

The 4x4 AD/AR Envelope Generator with Delayed Pulser

Ian Fritz, November 2010

This novel envelope generator (EG) provides a versatile alternative to other designs. It features four input modes and four output signals, so I call it the 4x4 EG. Here's what it can do:

Input modes:

Trigger/Gate

This is the main input. It will take just about any signal you feed it. Driven by a trigger pulse, the unit's output is an attack-decay (AD) envelope. Driven by a gate its output is an attack-release (AR) envelope. And you can even use a continuous signal like an LFO for the gate.

Cycle

A pulse is generated at the end of the envelope decay/release and can be switched back to the input to produce a repetitive AD output signal.

Manual Trigger

A momentary push button switch on the panel generates an input trigger pulse to generate an AD envelope.

Delayed Pulse

An auxiliary circuit produces a delayed, fixed-width pulse, which may be switched to drives the EG circuitry (Pulse - EG). The pulse may be initiated by any signal with a positive-going 1.5 V crossing, for example, a trigger pulse or a waveform from an LFO etc.

Output signals:

AD/AR

This is the main envelope output.

EOE Trigger

A trigger pulse is generated when the envelope falls to near zero (end of envelope). This pulse may be feed back to the input to generate a cyclic signal, or may be used externally for cascading more than one unit or for other timing applications.

Delayed Pulse

The delayed pulser's output is available at the front panel, to use separately from or in conjunction with the EG itself. The delay time is retriggerable, ie if multiple triggers are received during the delay phase, the end of the delay phase is determined by the last received trigger. The pulse width phase is not retriggerable, ie a fixed pulse width always occurs.

EOP Trigger

This is a trigger pulse generated at the end of the delayed pulse (end of pulse). This pulse may used for a variety of timing functions, such as cross-coupling with the EG to generate a cyclic signal with a zero-voltage segment, for cascading more than one unit or for other external timing applications.