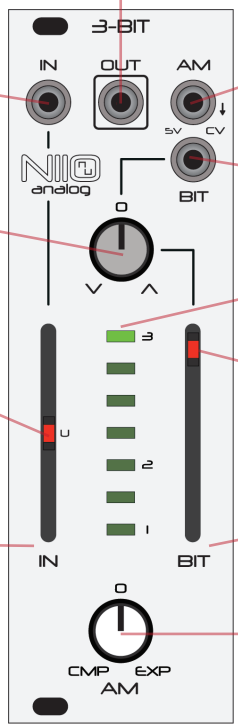
∃-BIT

analog bit reducer / VCA

3-BIT is an analog circuit that transforms audio waveforms into 9 bipolar levels creating a “digital” stepped waveform.
The levels can be reduced from 9 to 8 to 7... to 0.
The (BIT) slider and cv input step thru the 9 bit levels.

The overall gain of the waveform can be modulated by the (AM) cv input acting as a smooth vca over the BIT circuit.



OUT jack
Audio output.

IN jack
Audio input.

AM cv mod
Input 5v cv to modulate the amplitude.
normalizes down to BIT cv

BIT mod knob
Adjusts the amount of bit modulation.
Center = no mod
CCW = inverse mod
CW = normal mod

BIT cv mod
Input 5v cv to modulate the BIT.

BIT leds
Display the bit level from 1 to 3bits.

IN slider LED
illuminates when the maximum input audio level is reached.
Solid illumination displays compression into the BIT circuit.

BIT slider LED
illuminates when the maximum bit level of 3.143 bits is reached.

BIT slider
Sets the bit.

IN slider
Sets the level of the audio input.
U = unity gain / 2x total gain.
Use to set the audio level feeding the BIT circuit.

AM mod knob
Adjusts the amount of amplitude modulation.
Center = no mod
CCW = inverse mod (compression)
CW = normal mod (expansion)

width: 8hp depth: 37mm 75ma +12v 48ma -12v

IN jack

The audio input.

Typical use case is to patch in an oscillator.

Simple waveforms (sine/tri/saw) work best.

See DC coupled audio input diagram

IN slider

Adjusts the gain of the incoming waveform. Center (U) position = unity gain. Total gain above unity is 2X.

The BIT circuit has a fixed voltage range, use the slider to maximize the gain of the incoming audio into the BIT circuit. The red LED illuminates when the audio utilizes the full 3.143 bits of the circuit. This fixed ceiling acts as a limiter to the incoming waveform.

illuminate the red LED on the peaks of the waveform for the **ideal** gain.

Over ideal gain compresses the waveform into the bit ceiling. Use the IN slider to control the amount of compression.

Under ideal gain reduces the amount of bits representing the waveform.

BIT slider

The BIT slider sets the total bits available within the BIT circuit.

There is a total of 9 bipolar audio levels that can be output. Each BIT level has a different character.

As the bits are reduced from 9 levels to 0 the wave form is simplified down to a squarewave at level 1. The gain of the waveform is reduced with the bit levels. At level 0 the waveform is off.

BIT can be used as a stepped VCA .

BIT CV

Use 5v CV to modulate the BIT. The BIT mod knob determines the amount of modulation that is added to the BIT slider position. Center is off, CW adds to the slider position, and CCW subtracts from it.

AM CV

The AM cv input and mod knob control the overall level of the BIT circuit. This acts as a smooth linear VCA independent from the BIT level. Use 5v CV to modulate the gain of the output.

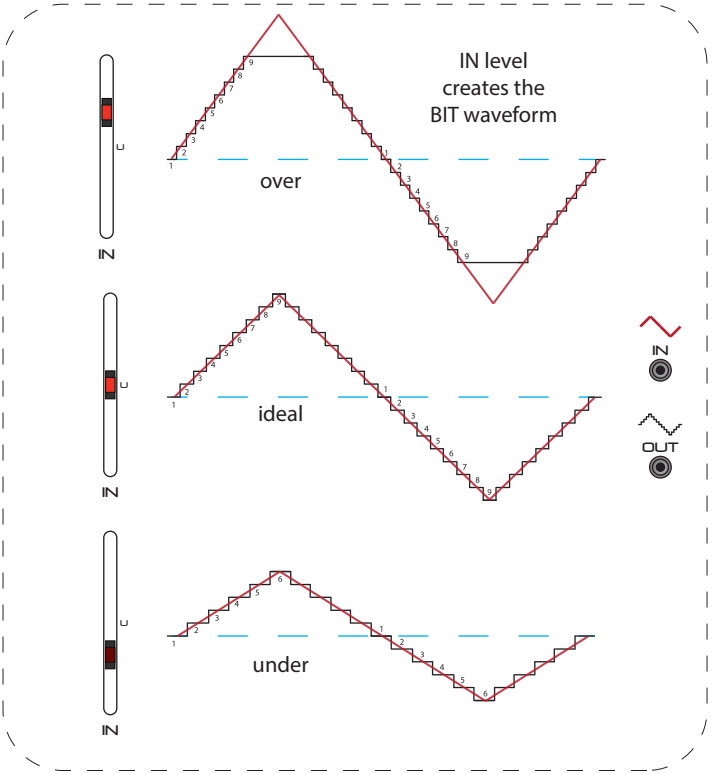
The AM mod knob determines the amount of amplitude modulation. Center is off, CW pos affects the gain (expansion), and CCW subtracts from the gain (compression).

