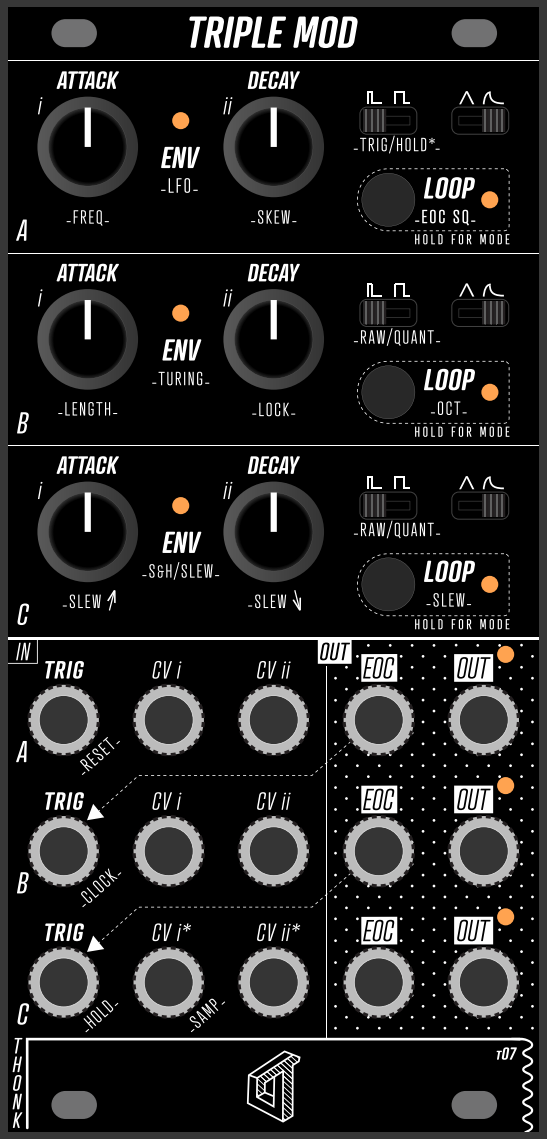
THONK SYNTH τ07 TRIPLE MOD



INTRODUCTION

Triple Mod is a 12HP Eurorack module that provides three channels of modulation, each capable of being an Attack/Decay envelope generator with CV control, looping, linear/logarithmic slopes, trigger/gate modes and an end-of-cycle (EOC) output.

Each channel has an unique additional mode -

Channel A can become a wide ranging **LFO** with skew function.

Channel B can turn into a **Turing Machine** looping random sequencer.

Channel C can become a **Sample & Hold (S&H)** with slew options, or a simple slew rate limiter.

SPECS

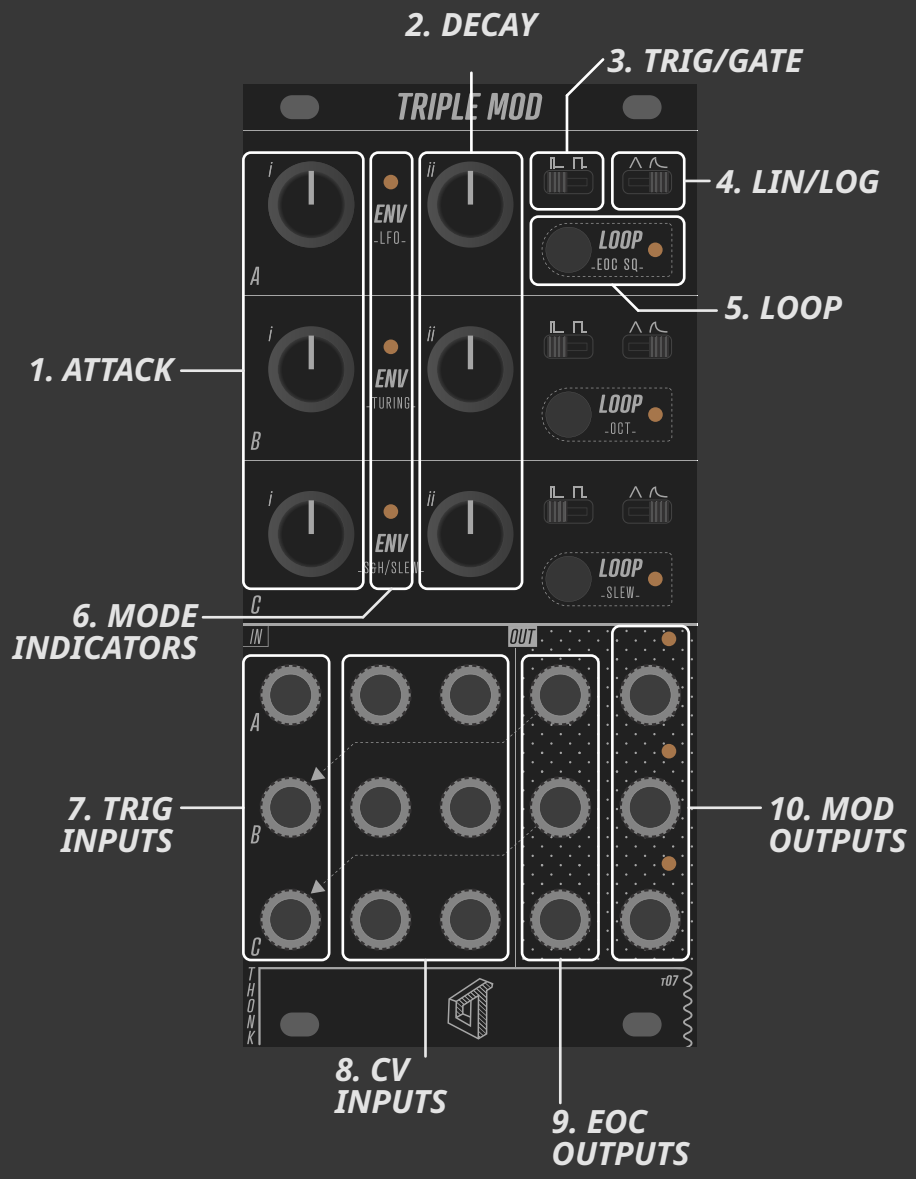
Width 12HP
Depth 38mm (including power connector)
Current +12V 54mA / -12V 10mA / +5V 0mA
Output level 0V to +5V
Trigger input level +2V
CV input levels -5V to +5V

PREFER TO WATCH VIDEOS THAN READ MANUALS?

