01/IV by The Division Department is a 4-channel analog drum synthesizer capable of synthesizing a wide palette of sounds. From usual drum hits like kicks, toms, snares, claps, hi-hats and cymbals to unusual and complex sounds like drones and weird modulated creations. The provided MIDI implementation lets the 01/IV be triggered via MIDI, which makes it a powerful piece of equipment in a setup.

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The concept of 01/IV is unique as it has four identical voice channels with all the power of synthesizing various type of drum sounds. Any channel can play a kick, a cymbal, toms and congas, or even a bassline. Channels can even be combined, can modulate each others in pairs (FM) or can be layered to form complex sounds. All these achieved with a flexible routing system composed of slide switches and carefully calibrated synthesizer elements.

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01/IV inherited genes from legendary drum machines and drum synthesizers like the Pollard Syndrum, the Roland 808 & 909, and Pearl Syncussion SY-1. It has a true analog audio path, but also added a very flexible digital modulation system of a multi-function LFO, ramp and retrigger generator.

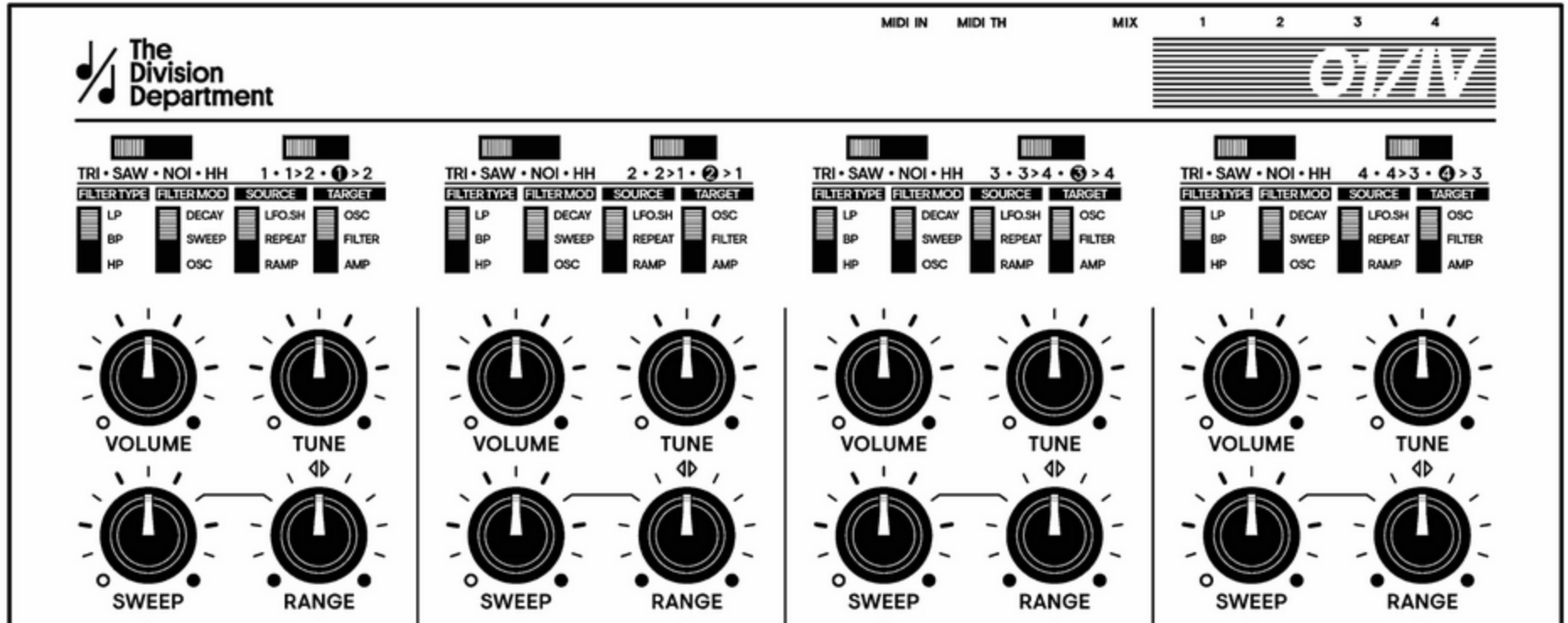
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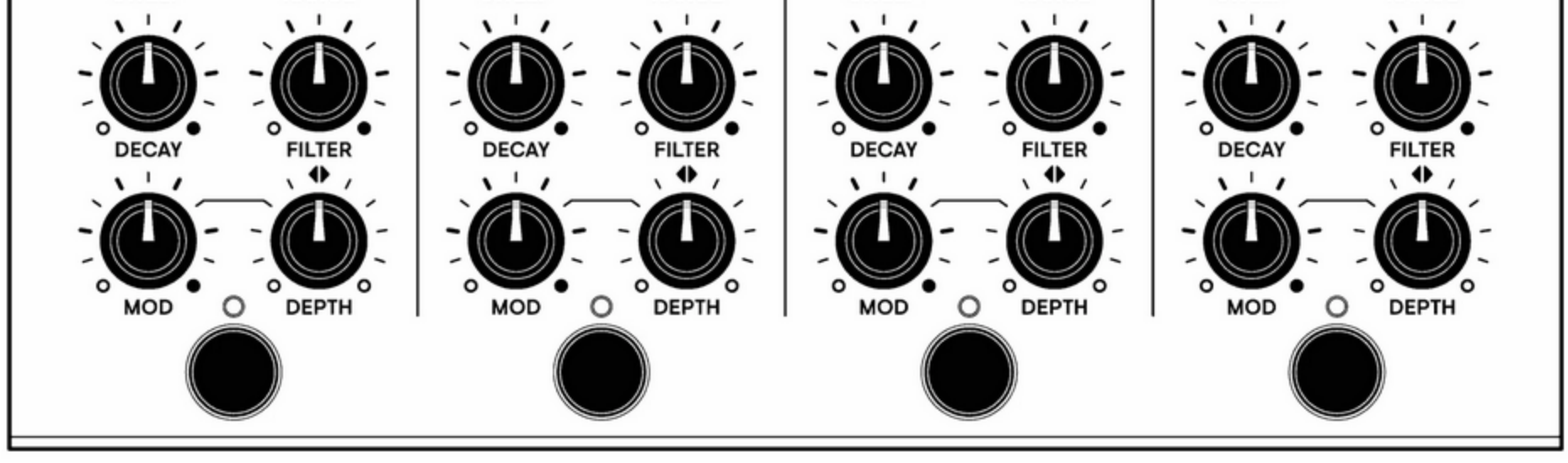
Key Features:

