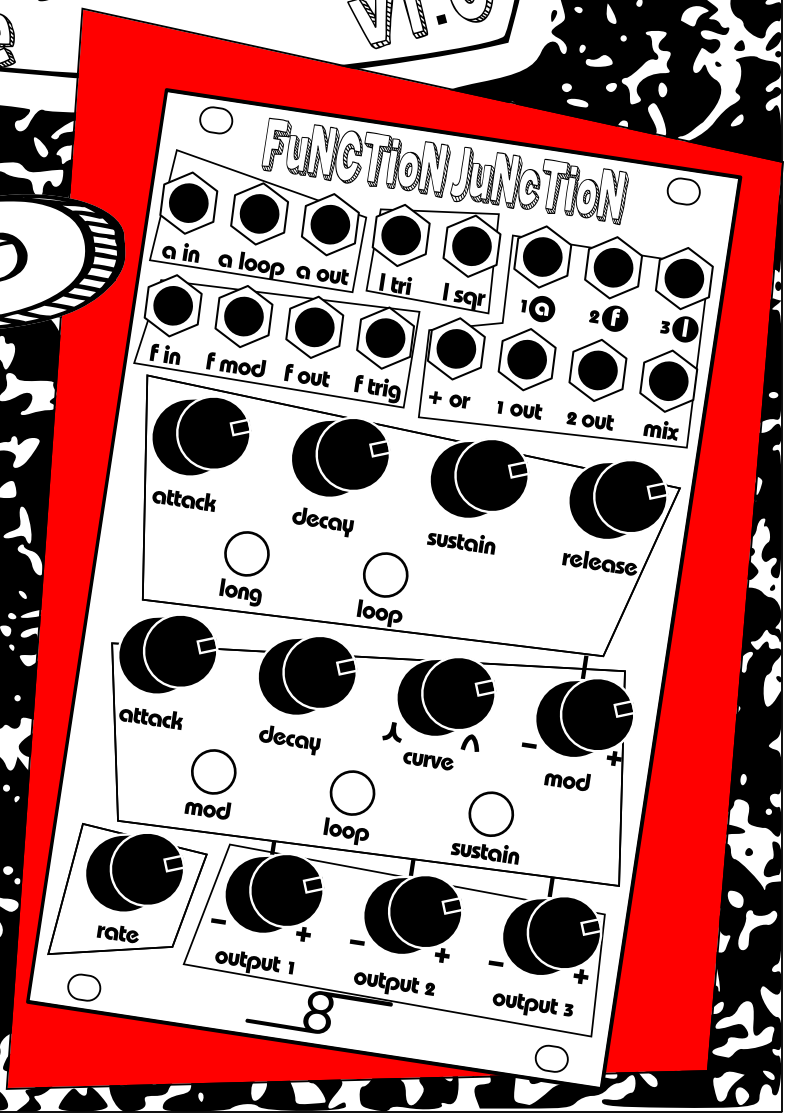
func adsr

FuNCTioN JuNCTioN

User Guide

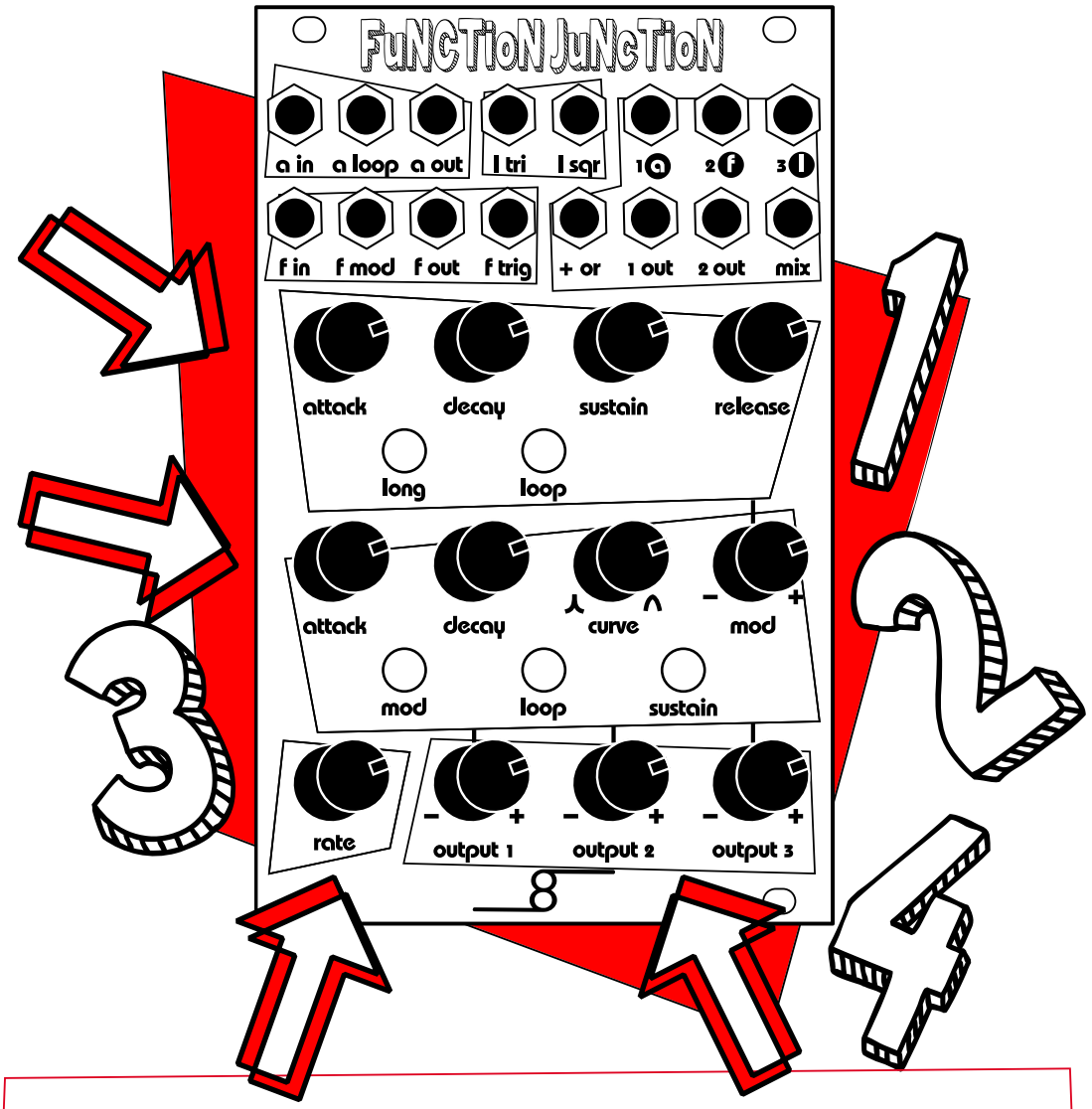
v1.0

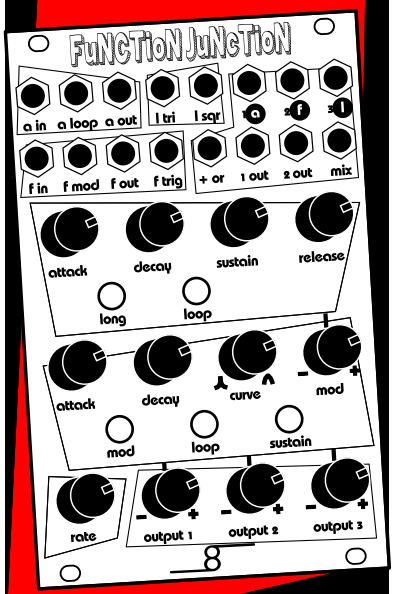
Info



cre8audio™

Four Plus More All In One!