Watch the Divkid demo here!

https://youtu.be/zEcX-NJVApk?si=7n7xU-oCmoDWoHoW

QUICK GUIDE - ENV MODE



1. ***ATTACK:*** Sets the attack / rise time for each channel (~1ms to 15s).

2. ***DECAY:*** Sets the decay / fall time for each channel (~1ms to 15s).

3. ***TRIGGER / GATE:*** Selects input type:

   - **TRIG**: always completes a full envelope cycle.

   - **GATE**: output stays high while the gate is held, then falls when released.

4. ***LINEAR / LOGARITHMIC:*** Changes slopes between fully linear or log-attack/exp-decay curves.

5. ***LOOP:*** Enables looping mode, cycling the envelope continuously without an external trigger. LED lights when active.

6. ***MODE INDICATOR:*** Shows the channel's active mode. Orange = envelope, White = alternate.

7. ***TRIGGER INPUTS:*** Trigger/Gate input (threshold +1V).

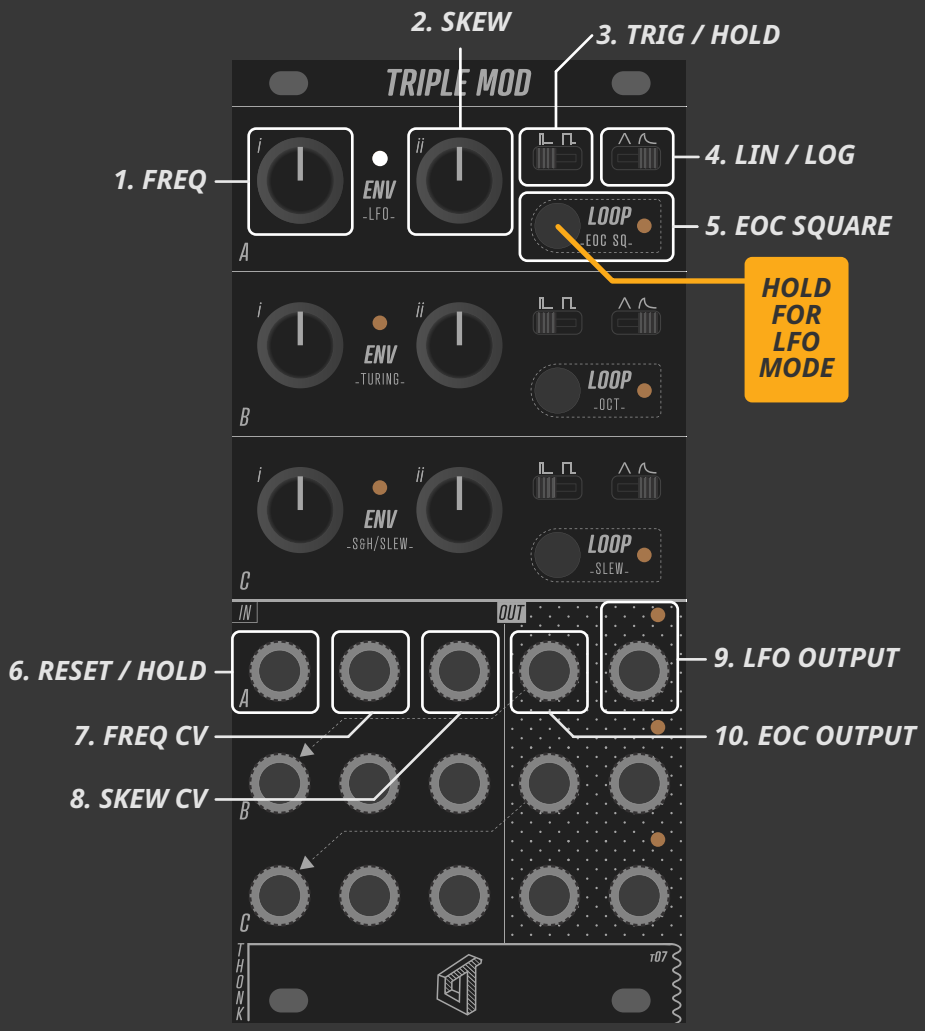
8. ***CV INPUTS:*** Voltage control over Attack and Decay. Inputs are bipolar (+/-5V) and summed with the knobs.

9. ***EOC OUTPUTS:*** End-of-Cycle triggers (1ms at +5V), emitted when each channel completes it's cycle.

10. ***MOD OUTPUTS:*** Main envelope outputs (0-5V). Output LEDs indicate current voltage.

Go to page 7 for details.

QUICK GUIDE - CH A LFO MODE



1. ***FREQUENCY:*** Sets the LFO speed - ranges from 60s up to 4ms / 250Hz. Clockwise = faster.

2. ***SKEW:*** Adjusts the waveform shape from falling ramp → triangle → rising ramp.

3. ***TRIGGER / HOLD:*** Selects input behaviour.

   TRIG: incoming triggers reset the LFO cycle

   HOLD: LFO only runs while the gate at the input is high.

4. ***LINEAR / LOGARITHMIC:*** Changes the curve of the LFO between linear and logarithmic slopes.

5. ***EOC SWITCH:*** Toggles **EOC SQUARE** mode - the EOC output becomes a PWM-style square wave, with pulse width set by the **SKEW (ii)** knob. Orange LED = TRIG, White LED = SQUARE.

6. ***RESET / HOLD IN:*** Trigger/Gate input - resets the LFO in **TRIG** mode, or gates it in **HOLD** mode. In **HOLD** mode, the LFO only runs while this input is high.

