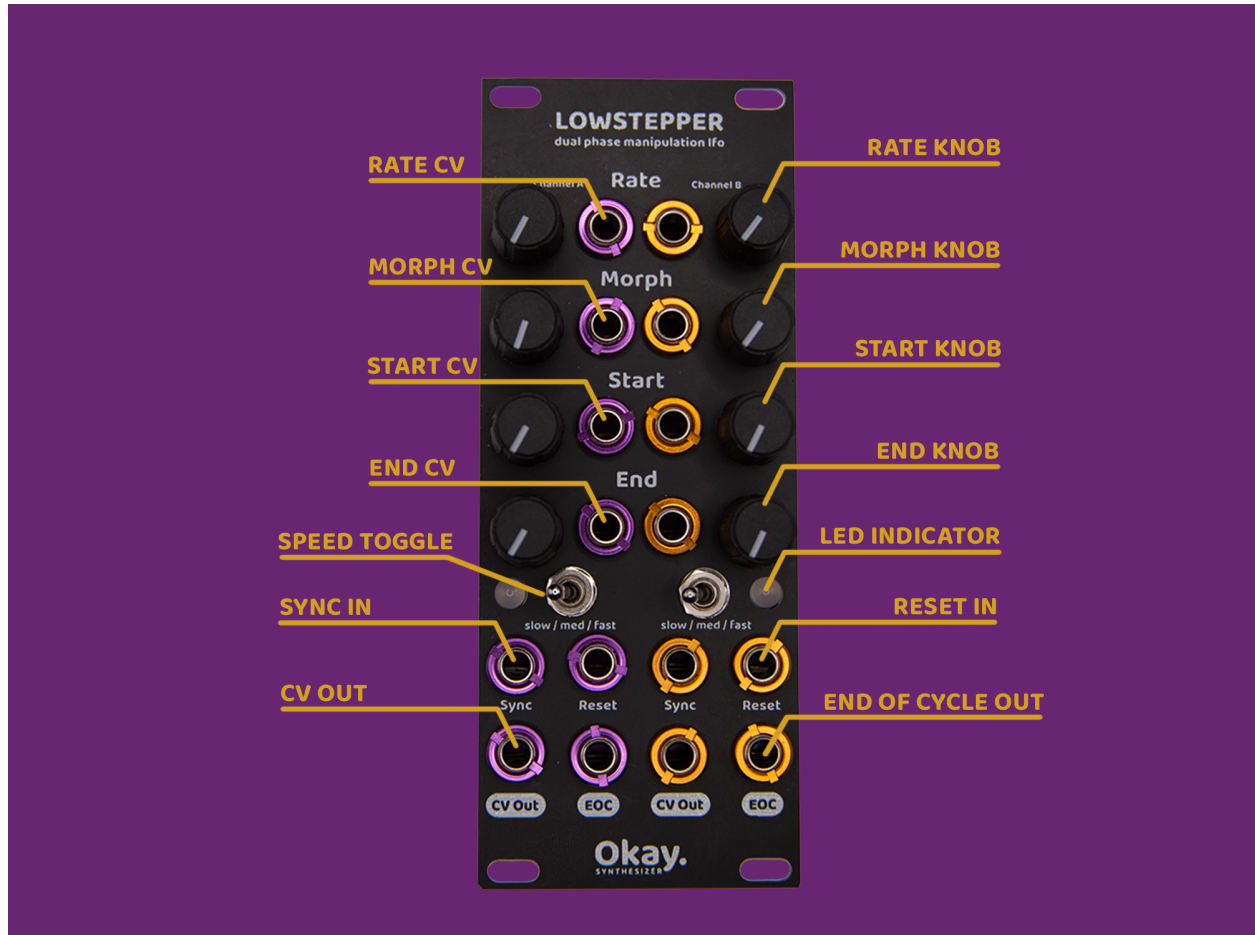# Hello, world.

Welcome to Okay Synthesizer, and thank you for purchasing a Lowstepper. It means the world to us to have you join the crew. We encourage you to do the maximum amount of damage possible with this module, and we promise that it is a substantial amount.

Front Panel Overview

Both sides are identical, there are no normalled connections between them.

Rate: Change the speed of the LFO. The range of **Rate** changes based on the **Speed Toggle**. The rate will also change in fractional increments relative to the BPM, when sync is plugged in.

Morph: Warp the wave from sin, to triangle, to saw, to a slightly warped square.

Start: Move the start phase of the LFO from 0 - 100%. Will move in even increments when sync is plugged in.

End: Move the end phase of the LFO from 0 - 100%. Will move in even increments when sync is plugged in.

Speed Toggle: Switches between different ranges of speeds.

Sync In: Trigger input accepting 1/16th notes, will modify the behavior of **Rate**, **Start** and **End** when plugged in.

Reset In: Trigger input. Will instantly jump back to the start point of the LFO when a trigger is received.

CV Out: Main LFO output! Party time!

**End of Cycle Out:** Trigger output. Will output a trigger when the LFO reaches the end point.

What the F**k is a "dual phase manipulation LFO"?