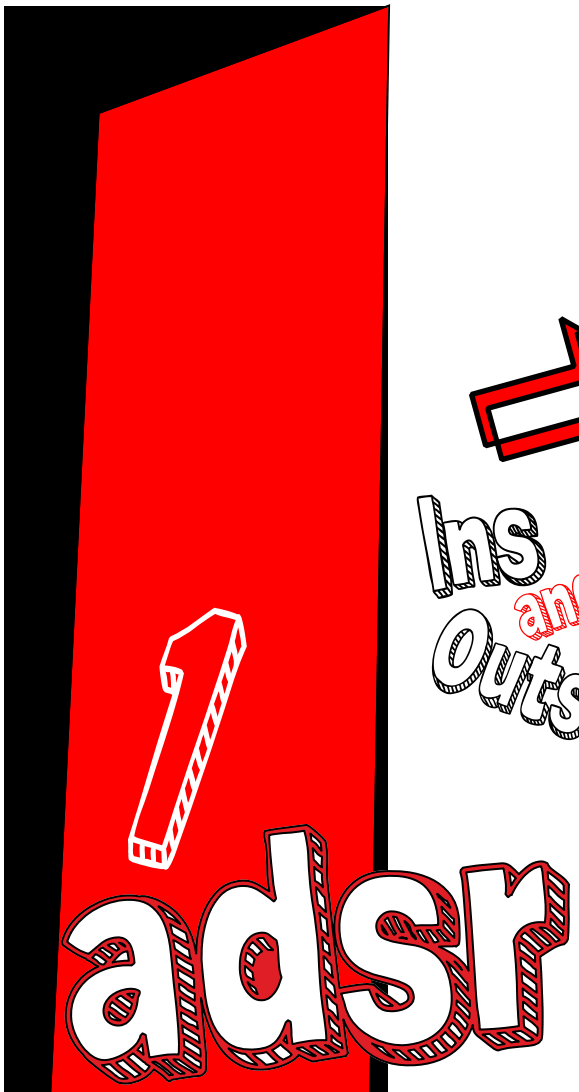
Function Junction is a modulation hub combining four independent sections into a single intertwined module that offers much more than the sum of it's parts. Although a sum of it's parts is one of it's best features!

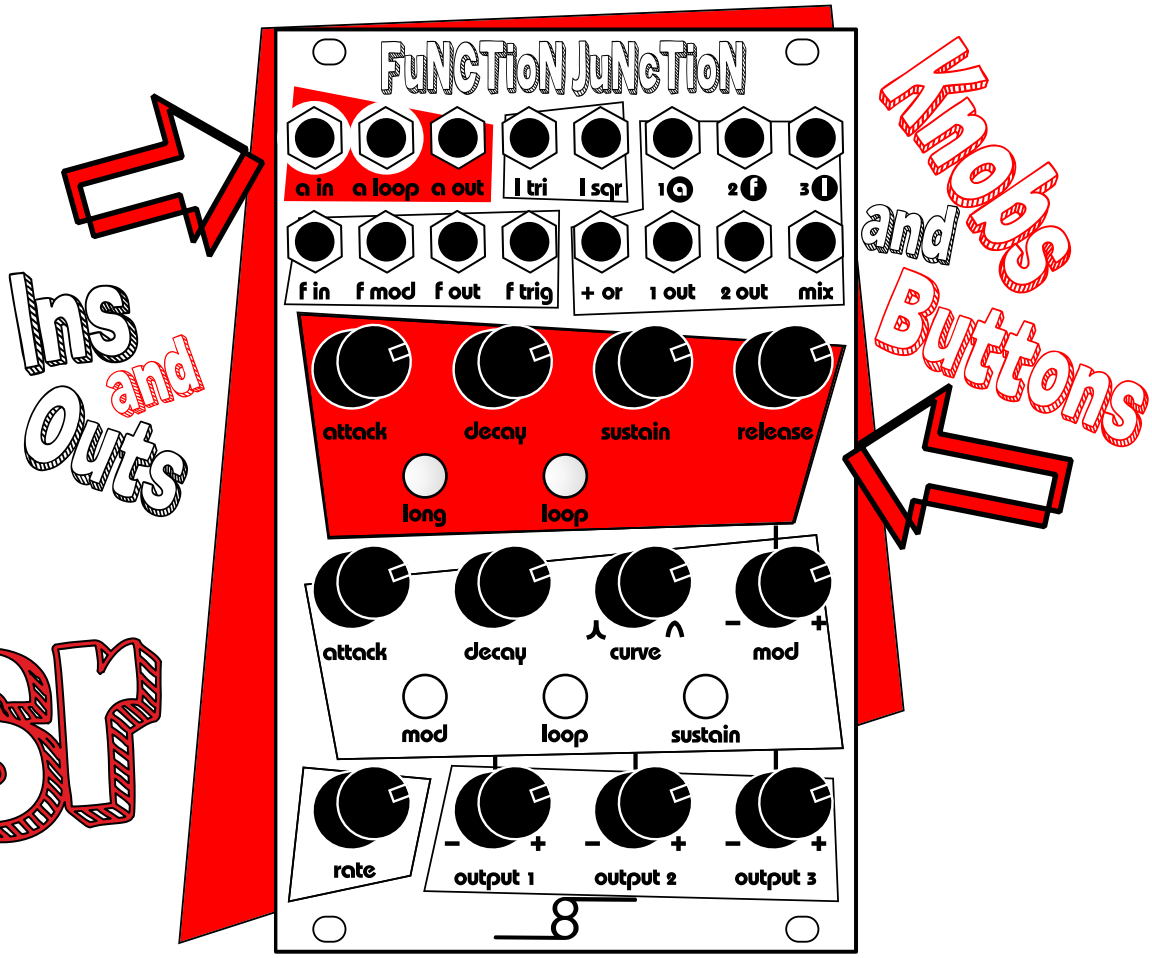
Three classic analog modulation sources, ADSR envelope, function generator, and LFO are fed into an attenuverting mixer to create a complex modulation junction. A simple idea supported by a very deep set of tools.