7. ***FREQ CV:*** Voltage control over frequency - summed with the **FREQ (i)** knob. Roughly tracks to 1V/Oct.

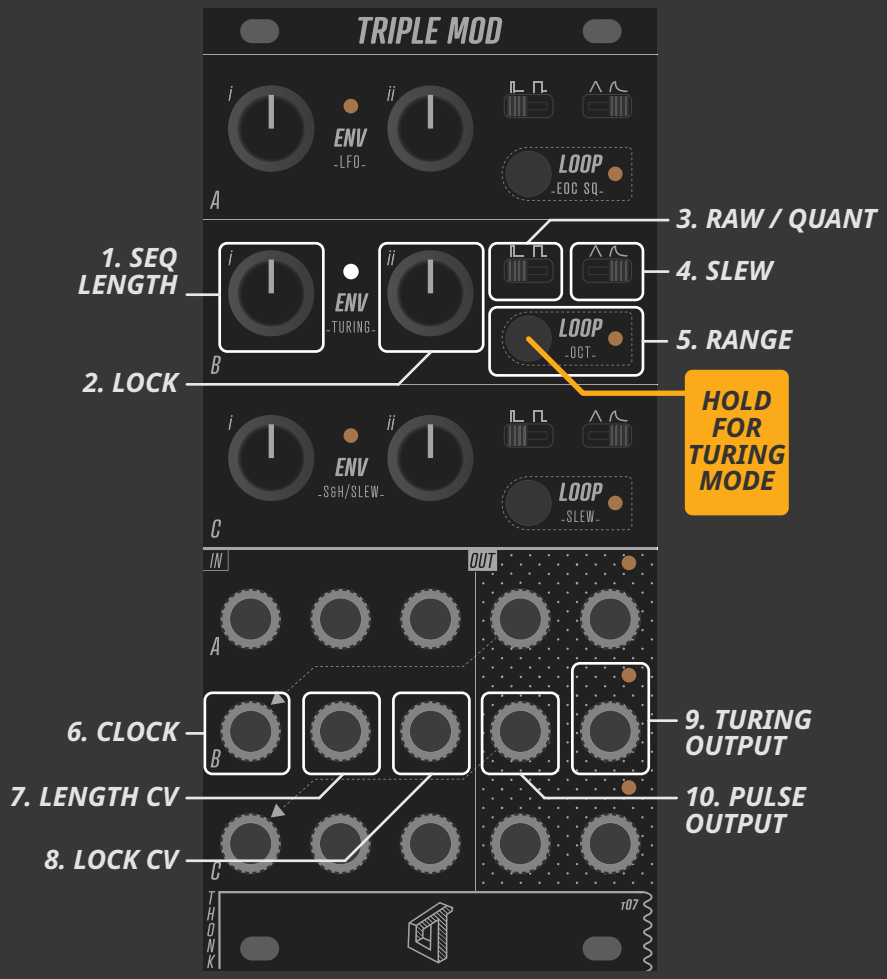
8. ***SKEW CV:*** Voltage control over the skew of the LFO - summed with the **SKEW (ii)** knob.

9. ***EOC OUT:*** End-of-Cycle output. Outputs a trigger or a square wave, depending on mode.

10. ***LFO OUTPUT:*** Main output (0 to 5 V)

Go to page 10 for details.

QUICK GUIDE - CH B TURING MODE



1. ***SEQUENCE LENGTH:*** Sets the number of steps in the sequence (2-16).

2. ***LOCK:*** Adjusts the balance between a random and repeating sequence. Fully counter-clockwise = completely random; fully clockwise = fully locked / repeating.

3. ***RAW / QUANT:*** Enables semitone quantisation of the output.

4. ***SLEW:*** Adds a small glide between voltage steps.

5. ***RANGE:*** Selects one of five octave ranges (1–5 V). LED brightness indicates the selected range.

6. ***CLOCK IN:*** Advances the sequence on each trigger/clock pulse.

7. ***LENGTH CV:*** Voltage control over sequence length - summed with the **LENGTH (i)** knob setting.

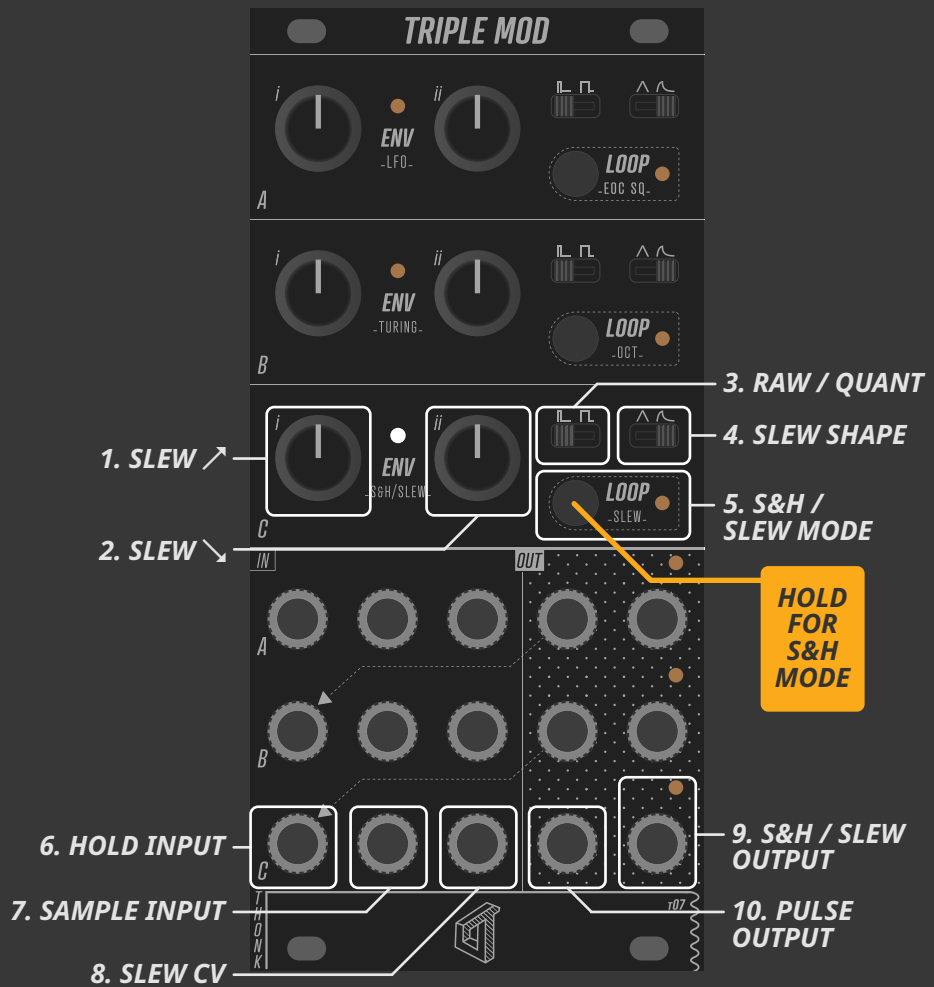
8. ***LOCK CV:*** Voltage control over the randomness of the sequence - summed with the **LOCK (ii)** knob setting.