60 panel controls: Knobs - Switches - Triggers Buttons
4 Voices - Chromatic via midi
Drone Mode
Midi note triggers and partial Midi CC controls
Mix / Individual outputs
Compact size / Light weight

INTRODUCTION

· INTRODUCTION - Overview





The 4 identical voice channels are organized for a clear and accessible control surface. 8 knobs and 6 switches plus the trigger button per channel sums up to a total of 60 panel controls. The 01/IV is compact, light weight, easy to carry. It ships with a AC/DC adapter and a MIDI adapter.

The following chapters will help you understand its synthesis methods, overall posibilities, and usage.

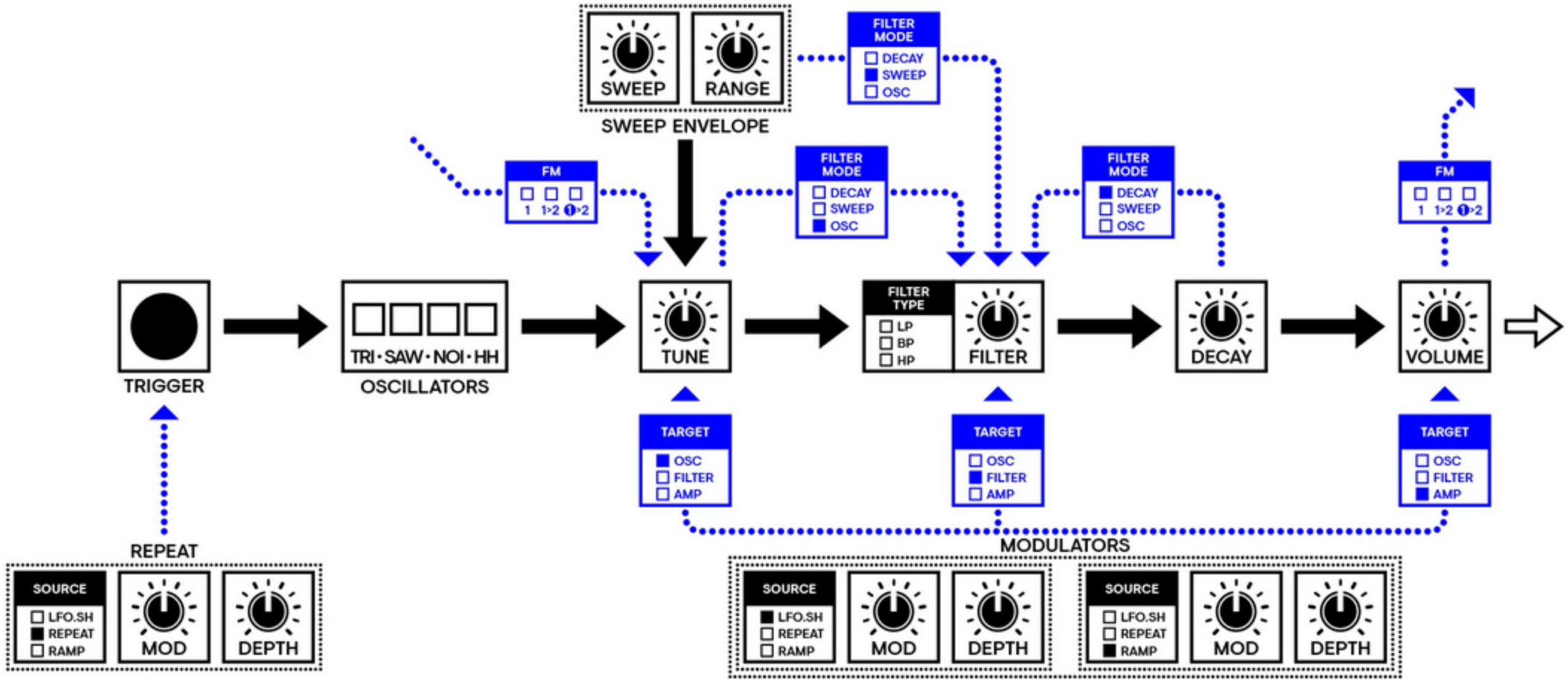
· INTRODUCTION - Workflow

The 01/IV can be used standalone while using the trigger buttons or can be sequenced by other MIDI devices.

The workflow is flexible, either structured or free-form. Quick access of all functions without menu diving or patch cabling lets you focus on sound creation and tweaking.
Sounds can be defined individualy per voice. Another option is to create more sophisticated sounds by stacking and triggering the 4 voices together. The 01/IV can also be used in drone mode, generating evolving textures without the need of an external sequencer. Lastly, sequencing the 01/IV with chromatic MIDI, sending MIDI CC messages and using diverse functions such as repeat, can lead to very complex and sometimes unexpected patterns.
The key is practising, and experimenting.

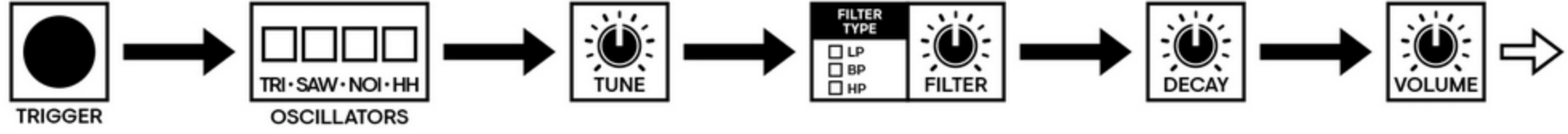
SYNTHESIS

· SYNTHESIS - General


SWEEP
RANGE
SWEEP ENVELOPE
FILTER MODE
DECAY
SWEEP
OSC
FM
1 1>2 1>2
FILTER MODE
DECAY
SWEEP
OSC
FILTER MODE
DECAY
SWEEP
OSC
FM
1 1>2 1>2
TRIGGER
TRI·SAW·NOI·HH
OSCILLATORS
TUNE
FILTER TYPE
LP
BP
HP
FILTER
DECAY
VOLUME
TARGET
OSC
FILTER
AMP
TARGET
OSC
FILTER
AMP
TARGET
OSC
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MODULATORS
