DivSkip

DivKid & Making Sound Machines

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DivSkip is a 4 channel Trigger / Gate processor for Eurorack. Eight modes on four independent channels make this 8 HP module a Swiss Army Knife to chain behind clock utilities, trigger sequencers, logic modules, and LFOs.

It processes their output to overlay rhythmic patterns, randomness, chance, speed ramps, ratchets, or variable gate lengths. A / B outputs allow you to stack multiple modes of logic processing by self-patching the module.

Toggle switches and Click-to-Mute knobs facilitate an immediate, improvisational workflow. The visualization on its LED rings keeps it intuitive and easy to understand.

DivSkip is the first module collaboration between UK musician and video creator DivKid and Making Sound Machines, a duo of synth makers from Germany.

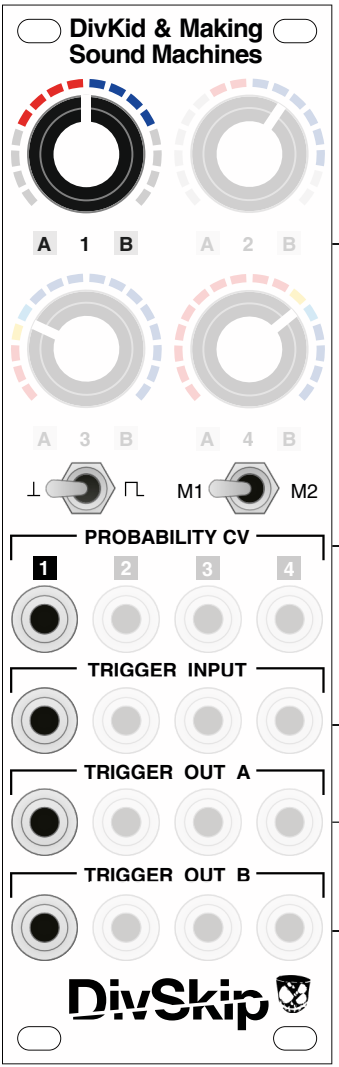
Installation

DivSkip requires a -12V /+12V Eurorack power supply. Connect the 2x5 pin header on the back to the bus board of your Eurorack case using the included ribbon cable. The red stripe on the ribbon cable needs to match the Red Stripe mark on both DivSkip and the bus board.

Power consumption: +12V 45 mA / -12V 15 mA

Find an expanded online version of this manual under **makingsoundmachines.com/divskip/manual/**

Instructions for building the DIY version of this module **makingsoundmachines.com/divskip/build/**



Four Channel Layout

DivSkip offers four identical channels. Each one operates independently and can be set to one of 8 modes, processing a trigger input into a pair of trigger or gate outputs A/B.

The knob is a push potentiometer.

Click it to mute the channel output.

Turn it to fine tune how the channel behaves, adjusting a parameter for the currently selected mode.

Hold it for 2 seconds, then release, to enter mode selection. Point to one of 8 modes, confirm with a click.

You can automate the knob value using **CV**. The control voltage you plug into the jack (range -5V to +5V) is added to or subtracted from the value set with the knob (center is 0V).

Trigger Inputs 1 to 4 are normalled. Any input you plug into Channel 1 is duplicated to the channels on its right. If you plug a second signal into any other input (Ch 2 to 4), it breaks that connection and in turn its signal is duplicated to the channels on its right.

Trigger Outputs A / B are a pair of trigger or gate signals, 0 to 10V level. Their output depends on the mode their channel is set to. Please read the mode descriptions for details.

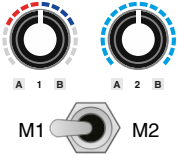
Mode selection menu. Each of the 8 colors represents one mode.

Mode Selection

DivSkip lets you set a mode of operation for each of its four channels. Press and hold the channel knob for 2 sec, then release. The LED display is split into 8 color segments, with the active mode highlighted.

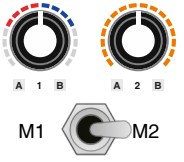
Click immediately to return to the previous mode, or turn to select any other segment and click to confirm. You can select one of the following modes:

1 ● Bernoulli Gate
2 ● Clock Divider
3 ● Turing
4 ● Euclidean Split
5 ● Euclidean Classic
6 ● Ramp / Gate length
7 ● Retrigger
8 ● Pattern



Mutes M1 and M2

DivSkip has two sets of mutes, M1 (cyan) and M2 (orange) that each hold a mute setting for all four channels. This allows you to create two states on the module and switch between them for variation. Flip the switch M1 - M2 to select one or the other.

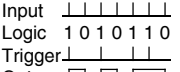


Click a knob to mute. If you set the switch to M1: cyan is muted, M2: orange is muted.

