
SMEAR
DUAL STEREO 98-POLE ALLPASS FILTER

# SMEAR

A dual stereo 98-pole allpass filter unlike anything else in your rack.

At its core, Smear takes a deceptively simple concept, the **allpass filter**, usually buried deep inside reverb algorithms, and refines it into a **playable, sculptural processor**.

A single allpass subtly shifts the **phase** of incoming audio while passing the entire signal unfiltered. Stack 98 poles in series, and the effect becomes striking: frequencies across the spectrum are **delayed by different amounts**, creating a rich **spectral delay** that can smear, morph, and transform sound.

It **does not cut frequencies** at all. The result is closer to a multi-FX than a traditional filter.

### EFFECTS

| | |
|---|---|
| **Transient smearing and spectral delay** | Reshapes transients. Can add punch. |
| **Resonator and percussion voice** | Metallic, physical-modeling tones when pushed into feedback territory. |
| **Morphing filter and phaser** | Animated timbral movement. |

### INTERFACE

The panel is laid out symmetrically, with **two identical sections**, left and right. Each section offers three core parameters: **frequency, resonance and stages (TAP)**, each with a dedicated CV input. Frequency and resonance have attenuverters for precise modulation. A global **feedback** control, with CV, sits in the centre.

# Install

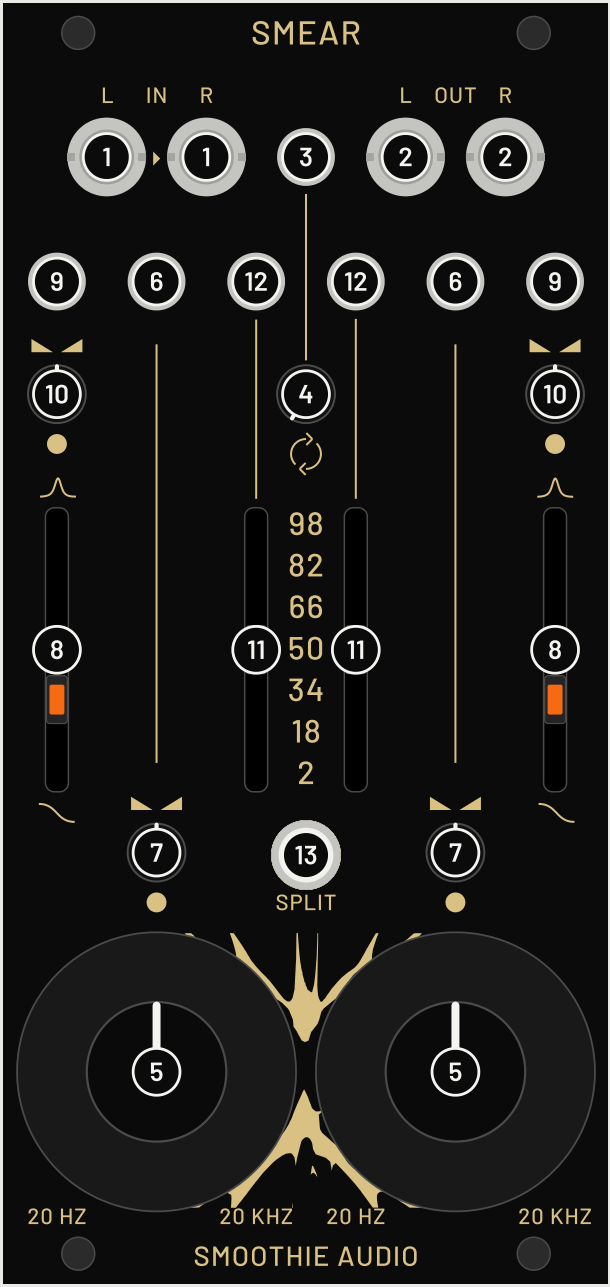
1. Power off the case.
2. Connect the ribbon. Put the red stripe on −12 V.
3. Mount the module. Rack screws are not included.
4. Power on. The LEDs show a start animation.