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SOURCE
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REPEAT
RAMP
MOD
DEPTH

The synthesis path includes various sound sources and modulation possibilities that favor sonic explorations.
Classic analog audio path with Voltage Controlled Oscillator - Voltage Controlled Filter - Voltage Controlled Attenuator - Mixer. Selection of 2 analog oscillator waveforms and 2 digital noise sources including a TR-808 like hi-hat noise. Multimode filter with low-pass, band-pass, high-pass option.
Two envelopes, one for pitch with up or down direction and one for amplitude with variable hold time. For the filter, either of the two envelopes can be selected as modulation source or - as a third option - the oscillator can modulate the filter frequency for audio range filter excitement. Powerful LFO for dynamic variations with frequency of 0.03 Hz to 2000 Hz, selectable waveform of triangle, ramp, sample and hold, just one shot or cycling. LFO can be routed to VCO, VCF, or VCA.

· SYNTHESIS - Basic Routing



TRIGGER
The trigger button is used to preview the sound

OSCILLATORS
There are 4 waveforms on each voice to choose from.
TRI: Triangle waveshape (analog)
SAW: Sawtooth waveshape (analog)
NOI: White noise (digital - common for all voices)
HH: Hi-hat noise (digital - common for all voices)

TUNE
The TUNE knob allows for base frequency adjustment of the oscillator between 18 Hz - 3000 Hz. When a noise type waveform is selected, it controls the filter cutoff thus allowing to shape the noise.

FILTER
The filter type can be selected via Slide Switch.
LP: Low Pass (12db slope) useful for bass oriented sounds
BP: Band Pass (6db slope) with middle frequencies enphasized
HP: High Pass (12db slope) useful for high frequency tones

The FILTER knob allows for dynamic cutoff frequency adjustment of the filter.

