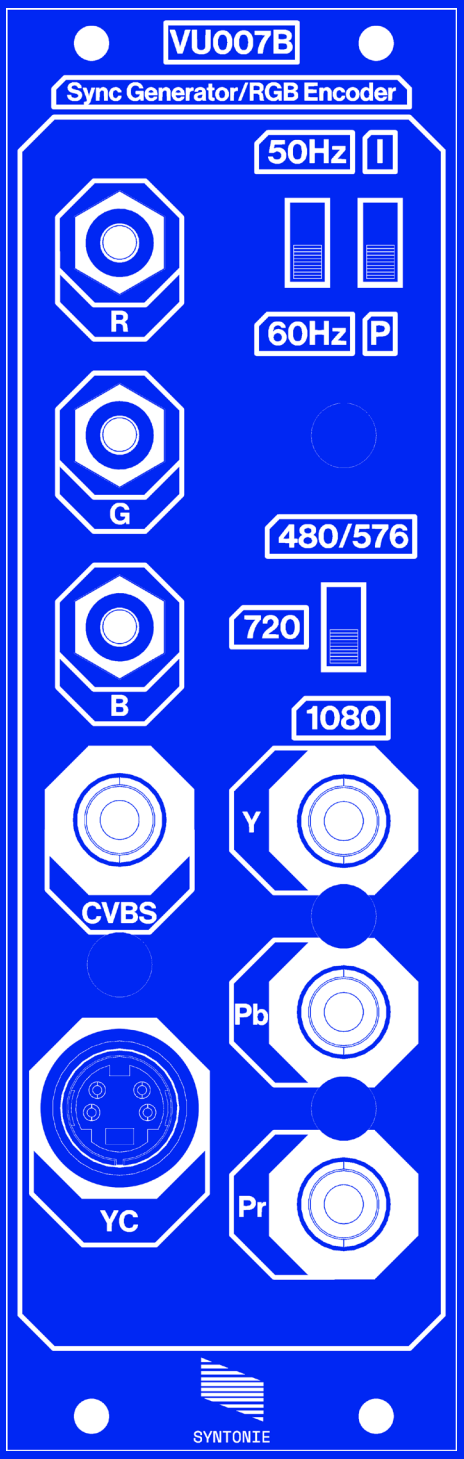
VU007B

Sync Generator / RGB Encoder ¬
Build guide (THT)