**CAUTION** A reversed ribbon can damage the module.

**SPECIFICATIONS**

| | |
|---|---|
| **Size** | 12 hp, 30 mm deep |
| **Power** | +12 V 108 mA · −12 V 70 mA · +5 V 0 mA |
| **Platform** | Digital, based on the Electrosmith Patch SM, 48 kHz |
| **Audio** | 2 in, 2 out |
| **CV** | 7 in, ±5 V, audio rate |
| **Poles** | 2 to 98 per section, up to 160 with the config drive |

# Panel

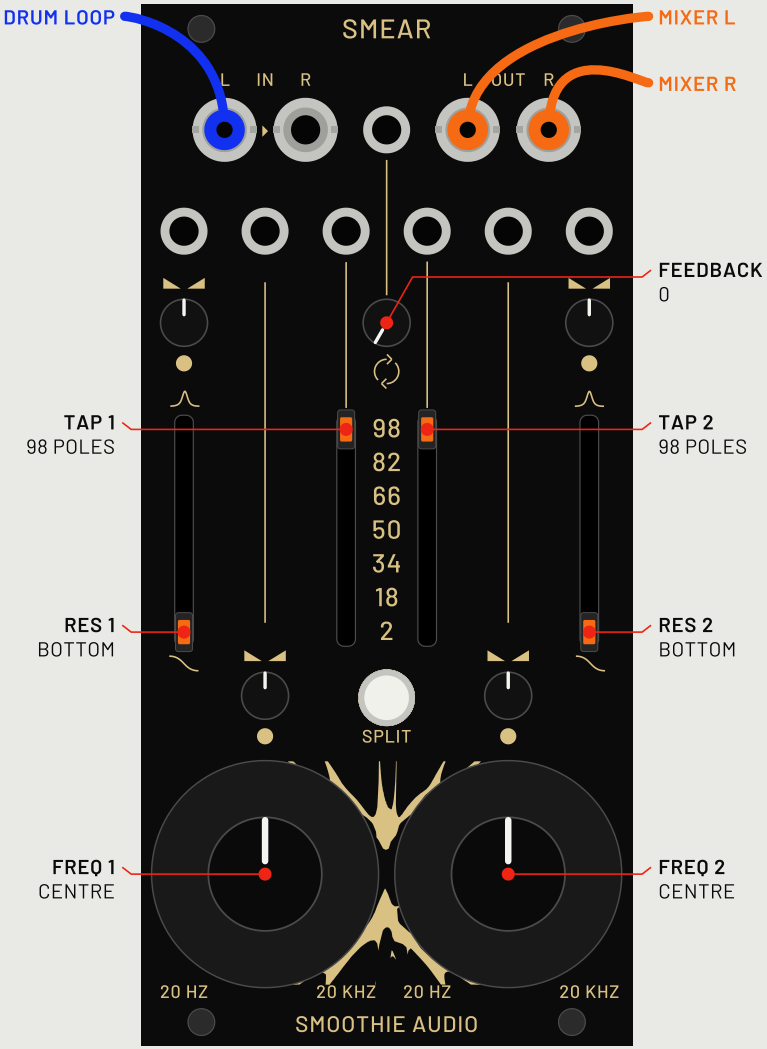



1. Inputs. L goes to R if R is empty.
2. Outputs
3. Feedback CV
4. Feedback
5. Frequency
6. Frequency CV
7. Frequency CV depth
8. Resonance
9. Resonance CV
10. Resonance CV depth
11. Tap
12. Tap CV
13. Split

Left side: section 1.
Right side: section 2.

