edit Functions for details.

7. Freeze

Locks the current contents of the delay line. Size of the buffer is set by the Time control.

When the LED is illuminated, Freeze is activated.

While locked, the signal will repeat indefinitely, and the input signal will be ignored.

Button and gate input can be configured momentary or latching.

See Edit Functions for details.

8. Mode

Rearranges the signal flow so that the state variable filter is placed at the beginning or end of the chain.

When the LED is blue, the state variable filter will be placed at the beginning of the signal path.

When the LED is green, the state variable filter will be placed at the end of the signal path.

The state of this behavior is stored between power cycles.

9. In 1

Modular Level Input.

This input is normalled to Input 2.

10. In 2

Modular Level Input.

11. Out 1

Modular Level Output.

12. Out 2

Modular Level Output.

Edit Functions

Latching / Momentary Freeze behavior

Pressing the Freeze button while holding the Mode button will toggle between the two Freeze behaviors.

When the Freeze LED is white while engaged, the control is latching. Each new press or trigger input will toggle the state of the Freeze control.

When the Freeze LED is blue while engaged, the control is momentary. Freeze will be engaged whenever the button is held, or the gate input is above 1V.

The state of this behavior is stored between power cycles.

Clocked Delay Times

This feature turns the Filter Type CV input into a clock input for the delay line.

Pressing the Filter Type button while holding the Mode button will toggle the state of this feature.

While engaged the time parameter will control multiplications/divisions of the clock rate.

All of the Central Prism LEDs will perform a short, white blink any time the multiplication/division of the clock rate is changed.

The Central Prism LED will blink white with the current clock rate.

If the clock rate is slower than the delay line is large, the delay line will reset on the proper clock divisions, and otherwise continue to loop.

The state of this behavior is stored between power cycles.

Input Level Adjustment

Turning the Cutoff CV Attenuator while the Mode button is pressed will attenuate the audio input level.

When adjusting the input level, the Prism LEDs will all illuminate blue, and display the amplitude as brightness.

The default state of this control is with input amplitude at full-scale.