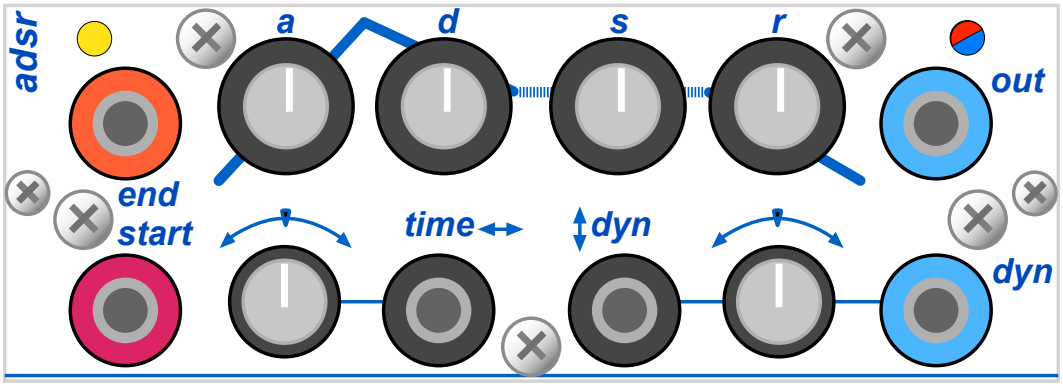
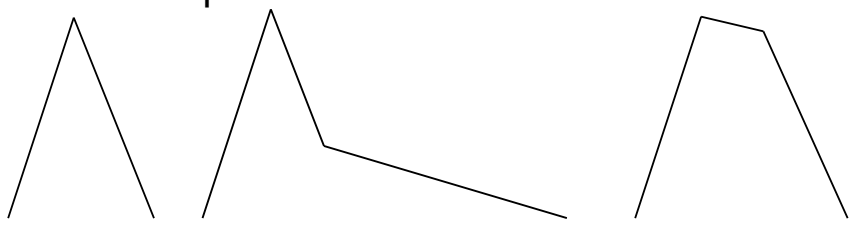


"Keyboard" use

When used with an event source that generates a "stepped pulse" gate + trigger, such as a 222e, 223e or 225e, the ADSR implements a "traditional" Attack–Decay–Sustain–Release envelope. When driven with a stepped pulse, the ADSR enters the release phase whenever the gate goes away. This is much like the behavior of the 281e in sustained mode.

Darn Short Pulses

Many of the pulses floating around in a Buchla system are very short. The 281e pulse out is about 500 microseconds, the Pendulum/Ratchet pulse is 1 millisecond, the 250e pulse is about 5 milliseconds. What should an ADSR envelope do with these short pulses? What the ModuleModule ADSR does is dependent upon the sustain level. If sustain is all the way down, only the attack and decay sections are active, and it behaves much like a 281e section in transient mode. When sustain is up at all, the attack and decay work as above until the decay phase reaches the sustain level, at which point it starts decaying at the release time. This allows for shapes such as these:



Sustain=0% Sustain 33% Sustain 90%

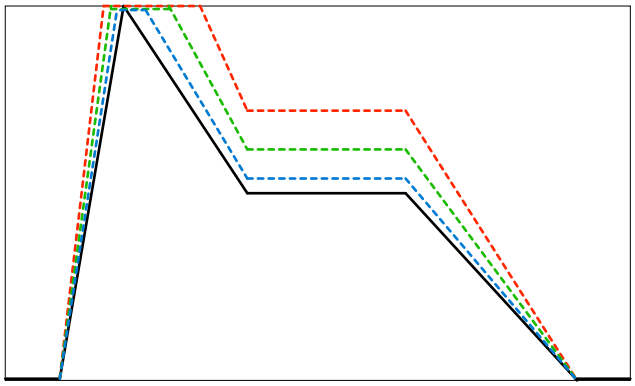
Oscillation

The ADSR will oscillate if the end and start are patched together, and these jacks are a shorting bar away from each other to make this easier. The only caveat is that it needs an initial pulse to get it going. The envelope goes through a cycle upon power up, which enables it to come up oscillating, if properly strapped.