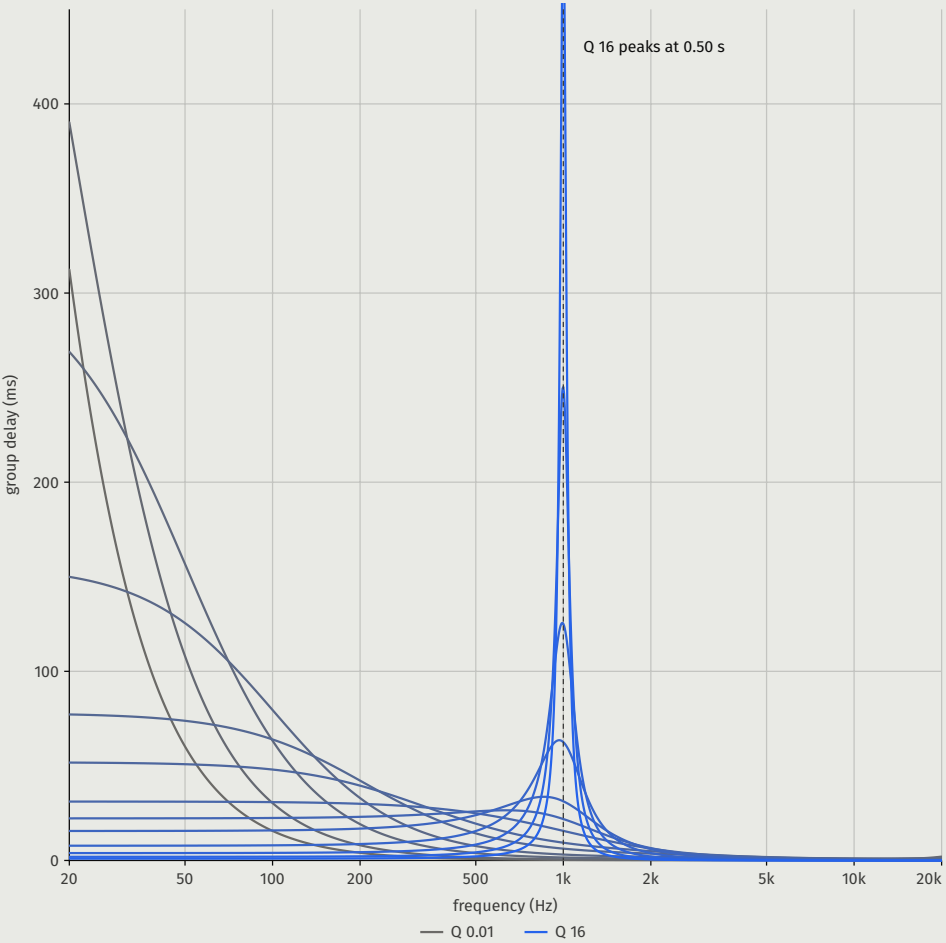
# First sound

Use this as a start point. Then move RESONANCE and FREQ.



# Frequency and resonance

FREQ sets where the delay acts. RESONANCE sets its shape.




Delay of 98 poles at 1 kHz. Q 0.01 (grey), 0.02, 0.05, 0.1, 0.2, 0.3, 0.5, 0.7, 1, 2, 4, 8 and 16 (blue).

Low Q: the bass comes late and the treble comes on time. High Q: a narrow band at FREQ rings.

| **Position** | 0 % | 25 % | 50 % | 75 % | 100 % |
|---|---|---|---|---|---|
| **FREQ** | 20 Hz | 113 Hz | 633 Hz | 3.56 kHz | 20 kHz |
| **Q** | 0.01 | 0.026 | 0.51 | 3.81 | 16 |

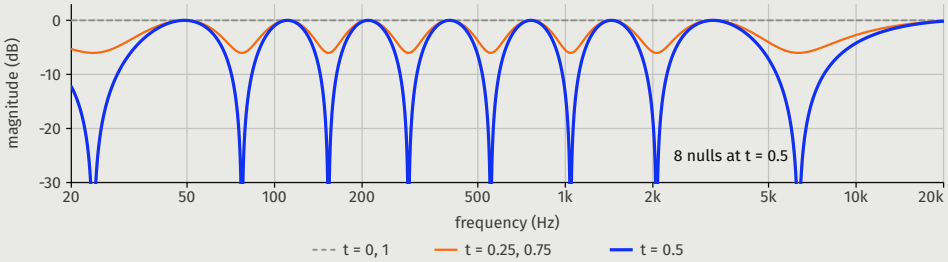
# Tap

The stage sliders reveal the hidden depth of SMEAR. TAP sets the number of poles. More poles give more delay.

When crossfading between two taps, you hear **both at once**. The later tap has passed through more poles, so it is delayed by a **different amount at each frequency**. Where the two taps are in phase, they add. Where they are opposite, they **cancel and make a notch**. A phaser makes its notches the same way.

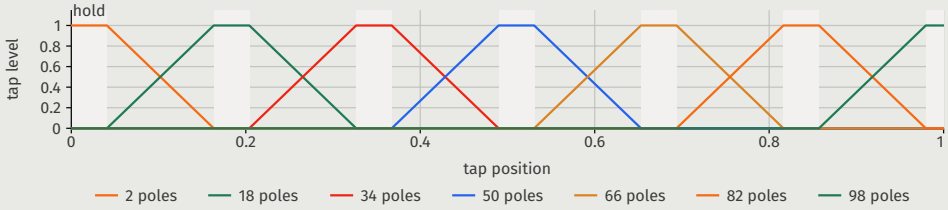
On a marked tap, you hear **one tap only**. Nothing cancels, so the **level stays flat**. The LED is on at a marked tap and off between two taps.

The **difference of poles** between the two taps determines the number of notches when crossfading between those taps. More poles between the two taps make them swing in and out of phase more often across the spectrum. **Every 2 poles of difference gives 1 notch**, so the default 16-pole steps give **8 notches**, whichever two taps you are between. You can **configure the taps** to change the gap, and so the number of notches. See Config drive.




Level between 50 and 66 poles. t is the slider position between the two taps.