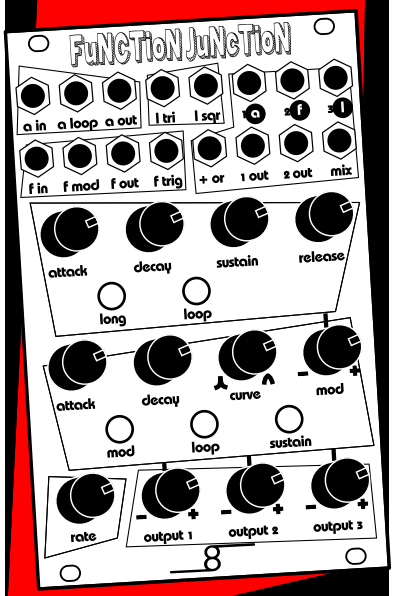
Each section can be patched by itself. This is important for the whole "four independent sections" thing to work. The ADSR, function generator, LFO, and mixer never need to interact. The mixer is perfectly happy to mix external signals instead of the modulation sources. Each section uses switched jacks to normal internal connections. These internal connections can easily be patched over to create custom signal paths.

I am sure I have made Function Junction sound more complicated than it is so let's dig in and look at each section one at a time.

ADSR Envelope (1 of 2)





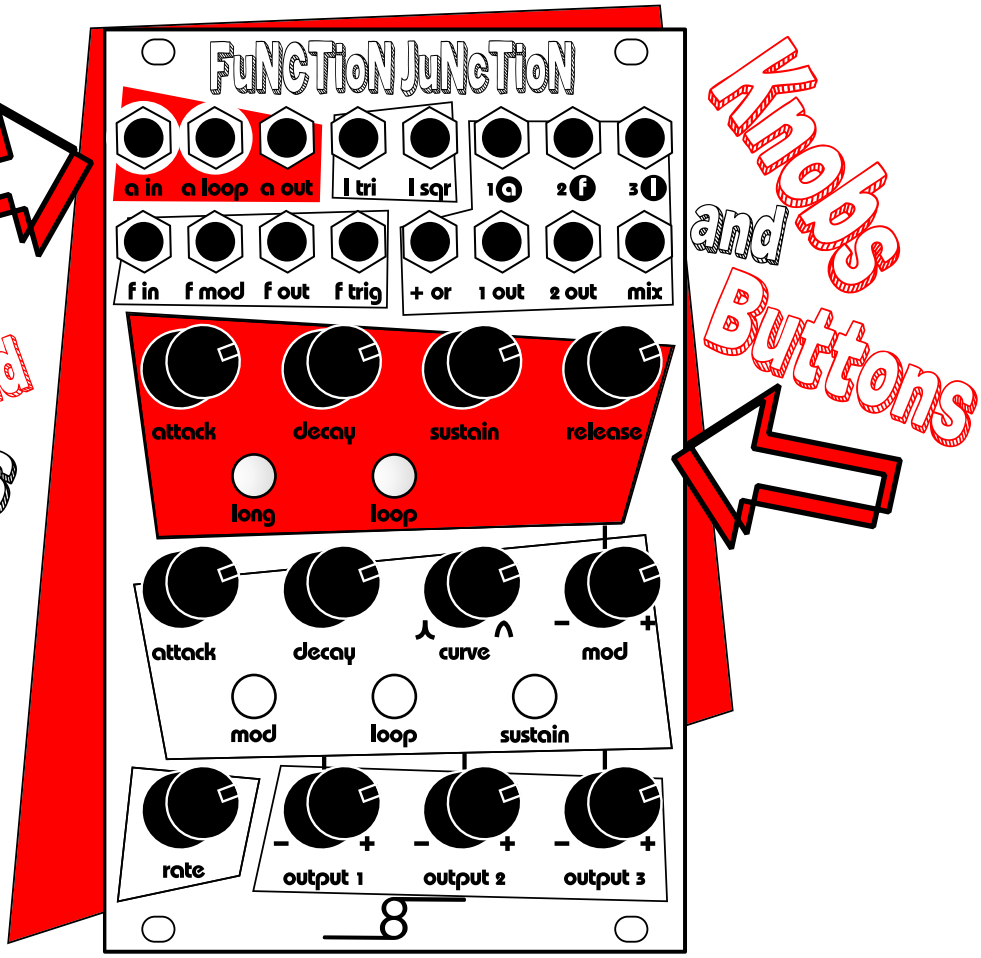


Envelope Generator (ADSR) Overview

The ADSR section is a four stage envelope generator that smooths the shape of incoming trigger or gate signals to produce more expressive control voltages. The ADSR output can be used to control the amplitude of an oscillator, the cutoff frequency of a filter or any other function on a module that accepts control voltages.

The incoming gate or trigger signal passes through each of the four stages to output an envelope. When the ADSR module receives a gate or trigger signal, the attack determines the amount of time needed for the envelope generator to reach the peak output voltage and move on to the decay stage. Decay sets the amount of time needed to transition to the level set by the sustain knob. The sustain level is maintained as long as the incoming gate remains on or high. Once the incoming gate goes low or off, the release knob sets the time needed to close the envelope and return the ADSR output to 0 volts.

ADSR Envelope (2 of 2)



Envelope Generator (ADSR) Controls

ATTACK KNOB - Envelope attack control knob.
DECAY KNOB - Envelope decay control knob.
SUSTAIN KNOB - Envelope sustain control knob.
RELEASE KNOB - Envelope release control knob.

A IN JACK - Envelope input gate jack.
A OUT JACK - Envelope output jack.

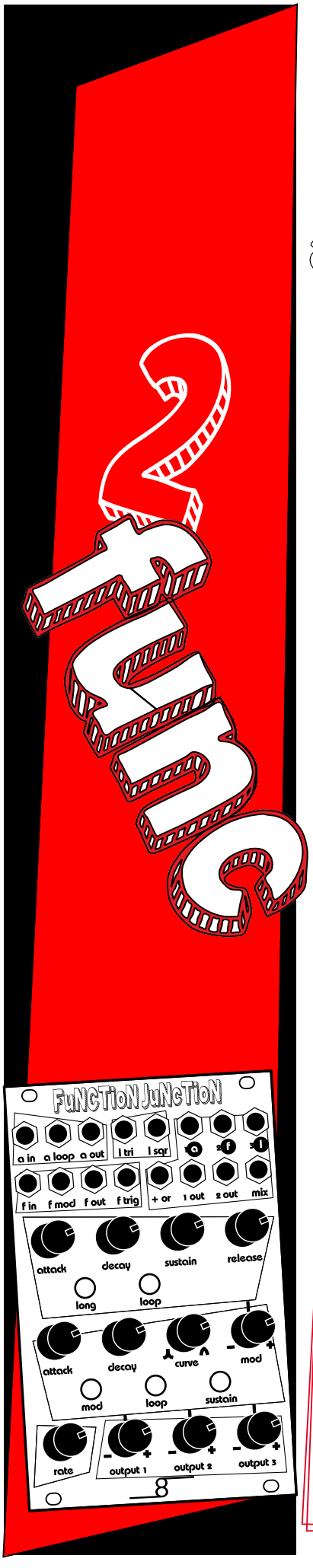
LONG BUTTON - Extends the length of the attack, decay, and release times.

