VU006

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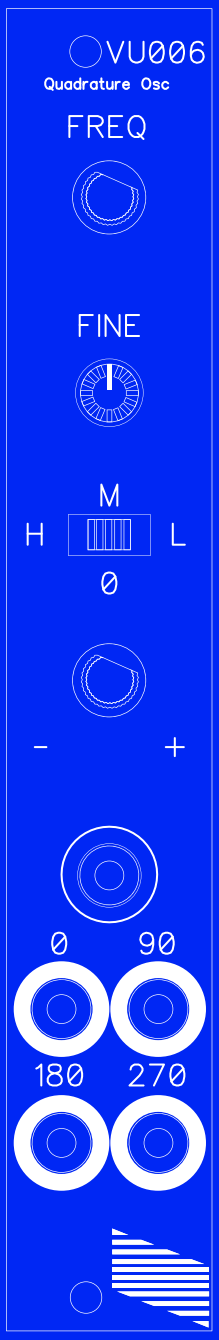
Quadrature oscillator ¬

User documentation / build guide



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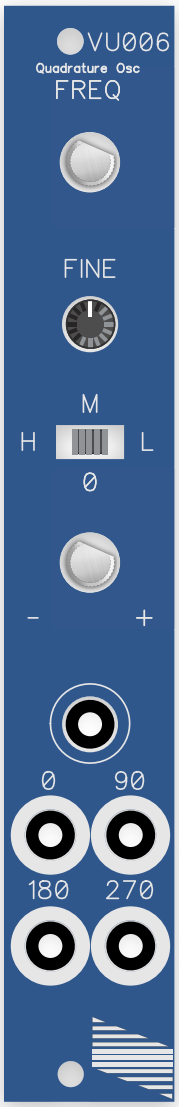
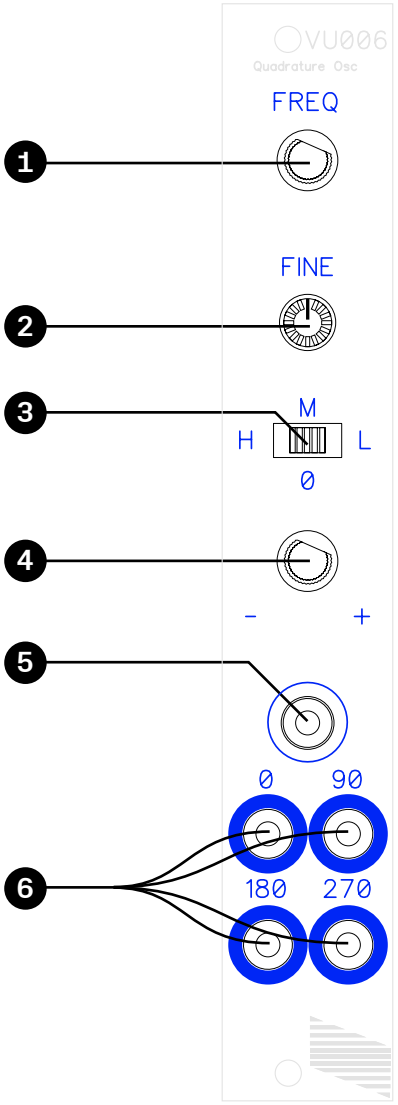


The VU006 is a low frequency to audio rate quadrature oscillator, outputting 4 sine waves 90 degrees apart. Based around two self-oscillating filters, it features a buffered frequency modulation input with attenuverter, a switch to select from 3 frequency ranges and a trimmer pot for fine tuning.

Specifications

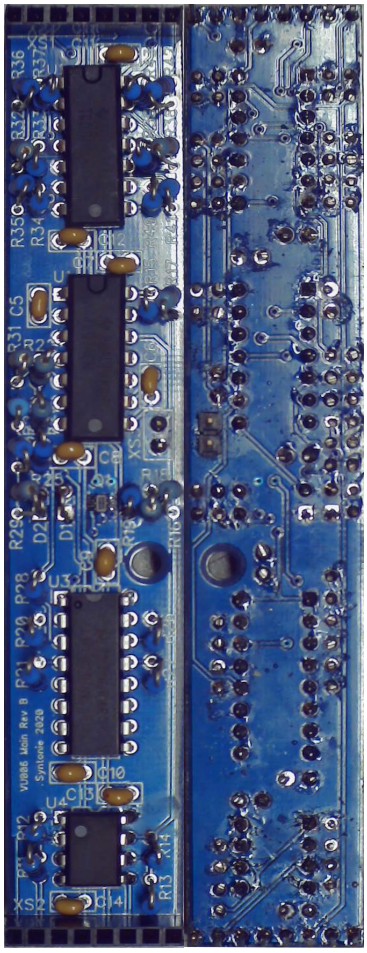
- 4HP
- 30 mA +12V
- 28 mA -12V
- 0 mA +5V
- 50mm deep