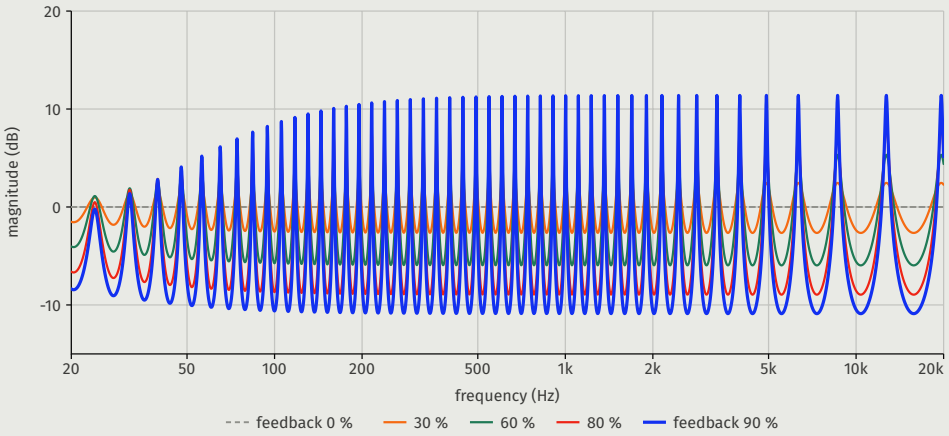
With the LEDs as a guide, you can dive into complex **notch filtering, animated flams** and **evolving timbral movement**. Modulate the sliders, and the module comes alive with dynamic filtering effects.




Level of each tap across the slider travel.

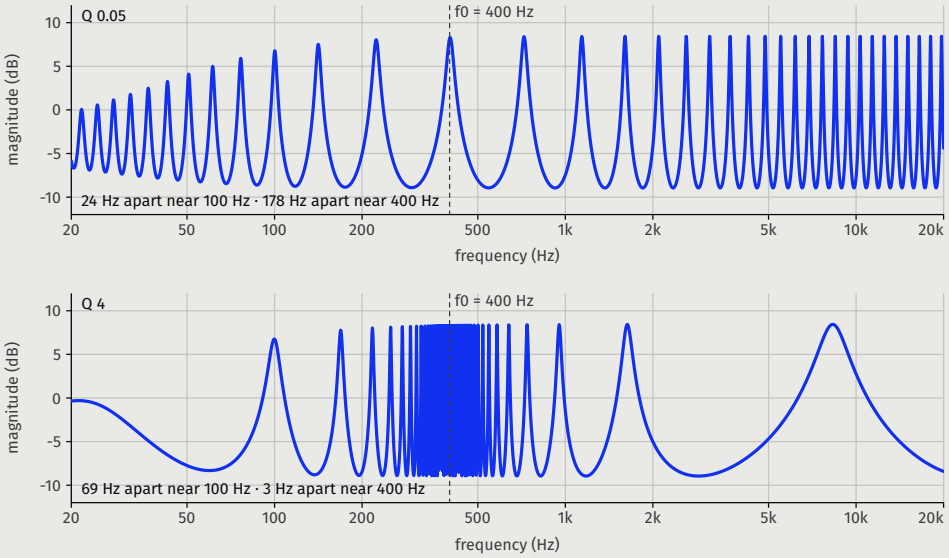
# Feedback

FEEDBACK sends the output back to the input. It unlocks resonant, flanger-like and physical-modeling behaviors.




Level with feedback at 0, 30, 60, 80 and 90 %. Both sections: 400 Hz, Q 0.3, 50 poles.

Set high Q to bunch the peaks at FREQ. More poles put the peaks closer together.




Level at 400 Hz, feedback 80 %. Top: Q 0.05. Bottom: Q 4.

# CV

All 7 inputs are bipolar and accept audio rate.

| | |
|---|---|
| **F CV** | Frequency. Depth: attenuverter. |
| **Q CV** | Resonance. Depth: attenuverter. |
| **ST CV** | Tap. Direct. |
| **FB CV** | Feedback. Direct. |

- ±5 V moves a control through its full travel.
- An attenuverter at noon gives no CV. Left of noon inverts the CV.
- CV adds to the knob or slider position.

**NOTE** F CV is not calibrated to 1 V/oct. With the attenuverter at about 3/4 clockwise, 1 V moves FREQ by about 1 octave.

# Stereo and split

By default, stereo audio flows left → right → out. Split mode allows each side to process audio independently. The module keeps the setting at power off.

**SPLIT OFF: STEREO**




Each channel goes through both sections.

**SPLIT ON: DUAL MONO**




Each channel goes through its own controls, with double the poles. The word SPLIT on the panel lights up. Feedback stays inside each channel.

