

# DOEPFER

## Superbooth 2018



# Dark Energy III



Dark Energy III is the successor of Dark Energy II. The main differences between II and III are an improved VCO (no warm-up period, additional triangle waveform, wider frequency range), resettable LFOs, improved ADSR and a lot of internal access points for DIYers. The favored filter of the Dark Energy II has been unchanged.

Dark Energy III is a monophonic stand-alone synthesizer with USB and Midi interface. The sound generation and all modulation sources are 100% analog, only the USB/Midi interface contains digital components. It is built into a rugged black metal case with wooden side plates. High quality potentiometers with metal shafts are used and each potentiometer is fixed to the case (no wobbly shafts and knobs):

- VCO:
  - Triangle based, 10 octaves frequency range
  - Tune control and Octave switch  $-1 / 0 / +1$  octave
  - FM input with selectable source (ADSR / off / LFO1)
  - Manual PW control and PWM with selectable source (ADSR / off / LFO2) for rectangle wave
  - Waveform switch
  - Additional external CV inputs for frequency and pulsewidth of the rectangle
- VCF:
  - 12dB Multimode VCF with continuous mode control (lowpass – notch – highpass - bandpass)
  - Manual Frequency control and FM with selectable source (ADSR / off / LFO2)
  - Resonance control, up to self oscillation
  - Additional external CV and external audio input
- VCA:
  - Linear control scale
  - Manual Amplitude control and AM with selectable source (ADSR / off / LFO1)
  - Additional external CV input
- Envelope:
  - Improved ADSR type with 3-position range switch
  - Additional external gate input
  - Control LED
- LFO:
  - Two resettable LFOs (external Reset inputs)
  - manual frequency control and 3-position range switches
  - Waveform switches triangle/square
  - LED controls

Lots of internal access points for DIY applications or modification of the socket functions (e.g. VCO outputs triangle, sawtooth, rectangle, hardsync, softsync, linear FM, VCF outputs L/H/B, ADSR output and A/D/S/R CV inputs, LFO outputs triangle and square)



## Polyphonic Modules



### A-111-4 Quad VCO

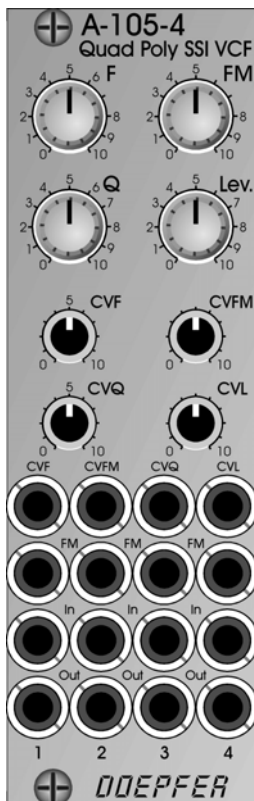
A-111-4 contains four precision VCOs with 10 octaves range and has individual controls, inputs and outputs for each VCO available as well as common controls and outputs.

Controls, inputs and outputs (individual for each and common for all VCOs):

- 1V/Octave CV input
- Octave switch (+1/0/-1 octave)
- Tune control (range internally adjustable by jumpers: 2 semitones / 1 octave / 4 octaves)
- Modulation CV input (common unit is fixed to FM)
- Modulation destination FM or PWM (only for the individual VCOs)
- Modulation intensity
- Triangle output
- Sawtooth output
- Rectangle output
- Sync input (internally selectable hard or soft sync)

Typical application:

polyphonic or paraphonic patches (i.e. all four VCOs processed by one VCF/VCA)  
fat sounding monophonic VCO



### A-105-4 Quad SSM VCF

A-105-4 is our first polyphonic filter and contains four identical 24dB Lowpass filters (SSM2044 type). It has available common manual controls and CV inputs with attenuators for these parameters:

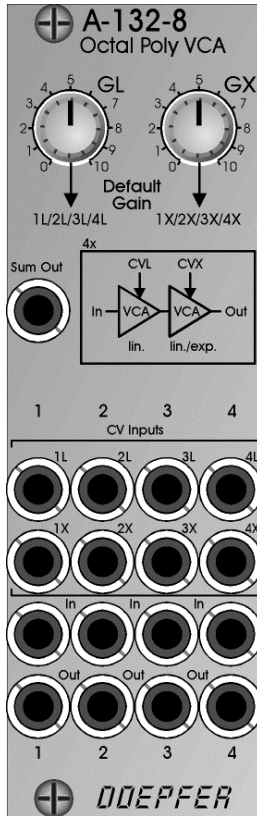
- Frequency (F)
- Frequency Modulation Intensity (FM)
- Resonance (Q)
- Audio Input Level (L)

