

## QUAD LFO QUICKSTART GUIDE

An LFO, or low frequency oscillator, sends control voltage out in the shape of a waveform. The Quad LFO available shapes include sine, ramp, saw and pulse and moves through these shapes using the SHAPE slider. You can send these 4 distinct LFOs directly out or to other modules for frequency modulation, VCA control, filter control, etc.

What makes this Quad LFO module different is that it also includes a 16 step automation sequencer as well as autosave or expanded preset functions when used in conjunction with Varigate 4+ and Varigate 8+.

To create a sequence of automation for an LFO, hold the RECORD button and move the sliders for Frequency, Phase, Shape, Distort and Level and those slider movements will play back automatically as the Quad LFO cycles through the sequence. This sequencing feature allows for a multitude of dynamic possibilities for live performance and recording.

### CLK IN:

An external CLOCK INPUT is required for the automated sequencer to run. Clock is also received from a Varigate 8+ or 4+ if connected to the same busboard.

### LFO OUTPUT CHANNELS 1-4:

Connect your patch cables from these outputs to other module CV inputs to modulate them with the QUAD LFO. There are a total of 4 individual LFOs/outputs.

### RESET:

Gate input for resetting the sequencer to step 1.

### GATE INPUTS:

Each LFO can be re-triggered/restarted with an individual gate (or cycle without a gate input).

### FORWARD/REVERSE/PENDULUM/ RANDOM SWITCH:

Switch to change the direction of the automated sequencer.

### LED BAR GRAPH:

Displays the sequence direction as well as sequencer/step position.

### LFO PARAMETER SLIDERS:

Each of the 4 LFOs include their own set of parameters that can be adjusted with the sliders. Select LFO buttons 1-4 and then move the sliders to adjust FREQUENCY, PHASE, SHAPE, DISTORT and LEVEL per LFO.

**FREQUENCY:** Sets the frequency of an LFO.

**PHASE:** Sets the starting point or phase of an LFO.

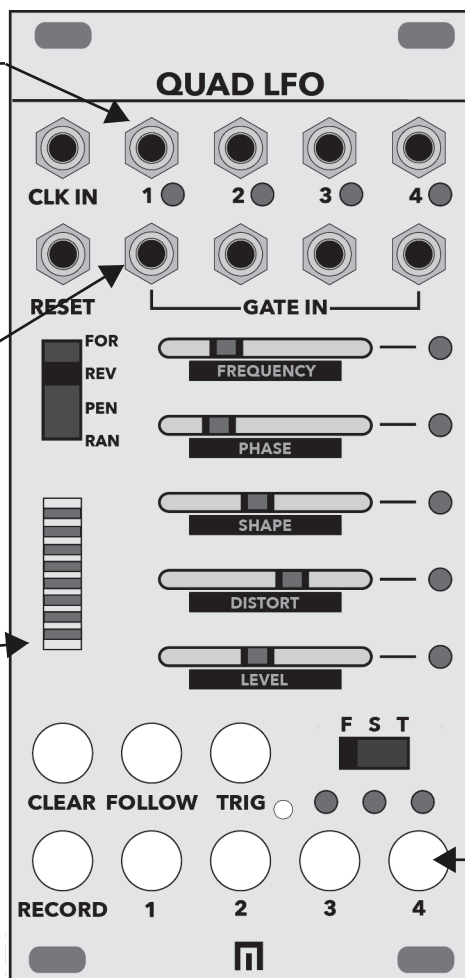
**SHAPE:** Moving this slider left to right will morph the shape of the LFO from:

SINE - RAMP - TRIANGLE - SAW - PULSE

(10 to 90% pulsewidth).

**DISTORT:** Moving this slider left to right will change the type of distortion applied: FOLD - BIT CRUSH - NOISE.

**LEVEL:** Adjust the level of an LFO output.



### LFO 1-4 CHANNEL SELECT BUTTONS:

To select an LFO for parameter editing, press one of these buttons.

### RECORD:

To record parameter automation to a sequence for an LFO, hold the RECORD button while you move the sliders. Once you've recorded automation for a given parameter the LED on that slider will be lit.

### FAST/SLOW/TEMPO:

Set each LFO to FAST, SLOW or TEMPO based cycling. QUAD LFO will receive tempo data via busboard clock as well as from clock input.

### TRIGGER:

To set an LFO to trigger a one-shot cycle of a waveform, select an LFO button 1-4 and then press TRIGGER.