# Config drive

Connect a micro USB data cable to the Daisy Patch SM on the back of the module. A drive called SMEAR appears. The drive needs firmware v1.2.1 or newer.

1. Open CONFIG.TXT in a text editor.
2. Edit a value and save. The change applies after about 1 second.
3. Eject the drive before you disconnect the cable.

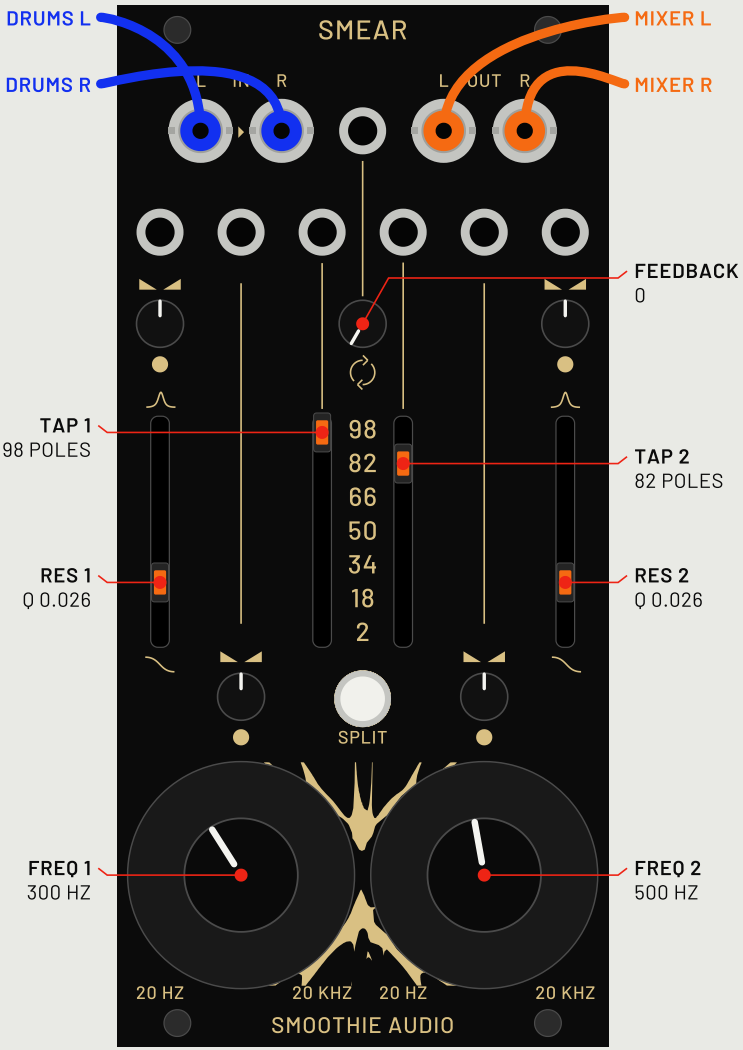
| | |
|---|---|
| **feedback** | unipolar (default)<br>bipolar: centre is 0, below centre inverts the loop |
| **taps1**<br>**taps2** | The stages for each TAP slider. 2 to 8 values, 0 to 80, in any order. 1 stage = 2 poles. 0 is the dry input.<br>Default: 1,9,17,25,33,41,49 |

```
taps1 = 0,4,10,18,28,40,54,70   # steps get wider: more and more notches
taps2 = 0,20,40,60,80           # even steps, up to 160 poles
feedback = bipolar
```

**NOTE** The module does not use a line that has an error. It adds an # ERROR comment with the reason, and the slider LEDs flash until the computer has the new file.
**Windows:** the drive reloads after approximately 10 seconds. Open the file again.
**macOS:** eject SMEAR in Finder. The drive comes back after a few seconds. Open the file again. Do not save the file again before you eject it, because the module ignores that save.

