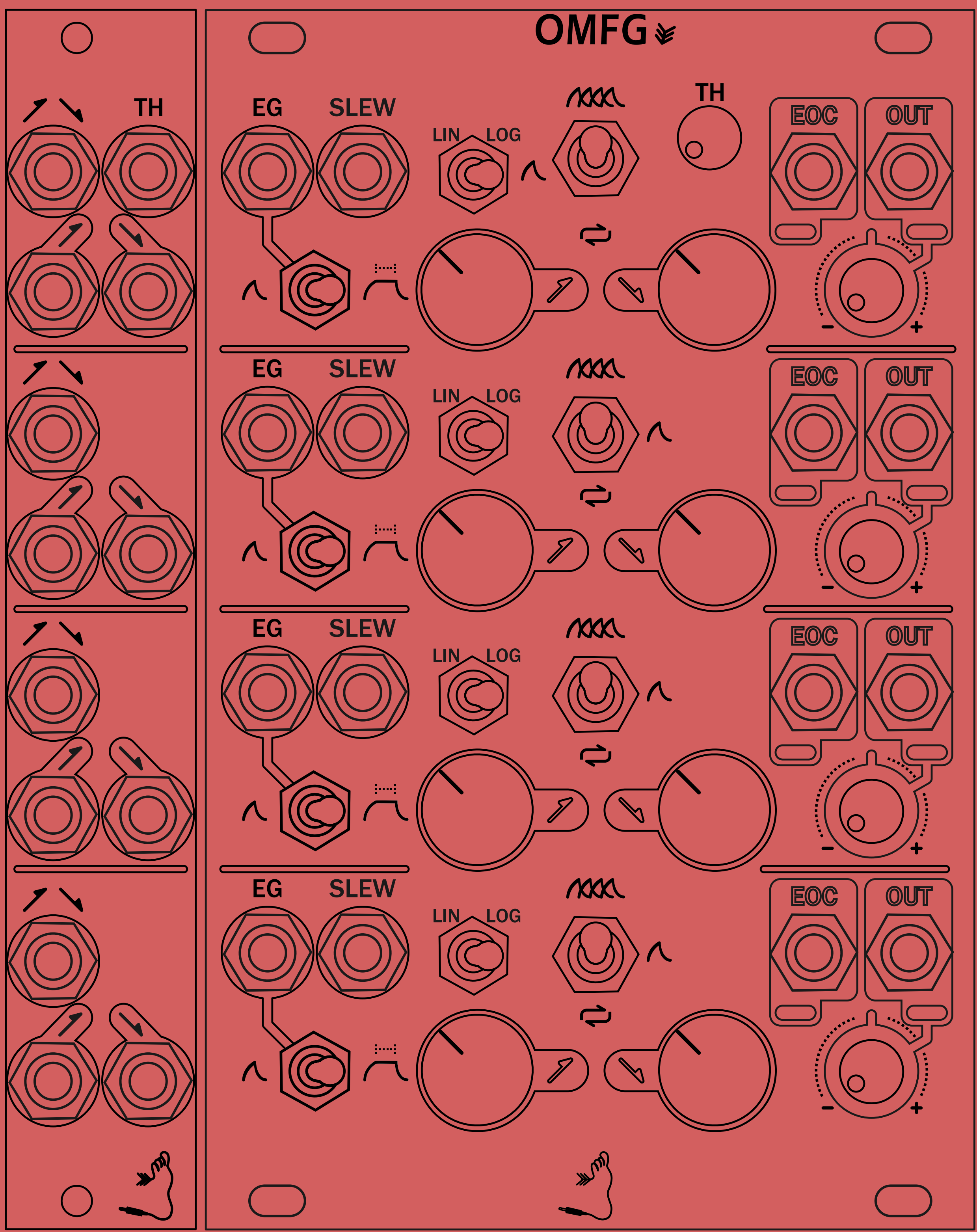
TENDERFOOT ELECTRONICS

OMFG - OBLIQUE MULTI FUNCTION GENERATOR

MANUAL REV1 - 2023/9/6



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INTRODUCTION

OMFG is a 4-channel multi-featured slew limiter and function generator. It can be used for processing CV and signals, adding glide; filtering; carrying out frequency divisions; creating A/R envelopes; cascading modulation sources and more.

