

Mutable Instruments

Shelves User manual

OVERVIEW

Shelves is a voltage-controlled signal processor inspired by the EQ section of console channel strips. Just like many sought-after equalizers, it provides low-shelf, high-shelf, and two parametric tone controls. Unlike an equalizer, each of these four tone controllers can be swept over the entire audio range; and their parameters can be freely modulated with control voltages.

Shelves occupies a space between tone-controllers and filters, sometimes achieving sounds reminiscent of a filter bank. It provides a subtler and less cliché'd way of spectrally altering complex drones or feedback patches.

INSTALLATION

Shelves is designed for Eurorack synthesizer systems and occupies 16 HP of space. It requires a -12V / +12V supply (2x5 connector), consuming 75mA from the -12V rail and 75mA from the +12V rail. The red stripe of the ribbon cable must be oriented on the same side as the "Red stripe" marking on the printed circuit board.

PARAMETER RANGES

On all channels, the **FREQ** knob covers the entire audio range, from 20 Hz to 20kHz. This is radically different from a classic EQ, in which each section operates in its narrow frequency range. Strange things (positive/negative interferences or phase effects) can happen when two sections overlap.

All the **FREQ** CV inputs have a 1V/Oct scale and act as offsets to the value set by the **FREQ** knobs.

On all channels, the **GAIN** knob covers an attenuation/boost range of -15dB to +15dB. The **GAIN** CV input has a 3dB/V scale and acts as an offset to the value set by the **GAIN** knob. Gains above +15dB cannot be reached, even by adding a positive CV offset to the **GAIN** CV input. However, gains below -15dB can be obtained by adding a negative CV offset to this CV input.

On parametric channels, **Q** goes from 0.5 to 20.0 from the panel knob, but can reach higher values, up to 1000.0 through external CV modulation.

CONTROLS, INPUTS AND OUTPUTS



A. High-shelf section. This section boosts or attenuates all frequencies above the **FREQ** control. The **GAIN** potentiometer controls the amount of attenuation or boosting. No modification is applied when **GAIN** is in its central position.

B. Parametric sections 1&2. These two sections boost or attenuate all frequencies in a frequency band whose central frequency is set by **FREQ**. The narrowness of this frequency band is set by the **Q** setting - from very wide to very selective.

C. Low-shelf section. This section boosts or attenuates all frequencies below the **FREQ** control. The **GAIN** potentiometer controls the amount of attenuation or boosting. No modification is applied when **GAIN** is in its central position.

1. 2. Global frequency and gain CV inputs. These CV inputs simultaneously adjust the **FREQ** or **GAIN** of all 4 channels.

3. IN. Audio input. The input signal can optionally be attenuated by -6dB before being processed by the EQ filter. A jumper is available on the back of the module to enable/disable this pre-gain.

4. Output clipping indicator. It is recommended to reduce the level of the input signal - or to reduce the gain on all channels - when this LED lights up.

5. OUT. Audio output.

6. 7. Individual outputs for the parametric sections' filters. Behind the scenes, Shelves' parametric sections are full-blown multimode filters. The low-pass (LP), band-pass (BP), and high-pass (HP) outputs of these two filters are provided on these two groups of jacks.

Note: the first batch of modules had these two groups of three outputs on a separate expansion module. Please refer to [this page](#) to learn how to connect it to the main board.

RANGES AND SCALES

On all sections, the **FREQ knob** spans the entire audio range, from 20 Hz to 20 kHz.

The **FREQ CV input** has a 1V/Oct scale and acts as an offset to the value set by the **FREQ knob**.

The **GAIN knob** covers an attenuation/boost range of -15dB to +15dB.

The **GAIN CV input** has a 3dB/V scale and acts as an offset to the value set by the **GAIN knob**.

Gains above +15dB cannot be reached, even by adding a positive CV offset to the **GAIN CV input**. However, gains below -15dB can be obtained by adding a negative CV offset to this CV input.

On the two parametric sections, the **Q** parameter, which controls filter selectivity, goes from 1 to 10, but can reach much higher values with CV modulation.



WARRANTY

This product is covered by Mutable Instruments' warranty, for one year following the date of manufacture. This warranty covers any defect in the manufacturing of this product. This warranty does not cover any damage or malfunction caused by incorrect use - such as, but not limited to, power cables connected backwards, excessive voltage levels, or exposure to extreme temperature or moisture levels.

The warranty covers replacement or repair, as decided by Mutable Instruments. Please contact our customer service (support@mutable-instruments.net) for a return authorization before sending the module. The cost of sending a module back for servicing is paid for by the customer.

Mutable Instruments encourages modding and hacking, but we will not service modified units or provide any assistance in the realization of mods.