DECAY
The DECAY knob sets the duration of the sound produced.
The range is between 1ms - 5s.

VOLUME
The Volume knob sets the output level of the produced sound.

SWEEP ENVELOPE

The sweep envelope is used to create a decreasing or increasing pitch in the attack section of the sound. The combination of the Sweep and Range knobs allow to shape the effect.

- Sweep modifies the duration of the envelope.
- Range affects the intensity of the envelope. Left: increasing - Right: decreasing.

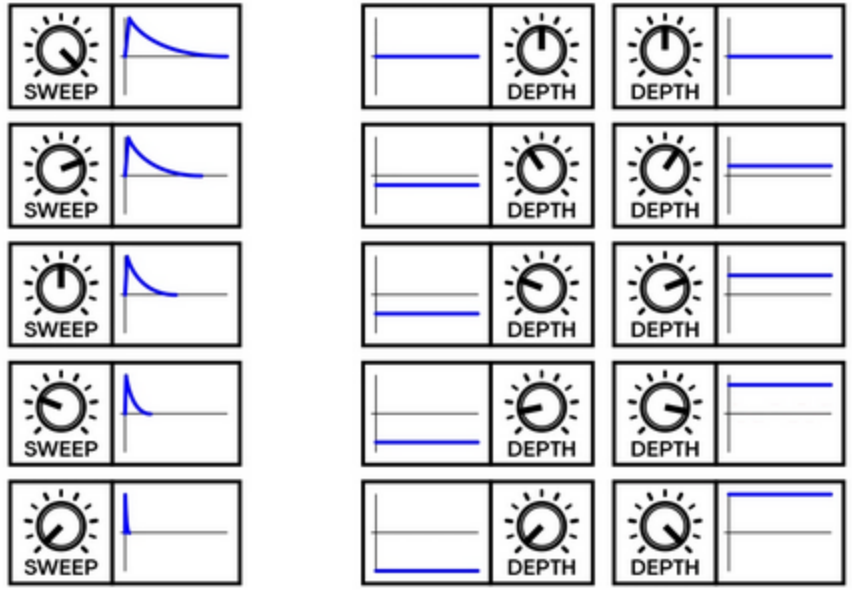
REPEAT

The repeat function can be activated to generate multiple triggers: rolls, flams, diddles. This feature is useful when emulating handclaps, snares or can be used in more unconventional sound creations.

- Mod sets the interval between the repeats
- Depth defines the duration of the effect. Left: fading out - Right: constant.

