

# LMC VCO Quick Start & Reference Guide

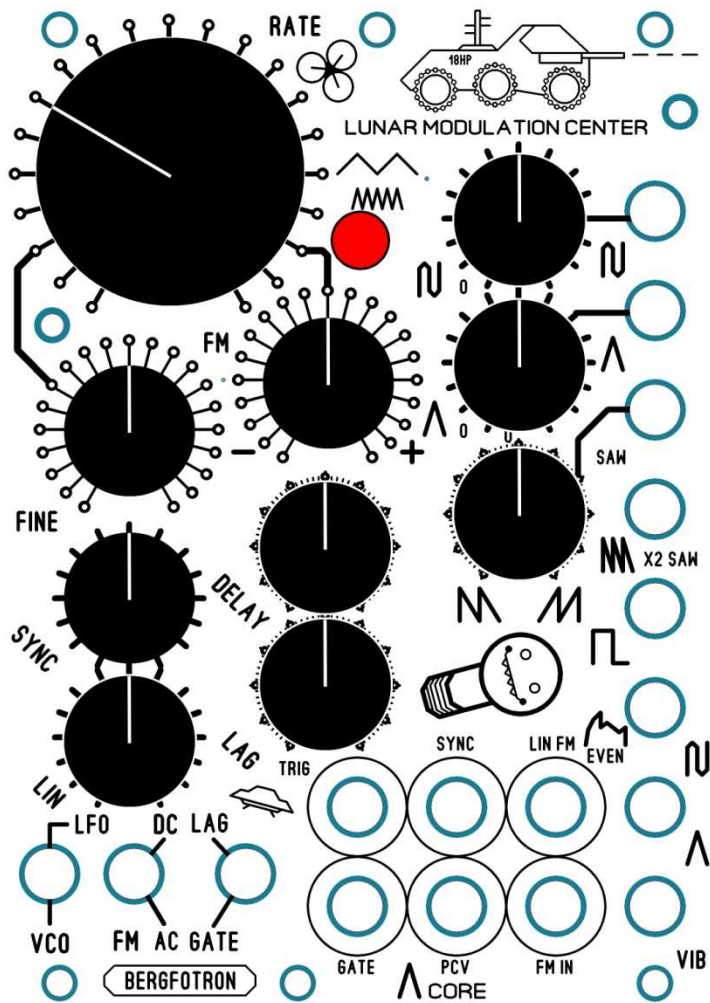
In this quick start manual I will explain all the fun features of this triangle core vco. This is an analog vco conceived by Bergfotron and adapted by me for use in the Euro Format. His website gives clue to the original concept he implemented for use for his personal format :

[http://hem.bredband.net/bersyn/VCO/vco\\_advanced.htm](http://hem.bredband.net/bersyn/VCO/vco_advanced.htm)

On my adaptation, I used a more modern exponential converter using an smt matched transistor pair and 5v Reference Regulator IC's for the main control parameters.

To keep costs down and make this unit affordable I did not implement all the features found on the original Complex VCO. First notable difference this and the original complex vco is that the Lunar Modulation Center is a single VCO.

Here is a picture of the panel to make sure you got the correct start guide.





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7. Lag Knob: this knob determines the fade in effect of final output #20 'vib' short for vibrato. This knob works for toggle switch #13 both 'lag' mode and 'gate' mode.
8. Sine Wave Level Knob: this is a level knob to control the output of the sine wave jack.
9. Triangle Wave Level Knob: this is a level knob to control the output of the triangle wave jack.
10. Saw/Ramp wave Knob: this is a level knob to control if you want saw or ramp for output. It acts as an attenu-inverter.
11. VCO/LFO Toggle switch: this switch determines the overall mode of the module. Use VCO mode for tones, LFO mode to control other modules in a slower rate.
12. FM AC/DC Toggle Switch: this has an internal 2.2uf non polar capacitor for the fm input, #19. In AC mode you use the capacitor, in DC mode you bypass the capacitor. You are free to use this on all cv signals, no harm done. Experiment.
13. Lag & Gate Mode Toggle Switch: this switch is used for the vibrato circuit. When in 'LAG' Mode you must patch a trigger or gate into jack #14. When in 'Gate' Mode you use jack #15. Both modes use the 'vib' jack, #20 to hear the effect. The 'Lag' knob is used for both modes. The Delay Knob only works with 'Lag' Mode.
14. Trig input jack: use this jack to patch a gate or trigger signal to use the 'Lag' Mode side of #13 toggle switch.
15. Gate input jack: use the jack to patch a gate signal to use the 'Gate' mode side of #13 toggle switch.
16. Sync Input jack: patch another vco signal hear, then use the 'sync knob' #3 to adjust the strength.
17. PCV jack input: use this to patch direct Pitch Control Voltages from a midi converter, sequencer, arpeggiator, etc.
18. Linear FM input jack: use this for Linear Control Voltage experimenting. The 'Lin' Knob is used to set the level.
19. FM input jack: patch a signal from another vco to get some cool frequency modulation. Use the 'FM Knob' #5 to adjust the level. Toggle switch #12 determines if you want AC/DC type modulation.
20. Vib output jack: short for Vibrato. Use this to hear the effect from toggle switch #13, switch #21, jacks #14 & 15, and knobs #6 & 7
21. Triangle/Sine wave selector switch: this selects the wave for the vibrato jack # 20.



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1. 10k & 100R trimmers: these are used to adjust the 1v/octave scaling of the expo converter. In other words 'tuning' or calibrating the vco. 10k determines the higher octaves, 100R adjusts the lower octaves.
2. 20K Tri Core Trimmer: this trimmer centers the actual triangle wave generator.
3. 10k Saw Centering trimmer: this trimmer adjust the saw or ramp wave shape. You also use the 20k tri core trimmer to help adjust the saw/ramp wave shape.
4. 100k Sine Shaper trimmer adjusts the top/ bottom curveness of the sinewave.
5. 100k Bias Shaper trimmer adjusts the centering of the Sine wave.
6. 1M Sine Level trimmer adjusts the overall level output of the sine wave.
7. 100k Offset trimmer is to adjust the Vibrato Output offset.
8. 100k Amp trimmer determines the level of the vibrato output jack.
9. 100k Sync Adjust trimmer way at the bottom determines how hard the sync will magnetize when the sync knob is fully clockwise.