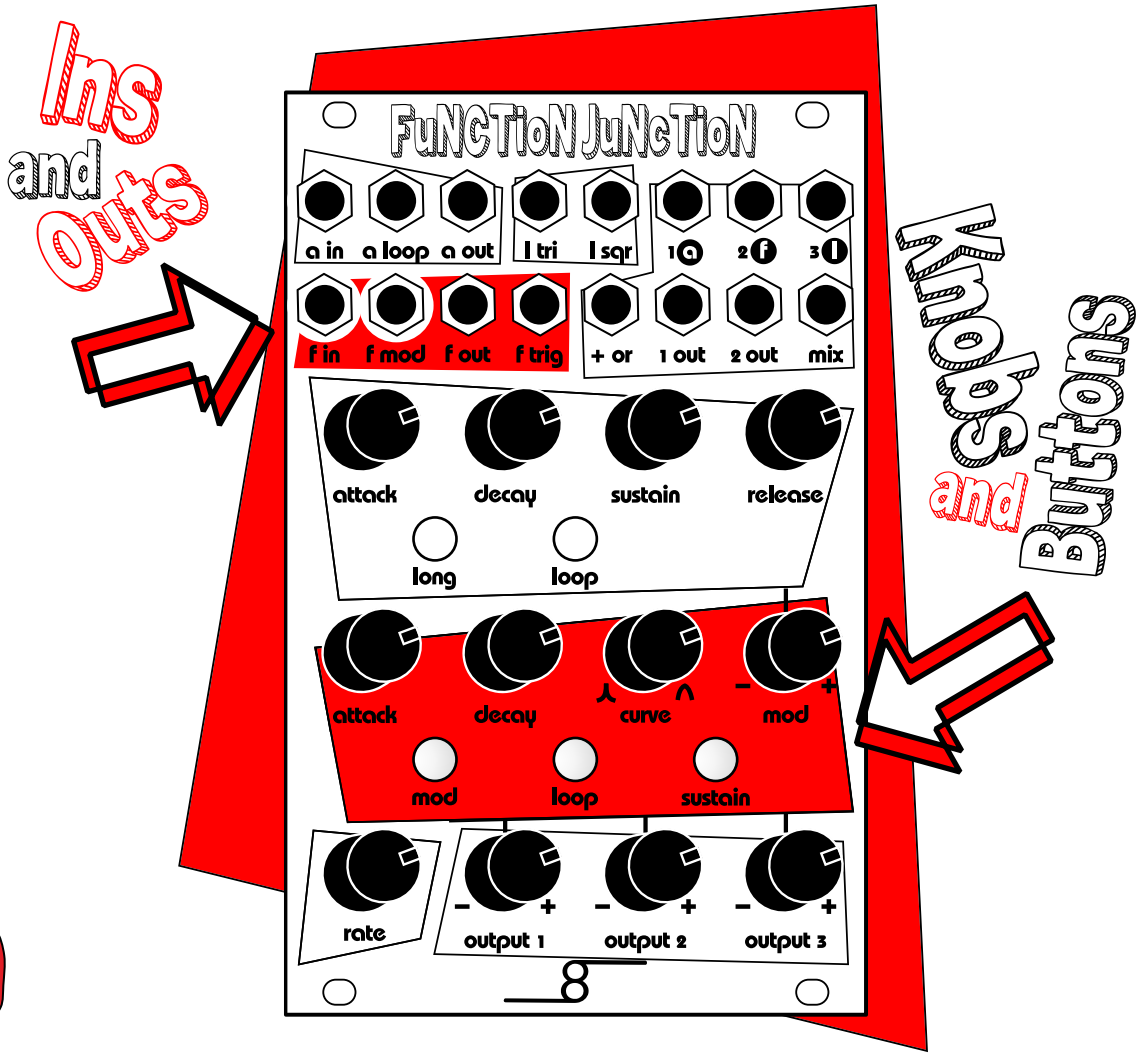
Envelope Generator Looping

LOOP BUTTON - Enable/disable envelope cycling. The SUSTAIN KNOB and RELEASE KNOB are used to adjust the time it takes to loop.

A LOOP JACK - Enable/disable loop mode. An external gate signal will flip the state of the loop mode. If loop mode is on, the gate will turn loop mode off. If loop mode is off, the external gate will turn loop mode on.

Function Generator (1 of 4)

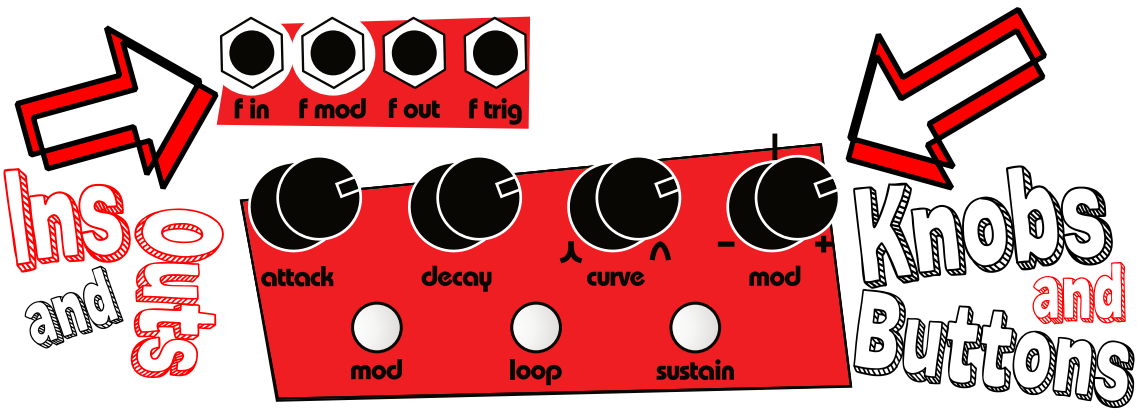




Function Generator Overview

A true multi-function utility section, the Function Generator can be utilized in many different ways to fit the needs of a patch. The Function Generator can be used as an envelope generator, a voltage controlled LFO, a slew generator, a gate signal delay, envelope follower, a clock source, voltage controlled clock divider, complex modulation source, and more...

Function Generator (2 of 4)



Function Generator Controls

ATTACK KNOB - Attack duration control knob.
DECAY KNOB - Decay duration control knob.
CURVE KNOB - Attack and decay response curve. Exponential (full left), Linear (12 o'clock), Logarithmic (full right)

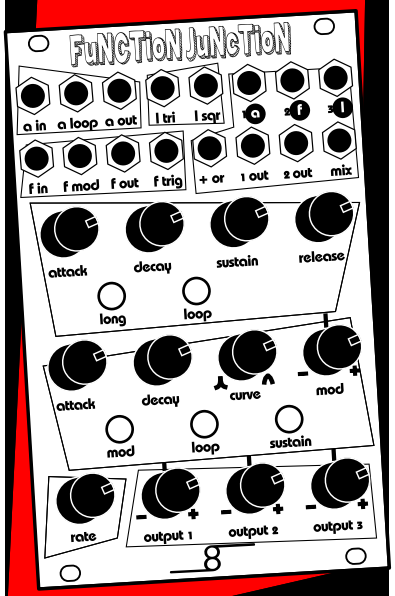
MOD KNOB - Modulation input (F MOD JACK) attenuverter knob.