Click a knob to enable or disable mute on a channel. When muted, the LED ring switches from its display to a solid color, either cyan - M1 or orange - M2.

Trigger and Gate Mode

DivSkip accepts both triggers and gates as an input. For the output, you can select whether you prefer for the module to output Triggers of 5ms, or Gates.



Set output to Trigger.

Or set output to Gate.

Trigger Mode evaluates whether the output should be high, and if so, writes a 5ms pulse to the output. Mode 6 and 7 generate multiple pulses per input.

Gate Mode evaluates whether the output should be high, and if so, sets the output high until the next input. Mode 6 and 7 let you set a variable Gate length.

Hold channel knob for 2 sec, then release to enter mode selection. Point knob to Mode 1, confirm with a click.

Mode 1

Bernoulli Gate

The Bernoulli Gate takes an incoming trigger and determines, by means of a coin toss, whether to output it on Trigger Out A or B. The knob position sets the bias, or how likely the coin toss is going to result in A or B respectively. The LED ring shows you the distribution of the expected outcome.

Turn the knob all the way counter clockwise (only red LEDs) and the coin toss will always result in A. Turn the knob clockwise (introducing blue LEDs) and you will increase the chance of the coin toss resulting in B. All the way clockwise, the trigger will always result in B (only blue LEDs are active).

A 1 B

In center position, an incoming trigger will result in A or B with equal probability.

A 1 B

Incoming triggers will always result in out A.

A 1 B

Will often result in B, and occasionally in A.

Trigger or Gate input	●●●●●●●●●●●●●●●●
A: set to 25% chance	●○○●○○○○●○●○○○○○
B: inverse, 75% chance	○●●○●●●●○●○●●●●●

Patch ideas

This mode works great for triggering variations of the same sound - one with short decay on Out A, one with long decay on Out B, like open and closed hihats - randomly switching over from one sound to the other with each input.

In Gate mode, you will get high and zero voltage switching randomly with every input - great as CV for opening and closing cutoff on a filter, or fold on a wavefolder, for sudden changes in timbre.

Self-patch from one of the Outputs to the Trigger Input of another channel to randomly advance the receiving channel, and set how likely that is to happen.

Enter mode selection. Point knob to Mode 2, confirm with a click.

Split sequence A / B:

When centered, both dividers are 8 steps long. Both sequences have advanced 5 steps.

A - one output every 4, B - one every 12 steps.

Divider A is 11 steps, and B is 5 steps long.

Mode 2

Clock Divider

The Clock Divider mode lets you define how many incoming trigger events are required for one trigger output to occur on Trigger Out A or B.

The knob position sets the clock division, splitting the LED display into the number of steps it takes for Channel A (red) and B (blue) to produce a trigger. A highlight for each Channel (orange for Channel A, and cyan for Channel B) indicates when the next output is going to occur. Each trigger input advances the clock divider by one step.

Input	●●●●●●●●●●●●●●●●●●●●●●●●
Divider of 4	●○○○●○○○●○○○●○○○●○○○●○○○●
Divider of 6	●○○○○○●○○○○○●○○○○○●○○○○○●
Divider of 12	●○○○○○○○○○○○●○○○○○○○○○○○●

Patch ideas

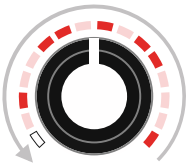
A clock divider in itself can hold musical value. Take a sixteenth note clock and divide it by 4, and you get a 4/4 Kick drum pattern. Divide it by 3 or 6, and you will get syncopated repeats that line up periodically with a beat. Or divide it by (multiples of) 5 or 7 to get a downbeat for more exotic meters.

Self-patch a short Clock Divider of 2 or 4 to the input of another DivSkip channel to have the receiving channel advance at a slower regular interval.

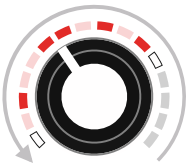
A longer divider is great for recurring events that stick out in a pattern. Use a clock divider of 12 or 16 to trigger something every 3 or 4 beats - such as a ramp or retrigger event on another DivSkip channel.

Enter mode selection. Point knob to Mode 3, confirm with a click.

Length Random



When centered, the sequence is 16 steps long. A plays lit steps, B plays dimmed steps.



Knob under 12 o'clock: Set length of sequence

Knob over 12 o'clock: Gradually more random

Mode 3

Turing

Turing Mode generates a random pattern, giving you control over loop length and the randomness of newly introduced steps, as made popular in Eurorack by Music Thing Modular's Turing Machine.

The LEDs show loop length (dimly lit), and whether a step is set (red highlight) and fires on Channel A, or not set and fires on Channel B. A trigger input will right-hand shift the sequence by one step.

