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Hello and thank you for purchasing the WMD Multimode Envelope. We hope you make great music and/or noise with aid of this module.

Design

The Multimode Envelope is a hybrid digitally controlled analog design. It uses a small computer to control the flow of energy around the envelope core.

Controls and I/O

Attack, Decay, Release Speed - These knobs control the speed of the respective segment. At full CCW setting, the time taken is about 4 minutes for full rise or fall. At fully CW, the segment will last about 200µS.

Attack, Decay, Release Shape - These knobs give individual control to the shape of each segment. Shape ranges from Logarithmic (start quickly and slow down) to linear (constant speed) to exponential (start slowly and speed up).

Mode - This knob controls the different modes of operation. These are explained later.

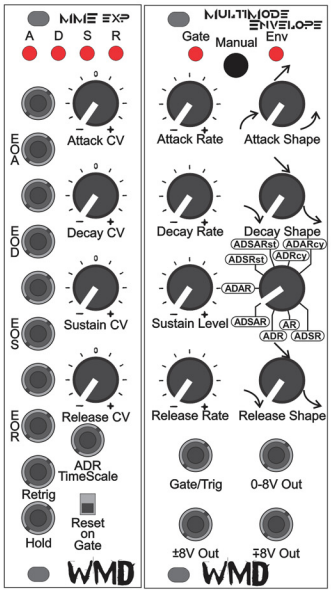
Gate/Trig - This input starts the envelope, different modes handle the input differently. When a gate is present, it will show on the Gate LED. This is normaled from the Doepfer gate bus.

0-8V Out - This is the primary output of the envelope. It swings from ground to 8 volts.

+-8V Out - Full swing output from -8V to +8V. This output shows on the Env LED.

-+8V Out - Inverted full swing output. (Jumper option for 0-8V output).

Manual Button - Push this to manually trigger/gate the envelope.



MULTIMODE ENVELOPE

Modes of Operation

First, a note about gates and triggers. A gate is an on or off signal that has duration. A trigger is an on or off signal whose duration is ignored.

When the gate turns on, the envelope will run through the specified segments until the gate is released. If the gate goes off at any time, the envelope will immediately jump to the release segment. Gate modes have the abililty to sustain, and are applicable to ADSR and ADSAR.

Trigger modes will cause the envelope to run its course every time it is triggered, from start to finish, regardless of the trigger's length. Trigger modes include AR, ADR, and ADAR.

ADSR - This is the classic East Coast envelope shape. Upon a Gate input (key down), the envelope opens, then closes to the sustain level. When the gate is off (key up), the envelope releases to ground. To use as an ASR envelope, turn the Sustain fully CW and Decay will be ignored.

AR - This is the classic West Coast envelope shape. Upon a trigger input, the envelope opens with the Attack control, peaks, and then falls with the release control. It is triggered instead of gated and will not sustain.

ADR - The ADR is a trigger mode that will not sustain. Instead, at the sustain point, Decay transitions instantly to Release, allowing you to change shapes or speeds in the middle of the falling action.

ADSAR - This gate mode attacks, decays and sustains like a normal ADSR. After the gate is released (key up), the envelope will attack again and then release. This gives you an accent on key up.

ADAR - This trigger mode attacks, then decays until reaching the sustain level, then attacks again and releases.

ADSRst - ADSR Step Through mode runs one segment at a time as triggered. This mode causes sustain after each segment runs. After attack, it will sustain at 8 volts. After decay it will hold at the sustain level. After release, the cycle is finished and 0 volts will be output. Each segment must be complete before another trigger is recognized. This mode requires three triggers per cycle.

ADSARst - This is similar to ADSRst, but with a second attack after the decay. This mode requires four triggers per cycle.

ADRcy - This mode will cycle automatically after release is compete. It can be an AR cycling envelope by setting the sustain level to maximum. Decay will transition to Release at the sustain point. A trigger or gate will reset to the attack segment.

ADARcy - This self cycling mode works just like ADRcy, but will attack again from the sustain point after the decay segment. A trigger or gate will reset to the attack segment.