MOD BUTTON - Assign Modulation input (F MOD JACK) to attack, decay, or both.
LOOP BUTTON - Enable/Disable loop mode.

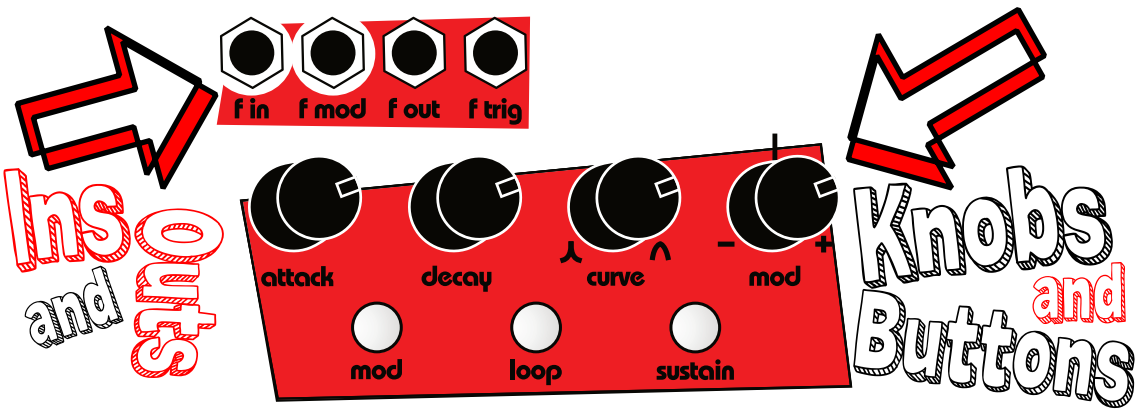
LOOP BUTTON (2nd FUNCTION) - Press and hold MOD BUTTON then press LOOP BUTTON to assign A LOOP JACK destination to ADSR or function generator.

SUSTAIN BUTTON - Enable/Disable sustain mode.

F IN JACK - Function Generator trigger/gate input gate jack.
F MOD JACK - Function Generator modulation input jack.
F OUT JACK - Function Generator output jack.
F TRIG JACK - Function Generator end of decay trigger output jack. A trigger is output at the end of the decay stage.



Function Generator (3 of 4)



Duration and Shape

The Function Generator is a variable modulation source outputting between 0 and +5v. The shape of the output is created using two main controls, ATTACK KNOB and DECAY KNOB. The ATTACK KNOB sets the amount of time the function generator takes to reach 5v and the FALL KNOB sets the amount of time the function generator takes to return to 0v. These controls determine both the duration and shape of the function generator. A short attack with a long decay creates a saw like wave. Matched attack and decay times will generate a triangle.

Response Modes

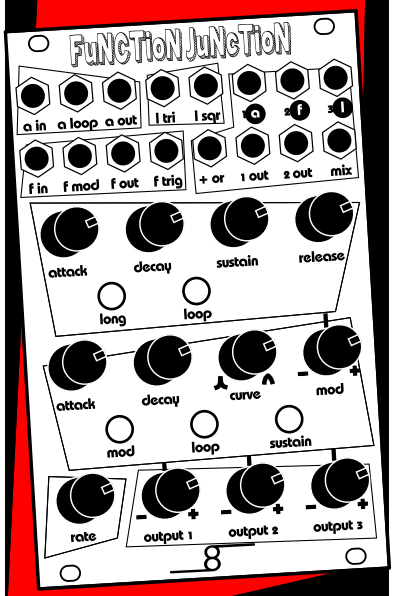
The function generator will respond to an incoming gate or CV signal differently based on the selected mode. There are 3 modes to choose from.

1. Sustain Mode

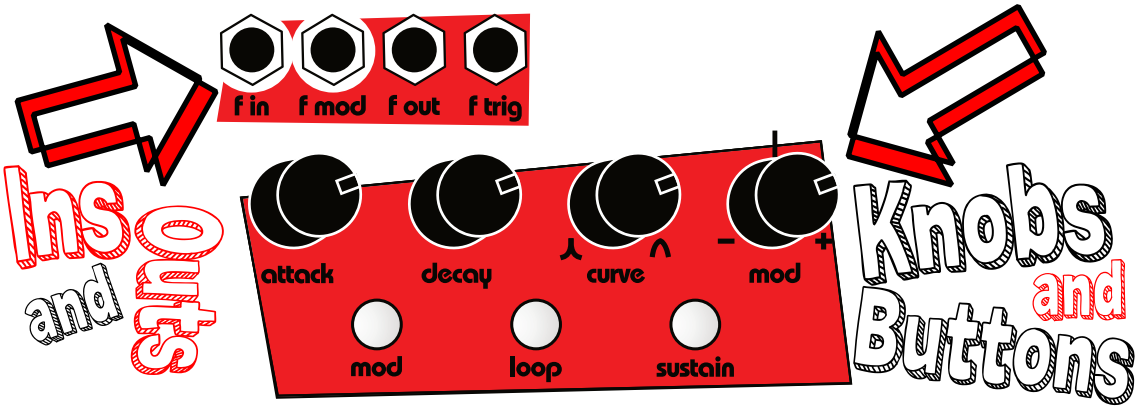
Sustain Mode allows the function generator to act as an attack, sustain, release envelope, a slew generator, or an envelope follower. A gate or CV signal patched into the F IN JACK initiates the attack stage. Once the function generator has reached the end of the attack stage, the output is sustained as long as the gate signal patched into the F IN JACK remains high. The decay stage is triggered once the incoming gate or CV signal drops to 0v. The envelope generated in sustain mode can be retriggered at anytime during the attack, sustain, or decay stages.

2. Trigger Mode

Trigger Mode (or Sustain Mode Off) can be used to create a two stage attack, decay envelope, gate signal delay or clock divider. The internal circuitry responds differently than sustain mode when triggered. The attack stage of trigger mode is triggered with a gate or trigger signal patched into the F IN JACK over 2 volts. Some CV signals may trigger the function generator as long as the waveform has a sharp enough rising slope. In trigger mode, the function generator will not retrigger during the attack stage, however the envelope will retrigger during the decay mode. This quirk allows the function generator to work as a clock divider by adjusting the attack stage to skip over or miss a set number of incoming gate signals.



Function Generator (4 of 4)



Loop Mode

Loop Mode is an extension of trigger mode and utilizes all the same feature set. To create the loop, the function generator uses the end of decay trigger (F TRIG JACK) created at the end of the cycle to retrigger the attack creating a voltage controllable low frequency oscillator and clock source.