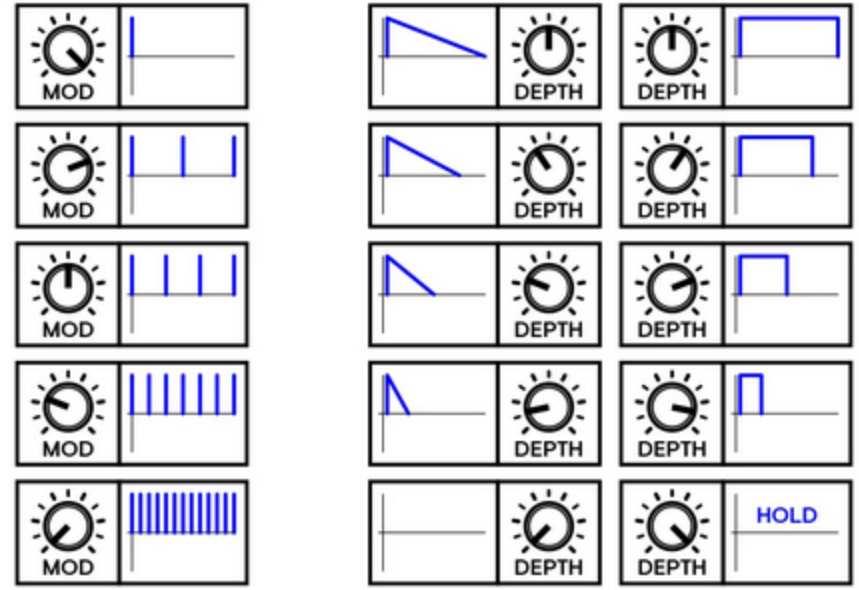


SWEEP ENVELOPE

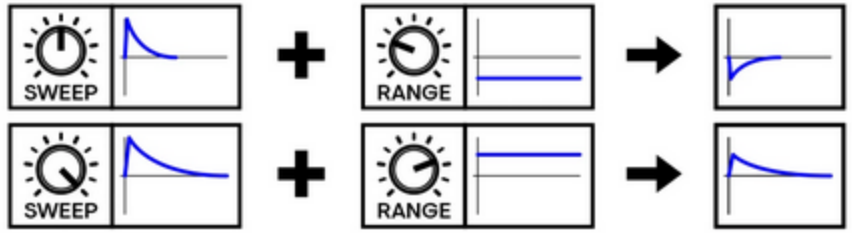




REPEAT

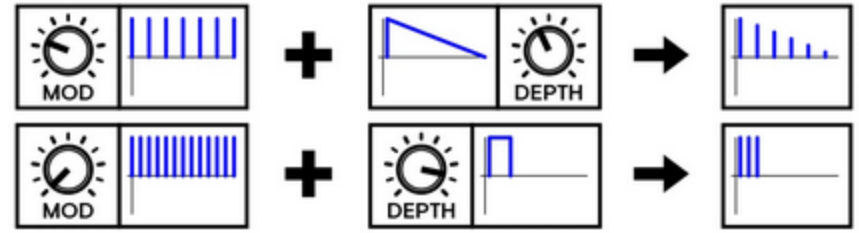


Sweep Envelope operation



Examples for the Sweep Envelope

Repeat Envelope operation



Examples for the Repeat Envelope

• SYNTHESIS - Modulators: LFO/S&H - Ramp

LFO / S&H

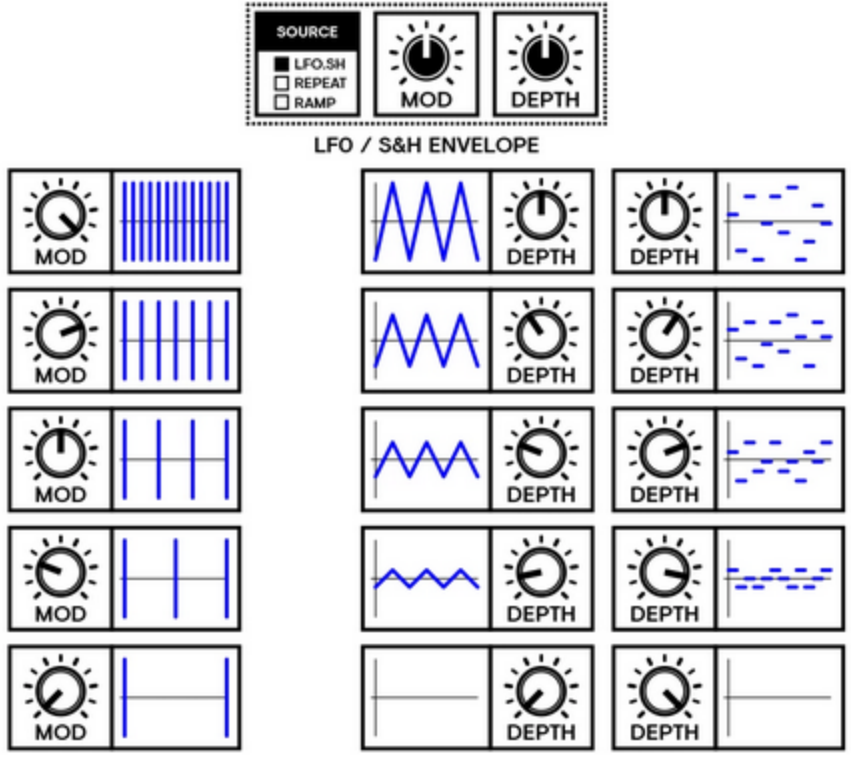
The digital LFO and S&H envelope can modulate certain parameters of the sound. The LFO waveform is by default set to triangle, other shapes are available via a dedicated midi CC. LFO can reach the audio range.

- Mod sets the speed of the oscillation.
- Depth defines the intensity of the effect. Left: LFO - Right: S&H.