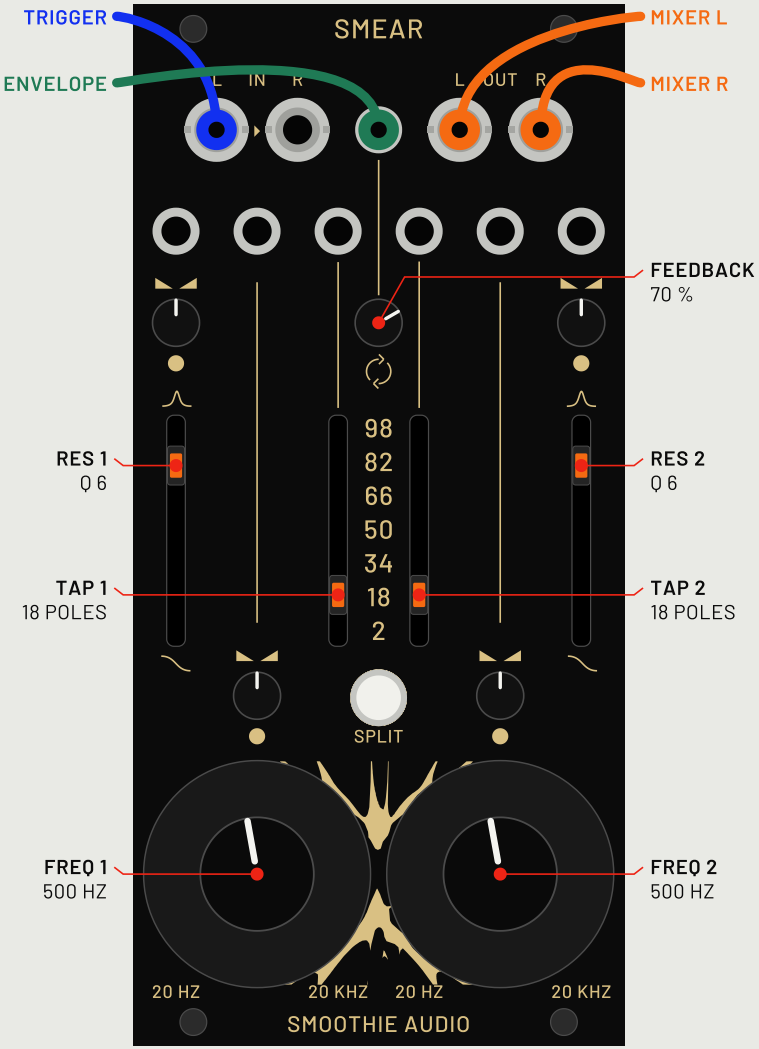
# Transient smear

A spectral delay that reshapes transients and can add punch. The tone stays the same.



# Resonator and percussion voice

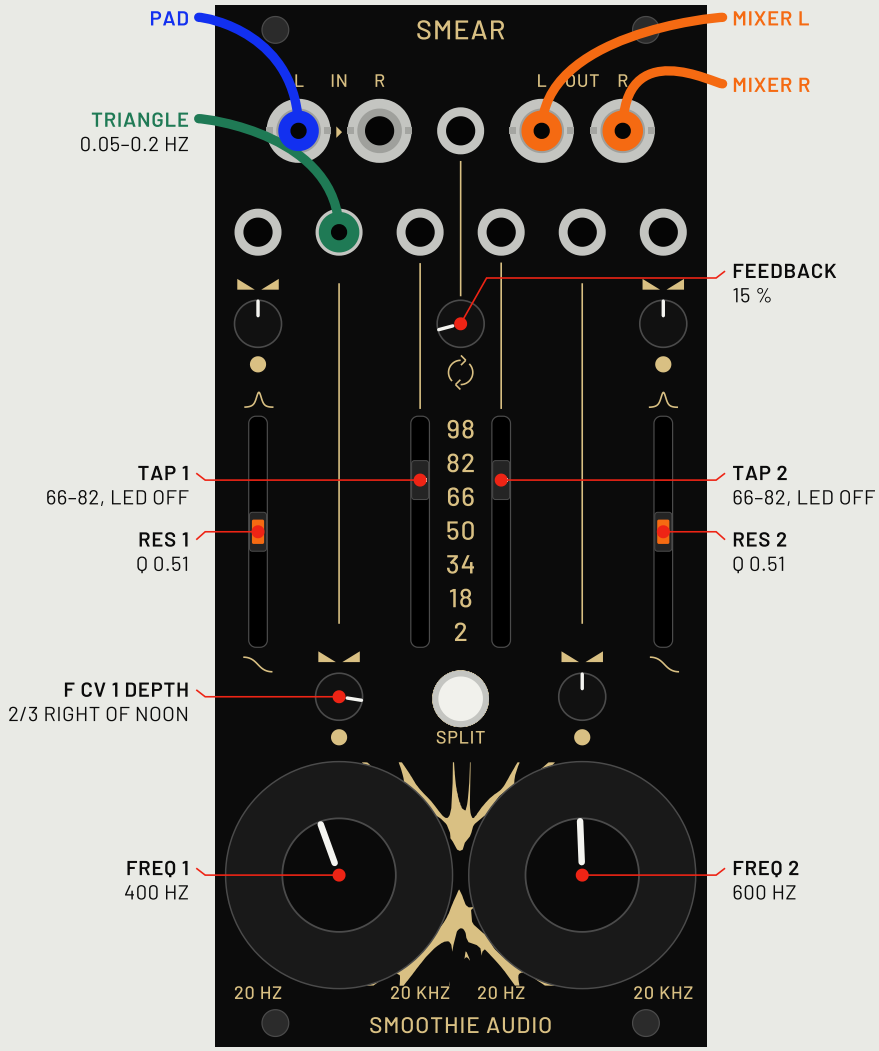
Metallic, physical-modeling tones in feedback territory. Feed it triggers for pitched percussion. An envelope sets the decay.