SPECIFICATIONS:
OMFG = 16HP ; CV EXPANDER = 4HP
Depth = 33mm

CURRENT DRAW:
+12V = 150mA
+5V = 0mA
-12V = 110mA

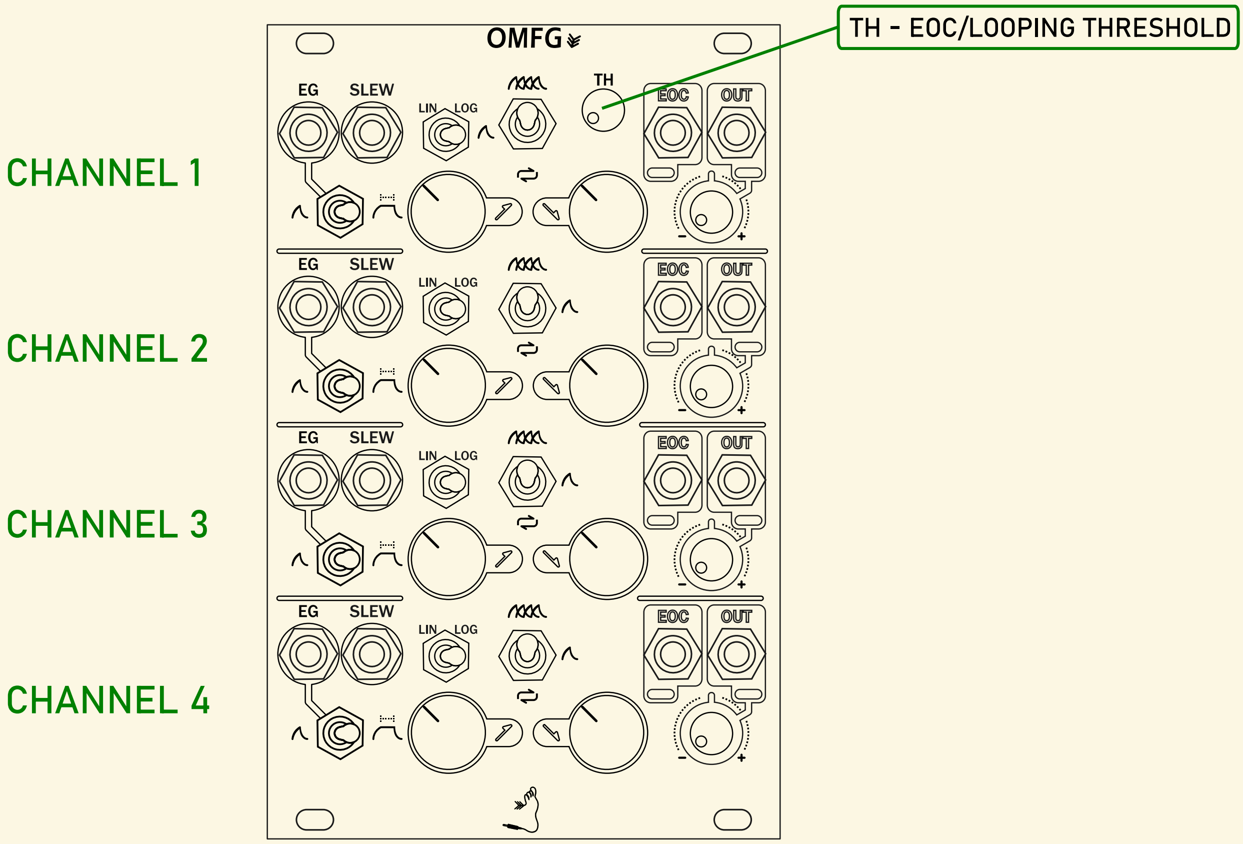
REQUIREMENTS
In order to use the OMFG, ensure the case you are installing it into uses a eurorack specification power supply and has enough available current to supply the module.

When connecting the power cable, align the red stripe of the cable with the indicated -12V marker on the back of the module.