From 0% to center position, the knob sets pattern length (1-16 steps), looping a locked sequence. From center to 100%, it becomes gradually more likely that random steps are added to the pattern.

Imagine this mode working like a faucet (knob) and a sink (sequence). Turn up the knob past 12 o'clock to let random events drip or flow in. Turn it down and play with the mix you created. Turn it all the way down to drain the sink into a small puddle of events.

Patch ideas

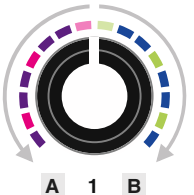
Turing Mode draws its appeal from a range of being totally random, with the knob set to 100%, to being in a repeating loop of variable length, with the knob at 12 o'clock and counter-clockwise.

This generates great patterns for syncopated Kicks, or, making use of the inverted output A and B, pairs of high and low percussion like congas or toms.

Patched to another DivSkip input, the receiving channel advances at looped, irregular intervals, or totally at random.

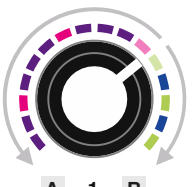
Enter mode selection. Point knob to Mode 4, confirm with a click.

Split sequence A / B:



When centered, both dividers are 8 steps long. The pattern is a 3:3:2 clave on A / B.

A - 3 steps, length 6,
B - 3 steps, length 10.



Rhythm A is 11 steps, and B is 5 steps long.

Mode 4

Euclidean Split

Euclidean Rhythms

The Euclidean algorithm is a way of dividing an integer length into the most even distribution of whole-numbered segments.

While this may sound abstract, to musicians it will be instantly familiar: dividing the length of a 4/4 bar into four segments results in a pattern of 4 quarter notes. Dividing it into six results in two groups of 3:3:2 patterns, or the familiar clave rhythm:

4 steps, length 16 ● ○ ○ ○ ● ○ ○ ○ ● ○ ○ ○ ● ○ ○ ○
6 steps, length 16 ● ○ ○ ● ○ ○ ● ○ ● ○ ○ ● ○ ○ ● ○

DivSkip has two modes generating Euclidean rhythms:

Euclidean Split 2 sequences, split length, 3 steps set
Euclidean Classic select patterns with length 1-16

Euclidean Split

Euclidean Split Mode works similar to Clock Divider Mode: you set a split length for sequence A (violet) and B (blue) with the knob. An euclidean rhythm with three steps (A: pink, B: cyan) will then be distributed on top of that length. A highlight advances through the sequence (A: bright pink, B: bright cyan) to indicate the currently active step.

Note: In this mode, the number of steps are always three, for a range of intricate Clave-like patterns.

A trigger in advances the highlight on each side by one step. Every time it lands on a set step, a trigger occurs on the corresponding Trigger Out (A or B).

Enter mode selection. Point knob to Mode 5, confirm with a click.

Single Sequence:

A plays green steps, B plays blue steps. White denotes length, highlight is current step.

A pattern with 4 active steps and a length of 6.

The longest pattern: 5 steps and length 16.

Mode 5

Euclidean Classic

In Euclidean rhythms, steps (numerator) over length (denominator) make up a fraction, which can often be simplified (reduced), while resulting the same pattern:

4 steps, length 16 ●○○○●○○○●○○○●○○○
3 steps, length 12 ●○○○●○○○●○○○
2 steps, length 8 ●○○○●○○○

Euclidean Classic

In Euclidean Classic Mode, Channel B produces the inverse pattern of A, so it is possible to eliminate a large number of combinations and be left with a smaller number of unique and interesting patterns.

Turning the knob selects one of 32 Euclidean rhythms. Here are the patterns we chose:

4 1 ●○○○
2 ●○●○
3 ●●●○
5 1 ●○○○○
2 ●○●○○
3 ●○●○●
6 1 ●○○○○○
2 ●○○●○○
3 ●●○●●○
5 ●●●●●○
7 1 ●○○○○○○
2 ●○○●○○○
3 ●○●○●○○
8 1 ●○○○○○○○
3 ●○○●○○●○
5 ●○●●○●●○
9 1 ●○○○○○○○○
4 ●○●○●○●○○
10 3 ●○○●○○●○○○
7 ●●○●●○●●○●
11 3 ●○○○●○○○●○○
4 ●○○●○○●○○●○
12 5 ●○●○○●○●○○●○
7 ●○●○●●○●○●●○
13 3 ●○○○●○○○●○○○○
4 ●○○●○○●○○●○○○
14 3 ●○○○○●○○○●○○○
5 ●○○●○○●○○●○○●○
15 4 ●○○○●○○○●○○○●○○
7 ●○●○●○●○●○●○●○○
16 3 ●○○○○●○○○○●○○○○○
5 ●○○●○○●○○●○○●○○○

Enter mode selection. Point knob to Mode 6, confirm with a click.