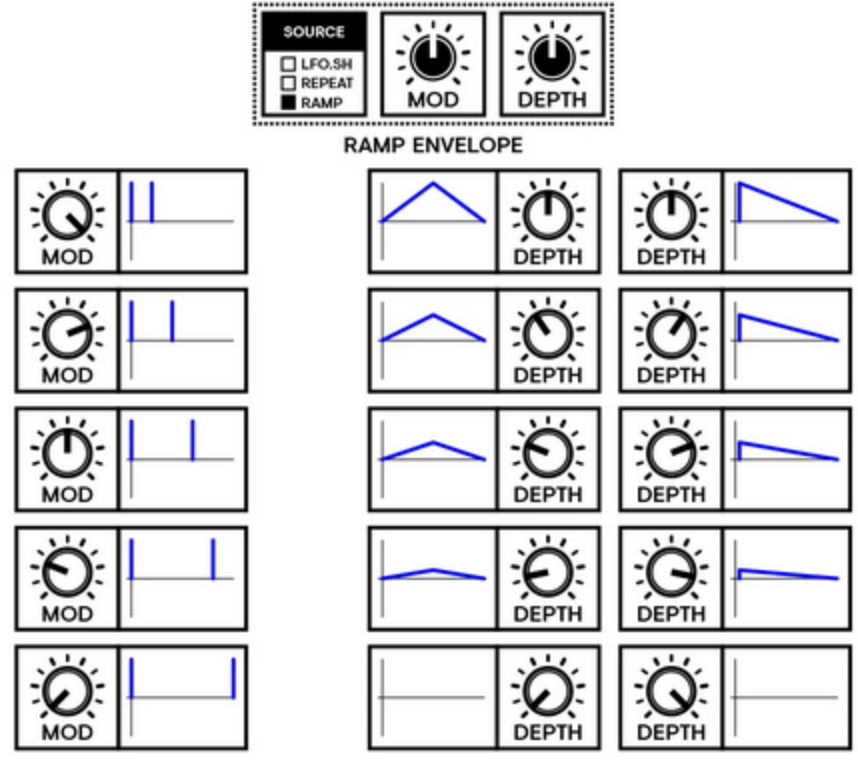
RAMP

The ramp is a one shot envelope that is sync'ed to the trigger, that can be can be routed to VCO, VCF, or VCA. It is usefull to create more defined filter or tune effects.

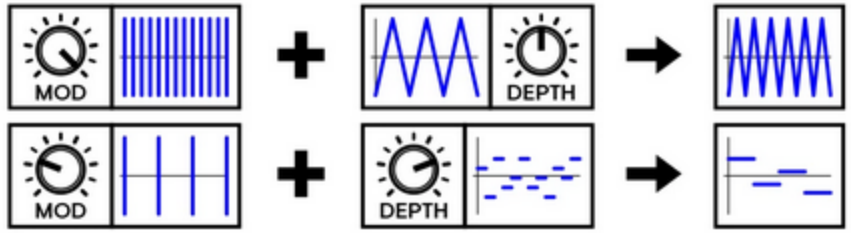
- Mod sets the length of the envelope.
- Depth defines its intensity. Left: triangle - Right: ramp.



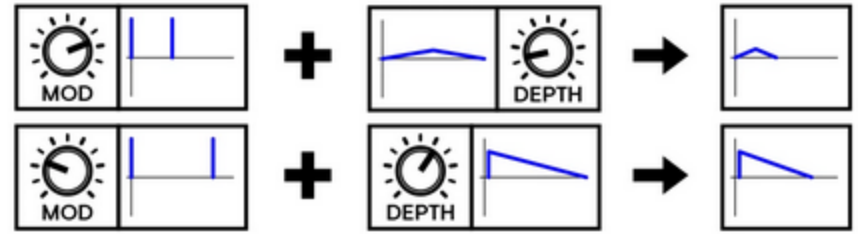
LFO / S&H Envelope operation



Ramp Envelope operation

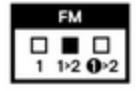


Examples for the LFO / S&H Envelope



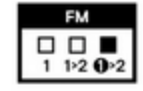
Examples for the Ramp Envelope

· SYNTHESIS - Voice to Voice FM



VOICE TO VOICE FM

Voices can modulate each other. This experimental feature is useful in drone mode as well as in a more classic usage, as it adds some sound interferences when 2 voices are emitting sounds at the same time. Voice 1 & 2, and voice 3 & 4 can be linked and cross-feed each other. Results are sometimes unpredictable, unexpected harmonics and noises can occur, which can add character to the patterns. When the FM switch is set at the middle position, the output of the voice is send both to the Mix output and to the linked voice.



VOICE TO VOICE FM - MUTE

With the FM switch set at the right position, the output of the voice is only sent to the linked voice. In some cases, and with particular settings, some high frequency noises can remain audible.

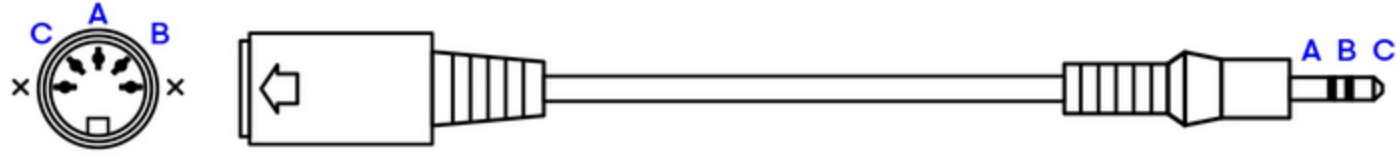
· SYNTHESIS - Drone Mode

DRONE MODE 1
With the target switch set on AMP, the VCA is released and the sound is heard continuously. Pitch, filter or AMP itself can be driven by LFO or Ramp. This mode produces interesting results used in conjunction with cross voice FM.

DRONE MODE 2
Another option for drones is to use the Repeat mode set to Hold. By setting knobs Depth and Mod to their maximun postions. The decay becomes infinite. It is then possible to manually switch on and off sounds.