Step TAP between lit LEDs to change the pitch. Above 75 %, the ring lasts for seconds.

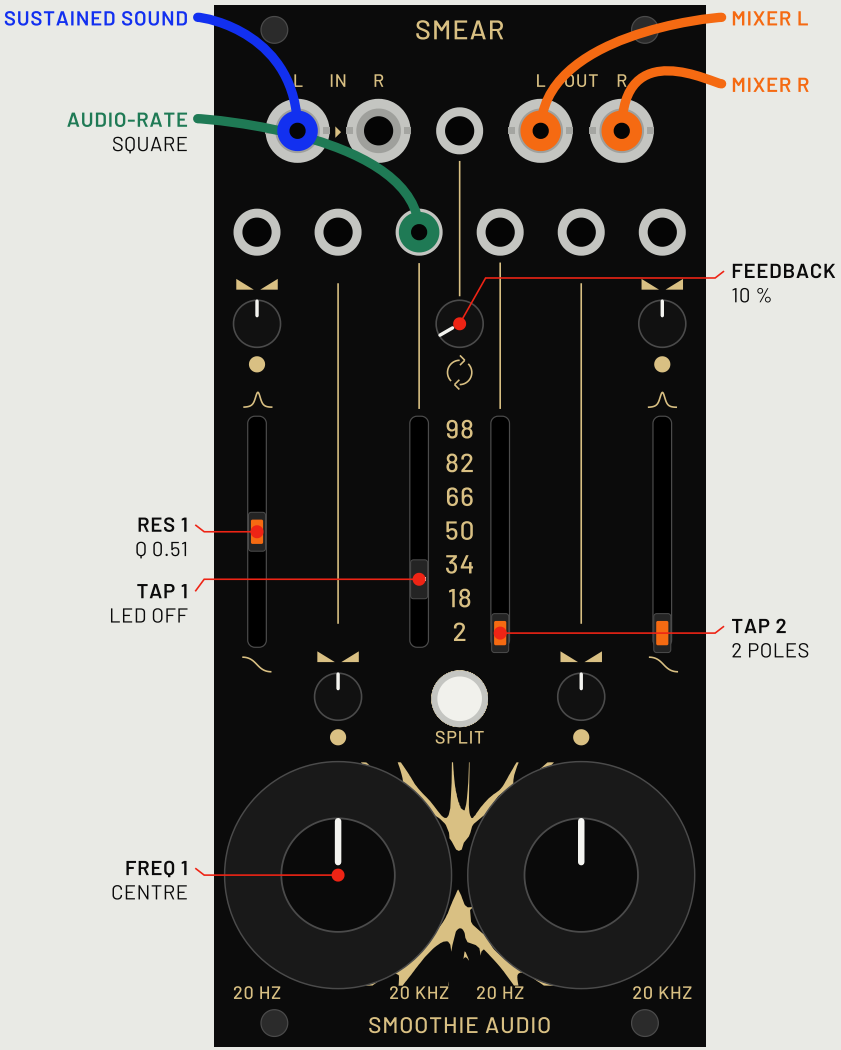
# Morphing filter and phaser

Animated timbral movement. A slow wave moves the delay, and notches and peaks sweep through a pad.