PANEL LAYOUT

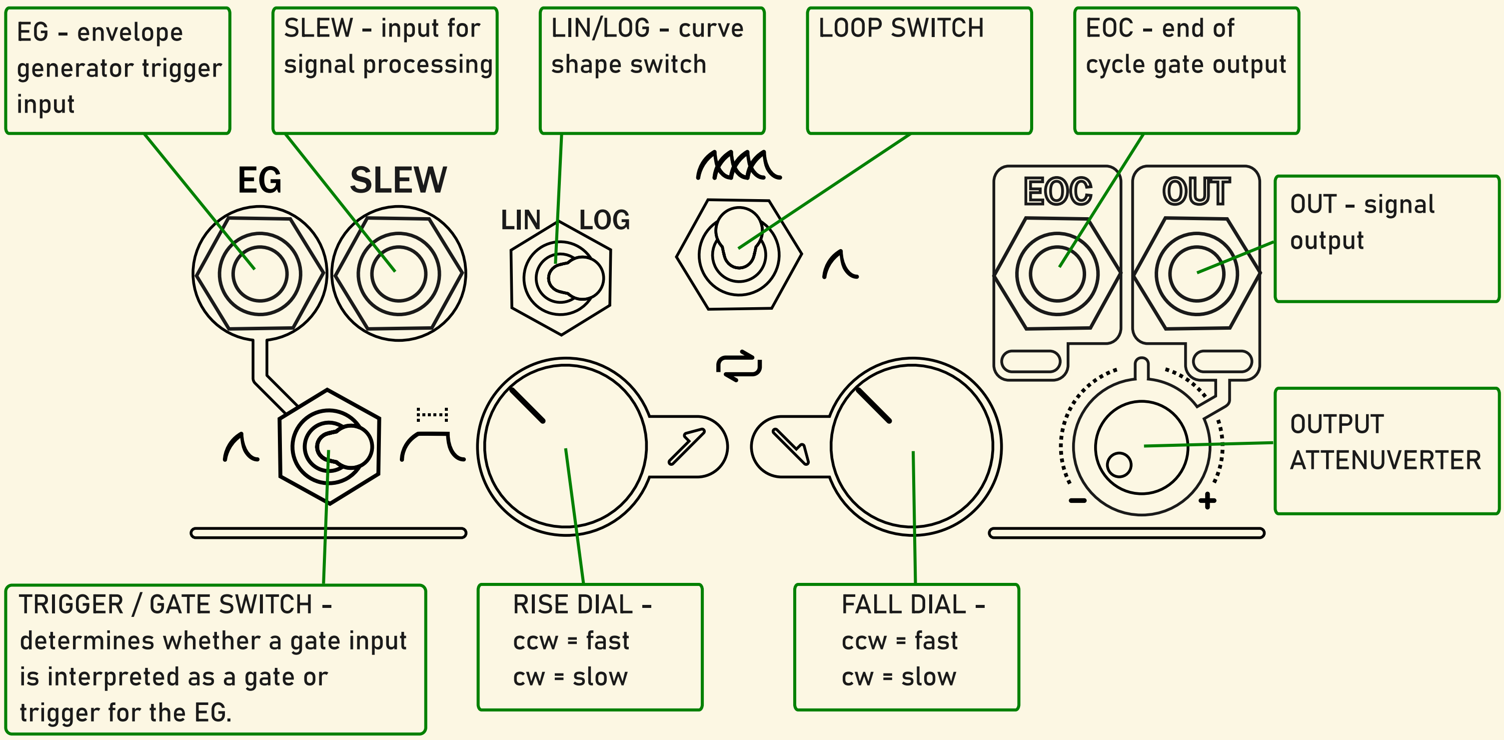
OMFG

The 4 channels of the OMFG are arranged from top to bottom, with identical controls for each of the channels. The only exception is the threshold control (TH) is located at the top of Channel 1, but is a global control.



(figure 1. OMFG front panel)

SINGLE CHANNEL VIEW

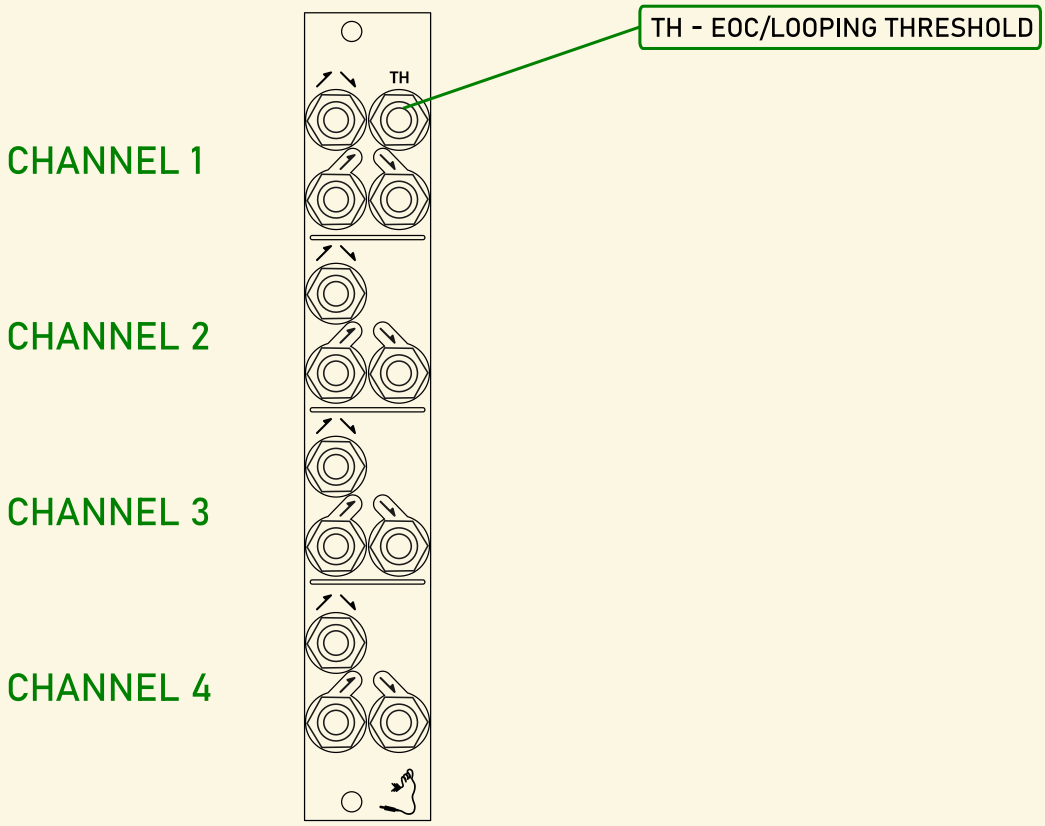


(figure 2. OMFG channel close-up)

PANEL LAYOUT

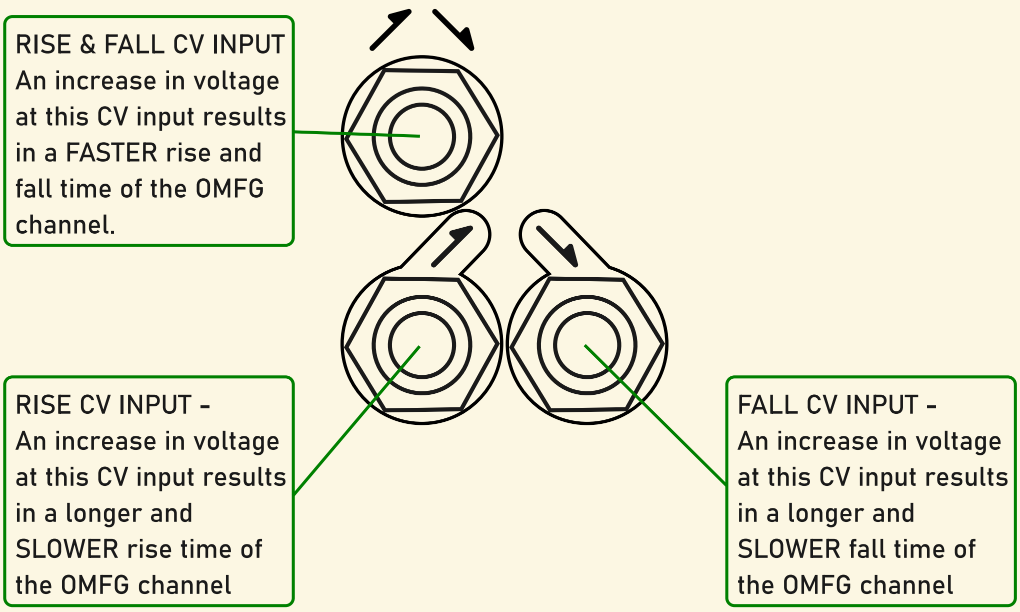
CV EXPANDER

The CV expander for the OMFG is included in the box at purchase and adds the ability to control the rise and fall of each channel with CV. The top channel also has the control to affect the EOC threshold.