Response Curve

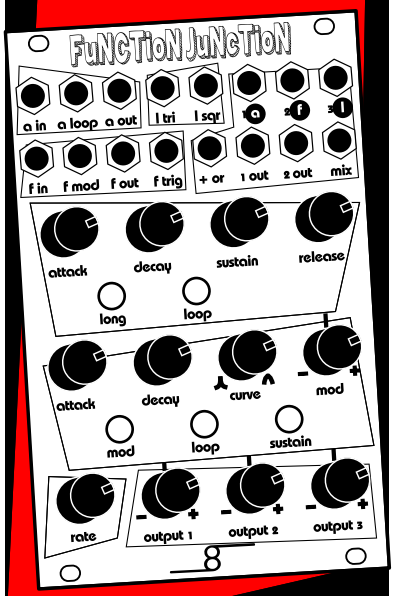
The CURVE KNOB determines the linearity of the attack and decay stages from exponential through linear to logarithmic. Turning the CURVE KNOB full left creates a exponential response. At 12 o'clock the response is linear. Turning the CURVE KNOB beyond 12 o'clock creates an logarithmic response.

Voltage Controlled Attack and Decay Times

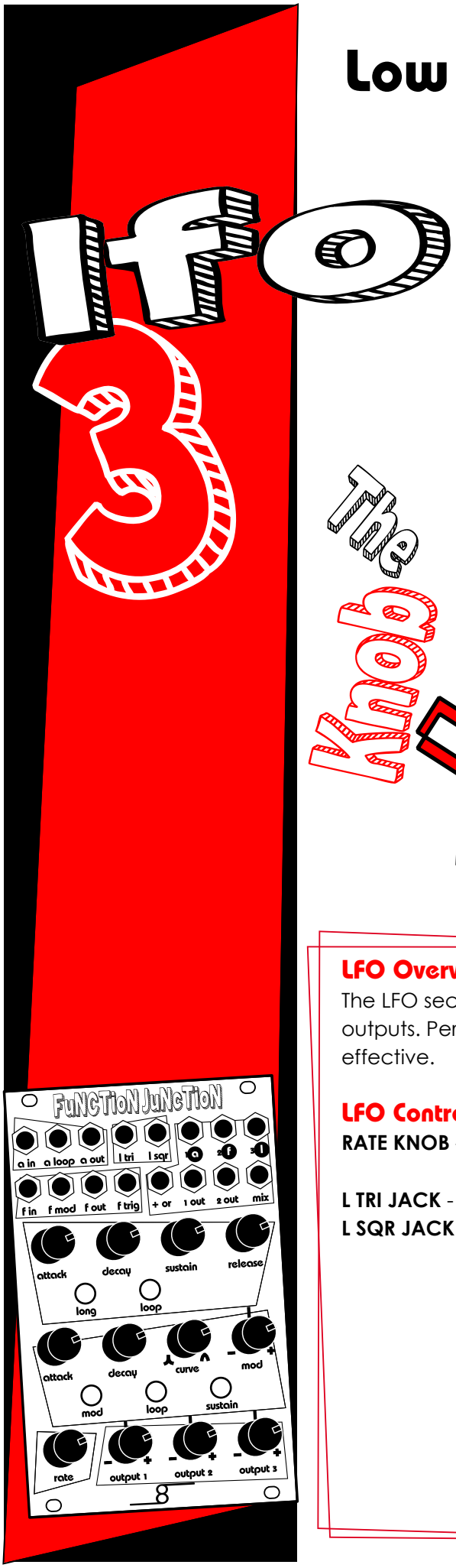
Voltage control over the attack time, decay time, and both attack and decay times is available. A CV signal can be patched to the F MOD JACK. This signal is passed through the MOD KNOB.

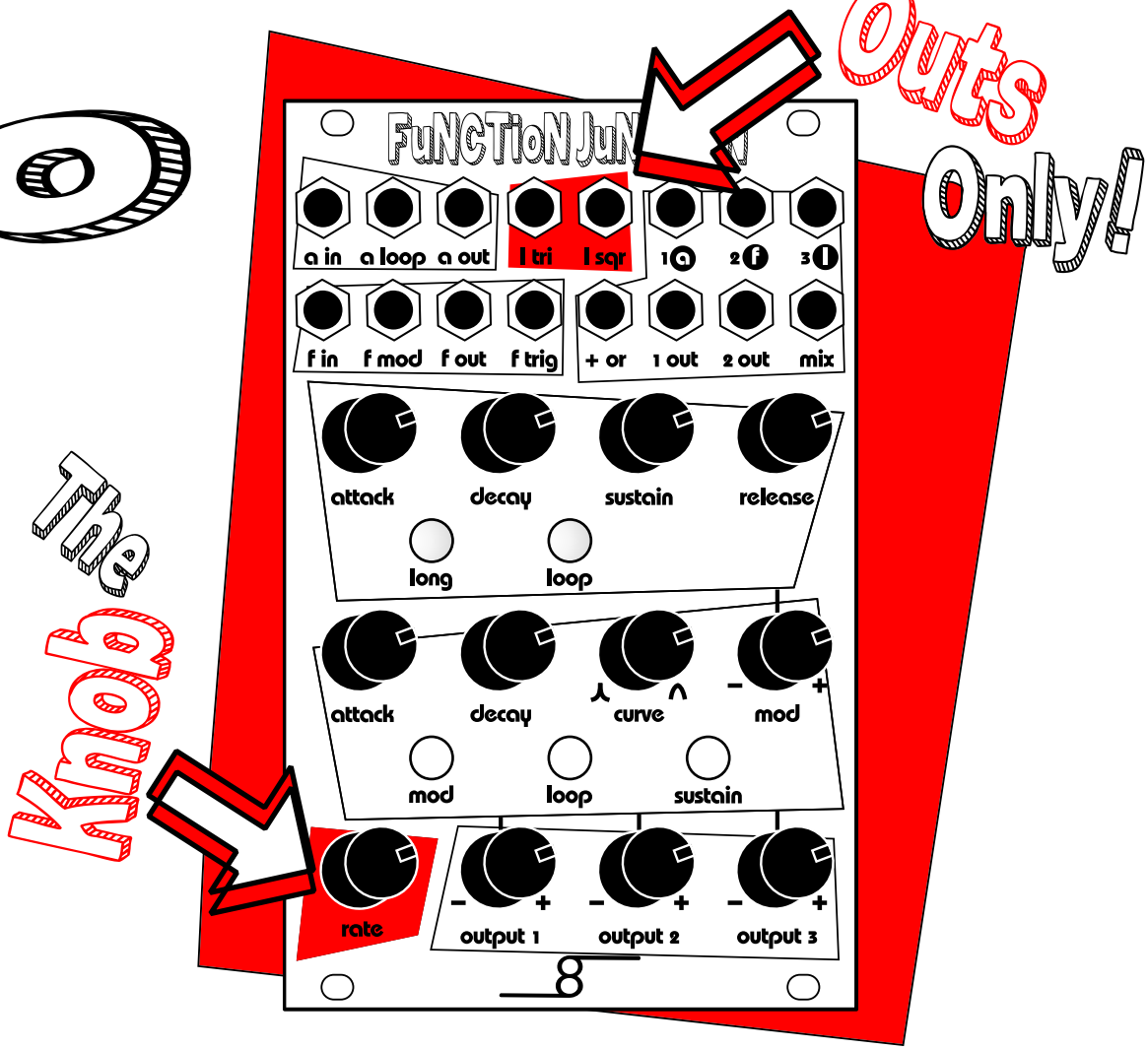
The MOD KNOB is an attenuverter. That means the incoming signal is off when the trimmer is set to the 12 o'clock position. Turning the attenuverter to the right passes the original signal through. Turning the attenuverter to the left passes an inverted version of the original signal through. Locating the exact off position of an attenuverter can be difficult. The easiest way to remove the CV signal from the signal path is to simply remove the patch cable patched into the F MOD JACK or deselect attack and decay using the MOD BUTTON.