# Audio-rate tap

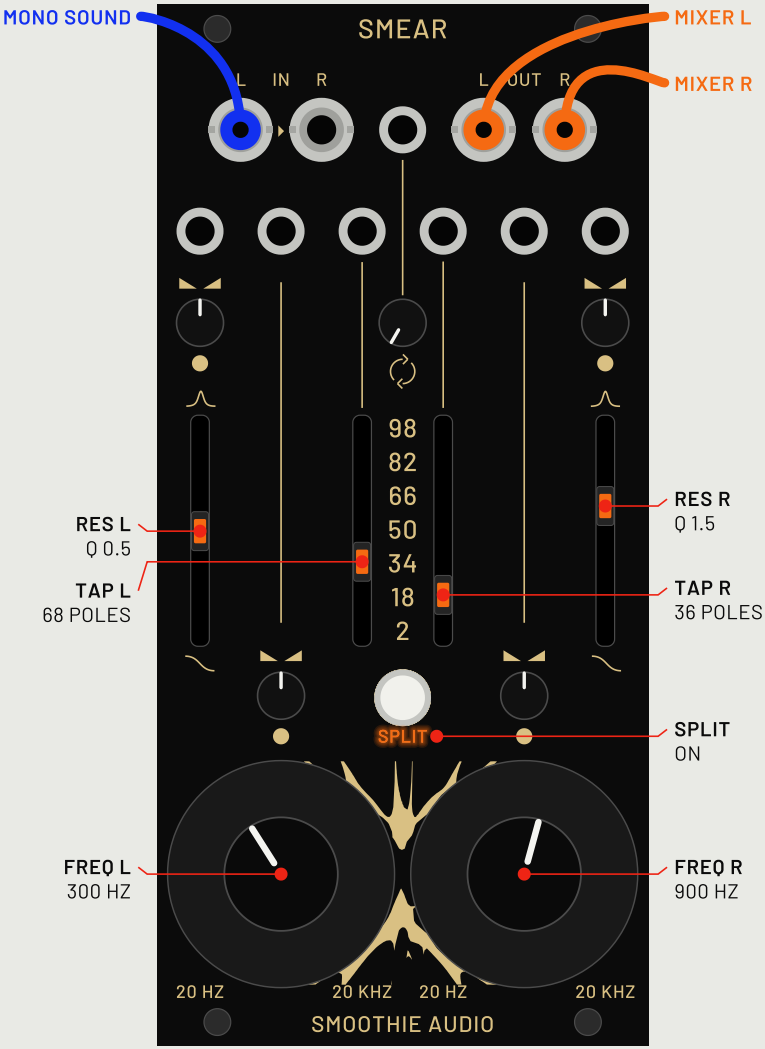
Dynamic filtering at audio rate. A fast wave moves the notches, and the sound gets new, metallic tones, like FM or ring modulation.




Raise RESONANCE 1 to pull the notches around FREQ 1.

# Stereo from mono

Use SMEAR as a stereofier: the mono input is processed differently on the left and right channels.




For dual mono, patch a second sound into R IN. Example: kick to the left side, snare to the right.

# Help

| | |
|---|---|
| **Bypass** | Set both TAP sliders to the bottom, FEEDBACK to 0 and the attenuverters to noon. A small phase shift stays. For a dry signal, start both tap lists with 0. |
| **Little effect** | Raise TAP, then RESONANCE. Drums show the effect more than pads. |
| **Input distorts** | Some modules output a high level. Attenuate the signal before L IN and R IN. |
| **Feedback distorts** | The module does not self-oscillate, and a limiter holds the loop. Lower FEEDBACK, then the input level. |
| **No ERROR line in CONFIG.TXT** | Wait until the slider LEDs stop flashing, then open the file again. On macOS, eject SMEAR in Finder first. |
| **Slider does nothing** | The slider is in a hold zone. Keep moving. |
| **All LEDs flash fast, sound stops** | The firmware hit an error and stopped. Turn the rack power off, then on. If it happens again, write to us and say what you were doing. |

# Firmware update

Use the newest firmware. If the module does not keep SPLIT at power off, it has firmware older than v1.1.1.

1. Open smoothieaudio.com/support/smear/firmware in Chrome or Edge on a computer. The page has the newest firmware.
2. Connect micro USB to the Patch SM. Keep the Patch SM in the module.
3. Hold BOOT, press and release RESET, release BOOT.
4. Click Connect, select DFU in FS Mode, click Flash.

Other option: download the .bin from the same page, open flash.daisy.audio in Chrome or Edge, do steps 2 and 3, then click Connect, select DFU in FS Mode, choose the file, click Flash.

**CHANGELOG**

| | |
|---|---|
| **v1.2.1** | New: the config drive. Set the stages for each TAP slider (up to 160 poles) and bipolar feedback in CONFIG.TXT.<br>New: when the module cannot use a config line, the slider LEDs flash and CONFIG.TXT shows the reason. You do not need to reconnect the drive.<br>New: all LEDs flash if the firmware stops. |
| **v1.1.1**<br>**2026-03-31** | New: audio-rate modulation on the CV inputs is more responsive.<br>New: better level compensation at high feedback.<br>New: in dual mono, the poles per section double: 4 to 196 instead of 2 to 98.<br>Fixed: resonance and level peaks when Q and frequency move.<br>Fixed: some low-level digital noise.<br>Fixed: SPLIT is kept at power off. |
| **v1.0** | Launch firmware. |