I'm going to assume that you, the modular synthesizer owner, likely knows what an LFO is. It is a **L**ow **F**requency **O**scillator. Which is described as an oscillator that moves below the frequency at which humans hear *(20hz or so)*. In the case of Lowstepper, there are facilities for typical low frequency oscillations, as well as audible oscillations when **Speed Toggle** is set to Med or Fast.
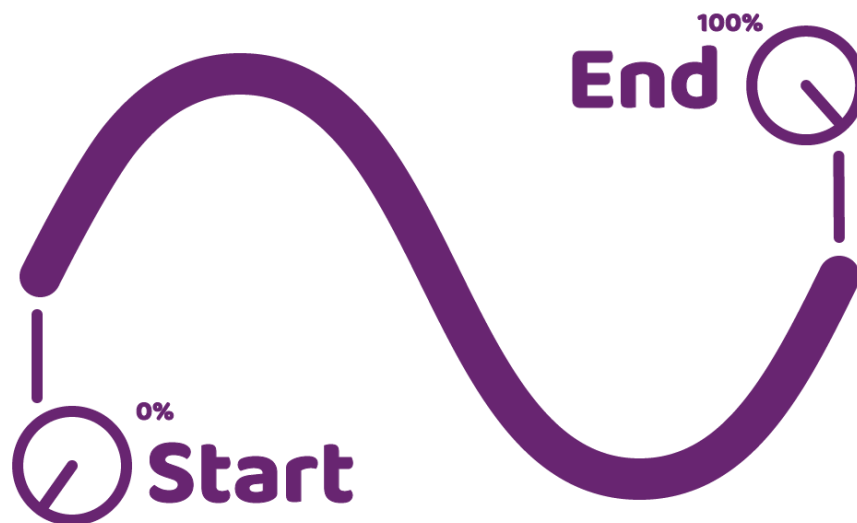

A completely unsuspecting sine wave....

The goal of lowstepper is to let you control the start and end position of a standard LFO waveform, to create new wave shapes. You can push and pull the start and end points of the waves by turning the **Start Knob** and **End Knob**, and by using the corresponding **Start CV** and **End CV** controls beside them. When CV is passed into any controls, the knob acts as an offset.
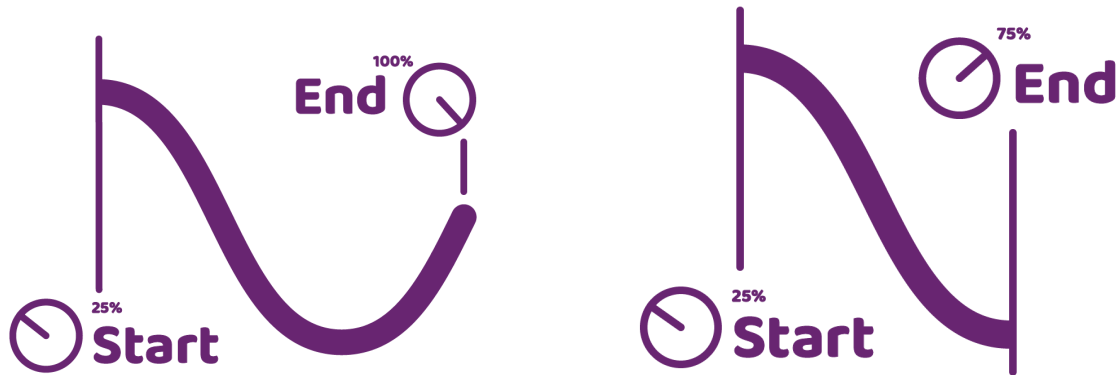
Left: Start point shifted 25%, end point left at 100%
Right: Start and end point shifted to 25% and 75% respectively

When the end point is before the start, it will travel from the end to the start, effectively inverting the wave you started with
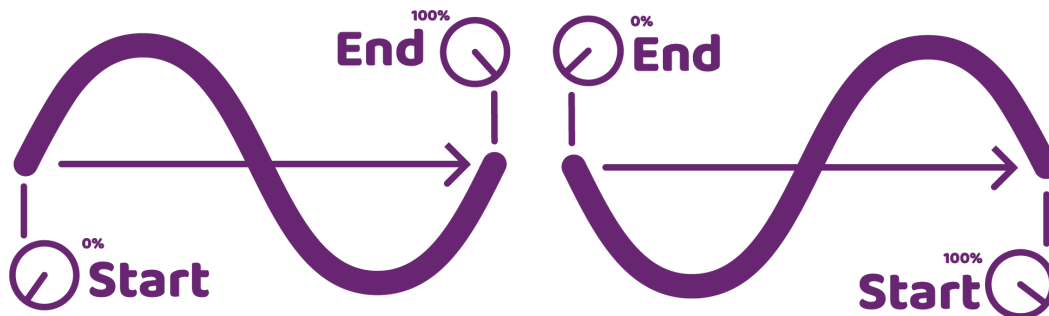
Left: Normal direction of travel
Right: Inverted direction of travel

Tech Specs

CV Output: 8v (-3.3 to 4.7 volts) *the offset is intentional, so that the standard wave, and inverted wave shape is not 100% symmetrical, weird by design.*

CV Inputs: +5v to -5v

EOC trigger output: +3.3v

Firmware Update

Download the latest version of the firmware at https://okaysynthesizer.com/products/lowstepper in the **Downloads** section of the product description.

Visit https://electro-smith.github.io/Programmer/ and follow the on-screen instructions. Make sure you upload the correct firmware file from your computer before programming. Flashing the wrong firmware can result in unknown damages.

Daisy Web Programmer

Connect to the Daisy - If this is your first time here, follow the steps in Help section below

Connect

Display Help

Getting Started? Flash the Blink example!

Flash Blink!

Or select a platform and a program from the menu below.

-- Platform --
-- Example --

Or select a file from your computer

Choose File   No file chosen   Choose or drop a file...

Programming Section

Program

Advanced...