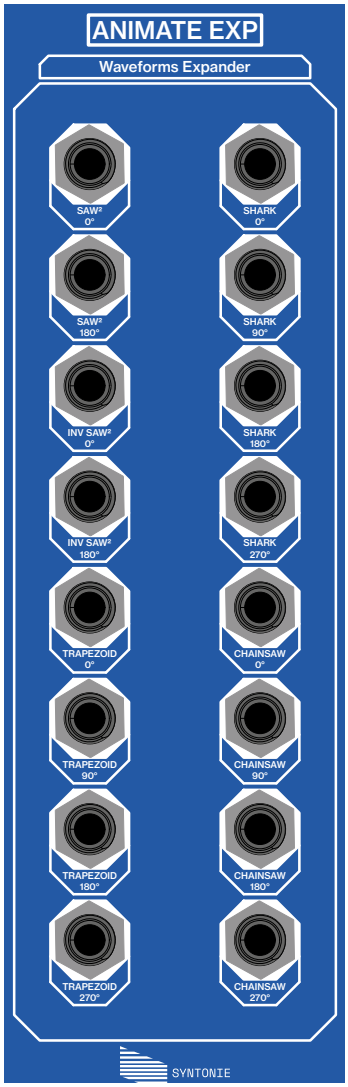
Animate EXP

Waveforms Expander¬

User documentation

SYNTONIE

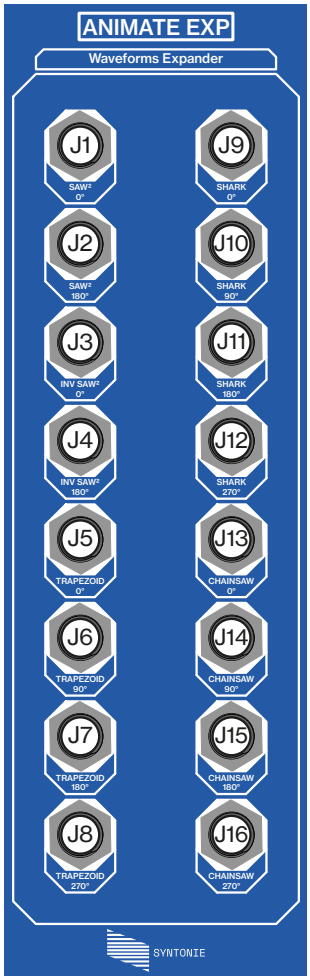


Animate EXP is an expander for Animate that adds 4 additional waveforms to the core module: sawtooth, trapezoid, shark and chainsaw. The expander cannot work on it's own and needs to be connected to Animate to work.

Specifications

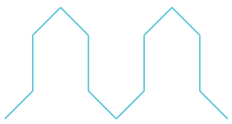
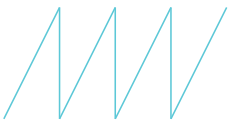
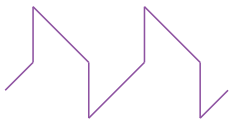
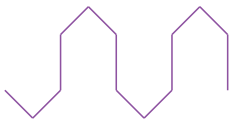
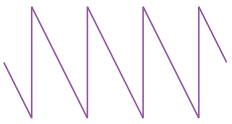
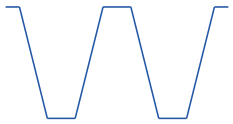
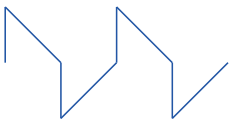
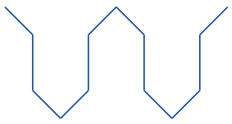
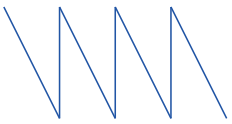
- 8HP
- 30 mA +12V (powered by Animate)
- 0 mA -12V
- 0 mA +5V
- 20mm depth

Special thanks to: **Dave Jones** for the description of how to produce those waveforms out of triangle waves and square waves which have been the starting point to develop this module. **Lorenzo Ferronato** for the documentation design // And of course, **everyone who has supported Syntonie until now & those who will support it in the future.**



- **(J1)** Sawtooth 0°
- **(J2)** Sawtooth 180°
- **(J3)** Inverted Sawtooth 0°
- **(J4)** Inverted Sawtooth 180°
- **(J5)** Trapezoid 0°
- **(J6)** Trapezoid 90°
- **(J7)** Trapezoid 180°
- **(J8)** Trapezoid 270°
- **(J9)** Shark 0°
- **(J10)** Shark 90°
- **(J11)** Shark 180°
- **(J12)** Shark 270°
- **(J13)** Chainsaw 0°
- **(J14)** Chainsaw 90°
- **(J15)** Chainsaw 180°
- **(J16)** Chainsaw 270°

Note: the sawtooth outputs are twice the frequency of the other waveforms and do not have true quadrature outputs, only 0° and 180° and inversions (since sawtooth waves are not symmetrical around the zero crossing point).