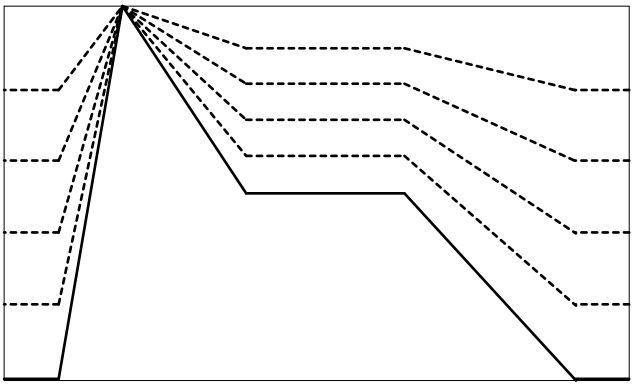
Dynamic Output

The dynamic output scales the envelope in a few ways. The standard configuration, with jumper 3–>4 installed, is a dynamic output behavior I'm calling DynOffset. This does different things with the two sides of the CV attenuator.

In the positive rotation of the knob, from 12:00 to about 3:00 it scales the envelope from nothing to full range. From 3:00 to fully counter clockwise, it starts clipping at the top of the envelope. This *sort* of acts like an attack hold segment. In this image the solid line is the envelope as it appears at the main output, and the dashed colored lines represent increased clipping as you turn the knob up past 3:00.



In the negative rotation of the Dyn CV attenuator, it scales the envelope up to full from 12:00 – 9:00 on the dyn knob. Then from 9:00 to fully counterclockwise, it adds offset, and squishes the envelope into the remaining voltage range. This is useful for controlling things like the Eardrill VCAs, which feature a very wide dynamic range that you may not always want to utilize. In this drawing, the solid line is the main envelope out, and the dashed line is the dynamic out. It illustrates several positions of the dyn knob moving counter-clockwise past 9:00.



See the Deep Switch section, later in this document, for info on an alternate "InvertOffset" mode.

"Normals"

The Time mod in and the Dynamics mod in have option jumpers to enable pull-ups that act as normaled connections to +10 v, which is overridden if a low impedance source is plugged in (most Buchla CV sources). With nothing plugged in, the time and dyn attens act as offset knobs, but when something is plugged in they act as CV attenuators. There are a couple Buchla modules that I've identified that have fairly high impedance outputs: 256e and 266e fluctuating random outputs A & B. With the ADSR pull-ups enabled, the outputs from the 256e and 266e A&B may not be able to drive the mod inputs all the way to zero.

End out pulse level

There is a jumper that sets the end pulse out level. This can either be set to a +10 volt pulse, which is what the 200e mostly has, or a +15 volt pulse to accommodate earlier 200 systems. I'm shipping these jumped to +15, because that's the way the 281e does it, and it helps when

driving lots of things from one adsr pulse.

Trimmers

There are two trimmers on the ADSR, one for start threshold, and one for output scale. The start threshold is the smaller blue trimmer nearer the center of the board. It is set for a little under 7 volts to accommodate the 250e, which has a sort of low pulse level. The output scale trimmer is set to give a 0-10 volt swing, and probably will never need to be touched.

Deep Switch

There are two configuration jumpers on the ADSR. The first of these forces the ADSR to always start at 0. This is controlled by jumper 1–>2.

If you remove the default 3–>4 jumper, it enables a more vanilla behavior of the dyn output, called "InvertOffset." In this mode clockwise from 12:00 give scales positively (see fig c), counter-clockwise scales and inverts (see fig d.) In a unipolar world like the Buchla system, this means that the more the knob is turned counter-clockwise, the more effective offset is added to the output. Here are a couple drawings to illustrate (the solid line is main envelope out, dashed line is ***dyn*** out):

