



Ancient Scroll VC Decay Envelope - User's Manual for Eurorack
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Hello and thanks for using the Ancient Scroll Voltage-Controlled Decay Envelope for Eurorack modular. We hope you will find it to be a useful and interesting source of modulation for your patching enjoyment!

In just 10hp, the Ancient Scroll provides a snappy Decay envelope with control where it really counts, perfect for use in Synth Pads, Leads, Percussion, and more. This module makes it easy to create a full voice without having to use more “specialty” Function Generators or modulators for simple enveloping tasks, keeping those free to perform more interesting functions.

Technical Specifications:

Width: 10 hp (Intellijel 1U format)

Depth: 35 mm

Peak Current Draw: 25 mA @ +12V, 20mA @ -12V

Time Range: 6 mS - 15 seconds (approx)

1. Installing the Ancient Scroll

The Ancient Scroll uses a standard 10-pin Eurorack power header which is mounted on the back of the module. When connecting the power cable, make sure that the -12V rail from your case’s power supply aligns with that of the module. The stripe on the bottom of the power header and the “-12V” label indicate the location of this rail on the module. The Ancient Scroll has reverse diode protection so plugging it in backwards will probably not destroy the module or case; however, we strongly recommend taking the proper precautions to plug it in correctly before powering up your case.

The 1U format module will fit in any **Intellijel-format** 1U case. Once your power ribbon cable is connected to the rear of the module, place it in the case and mount it using either two diagonal rack screws or screws in each of the four corner holes.

2. Theory of Operation

The Ancient Scroll is a Decay-only envelope based on the AS3310 envelope IC, itself a clone of the CEM3310 chip used in countless polysynths and modular units of the 80s. Though the 3310 chip is capable of a full ADSR envelope, its slightly-exponential shape and great Control Voltage implementation make it more than practical for use as a Decay envelope.

Each time it is triggered, the Ancient Scroll’s output rises very quickly to its peak voltage level (selectable as either 5V or 8V depending on rear jumper setting). Once this extremely brief “attack” phase has ended, the output will start to decay back to 0V at an arbitrary rate ranging from 10mS to several seconds, with control over this parameter coming from both the Envelope Decay knob and Decay CV input.

So why a Decay-only envelope? Simply put: when patching together a quick and basic synthesizer voice, particularly to create any sort of percussion, the Decay parameter is by far the most important and interesting. Being able to modulate the Decay with Control Voltage is immediate, gratifying, fun, and very useful for introducing “movement” to your patches. And the more the merrier: use multiple Ancient Scrolls to modulate different parts of your patch such as Oscillator Frequency, Filter Cutoff, or even each other’s Decay inputs to discover a world of fun and polyphony!

3. Summary of Functions

Envelope Decay (knob): Sets the initial level of the envelope's Decay parameter, with longer Decay times as the knob is moved Clockwise.

Decay CV: Controls the envelope's Decay time. The voltage present at this input is added or subtracted from that of the Envelope Decay, with a response range of 0-8V ignoring the Decay knob.

Trig In: Main Trigger input for the envelope. A positive rising edge initiates the envelope's Attack, causing the output to abruptly rise to the peak Voltage level.

Manual: Pushbutton for manually initiating the envelope. Pushing this button serves the same function as sending a Trigger or Gate to the **Trig In** jack. This button can be used at the same time as the Trig In jack.

Envelope Out: Does what it says on the can. This jack produces the Decay-only envelope with an output level of either 0-5V or 0-8V.

4. Calibration

The Ancient Scroll requires no calibration, but there is a three-pin rear jumper which may be used to select the peak voltage level produced by the **Envelope Out** jack. To set the output level to either 0-5V or 0-8V, place the plastic jumper over the header's central pin along with the outer pin which corresponds to your preferred voltage level as indicated on the PCB.

5. Patch Ideas

"Simple Hi Hat"

Patch a noise source into a VCA such as Arcane Knowledge with the Initial level turned to 0. Patch the Ancient Scroll's **Envelope Out** into the VCA's Level control input and feed a trigger sequence to the envelope. If your sequencer has a CV output, use it to control the envelope's Decay time in order to produce a variably "open" or "closed" Hat.

"Variable Shape Decay Envelope"

Patch the Ancient Scroll's **Envelope Out** jack into a Multiple. Take one copy of the output signal and patch it into an Attenuator or Attenuverter, then patch the attenuated output back into the Ancient Scroll's **Decay CV** input. Trigger the envelope and use another output from your Multiple to modulate something; the Decay response will now be shaped by the amount of envelope fed back into the **Decay CV** input and can produce some very interesting sounds!

"IDM Envelope"

Patch some noise into the signal input of a Sample & Hold module. Mult a Trigger signal to both the Trigger input of the S+H and the Ancient Scroll's **Trig In** jack, and use the output of the Sample and Hold to modulate the **Decay CV** input. Each new envelope will now have a pseudo-random decay time. How fun!

"Disco Toms"

Patch the **Envelope Out** jack into a multiple. Patch one copy of the signal to the Exponential FM input of an analog VCO, patch the VCO's Triangle or Sine wave output into a VCA such as Arcane Knowledge, and patch another copy of the **Envelope Out** signal into the VCA's Level control. Change the level of Envelope modulating the VCO's pitch to get all sorts of fun "pewwww" and "bwoooop!" type Toms. And yes, these are technical terms.

“Variable Attack Envelope”

Patch the **Envelope Out** jack into an Attenuverter and set the Attenuverter so it is fully inverting the signal, then patch the output of this to the parameter you wish to modulate, such as VCO frequency or Filter cutoff. You may have to raise the initial level of the modulated parameter to account for the change in input voltage level (it is now a negative voltage signal), but the Ancient Scroll will now have a variable Attack time which may be controlled with the **Envelope Decay** and **Decay CV** inputs. Once it reaches its “Peak” level of 0V, it will abruptly “Decay” to the initial Voltage level.

“Crude Waveshaper”

Patch a Square or Sawtooth waveform from a VCO into the Ancient Scroll’s Trig In jack. Use the **Envelope Decay** and **Decay CV** to slew the fall time of the waveform. The Ancient Scroll will respond to audio rates up to at least 1 kHz at its shortest Decay time, though this effect will work best under 200 Hz or so.