9. ***PULSE OUTPUTS:*** Fires a trigger when the current step's voltage exceeds half of the selected range.

10. ***TURING OUTPUT:*** Main voltage output (0–5 V).

Go to page 12 for details.

QUICK GUIDE - CH C S&H / SLEW MODE



1. ***SLEW ↗:*** Sets the rising slew applied to the input.

2. ***SLEW ↘:*** Sets the falling slew applied to the input

3. ***RAW / QUANT:*** Enables semitone quantisation of the output.

4. ***SLEW SHAPE:*** Changes the slew curve from linear to logarithmic.

5. ***S&H / SLEW MODE:*** Selects between **S&H** mode and **SLEW** only mode. Orange LED = **S&H** mode, White LED = **SLEW** mode.

6. ***HOLD IN:*** A trigger sent here causes the S&H to sample and hold a new input voltage.

7. ***SAMPLE IN:*** Signal input to be sampled.

8. ***SLEW CV:*** Voltage control over ↗ slew times. Affects both rise ↘ and fall, summed with the **SLEW (i)** and **SLEW (ii)** knobs.

9. ***PULSE OUTPUTS:*** Outputs a trigger when the output has reached the sampled value.

10. ***S&H / SLEW OUTPUT:*** Main voltage output (0–5 V).

*Go to page **14** for details.*

MODE SWITCHING

The current mode for each channel is indicated by the mode LED. An orange LED indicates envelope mode, while a white LED indicates each channel's alternate mode.

To switch modes, press and hold the **LOOP** button until the **MODE** and **LOOP** LEDs flash between orange and white. The mode will change when you release the button.

TIP: While the **LOOP** button is held down and the LEDs are flashing, changing the knobs and slide switches for that channel will have no effect. This allows you to 'cue' parameters in anticipation of the new mode. When you release the **LOOP** button, the new parameters will be applied instantly.

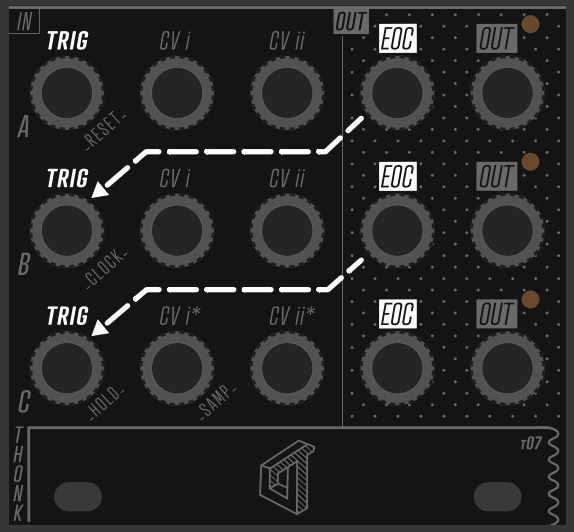
The channel will still respond to trigger and CV inputs during this transition phase.

TRIPLE MOD will remember parameters set by the **LOOP** button between mode switches - for example, if CH1 Envelope Mode is looping, it will still be set to loop even after switching to **LFO** mode and back.

TRIPLE MOD will also remember channel modes and settings between power cycles.

If you are ever lost, PRESS & HOLD all three LOOP buttons until you see the LED animation. On release, the module will reset to it's default state - all channels in ENV mode, LOOP mode disabled.

NORMALLING



TRIPLE MOD includes normalisation between channels - each channel's EOC output is normalled to the next channel's trigger input - as indicated by the dashed lines on the panel.

This means that when a channel completes an envelope cycle, it will trigger the next channel's envelope to start. Patching into a channel's trigger input will break this normalisation.

Try sending a trigger into CH A - you will see how the other channels are triggered automatically when the previous channel completes it's cycle.

If a channel is in **ENV** mode and **LOOP** is engaged, this normalisation will be disabled. For example if CH B is set to **LOOP**, it will not be triggered by CH A's EOC output.

Normalisation also works for the **ALT** modes - check the section for each **ALT** mode to see when an EOC output is triggered.

ENVELOPE MODE

ATTACK & DECAY

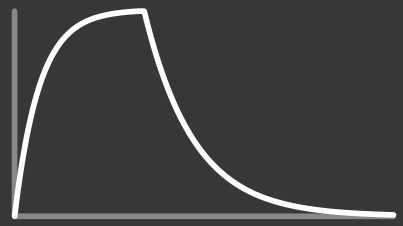
Attack and Decay times are controlled using the **ATTACK (i)** and **DECAY (ii)** knobs, which are summed with the **CV i** and **CV ii** inputs respectively.