The MOD BUTTON sets the attenuverted modulation destination. The modulation destination can be set to attack, decay, both attack and decay, or off.



Low Frequency Oscillator (LFO)





LFO Overview

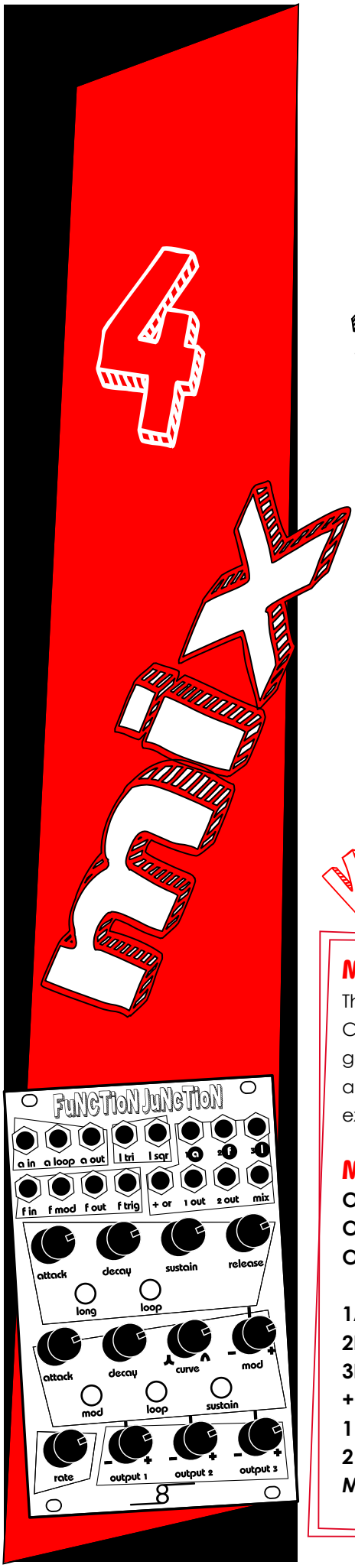
The LFO section is a utility low frequency oscillator with triangle and square wave outputs. Perfect for long sweeps or audio rate frequency modulation. Simple but effective.

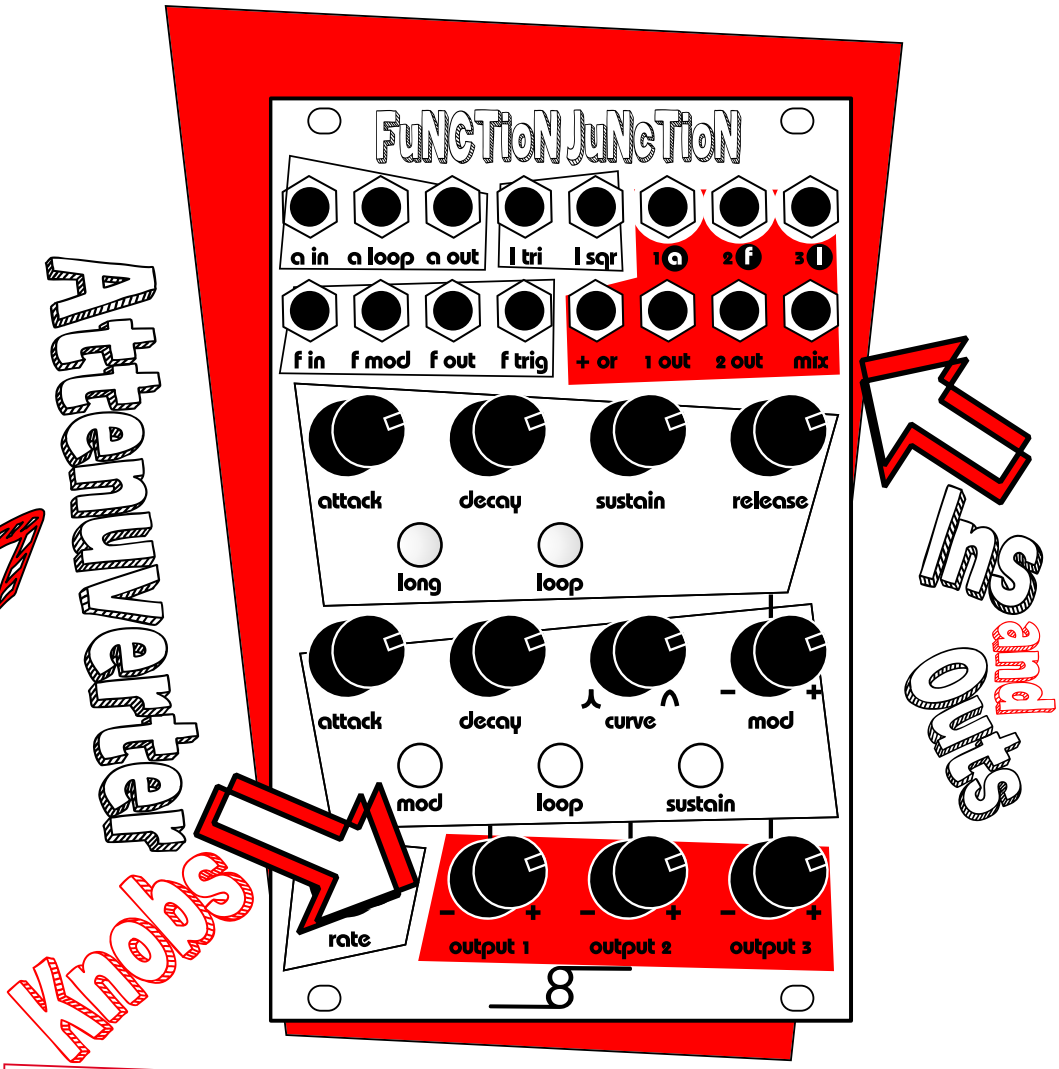
LFO Controls

RATE KNOB - Frequency control knob.

L TRI JACK - Triangle wave output jack.
L SQR JACK - Square wave output jack.