MIDI

· MIDI - Operation



MIDI ADAPTER

For MIDI control, use the included MIDI Adapter (DIN to 3.5mm) to plug your MIDI sequencer, controller or DAW to the MIDI Input on the 01/IV.

The 01/IV receives MIDI messages and CCs on a single MIDI channel.
By default, the 01/IV is set to MIDI Channel 1, but it can be set to receive on any MIDI Channel (1-16).

MIDI CHANNEL

To change the MIDI Channel:

1. Connect your MIDI sequencer, controller or DAW to the 01/IV.
2. Adjust the sequencer, controller or DAW to transmit on the desired MIDI Channel.
3. Switch on the 01/IV while pressing down the trigger button of voice 1. The 01/IV will be in MIDI channel learn mode.
4. Once in learn mode, send MIDI data from your sequencer, controller or DAW. The 01/IV will set its MIDI channel to match the channel being sent.

Changes to the MIDI channel are remembered on power down.

· MIDI - Implementation

MIDI

The 01/IV responds to both MIDI Notes and MIDI Control Change CC messages.
Some additional synthesis parameters are available via CC messages, such as LFO shape, or HH oscillator tune, amongst others.
This allows to create very rich, complex evolving sounds and rhythmical sequences.

The 01/IV has a MIDI thru port for plugging other MIDI devices.

MIDI NOTES

Each voice of the 01/IV can be played chromatically within a range of 2 octaves.
The target slide switch needs to be positioned on OSC. Repeat function is not available when playing sounds chromatically.

Voice 1: MIDI Notes 0 to 23 (C-2 to B-1)
Voice 2: MIDI Notes 48 to 71 (C+2 to B+3)
Voice 3: MIDI Notes 72 to 95 (C+4 to B+5)
Voice 4: MIDI Notes 96 to 119 (C+6 to B+7)

MIDI CC

MIDI CC messages per voice include:
LFO Shape (Triangle - Saw - Reverse Saw - Square - One shot - S/H)
LFO Speed - LFO Depth - LFO center
Repeat interval - Repeat Fade
Hold Time