Special thanks to: **Ian Fritz** for the self-oscillating filters design from the ChaQuO and **Yves Usson/Yusynth** for his take on Fritz design, using transconductance amplifiers in place of op-amps, allowing for external voltage control / **Lorenzo Ferronato** for the documentation design // And of course, **everyone who has supported Syntonie until now & those who will support it in the future.**



(1) Set the oscillator's frequency
(2) Set frequency of the oscillator (10 times finer than FREQ)
(3) Set the frequency range : Low (0.02Hz to 10Hz), Mid (6Hz to 2.5kHz)
(4) Attenuates and/or inverts the signal coming from FM input
(5) FM input 0-1 / `0-1V, 100k ohm`
(6) Sinewave outputs / `0-1V, 499 ohm`

¬ The FM attenuverter can be used as an additionnal tuning pot by connecting the FM input to a 1V source, allowing for even slower cycles.
¬ In High range the sinewaves remain consistent up to about 15kHz, they then start distorting resulting in a clipped sinewave.

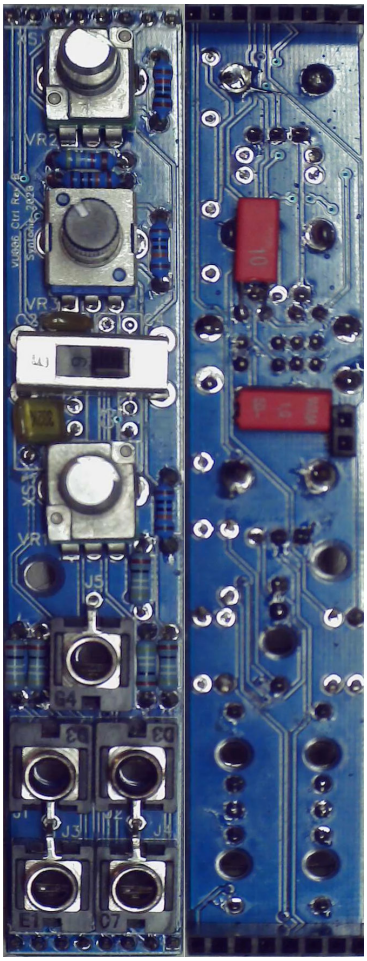


Use the interactive BOM regarding component placement / Find the BOM here

Place and solder the components in the following order:

- **1** Resistors **(be careful not to short leads** as resistors are standing vertically**)**
- **2** Diodes **(pay attention to the orientation)**
- **3** Capacitors
- **4** IC sockets/ICs **(pay attention to the orientation)**
- **5** 8 pin header & socket **(pins go on the solder side, socket on the component side)**
- **6** 2 pin header **(pins are soldered on the component side, header socket is on the solder side)**

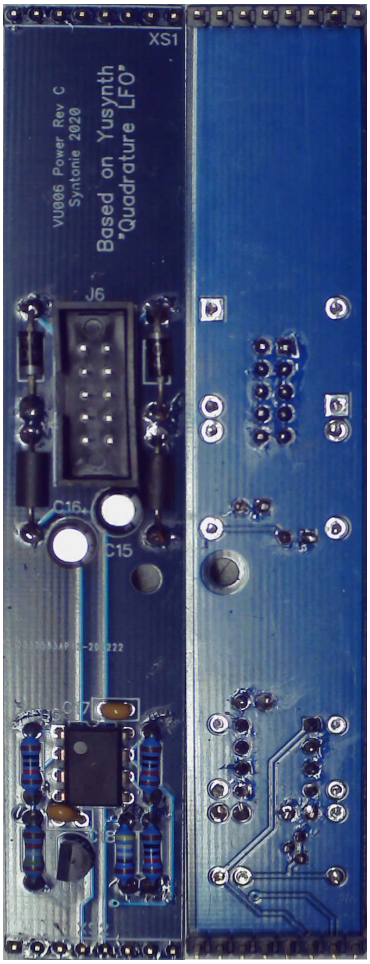
Q1 comes presoldered with the pcb set & full kit.