Split sequence A / B:

Center: Trigger speed ramps up, then down. (Switch set to Trigger)

Trigger out speeds up

Trigger out slows down

Mode 6

Ramp / Gate length

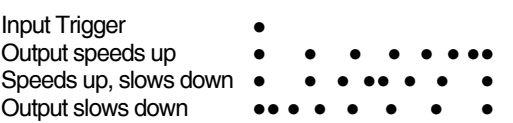
Timed Modes

Ramp and Retrigger are special modes: with the switch set to Trigger mode, a trigger input produces a whole sequence of timed output events. In Gate mode, you can set how long the output is held high.

Ramp

Ramp mode produces 16 trigger events for which the time interval between two triggers will speed up, slow down - or speed up, plateau, then slow down. You can adjust the speed ramp using the knob.

In Trigger mode out A and B carry the same signal.



In Gate mode a trigger in produces a gate on out A, then after a time switches over to a gate on out B.

Gate B only starts once gate A is completed.

Patch ideas

Triggered every half or quarter note, speed ramps can produce off-kilter shaker or hihat patterns. Used sparsely, they can add cool rhythmic accents.

Enter mode selection. Point knob to Mode 7, confirm with a click.

Split sequence A / B:

When centered, both out A and B produce a burst of 8 triggers.

A - 4, B - 12 retrigger.

A - 14, B - 2 retrigger.

Mode 7

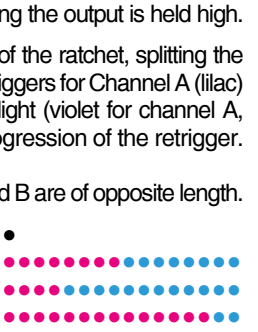
Retrigger

For every trigger input, Retrigger mode produces a number of fast retrigger events, ranging from a flam (two triggers) to a prolonged drum roll. In Gate mode, you can set how long the output is held high.

The knob sets the length of the ratchet, splitting the LEDs into a number of retriggers for Channel A (lilac) and B (turquoise). A highlight (violet for channel A, cyan for B) marks the progression of the retrigger.

In Trigger mode out A and B are of opposite length.

Input Trigger
Burst of 8 on A and B
Burst of 4 on A, 12 on B
Burst of 14 on A, 2 on B



In Gate mode a trigger in produces a gate on out A, then after a time switches over to a gate on out B. Compared to Ramp mode, this mode produces shorter overal timespans, but you get finer control.

Input Trigger
A: short gate, B: long
A and B same length
A: long gate, B: short

Patch ideas

Retriggers are a great tool for producing glitches, flams and drum rolls. Self-patched into another DivSkip channel input, they will advance the target channel by a number of steps at once.

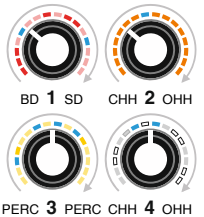
Use variable gate length to play with timing in patches using ADSR envelopes and VCAs.

Enter mode selection. Point knob to Mode 8, confirm with a click.

Mode 8

Pattern

Pattern mode offers a number of curated rhythm patterns for creating beats on the fly, ranging from Electro and Disco to House and Techno.



24 patterns per knob, Ch 1 has typical Kick patterns on out A (red) and Snare on B (cyan).

Patch a sixteenth note (4 ppqn) clock into the Trigger input. Each channel has 24 patterns of 64 steps (4 bars) for a pair of instruments on out A /B. Use the knob to select patterns for Channels 1-4.

Channel 1	A ●	Kick	B ●	Snare
Channel 2	A ●	Closed Hihat	B ●	Open Hihat
Channel 3	A ●	Percussion 1	B ●	Percussion 2
Channel 4	A ○	Closed Hihat	B ●	Open Hihat

Closed Hihat every 8th note, Open Hihat on 1.

The LEDs display the steps for out A (red, orange, yellow, white), overlaid with the steps for out B (cyan). The pair plays as a linked sequence of 4x16 steps. A highlight (bright cyan) denotes the current step. Once a bar is completed, the display flips to the next.

Channel 1 A ● Kick	●○○○○○●●○○○●○○●●
Channel 1 B ● Snare	○○○○●○○○○○○○●○○●
Both A / Bcombined	●○○○●○●●○○○●●○●●

Perc 1 plays offbeats, Perc 2 is syncopated.

Patch ideas

Each Channel can be clocked separately. Since a pair of out A and B plays as a locked sequence, Channels 1-4 do not necessarily need to play in sync to yield musical results.
Patch a 16th note clock into Channel 3 set to Bernoulli mode, occasionally skipping a step, then use its output to advance a Hihat pattern on Channel 4 to create cool shifting pattern variations.