Each filter has available a separate FM input as well as an Audio Input and Output. The FM input is typically connected to the output of the associated envelope generator (e.g. A-141-4). The envelope amount for all four filters is controlled by the FM knob and the CVFM input by means of four built-in VCAs, which are controlled by the FM control and CVFM input. This allows also voltage control of the envelope amounts. In addition common frequency modulation for all filters is possible (e.g. by an LFO). For this the CVF input with attenuator can be used.

The range of the audio input level control (L) allows also clipping/distortion with typical A-100 audio levels (e.g. from A-111-4) at the filter inputs. Even this parameter is voltage controllable as well as the resonance (Q).

Application: polyphonic patches (four VCFs with same parameters)

## Polyphonic Modules



### A-132-8 Octal VCA

A-132-8 contains four VCA pairs. Each pair includes two daisy-chained VCAs. One VCA has a linear control scale, for the second VCA linear or exponential control scale can be chosen by means of jumpers.

We decided to provide two VCAs for each voice because usually one VCA is required for loudness envelope and a second one for velocity (or another function).

For each VCA these in/outputs are available:

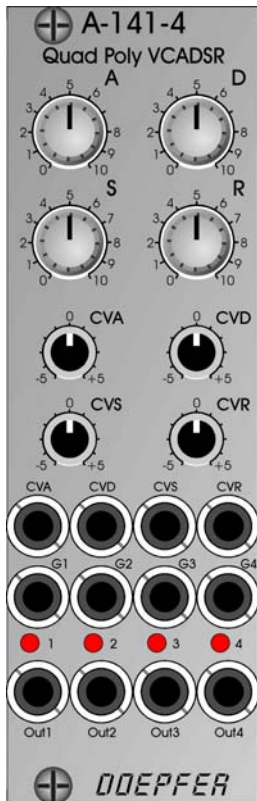
- CV Input VCA 1 (1L...4L)
- CV Input VCA 2 (1X...4X)
- Audio Input
- Audio Output

An Audio Sum Output is also available.

The module features two Initial Gain controls, that enable the opening of the first (GL) and/or second VCA (GX). This is necessary when the VCA in question is not in use (i.e. no external CV available). Otherwise the VCA would close. They are also useful for testing polyphonic patches.

Application:

polyphonic patches with two VCAs per voice.



### A-141-4 Quad VCADSR

A-141-4 contains four ADSR type voltage controlled envelope generators with common manual controls and CV inputs with polarizers for the parameters Attack (A), Decay (D), Sustain (S) and Release (R).

Each of the four envelope generators has available a gate input, a control LED and an envelope output.

Application:

polyphonic patches (four envelope generators with the same envelope parameters to control four VCFs, VCAs or other modules)

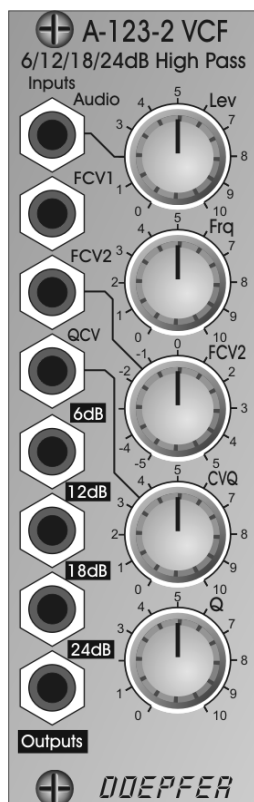
## Polyphonic Modules



### A-190-5 Polyphonic CV/Gate Interface

A-190-5 is a Midi/USB interface that generates 4 gate signals and 12 control voltages to control up to four synthesizer voices (i.e. VCOs and associated modules like envelope generators, VCFs and VCAs) for polyphonic sound generation. The A-190-5 will be equipped with different polyphonic, duophonic, paraphonic and monophonic modes which are selected by means of menu buttons and the display. For each channel a gate, a note controlled CV (1V/Oct.) and two auxiliary CVs (e.g. for velocity or controlled by midi control change messages) are available. In play mode the states of the four gates are displayed by four LEDs integrated into the buttons 1-4. Firmware updates are possible via USB.