Attack and Decay times have a range of <1ms to 15s.

There is a short built in hold period to add a bit of punch to the envelopes, calculated as 1/10th of the combined attack & decay times (up to a maximum of 40ms).

SLOPE SHAPE

The **SHAPE** switch toggles between a fully linear response and logarithmic attack with exponential decay response. This is great for more natural sounding envelopes that follow the non-linearities of human hearing.

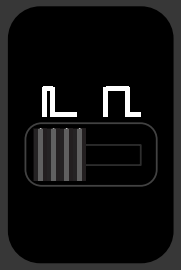


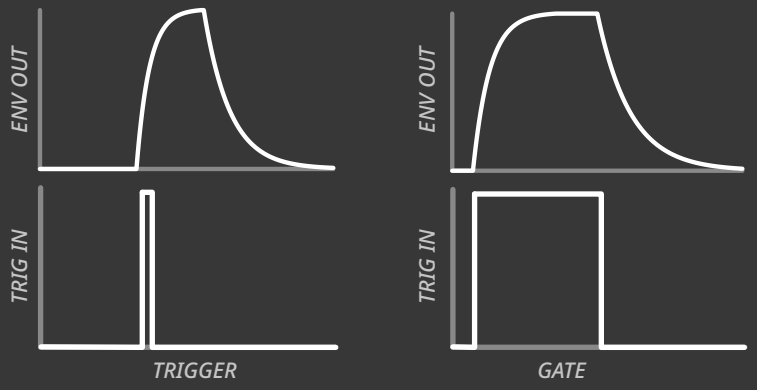
TRIGGER / GATE

Trigger mode - Each trigger sent to the input produces a full envelope cycle (attack + decay). The output always reaches the maximum level (+5V), regardless of trigger length, great for consistent sources like a sequencer.

There is a small hold period after the attack period which is equal to one 1/10th of the combined attack and decay times.

Gate mode - The envelope rises while the gate is high and holds at maximum until the gate is released. If the gate goes low before the rise is complete, the envelope immediately switches to the fall stage. This mode is more suited to playing with a keyboard.

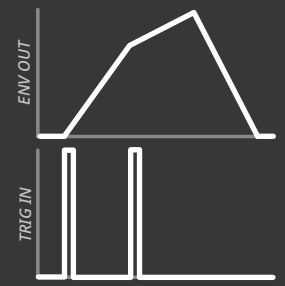




***ENVELOPE MODE** continued..*

RETRIGGERING

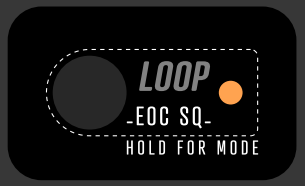
If a trigger is received during the attack stage (only possible in Trigger mode), the envelope continues rising, but its curve adapts so that the peak is still reached after one full attack time from the most recent trigger.



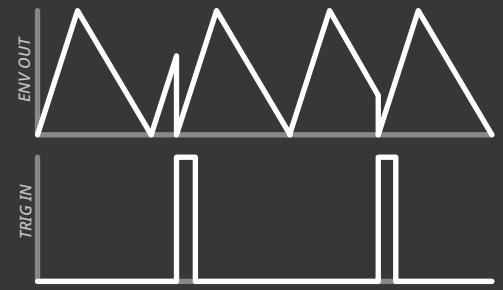
If a trigger or gate is received during the decay stage, the envelope begins a new rise from its current level. The attack time remains the same regardless of the point it restarts from.

LOOPING

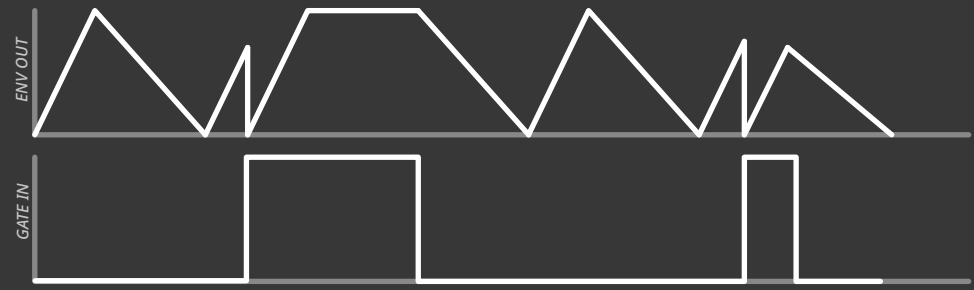
Pressing the **LOOP** button will cause that channel to enter loop mode and the **LOOP** LED will be lit orange. **LOOP** mode causes the envelope to loop continuously with no trigger/gate signal needed on the input. **ATTACK (i)**, **DECAY (ii)** controls and CV inputs behave exactly the same as before, however retriggering behaves slightly differently:



Trigger mode - a new trigger received at the **TRIG** input will reset the envelope to zero and the cycle will restart.



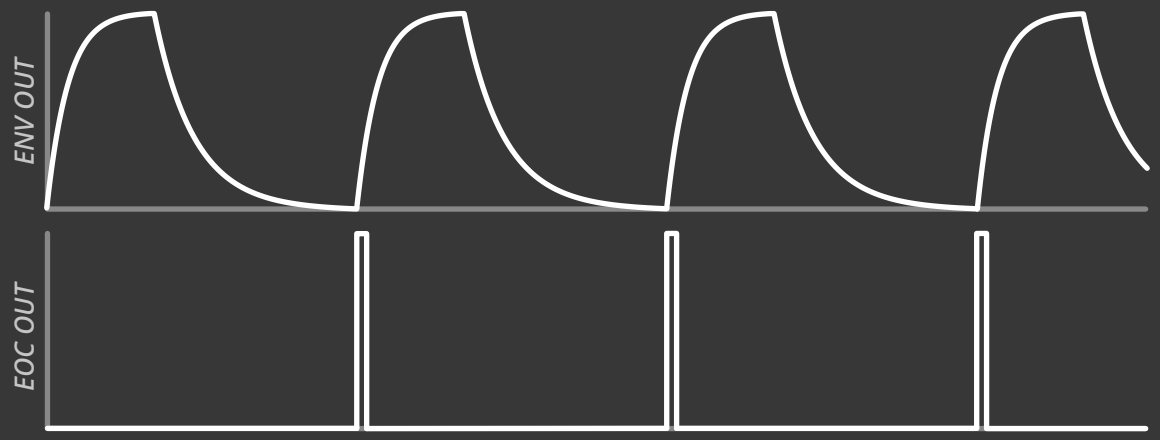
Gate mode - If a gate goes HIGH at any point of the cycle, the envelope will reset back to zero immediately. If a gate goes LOW at any point, the decay portion will start from the current level. If a gate is HELD high, once the envelope reaches it's max level, it is held at that level until a gate goes low again.