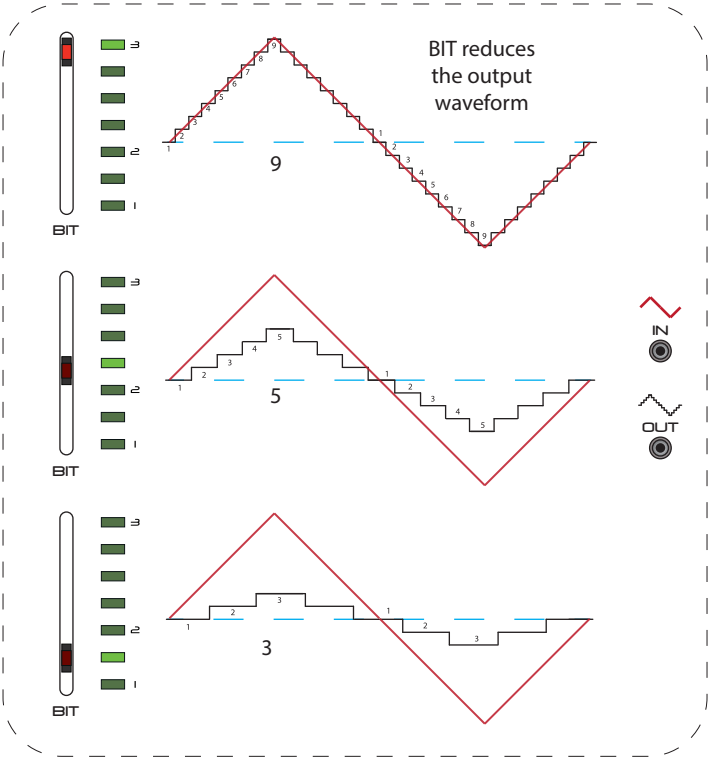
Finding silent gain with EXP may take backing off a bit from full CW.

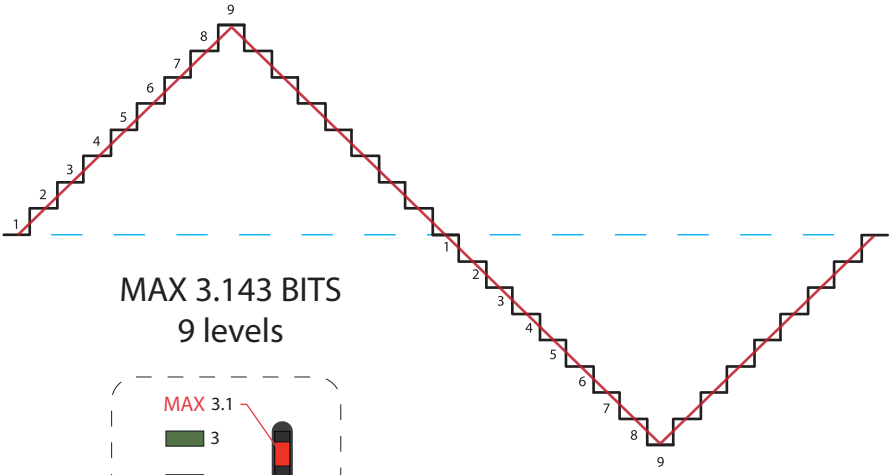
The AM jack is normalized to the BIT jack, allowing a single patch to affect both.

OUT jack

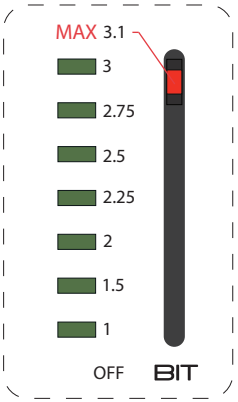
The audio waveform output.

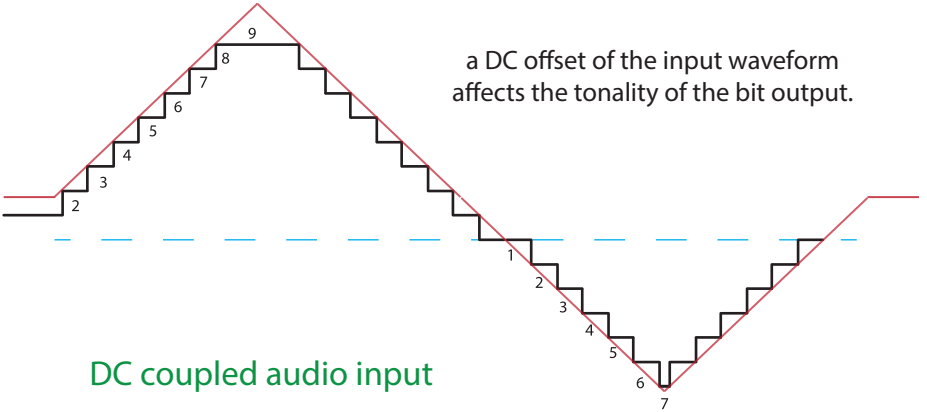

IN level
creates the
BIT waveform
over
ideal
under
IN
OUT


BIT reduces
the output
waveform
9
5
3
BIT
IN
OUT



MAX 3.143 BITS
9 levels





a DC offset of the input waveform
affects the tonality of the bit output.

DC coupled audio input