## Standard Modules



### A-123-2 6/12/18/24dB Highpass

A-123-2 is a voltage controlled highpass filter with four filter outputs (6, 12, 18 and 24dB slope). It also features voltage control of the resonance.

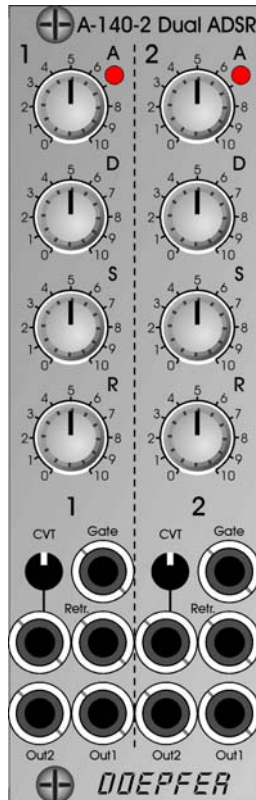
These controls and in/outputs are available:

- Audio In with attenuator (Lev)
- Manual Frequency control (Frq)
- FCV1: Frequency control input (~ 1V/oct)
- FCV2: Frequency control input with polarizer
- QCV: Resonance control input with attenuator
- Manual Resonance control (Q)
- 6dB Output
- 12dB Output
- 18dB Output
- 24dB Output

The audio input is very sensitive and enables also distortion/clipping if required.



## Standard Modules

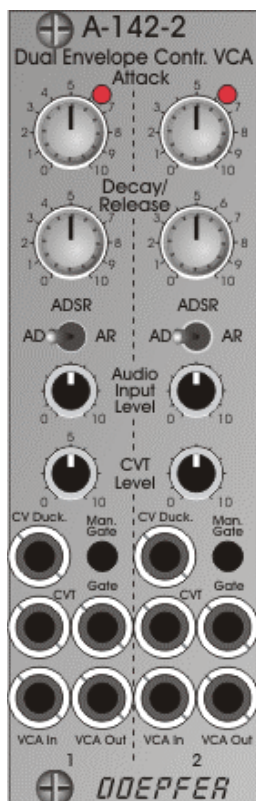


### A-140-2 Dual Micro ADSR

Module A-140-2 contains two ADSR type envelope generators behind a front panel with 8 HP only. Each ADSR provides these controls and in/outputs:

- Attack (A), manual control
- Decay (D), manual control
- Sustain (S), manual control
- Release (R), manual control
- Gate Input
- Retrigger Input
- CVT Input with attenuator (CVT = CV Time)
- Envelope Output 1
- Envelope Output 2
- LED control

By means of internal jumpers one can select which parameters are controlled by the CVT input (e.g. D only or D+R or A+D+R) and in which direction (i.e. if an increasing CVT shortens or stretches the time parameter in question). By means of another jumpers output 2 can be set to normal or inverted envelope). Two more jumpers are used for the optional bus access to the gate signal of the bus for each ADSR.



### A-142-2 Dual Envelope Controlled VCA

Module A-142-2 contains two identical envelope controlled VCAs. Each unit is the combination of a simple AD/ADSR/AR envelope generator and a VCA behind a front panel with 8HP only.

The type of envelope can be selected by means of a toggle switch between A/D, ADSR and A/R. In ADSR mode the sustain level is about 50% and Decay and Release time are the same.

The envelope output controls a linear VCA.

These controls and in/outputs are available:

- LED (envelope display)
- Attack control
- Decay/Release control
- AD/ADSR/AR switch
- Audio Input level
- CVT level (with attenuator)
- Ducking CV input (a positive voltage lowers the level, +5V or more mutes the VCA fully)
- CVT (time control voltage input for A/D/R)
- Gate Input
- Manual gate (momentary switch)
- VCA Audio Input (with Level control)
- VCA Audio Output

By means of internal jumpers one can select which time parameter(s) are controlled by the CVT input and in which direction. Internally also the envelope signal and the VCA CV input are accessible.