(figure 3. CV expander front panel)

SINGLE CHANNEL VIEW

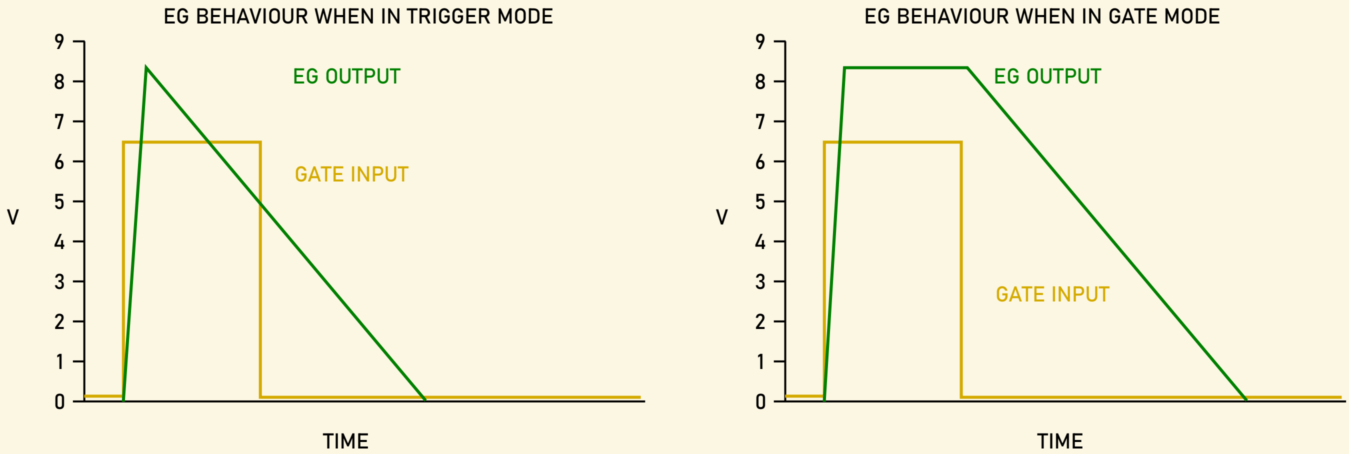


(figure 4. CV expander channel close-up)

CONTROL FUNCTIONS

EG input & TRIGGER/GATE switch

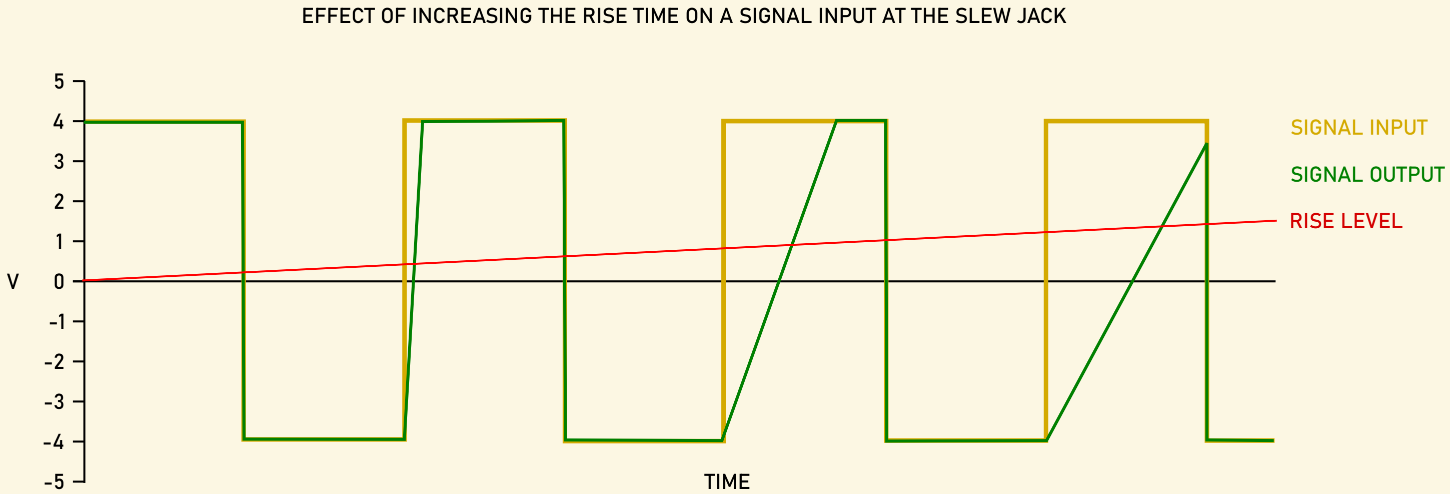
The EG input is the main way to use the OMFG channel as an attack-decay envelope generator. With the switch to the left position, any gate input will be seen as a trigger and the envelope will cycle one time with no pause at it's maximum output level (8.5V). With the switch to the right, if a HIGH gate is present at the EG input, the envelope will rise, and then hold at its maximum level, until the gate falls LOW, at which point the envelope will begin to fall towards 0V. (figure 5)