ENVELOPE MODE *continued..*

EOC (END-OF-CYCLE)

The end-of-cycle output will output a 1ms trigger at the end of each cycle, when the decay period ends and the output reaches zero.



If an envelope is re-triggered while it is decaying (either in TRIG or GATE mode), the EOC will output immediately.

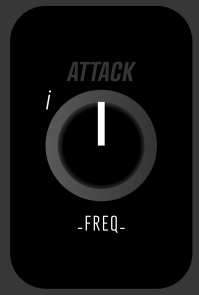
As described in the normalling section of this manual, the EOC outputs will trigger the next channel's envelope to start if it is not in loop mode.

CH A ALT MODE - LFO

LFO mode is the alternate mode for CH A. While it can perform very similarly to a looping envelope, it has control scheme more suited for LFO style modulation - FREQUENCY and SKEW.

FREQUENCY

The frequency of the LFO is controlled by the FREQ (i) knob, and is summed with the CV (i) input. Turning the FREQ (i) knob clockwise increases the frequency or speeds up the LFO.



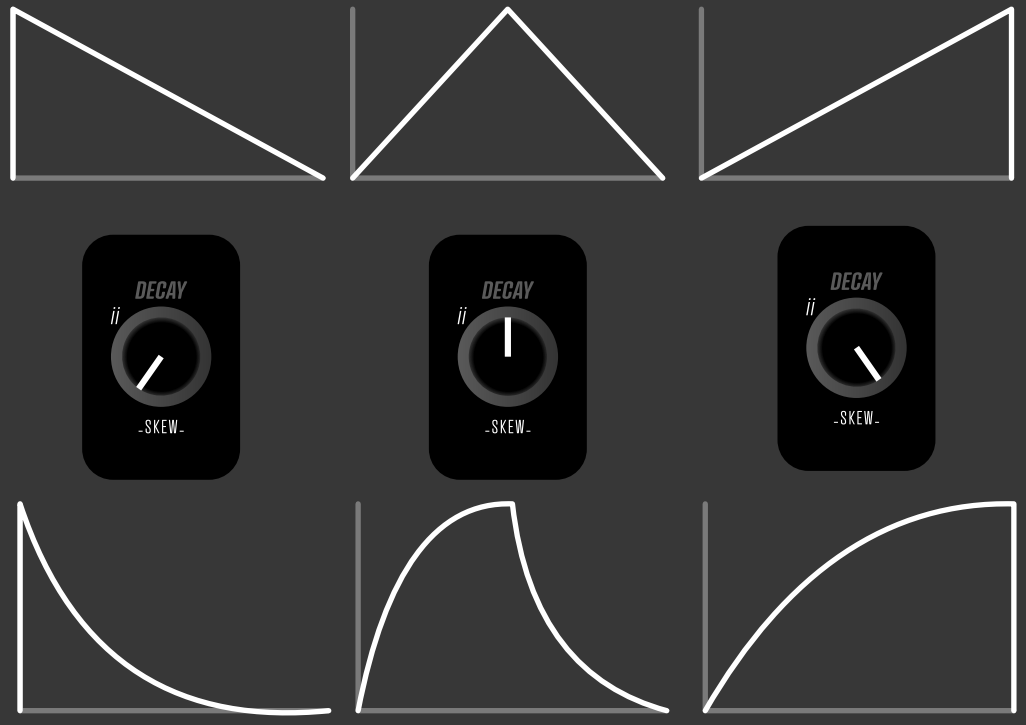
The CV (i) input acts as an approximate V/Oct input, where a 1V increase in CV will double the LFO frequency.

The frequency ranges from 0.017Hz (60 seconds) to 250Hz (0.004 seconds).

SKEW

The SKEW (ii) knob controls the shape of the LFO. Starting at fully counter clockwise, the LFO will be a falling ramp wave. As you increase the SKEW (ii) knob, the shape will morph through a triangle wave, and end as a rising ramp / saw wave.

The SKEW (ii) knob is combined with with CV (ii) input, allowing you to modulate the wave shape.



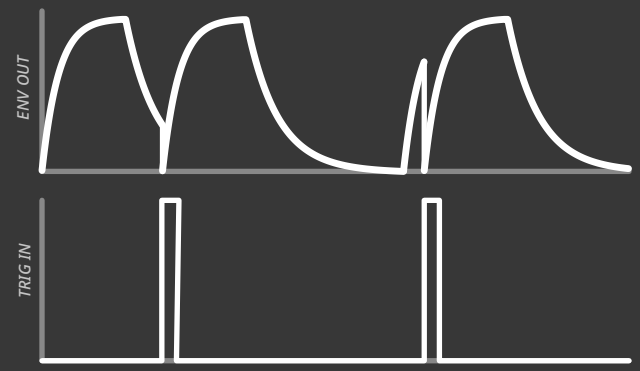
SLOPE SHAPE

The SHAPE switch behaves similarly to when in ENV mode, switching between a fully linear shape and a logarithmic attack / exponential decay. Combined with the SKEW (ii) knob, this gives you lots of control over the shape of the LFO.