Other Notables

- The Multimode Envelope is 8 HP.
- Current consumption is +49mA and -27mA
- The depth from the back of the panel is roughly 28mm with connectors.
- The MMEnv is reverse polarity protected.
- The MMEnv is RoHS and CE compliant.
- The MMEnv & expander is warranted for 12 months after purchase. Please contact us if you ever have problems. We will take care of you.

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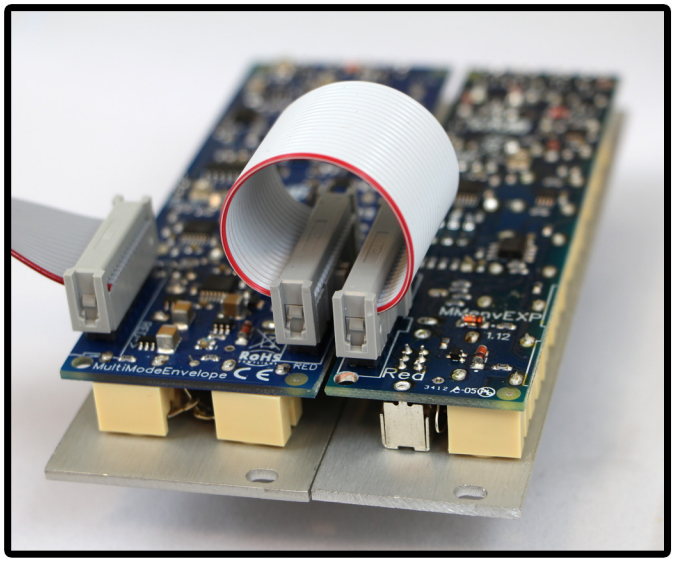

Expansion Information

The expansion for the Multimode Envelope is 6 HP and connects directly to the Multimode Envelope via a 20 pin ribbon cable.

Expansion Controls and I/O

CV Inputs and Attenuator Knobs - These dedicated CV inputs and bipolar attenuators give massive control over the shape of the envelope by allowing each segment to be CV controlled. Bipolar attenuators allow inversion of the source signal. A 12 o'clock position will yield no change from the control voltage. Spin CW for normal operation, CCW for inverted CV control. Each input is calibrated so when set to maximum CW, one volt will double the rate the segment.

EOA, EOD, EOS, EOR - These output triggers go off when the respective segment comes to an end. Useful for triggering other modules for complex timings. Standard trigger length is 10mS. This can be trimmed on the back of the module.

Retrig - This trigger input will cause the envelope to return to the attack segment if the envelope is already in progress. If the envelope is not running (no lights on) then retriggers will be ignored.

Hold - Apply a signal to this input to pause/hold the envelope. Use for stepping the envelope or halting motion during complex patches.

ADR TimeScale - This CV input affects the Attack, Decay and Release segments speed equally. The Multimode Envelope is designed so that this input will make each segment track reasonably 1V/octave.

Reset on Gate - This switch determines whether the envelope will reset to 0 volts when a new trigger or gate is applied if the output is above 0 volts. It does not affect Retrig.

Installation

Attach the included 20 pin cable to the Multimode Envelope and expansion as shown above. Make sure the red stripe is down. Also be sure the 16 pin power cable is attached as shown. Red stripe is down.

With the expansion attached, power consumption increases to 104mA on the +12 rail, and 38mA on the -12 rail.

MMENV Jumpers

There are several jumpers available on the MMENV.

(A). Decay Mode. This jumper causes (when connected) the Decay Shape pot to more dramatically control the envelope shape when close to the sustain level. We suggest leaving it connected.

(B). Reset on Gate. Jumpering the top two pins of the expansion header disable "reset on gate", causing the envelope to attack from where it is, instead of resetting to 0 volts.

(C). INV/-BP. This jumper selects whether the -+8V output has the full range bipolar signal (inverted -8 to +8 V signal) or the inverted 0-8V signal. INV (to the left) will always have a negative output voltage.