(figure 5. two charts depicting the behavioural difference between the trigger and gate modes of the envelope generator)

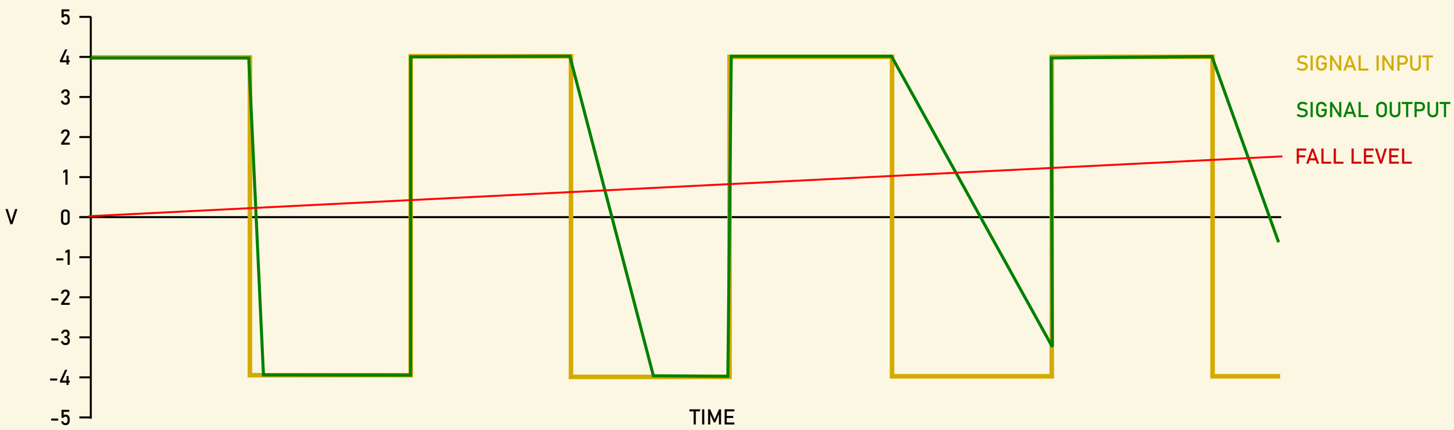
SLEW signal input

The slew input jack is the input for when using the OMFG channel as a slew limiter. Slew limiting is used to slow the transients of a signal. Increasing the rise or fall controls will increase the amount of time it takes for the channel output to match the level of the signal at the SLEW input. Some uses of adding slew time to a signal can be to add glide to CV signals and to filter audio signals. Signals to be slewed can be bipolar. (figures 6 & 7.)



(figure 6. This chart shows the gradually increasing ATTACK time at the output of a square wave processed through the slew limiter of an OMFG channel. The Yellow signal is the input, the green is the output and the red is an indictor of the increasing amount of voltage added to the RISE of the channel - voltage measurements are not exact and are just representative of the effect.)

