



NERMAL v1.1

by neutral labs



Manual

Hello, owner.

Congratulations on your new Nermal module. Nermal is a destructive distortion effect that has some unique sonic qualities and an onboard modulator, but of course it can also be modulated externally in multiple ways. If you feel like a glance at the front panel intuitively tells you all you need, feel free to jump right in and skip this manual, you're unlikely to break anything. However, for the best possible experience, it's recommended to spend a few minutes on a quick read-through.

Specifications

- Width: 14 HP
- Supply voltage: +12V/-12V (Eurorack 10-pin header)
- Current draw:
 - +12V: typ. 55 mA, max. 60 mA
 - -12V: typ. 1 mA, max. 5 mA
 - 5V: unused, 0 mA
- CV inputs: 3x 0-5V (overvoltage protected)

Connecting NERMAL to Eurorack power

Connect a 10 pin Eurorack power cable to the 2x5 power header on the back of the module. There are 2 indicators on the circuit board: +12V and STRIPE. Unsurprisingly, the red stripe side of the cable goes on the side that says STRIPE. The module (and your power supply) is protected in case you should ever connect it the wrong way around, but it won't turn on if you do.

Module Function

Nermal is a destructive distortion module that works on several levels: It can subtly saturate the sound of an incoming audio signal, create harsh and noisy harmonics, or totally mess up whatever is fed into it. It contains a dedicated modulator that controls the effect's flavour, but it also accepts external control voltages.

Hint

Nermal shapes the incoming output in wildly different - sometimes unpredictable - ways, which depend heavily on the harmonic content of the input audio. Glitchy drum patterns and drones generally work well, as do melodic lines coming from complex oscillators. Analog basses can be nicely saturated, but not all of Nermal's modes work equally well on them. It's a good idea to change the input audio slightly or use internal or external modulation whenever you're not satisfied with the result.

Manual Controls

Control	Function
VOL	This sets the output volume of the module.
SCRATCH	Changes the intensity of the saturation effect. If the BITE switch is off (top position), the effect is subtle. If it is on (bottom position), the effect is more dramatic and sounds less like a traditional distortion. In this mode, more is not always better. Rather, it can be rewarding to explore the whole range of the SCRATCH knob and find sweet spots that depend on the harmonic content of the specific input audio.
BITE	Changes the flavour of the distortion effect. With this switch in the bottom position, the effect is more pronounced and quite different. The state of the BITE setting is reflected by the LED. Note that the state, unlike the switch itself, is not binary: The onboard modulator or external control voltages can set the state to anything in between fully on or fully off, as indicated by the intensity of the LED. Engaging this switch supersedes the NIBBLE switch.
OUCH/F#!	This switch can boost the BITE effect further. In the OUCH (top) position, the effect is softer, much like the muffled sound a person may make when bitten by a small domesticated mammal. In the F#! (bottom) position, it is harsher with more high-frequency harmonics, similar to a person being bitten by a wild and slightly larger animal, now screaming profanities at high volume.
NIBBLE	In the bottom position, the onboard modulator is active, modulating the BITE effect. If the BITE switch is engaged, the NIBBLE switch will have no effect.
FREQ	This determines the frequency of the internal modulator. Turning the knob clockwise increases the frequency. The effect a counterclockwise turn has on the frequency is left as a practical exercise to the reader.
HARD/SOFT	In the HARD (top) position, the modulation of the BITE effect by the internal modulator amounts to it being quickly switched on and off, following a square modulation signal. In the SOFT (bottom) position, the modulation follows a smoother, triangle-like curve.
LO/HI	This sets the base frequency for the internal modulator. In the LO (top) position, the range of the FREQ knob is low,

	like a traditional low-frequency oscillator (LFO). In the bottom (HI) position, the modulation frequency is well within the audio range, which can lead to interesting harmonic patterns being created in conjunction with the input signal.
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Control Voltage (CV) Inputs

The three CV inputs expect signals within the 0V to 5V range. Don't worry about supplying a higher or lower (negative) CV though: All of the inputs are protected and a higher or lower voltage will simply be clipped without any potential damage to NERMAL or the module providing the CV, i.e. a negative voltage will present internally as 0V and any voltage above 5V will be read as 5V. It is possible (and advisable - since it can generate sonically interesting results) to feed in CV at frequencies within the audio range.

Input	Function
SCRATCH	This controls the intensity of the saturation effect, same as the SCRATCH knob. The knob itself has no function while a cable is connected to the SCRATCH CV input. Note that the effect is reversed between CV and knob function: A voltage of 5V will have the same effect as the SCRATCH knob being turned fully counterclockwise, and a voltage of 0V will have the same effect as the knob being turned fully clockwise. This ensures that a bipolar audio signal used as CV does not cause the saturation effect to be off during pauses in the audio, where the voltage is at 0V.
BITE	This controls the intensity of the saturation effect, like the BITE switch. However, unlike the switch, the CV control is non-binary, so the intensity can be controlled along the spectrum between on and off. The BITE switch has no function while a cable is plugged into the BITE CV input.
FREQ	This controls the frequency of the internal modulator. The FREQ knob has no function while a cable is plugged into the FREQ CV input. Similar to the FREQ knob's function, the frequency will be determined in conjunction with the LO/HI switch. Thus, the same CV on the FREQ input will result in different frequencies depending on the position of the LO/HI switch.