Multi-Function Mixer (1 of 2)





Multi-Function Mixer Overview

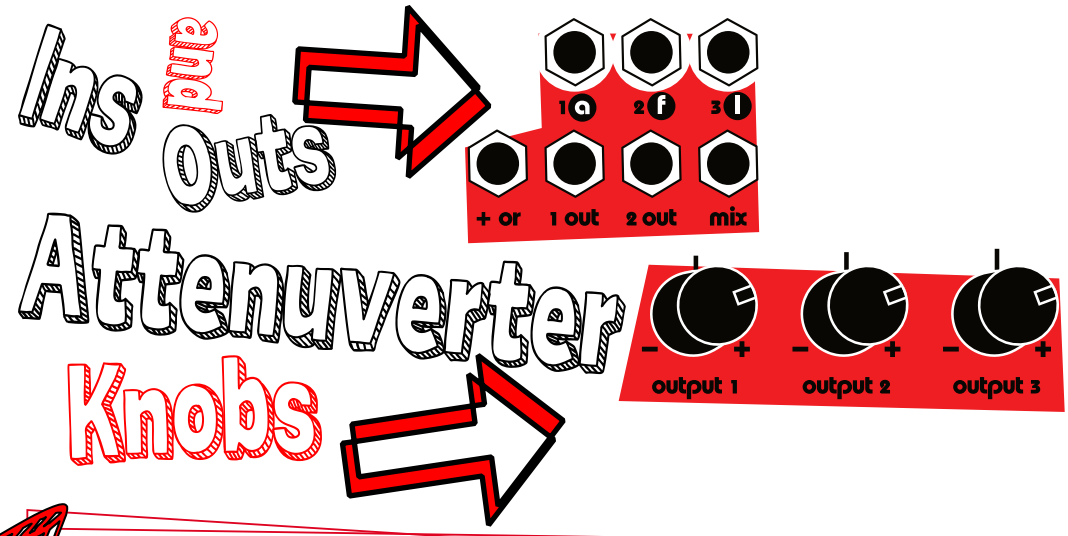
The mixer section is an ambidextrous three channel attenuverting mixer for both audio and CV signals. Internally the inputs are normaled to the outputs of the ADSR (1A), function generator (2F), and LFO (3L) but these connections can be replaced with any external audio or CV signal by patching into the mixer input jacks (1A, 2F, 3L). The signal path is extremely versatile allowing it to work in multiple configurations.

Multi-Function Mixer Controls

OUTPUT 1 KNOB - Channel 1 input (1A JACK) attenuverter knob.
OUTPUT 2 KNOB - Channel 2 input (2F JACK) attenuverter knob.
OUTPUT 3 KNOB - Channel 3 input (3L JACK) attenuverter knob.

1A JACK - Channel 1 input jack. Normaled to ADSR output.
2F JACK - Channel 2 input jack. Normaled to function generator output.
3L JACK - Channel 3 input jack. Normaled to LFO output.
+OR JACK - Analog logic output jack.
1 OUT JACK - Channel 1 breakout output.
2 OUT JACK - Channel 2 breakout output.
MIX JACK - Mixer output.

Multi-Function Mixer (2 of 2)



Three Channel Mixer

Each channel is able to mix inverted or non-inverted versions of the incoming signal. The sum of channels 1, 2, and 3 are passed to the MIX JACK output.

The + OR JACK compares the voltage level of the three mixer inputs and passes the voltage of channel with the highest voltage. This typically creates a chaotic, semi-random voltage source.

Three Independent Attenuverters

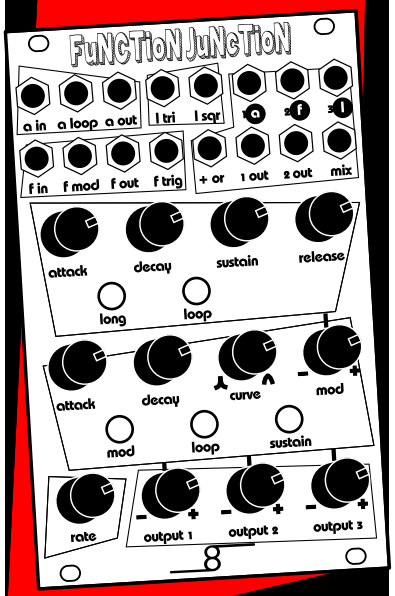
Channels 1-3 work as independent audio or CV signal attenuverters. Patch out of the 1 OUT JACK to remove channel 1 from the MIX JACK output. Patch out of the 2 OUT JACK to remove channel 2 from the MIX JACK output. If 1 OUT JACK and 2 OUT JACK are used, the MIX JACK is channel 3 only.

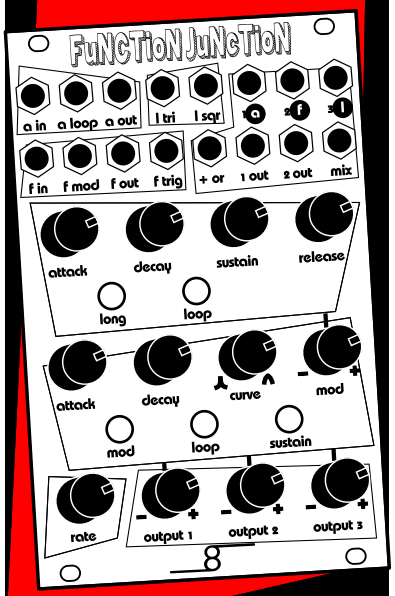
If 1 OUT JACK and 2 OUT JACK are used, the + OR JACK works as a half wave rectifier for channel 3 cutting off the negative portion of the waveform.

One Attenuverter and a Two Channel Mixer

Channel 1 or 2 can be used as an independent attenuverter with the remaining channels working as a two channel mixer.

The + OR JACK compares the voltage level of the two remaining mixer inputs and passes the voltage of channel with the highest voltage.





More Information

Warranty:

Cre8audio warrants to the original purchaser that this unit is free of defects in materials and workmanship under normal use and maintenance for a period of one (1) year from the date of original purchase. The warranty applies only to registered Cre8audio users that register their Cre8audio Product(s) within fourteen (14) days of time of original purchase. To register Cre8audio Products, visit Cre8audio.com. If the unit fails within the one (1) year period, it will be repaired, or replaced, at Cre8audio's option, at no charge, when returned prepaid to the Cre8audio Technical Service Center with proof of purchase – the sales receipt may be used for this purpose. Installation labor is not covered under this warranty.

Cre8audio reserves the right to change the method by which Cre8audio may provide warranty service, and any Cre8audio Product's eligibility to receive a particular method of service. Service will be limited to the options available in the country where service is requested. Service options, parts availability and response times may vary according to country. The original purchaser will be responsible for all shipping and handling charges. Customers that seek service in a country that is not the country of purchase must comply with all applicable import and export laws and regulations and be responsible for all custom duties, V.A.T. and other associated taxes and charges. For international service, Cre8audio may repair or replace Cre8audio Products and parts with comparable Cre8audio Products and parts that comply with local standards.

All replacement parts, whether new or re-manufactured, assume as their warranty period for only the remaining time of this warranty. This warranty does not apply to damage caused by improper use, accident, abuse, improper voltage service, fire, flood, lightning, or other acts of God, or if the product was altered or repaired by anyone other than Cre8audio Technical Service Center. Consequential and incidental damages are not recoverable under this warranty.

Some regions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply. This warranty gives you specific legal rights, and you may also have other rights, which vary by state and country No portion of this warranty may be copied or duplicated without the expressed written permission of Cre8audio. THIS WARRANTY IS NOT TRANSFERABLE.

Service and Contact Information:

Please contact us for service or other information related to the Function Junction or any other Cre8audio product. https://www.cre8audio.com/supportticket