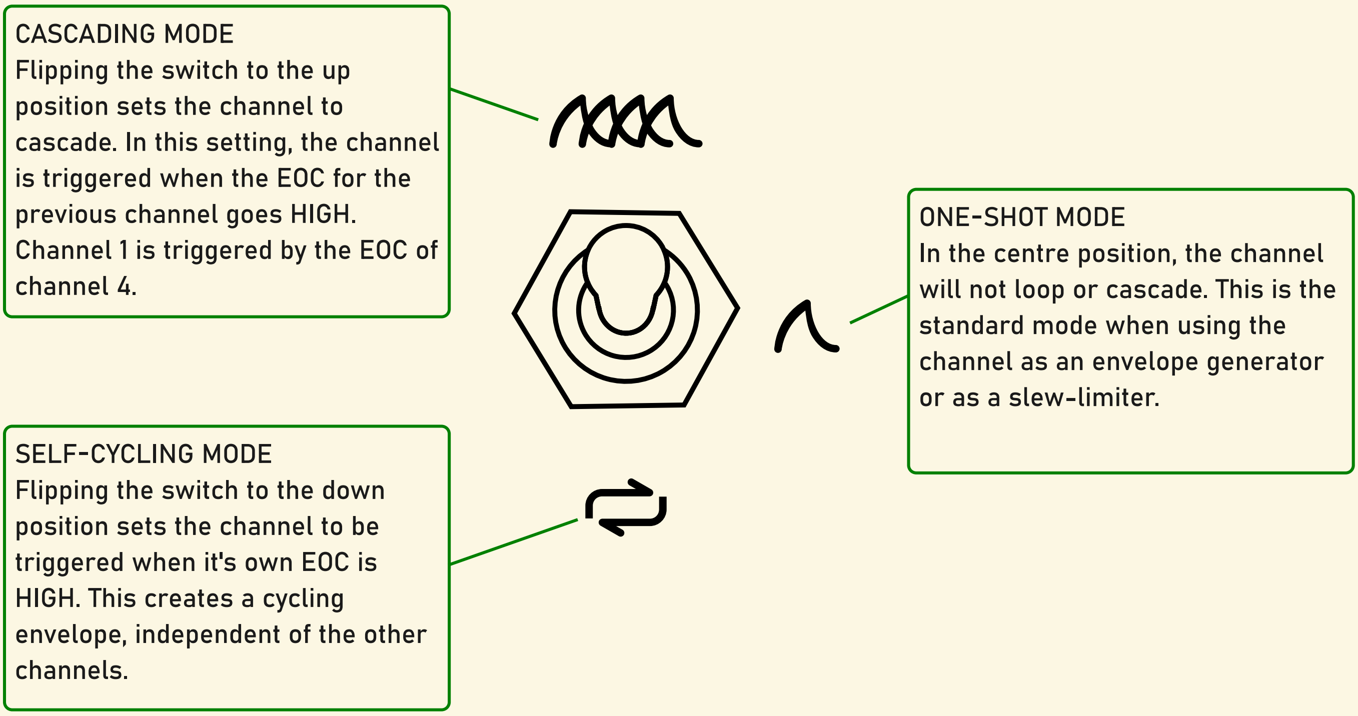
EFFECT OF INCREASING THE FALL TIME ON A SIGNAL INPUT AT THE SLEW JACK



(figure 7. This chart shows the gradually increasing DECAY time at the output of a square wave processed through the slew limiter of an OMFG channel. The Yellow signal is the input, the green is the output and the red is an indictor of the increasing amount of voltage added to the FALL of the channel - voltage measurements are not exact and are just representative of the effect.)

LOOPING switch

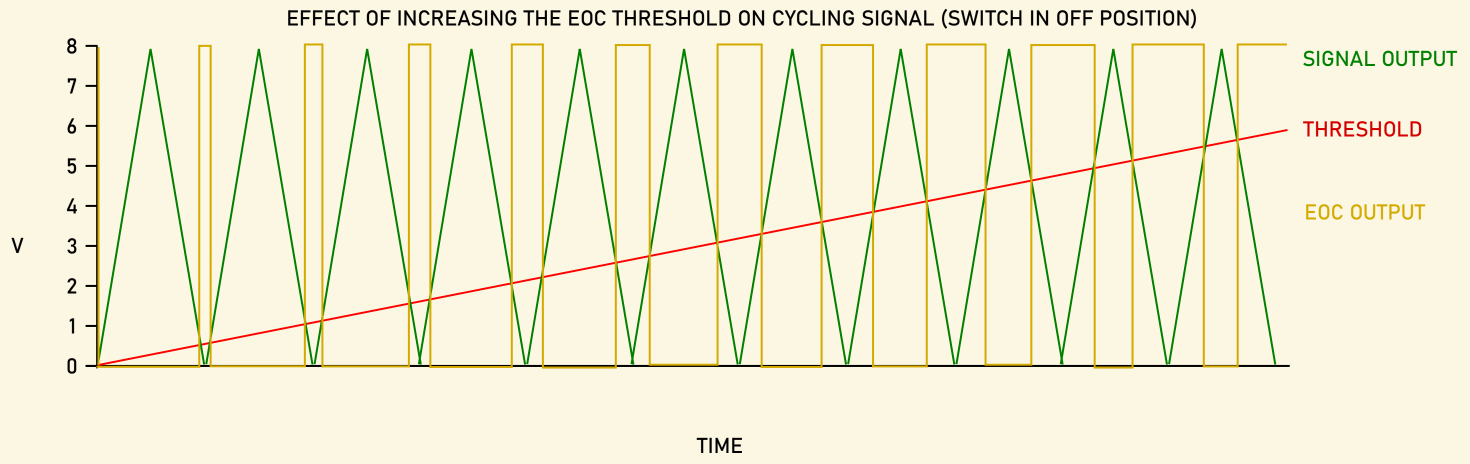
Each of the OMFG channels has 3 looping modes, selectable via the central switch (figure 8).



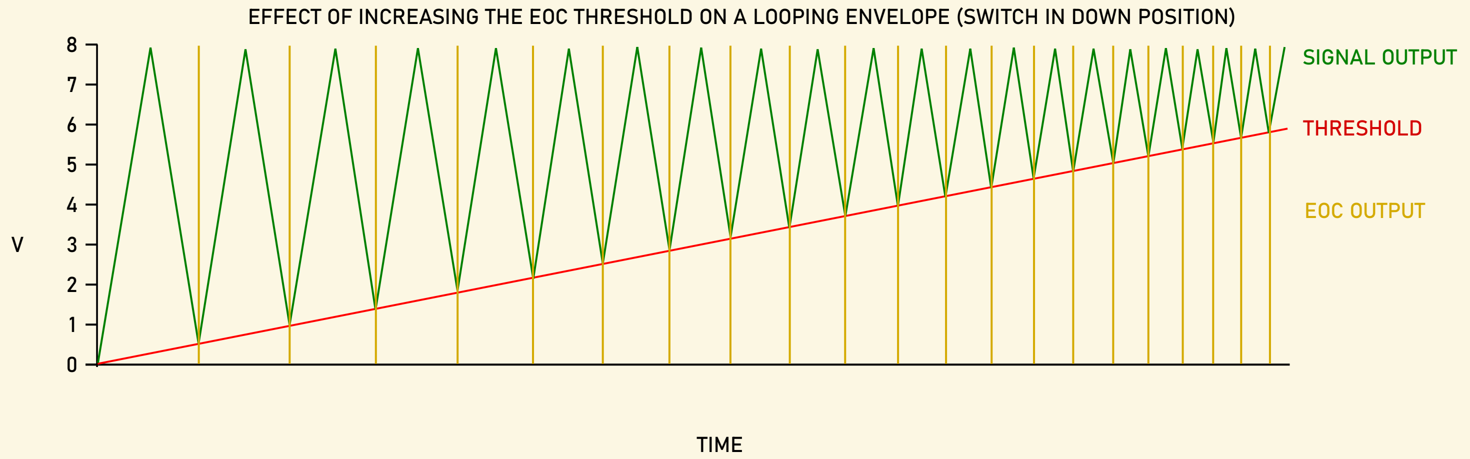
(figure 8. This diagram depicts the mode switch located centrally on every channel of the OMFG module)