Use the interactive BOM to look for component placement / Find the BOM here

Place and solder in this order :

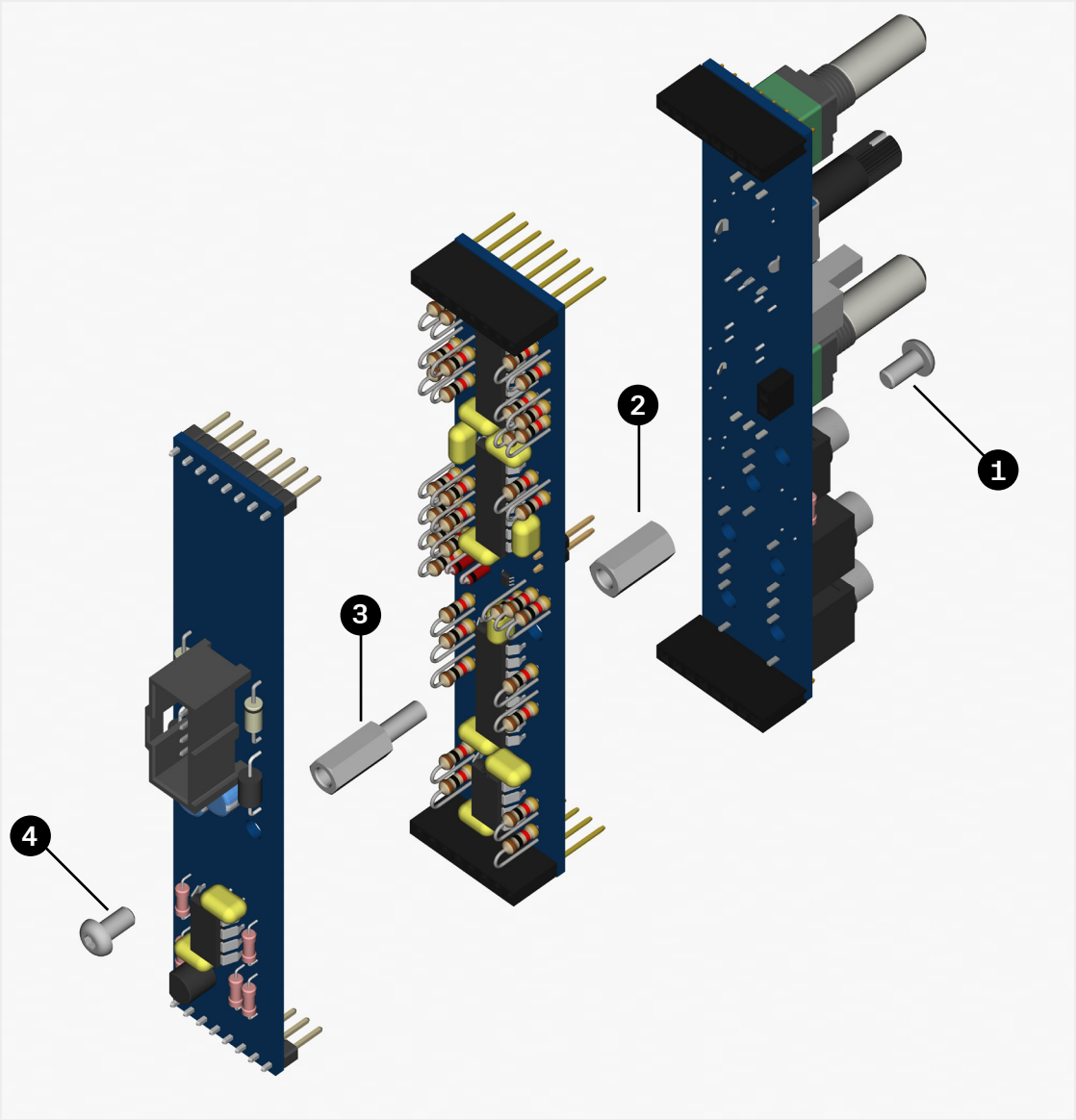
- **1** Resistors
- **2** Capacitors (**C3** and **C4** need to be **bent and fitted on the solder side**)
- **3** Jacks **(solder one pin and check that the part is sitting straight**, if so solder all the other pins)
- **4** Potentiometers/Tall trimmers **(same as above)**
- **5** Switch **(same as above)**
- **6** 8 pin sockets **(soldered on component side, socket on the solder side)**
- **7** 2 pin header **(soldered on component side, socket on the solder side)**