AUDIO

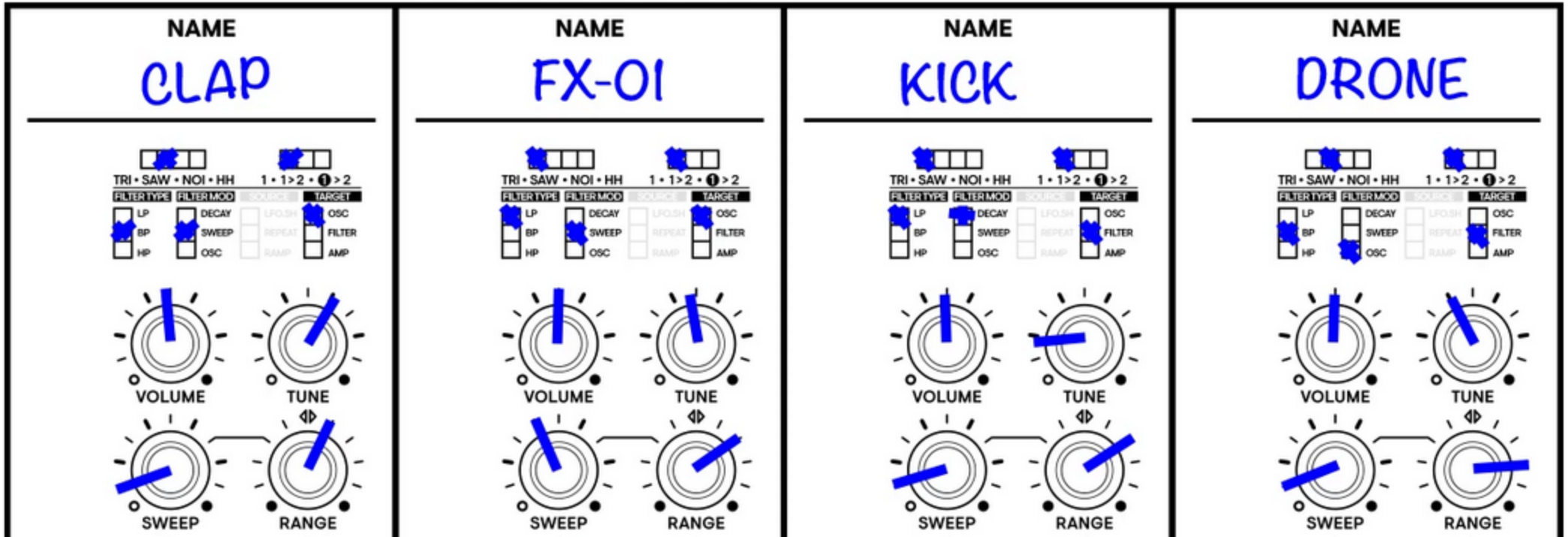
· AUDIO - General

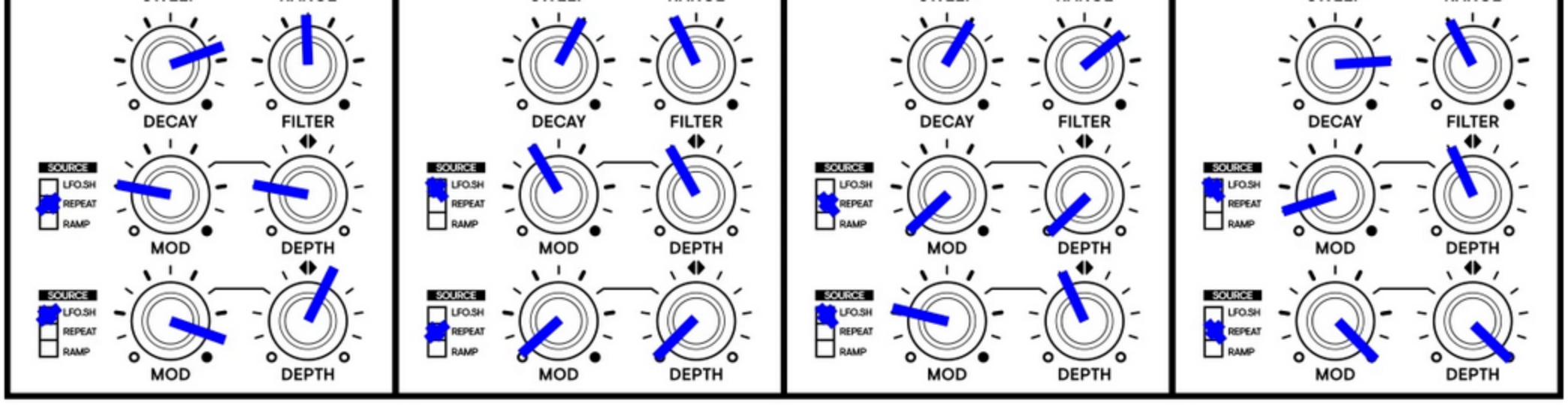
MIX OUT
All the voices of the 01/IV are combined to the Mix output (3.5mm jack mono).

INDIVIDUAL OUTS
Each voice has a dedicated output (3.5mm jack mono), plugging a cable in the individual output removes the voice from the general mix output.
This is particularly useful when using external effects to further process the individual sounds.

GETTING STARTED

Here's a few examples of sound patches to get you starting exploring with the 01/IV.





BLANK SHEET

Write down your own patches with the provided sheet.
Download the empty patch sheet in pdf format **here**

SPECIFICATIONS

· SPECIFICATIONS - General

HARDWARE
Aluminum casing
Dimensions: W 260 × D 178 × H 35 mm (10.25" × 7" × 1.4") (including knobs)
Weight: approximately 1 kg
Maximum operating temperature: +40C (+104F)

CONNECTIONS
MIDI In/Thru via 3.5mm stereo jacks
Main outputs level: +14 dBu peak-to-peak
Output impedance: 1K Ω unbalanced
1 × 3.5mm audio out mono jacks - Mix out
4 × 3.5mm audio out mono jacks - Individual Voices out

ELECTRICAL
Power inlet: Center positive 5.5 × 2.5 mm barrel jack, 12 V DC, 1 A
Unit power consumption: 5 W typical

· SPECIFICATIONS - Important safety and usage instructions

WHEN USING THE 01/IV, THESE BASIC PRECAUTIONS SHOULD BE FOLLOWED AT ALL TIMES

This product, in combination with an amplifier and speakers or headphones, is capable of producing sound levels that could cause permanent hearing loss.
Do not operate for a long period of time at a high volume or at a level that is uncomfortable.

The 01/IV should be connected to a power supply only with the provided adapter.
Connect the 01/IV to an easily accessible electrical outlet close to the unit. Protect the power cord from being walked on or pinched.
Unplug the 01/IV when it is left unused for long periods of time, or during lightning storms.

Make sure you place the unit on a stable surface before use.
Do not use the 01/IV near water. Care should be taken so that liquids are not spilled into the 01/IV.
Keep the 01/IV away from heat sources, such as radiators, heat registers, or any other equipment producing heat.
Never use aggressive cleaners on the casing. Remove dust and dirt with a soft, dry and non-abrasive cloth.

The 01/IV should be only serviced by qualified technicians.
Servicing is required when the 01/IV has been damaged in any way, when liquid has been spilled or the 01/IV has been exposed to rain or moisture, when it does not operate normally, or when it has been dropped.

DO NOT OPEN THE CHASSIS - THERE ARE NO USER SERVICEABLE PARTS INSIDE - REFER ALL SERVICING TO QUALIFIED TECHNICIANS ONLY