TH threshold control

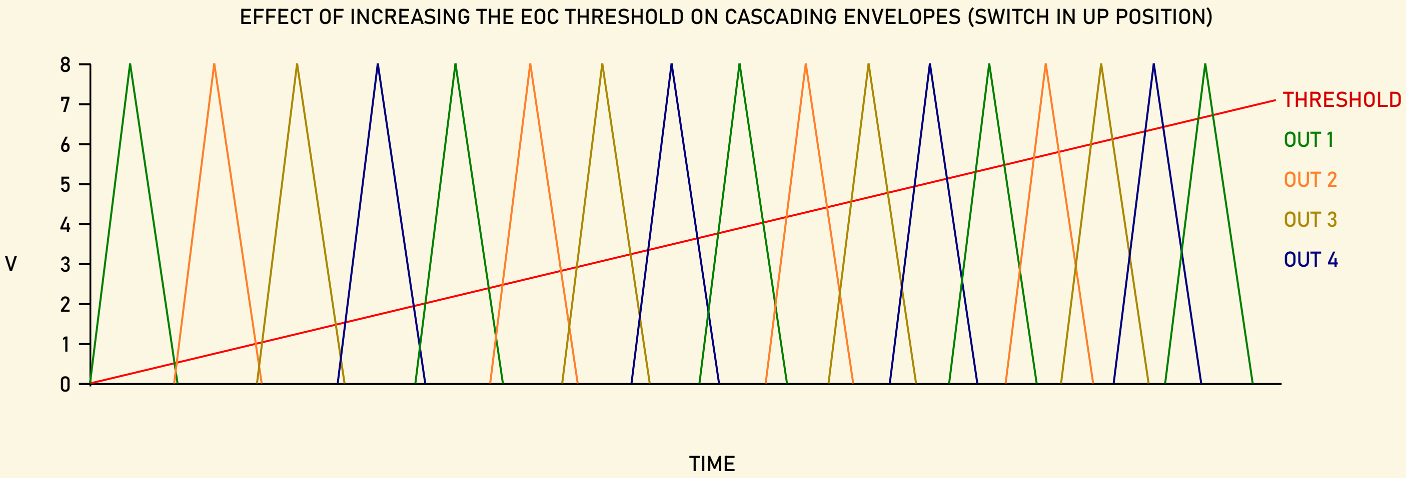
The threshold control determines the voltage at which the EOC output for every channel will switch to its HIGH state. When the voltage of the channel's output drops below this threshold, the EOC will be HIGH, otherwise it will be LOW. Since the looping and cascading functions of the OMFG are triggered by the EOC output, turning the TH up, will increase the looping frequency, while simultaneously increasing the base voltage of the cycling signal. (figure 9, 10 & 11).



(figure 9. This chart shows how increasing the threshold voltage (red) affects the point at which the EOC output goes HIGH (turns on) and goes LOW (turns off). It can be seen that with a steady input signal, varying the threshold essentially varies the pulse-width of the EOC output accordingly).



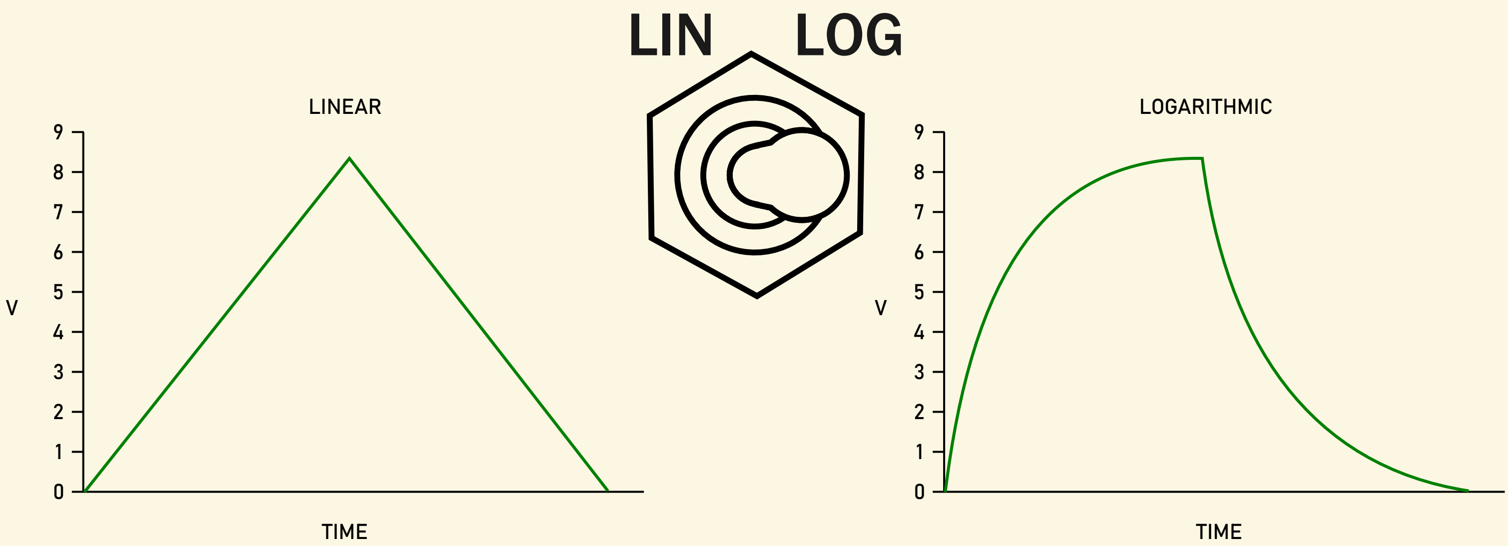
(figure 10. This chart shows how increasing the threshold voltage (red) affects the looping characteristics of a channel that is currently running in the self-cycling looping mode. As the threshold increases, the falling envelope is retriggered at a higher voltage, increasing the frequency of the looping signal, and raising the baseline voltage. In this mode, the EOC output will be in the form of an exceptionally short pulse (yellow)).