Use the interactive BOM to look for component placement / Find the BOM here

Place and solder in this order :

- **1** Resistors
- **2** Capacitors **(pay attention to the orientation of the electrolytic capacitors)**
- **3** Diodes **(pay attention to the orientation)**
- **4** Ferrite beads
- **5** Voltage reference
- **6** IC sockets/IC
- **7** 8 pin headers **(short pins on the component side, box header on the solder side)**



(1) 6mm M3 screw
(2) 12mm M3 spacer
(3) 10mm+6mm M3 spacer
(4) 6mm M3 screw

Stackable headers pins can be trimmed of 1-2mm to make distance between both boards closer to 12mm

- **Rev B :** initial release
- **Rev C :** voltage ref footprint fixed on Powerboard

Note : first pcb sets includes Control Rev B, Main Rev B and Power Rev C

References

- Ian Fritz ChaQuO
  http://ijfritz.byethost4.com/Chaos/ChaQuO_board_doc.pdf
- Yusynth - Quadrature LFO
  http://yusynth.net/Modular/FR/QUAD-LFO/index.html
- LZX – Reference Designs
  https://github.com/lzxindustries/lzxdocs/blob/master/Reference%20Designs/LZX%20Interface%20Examples%20RevA.pdf
- circuitjs simulation
  https://tinyurl.com/y6yk3hg5

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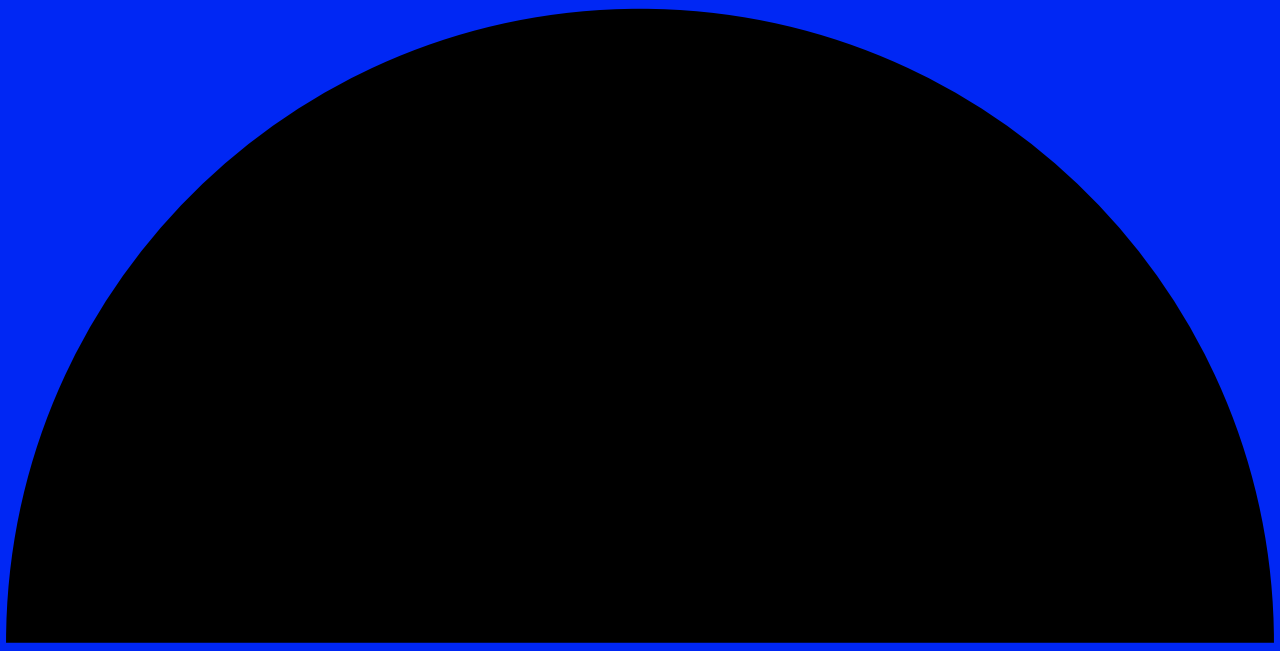

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