CH A ALT MODE - LFO *continued..*

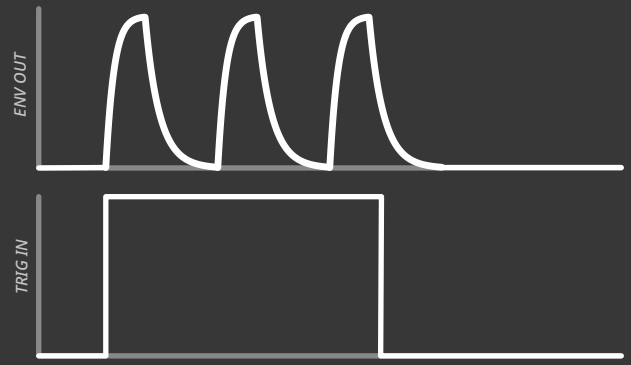
TRIG / HOLD

TRIGGER MODE - The LFO will run continuously and will reset back to zero when a trigger is received on the **TRIG** input. Think of this like HARD SYNC on a VCO, useful for syncing the LFO with your main sequence.



HOLD MODE - The LFO will only run when a HIGH gate signal is sent to the TRIG input, and will be stopped or 'gated' when the gate is LOW. The LFO will always complete it's full cycle, even if the gate goes LOW before it is finished.

If a second gate signal is sent to the **TRIG** input while the LFO is still running, the LFO will restart from it's current position, and the like **ENV** mode, will maintain the same timing.



EOC (END-OF-CYCLE)

The EOC output of the LFO has two modes - **STANDARD EOC** and **SQUARE EOC**. This can be toggled by pressing the **LOOP** button while in LFO mode. When the LED is lit orange, **EOC SQUARE** will be activated. **STANDARD EOC** behaves the same as in **ENV** mode. A 1ms trigger will be output when the LFO completes one cycle or is re-triggered in it's decay period. This could be used for example to get a clock signal where the speed is controlled by the **FREQ (i)** knob.

SQUARE EOC - In **SQUARE** mode, the EOC output turns into a square/pulse wave. The output will be high while the LFO is rising, and low while the LFO is falling. This means that the **SKEW (ii)** knob controls the pulse-width of the EOC output.

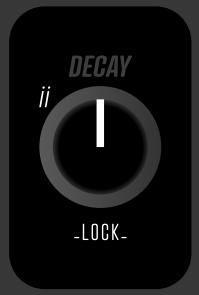
CH B ALT MODE - TURING MACHINE

CH B's alternate mode is a random looping sequence generator based on the Music Thing Modular Turing Machine, with several additional features. The channel outputs a stored sequence of values, advancing one step with each trigger input. The sequence can be locked for repeatable patterns, or a variable amount of randomness can be added. Controls are available for sequence length, octave range, quantisation, and slew.

LENGTH

The **LENGTH (i)** knob controls the length of the looped sequence. It ranges from 2 to 16, increasing as you turn the knob clockwise.

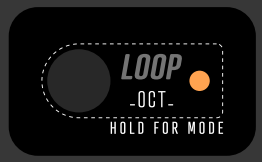
The **LENGTH (i)** knob is summed with the CV i input, allowing you to modulate the loop length.



LOCK

The **LOCK (ii)** knob controls the randomness of the sequence. When fully counter-clockwise, the sequence will be totally random. If you turn the **LOCK (ii)** knob fully clockwise, the sequence will be locked and will loop infinitely.

As you start turning the **LOCK (ii)** knob back counter-clockwise, it allows randomness to start slowly creeping back in, creating repeatable but organically changing sequences.

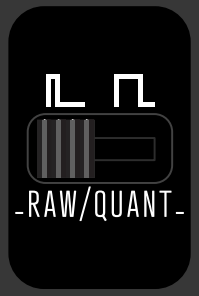


OCT

The voltage range of the output sequence is determined by the **OCT (LOOP)** button. Pressing it will cycle through five steps, ranging from 1V (1 octave) to 5V (5 octaves), and the new range will only apply on the next trigger. The range is displayed by the **LOOP** LED, increasing in brightness as you cycle through the ranges.

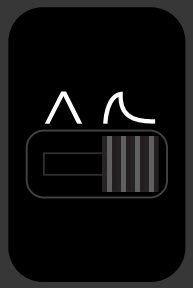
You can think of this as an intelligent attenuator - the sequence is calculated at full range, and then the notes are shifted to fit inside the selected range. This means that as you cycle through the ranges, the pattern or notes stay the same, but are shifted up in octaves.

CH B ALT MODE - TURING MACHINE *continued..*



RAW / QUANT

The RAW / QUANT slide switch allows you to quantise the output to semitones in the V/Oct scale.



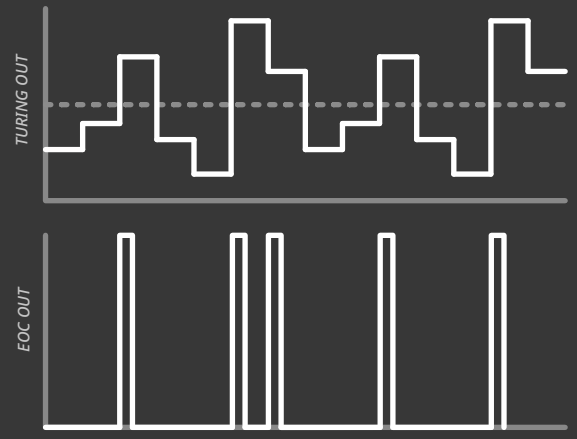
SLEW

The SHAPE slide switch allows you to add slew to the output voltages. When set to the LOG/EXP setting, the output will ramp up and down to the next value in the sequence. The slew rate is proportional to the timing of the incoming trigger, and is calculated as 1/5th of the clock period, meaning it will respond to changes in the clock speed.

EOC (END-OF-CYCLE)

The EOC output in Turing Machine mode outputs a trigger that is in sync with the incoming clock speed. For each step in the sequence, if the voltage is greater than half of the current range selected with the OCT button, it will trigger an output.