(figure 11. This chart shows how increasing the threshold voltage (red) affects the relationship between the 4 cascading envelopes. In this example, all envelopes are of the same length, and increasing the EOC threshold brings them closer together temporally, increasing the frequency of each envelope).

LIN / LOG shape switch

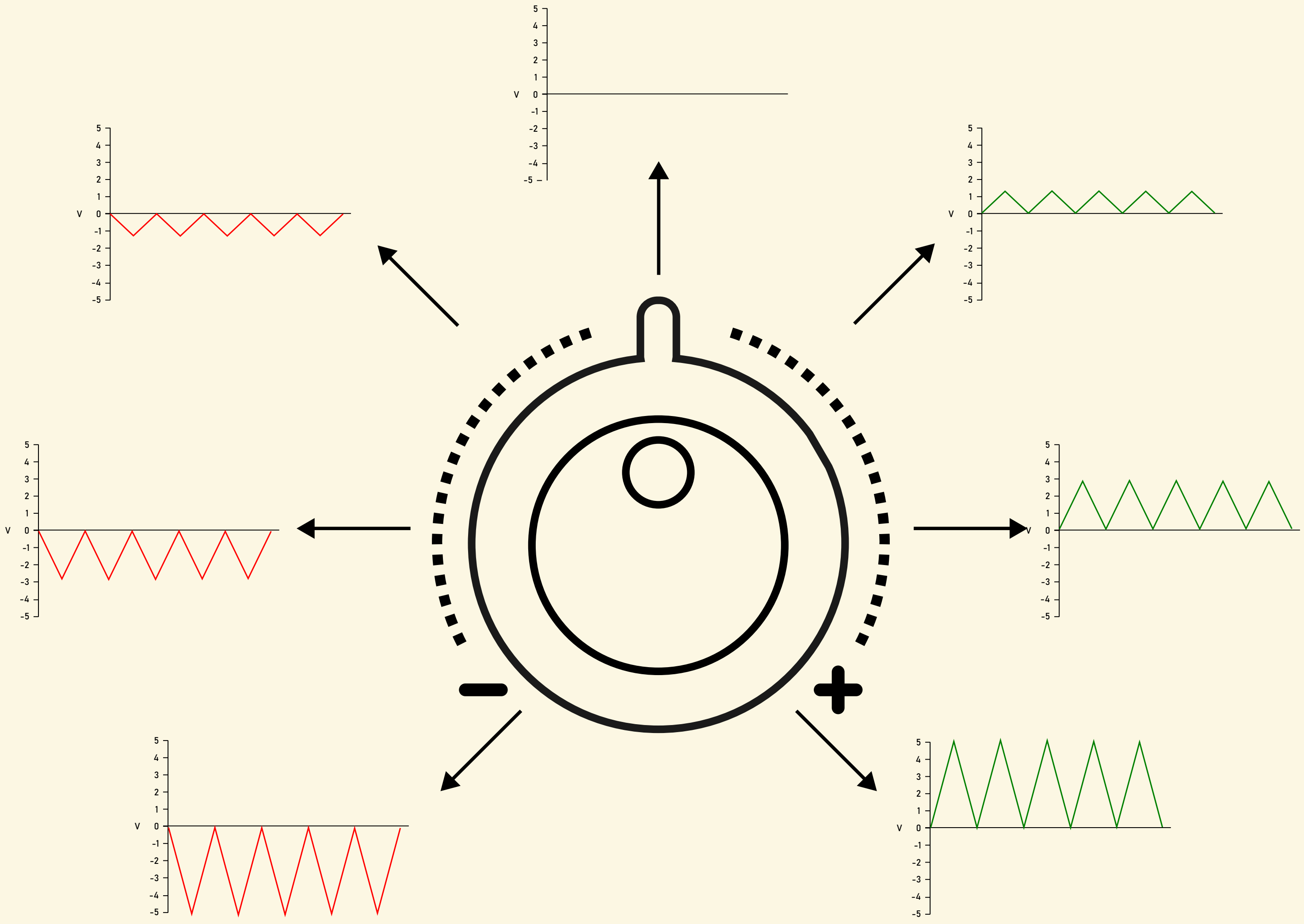
The shape switch affects the response curve of the slew limiter and envelope generator functions. When set to linear , all slopes created by the channel will be linear in shape. When set to log, all functions will have a logarithmic attack and exponential decay. When used to generate envelopes, logarithmic curves are often perceived as sounding more natural. Upon switching to LOG mode, the length of any envelopes or loops will increase, so may need some adjustment. (see figure 12).



(figure 12. This diagram shows the typical response curves of the envelope generator and slew limiter when in LIN mode (left) and LOG mode (right)).

OUTPUT ATTENUVERTER

Each channel signal output is preceded by an attenuverter circuit with control via the attenuverter dial. This allows you to adjust the scaling or "volume" of each channel. The 12 o'clock position is the OFF position. Rotating the dial clockwise will increase the signal in the non-inverted direction until it reaches unity gain at the limit. Rotating the dial anti-clockwise will increase the signal level in the inverted direction. (see figure 13)



(figure 13. This diagram represents the effect of the attenuverter dial position on the amplitude and polarity of the output signal).