	Trapezoid	Shark	Chainsaw		Sawtooth
0°				0°	
90°				180°	
180°				INV 0°	
270°				INV 180°	

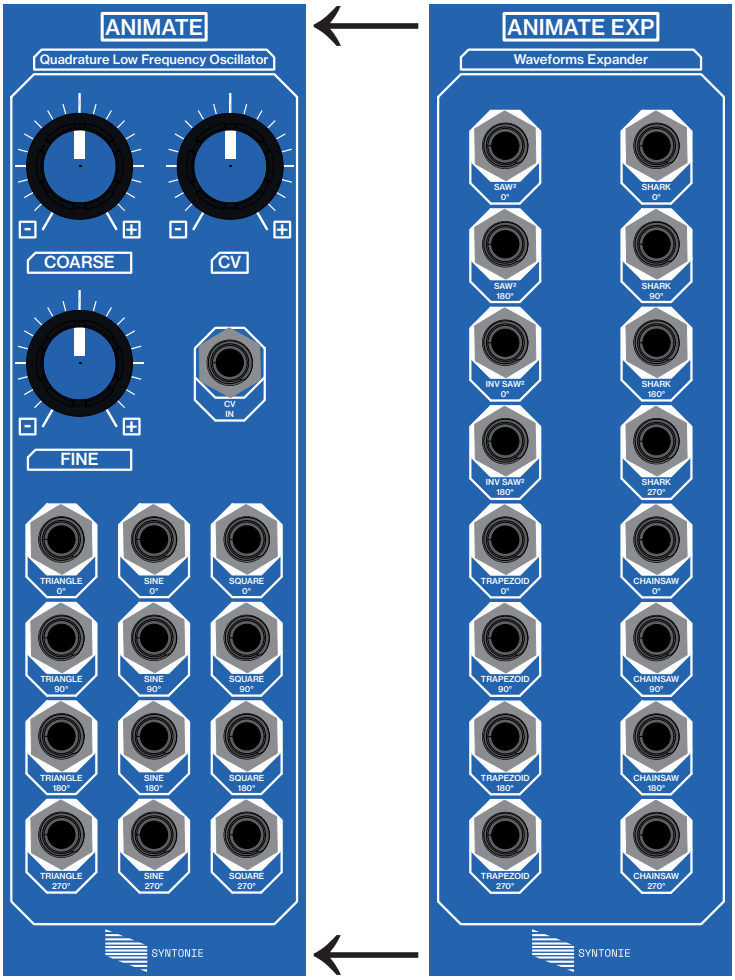
Here are the graphical representation of the wavefroms produce by Animate EXP.

The 0°/90° trapezoid waves are obtained by amplifying the 0°/90° triangle waves produced by Animate by a gain of 2 and clipping under 0V and above 1V, producing trapezoid waves in which the flat edges have the same duration as the falling/rising edges. The 180°/270° trapezoid waves are obtained by inverting the 0°/90° trapezoid waves respectively.

The 0° shark wave is obtained by mixing together the 0° triangle wave and 270° square wave produced by Animate, and the 90° shark wave is obtained by mixing together the 90° triangle-wave and 0° square wave. Before being mixed, the two source waveforms are scaled in order to obtain segments of equal amplitude. The 180°/270° shark waves are obtained by inverting the 0°/90° shark waves respectively.

The 0° chainsaw wave is obtained by mixing together the 0° triangle wave and 0° square wave produced by Animate, and the 90° chainsaw wave is obtained by mixing together the 90° triangle wave and 90° square wave. Before being mixed, the two source waveforms are scaled in order to obtain segments of equal amplitude. The 180°/270° chainsaw waves are obtained by inverting the 0°/90° chainsaw waves respectively.

The 0° sawtooth wave is obtained by inverting the 0° triangle wave using the 90° square wave produced by Animate, and the 180° sawtooth wave is obtainted by inverting the 90° triangle wave using the 180° square wave, thus producing waveforms at twice the frequency of the source waveforms. The inverted 0°/180° sawtooth waves are obtained (obviously) by inverting the 0°/180° sawtooth waves. As opposed to other waveforms, inverting the sawtooth results in a falling ramp instead of a rising ramp and not an 180° shift.



The connection of Animate EXP to Animate is done using two 4 pins connectors on the edge of both modules. The advantage of this method is that it doesn't require an additional cable running in the back of the case, though the drawback is that it limits the placement of the expander to the right of the core module.

To connect the modules together, simply put both of them into the case and slide the expander until it connects to the core module, then screw them into place.

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