This creates interesting rhythmic patterns on the EOC output that are related to the current sequence, and change depending on the LOOP length and LOCK amount.



CH C ALT MODE - SAMPLE & HOLD / SLEW

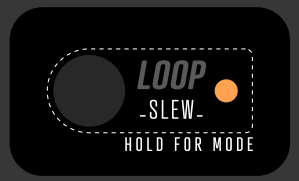
Sample & Hold / Slew is the alternate mode of CH C. A voltage sent into the **SAMP** input can be sampled and held, or slewed, with controllable rise and fall times, slew shape, and quantisation.

Negative voltages at the **SAMP** input are full-wave rectified, so that for example, a -2V voltage on the **SAMP** input will turn into a +2V voltage on the output.

Toggling between Sample & Hold and Slew functions is done using the **LOOP** button. When the **LOOP** LED is off, Sample & Hold is selected; when it is on, Slew is selected. The difference between these functions only affects the way inputs are sampled - all controls work the same with either function.

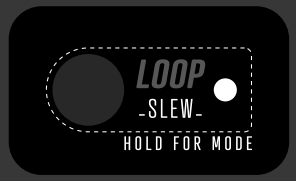
SAMPLE & HOLD

When using **SAMPLE & HOLD**, the voltage at the **SAMP** input (CV ii) will be sampled when a trigger is received at the **HOLD** input (TRIG).



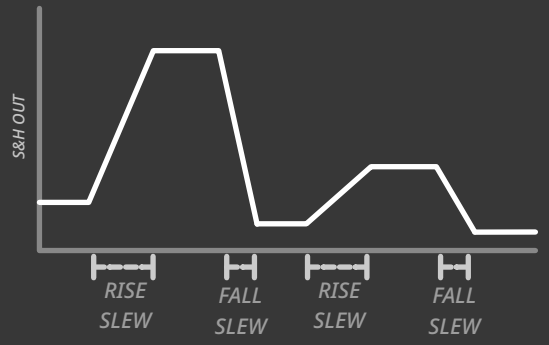
SLEW

When using **SLEW**, the voltage at the **SAMP** input will be sampled continuously as fast as possible, ignoring any input at the **HOLD** input. Note that the sample rate is not generally high enough for audio rate signals, so works best for lower frequency signals.



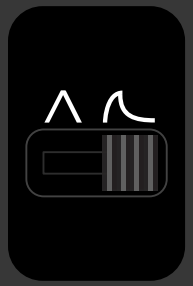
RISE & FALL SLEW

The **SLEW UP (i)** knob and **SLEW DOWN (ii)** knob give you independent control over the rise and fall slew rates in both SAMPLE & HOLD and SLEW modes, ranging from <1ms to 15s.



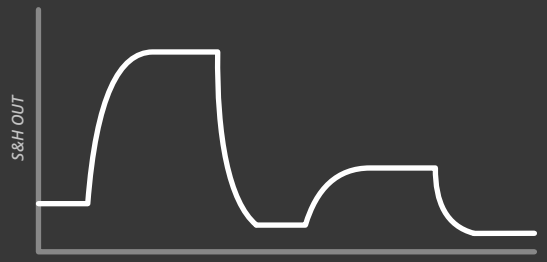
As the **CV i** input is used for the incoming signal, the **CV ii** input will control BOTH rise and fall slew rates. This CV value is summed with the **SLEW UP (i)** knob and **SLEW DOWN (ii)** knob simultaneously.

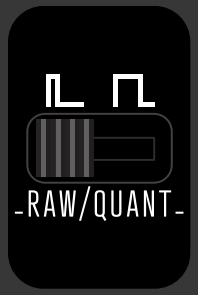
CH C ALT MODE - SAMPLE & HOLD / SLEW continued..



SLEW SHAPE

The SHAPE switch controls the shape of the slew slope, giving you either linear or logarithmic SLEW UP and exponential SLEW DOWN, much like in the other modes.





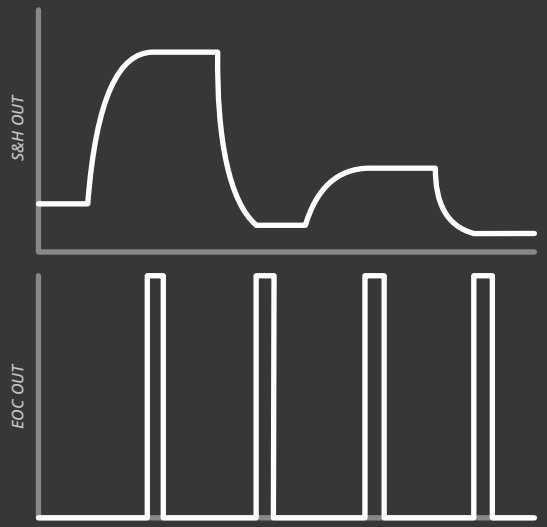
RAW / QUANT

The RAW / QUANT switch controls whether or not the sample is quantised to semitones in the V/Oct range. This only effects the sampled voltage itself - the slew will always be continuous and unquantised.

EOC (END-OF-CYCLE)

When using S&H, the EOC output will output a trigger once the output has reached the sampled value. The delay between the trigger on the HOLD input and the trigger at the EOC output is therefore determined by the rise and fall times.

In Slew mode, when quantised, a trigger will be outputted when the input voltage changes quantisation level, or if a trigger is received at the input. When unquantised, there is no EOC output.



INSTALLATION & SUPPORT

When installing the module, first ensure your power supply is switched off.

Plug the included power cable into the back of the module, making sure that the **RED** line of the power cable is aligned with the **RED** text on the back of the module, as shown in the photo.

This module DOES include reverse polarity protection.

Check the build guide here:
https://www.thonk.co.uk/shop/thonk-synth-t07-triple-mod-kit/

For all customer support please contact us on
support@thonk.co.uk

https://www.thonk.co.uk

https://www.instagram.com/thonksynth