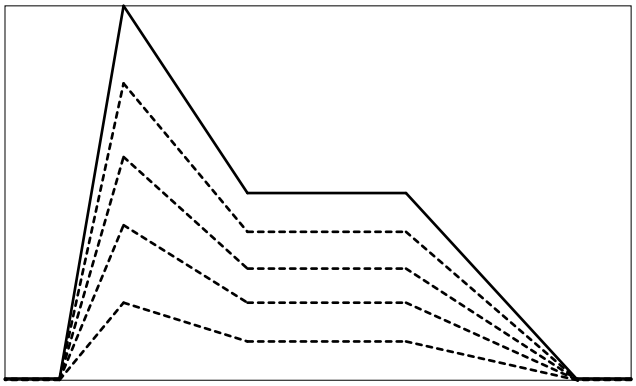


Figure c. - Positive scaling

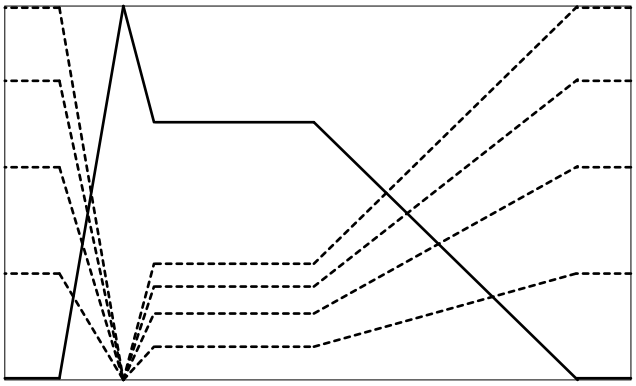


Figure d. - Negative scaling

Jumper Positions

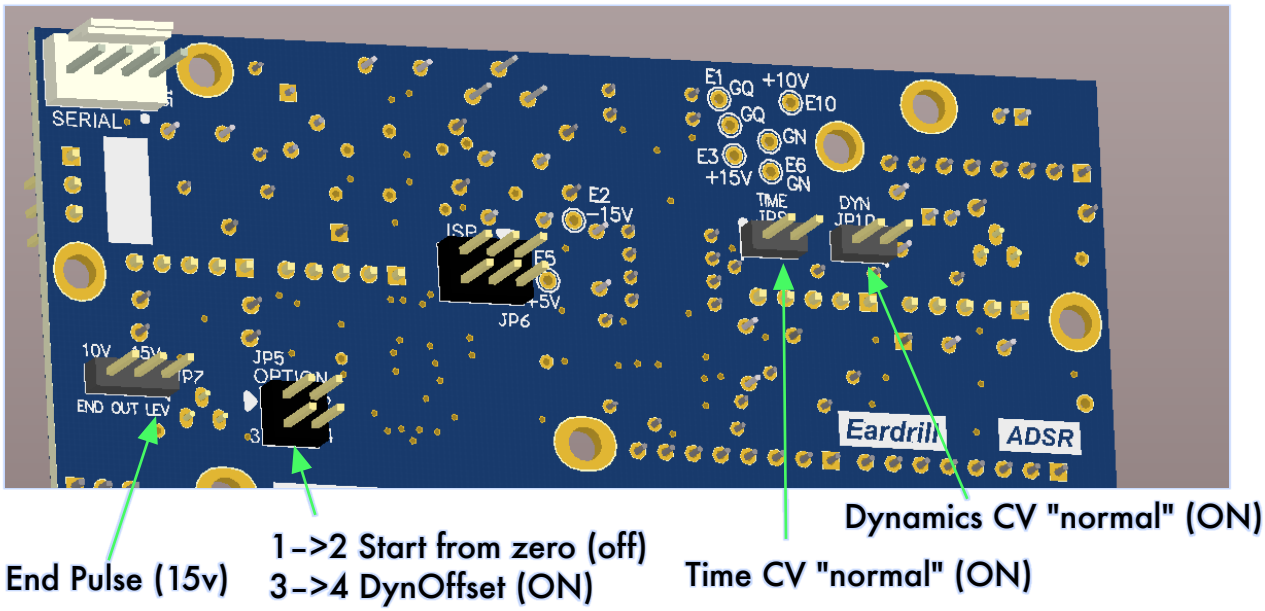
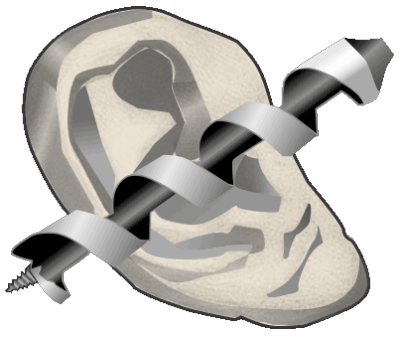


Figure e. – The jumper settings and their (defaults)



http://www.Eardrill.com