### CLEAR:

Holding CLEAR while moving sliders will clear existing automation recording for that specific control. Holding CLEAR while pressing a channel select button will clear all automation for that channel.

### FOLLOW:

To enter FOLLOW MODE (LFOs 2 thru 4 can follow LFO 1 and their individual phases can be adjusted to create quadrature), select LFO buttons 2-4 and then the FOLLOW button.

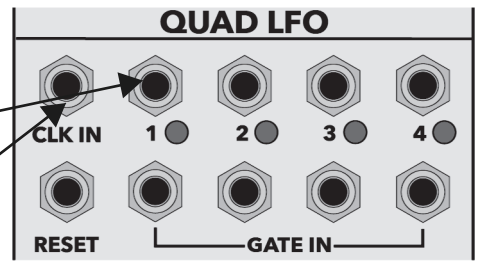
### SMOOTH AND "STEP" FUNCTIONS:

The Quad LFO automation sequences are set to SMOOTH by default (we've added a bit of slew to slow transitions between recorded settings so that they are seamless). However if you want the transitions to be more abrupt for a particular LFO animation sequence, hold the RECORD button while pressing one of the LFO channel select buttons. You will now see the sequence steps on LED bargraph pulse in a more step-like manner.

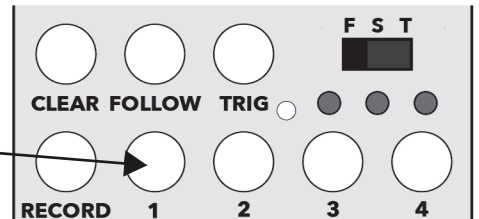
## YOUR FIRST PATCH

1. Patch output 1 of the Quad LFO to a module with CV input for modulation.

2. Patch a clock source into CLK IN and make sure you are receiving clock (you will see the LED bargraph moving indicating that the sequencer is active and you are receiving clock).



3. Press LFO BUTTON 1



4. Set the speed (Fast or Slow).



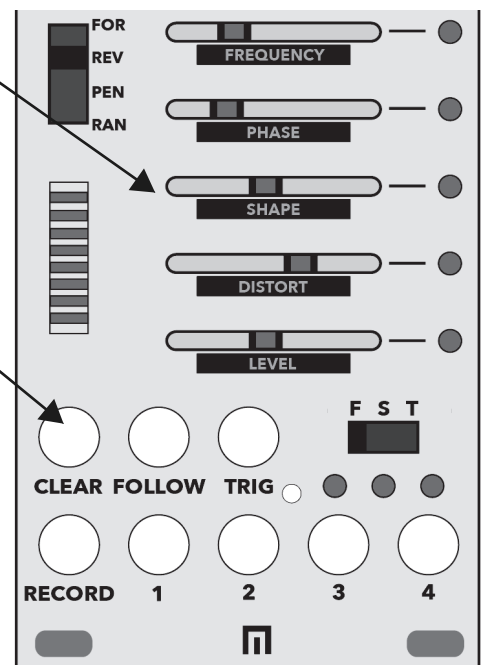
5. Move the sliders for FREQUENCY, PHASE, SHAPE, DISTORT and LEVEL to your liking. Or you can hold RECORD while moving the sliders to record slider movements to a sequence.

6. If you have recorded slider movements to a sequence, set the switch for the sequencer direction to your liking. You will now hear your recorded slider movements play back in the forward, reverse, pendulum or random direction.

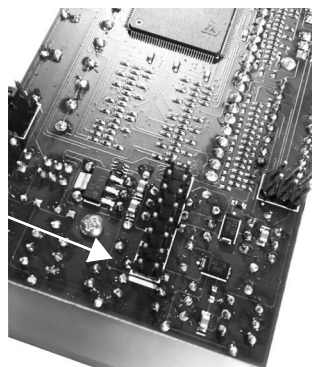
6. If you want to clear what you've recorded to the sequencer, hold the CLEAR button and move a slider to clear that parameter.

7. Follow steps 1-6 on each LFO channel or change it up a bit (each LFO channel can be fully edited).

8. There is an auto-save function. After making your final setting, wait 10 seconds before you power down. Then recycle your power and your settings will recall on power-up. If you are using the Varigate 8+ or the Varigate 4+ on the same power bus, you can utilize the memory power of these modules to save Quad LFO presets (up to 100 presets with the V8+ and 16 presets with the V4+).



CONNECT POWER CABLE WITH  
RED STRIPE TO WHITE LINE



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