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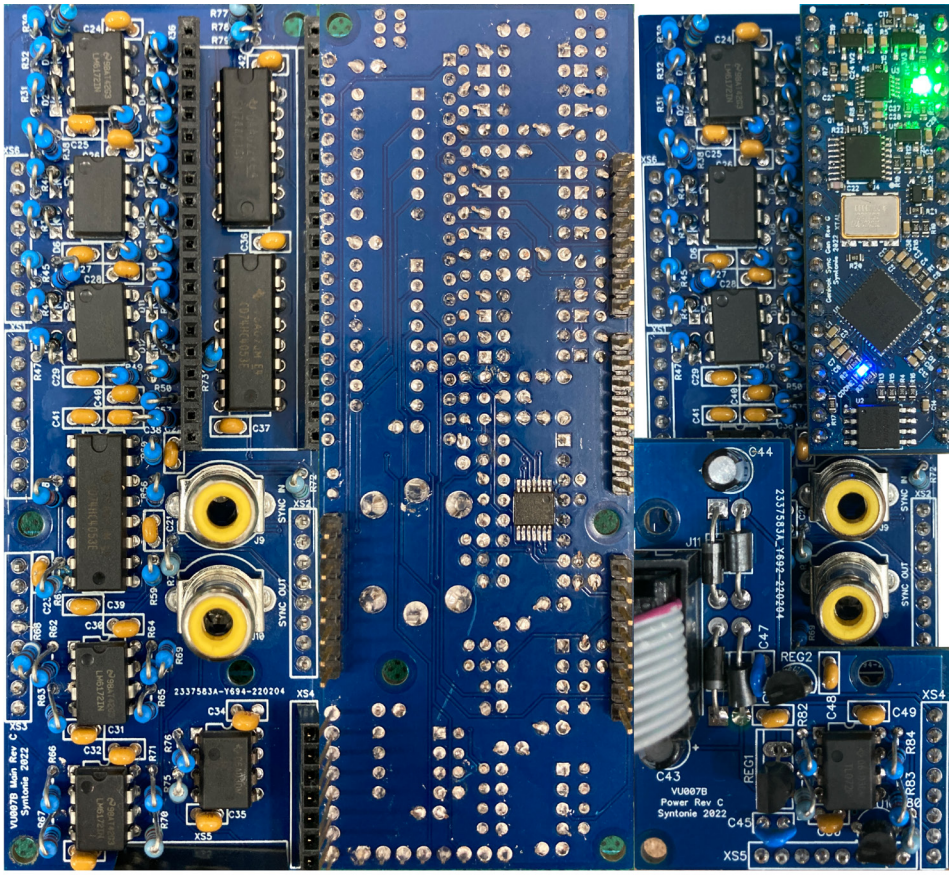
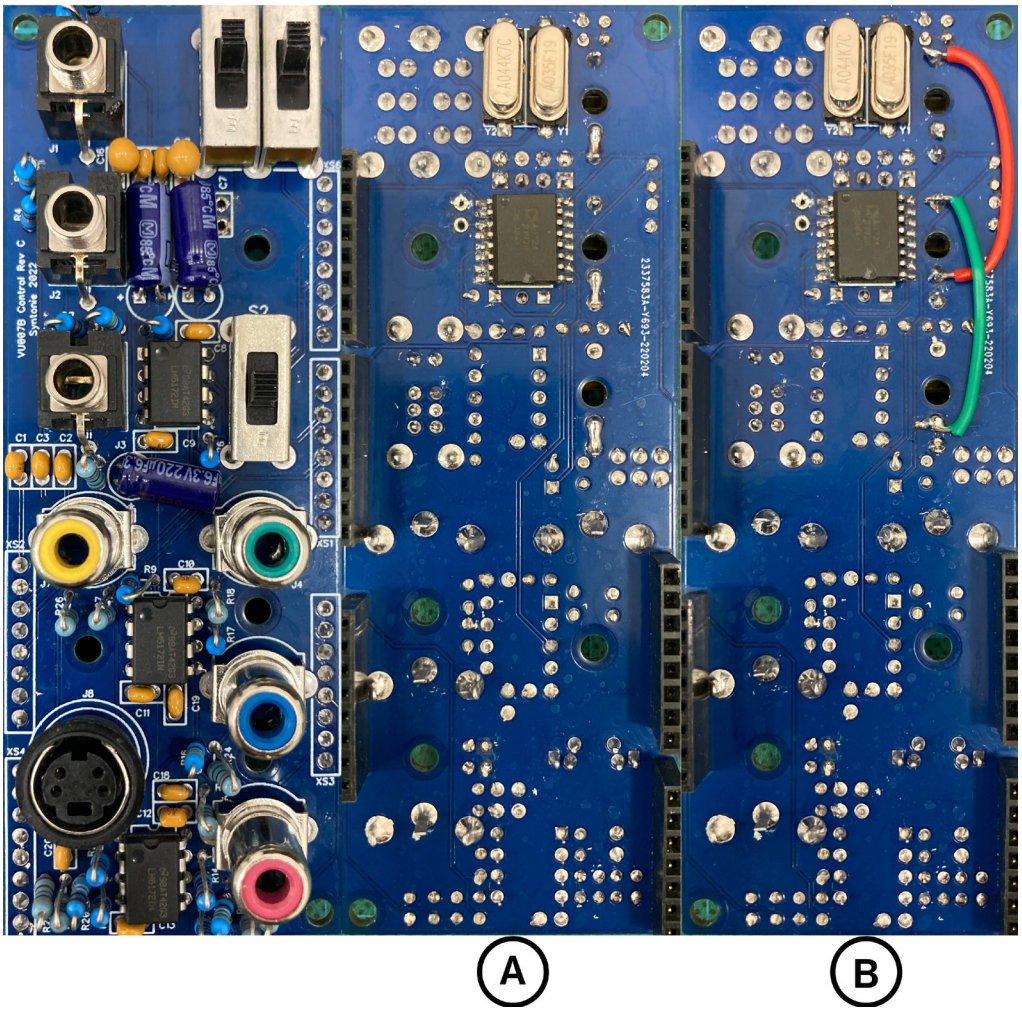


Use the interactive BOM regarding component placement / Find the BOM here

Place and solder the components in the following order:

- **1** Capacitors
- **2** 20 pin sockets for sync generator board
- **3** Resistors **(be careful not shorting leads as resistors are standing vertically)**
- **4** Diodes **(pay attention to the orientation)**
- **5** IC sockets/ICs **(pay attention to the orientation)**
- **6** 8-pin connectors **(check exploded view at the end of the document for orientation)**
- **7** RCA sockets **(picture show RCJ-024 (Yellow RCA), the BOM/kit include RCJ-021 (Black RCA))**

Note: Resistors around the 20pin connector, left of the sync generator board, are quite close together, so it's recommened to solder the connector first so it sits straight on the board. ADA4851-4 comes pre-soldered to the board, be careful when soldering components that are near.
If you're building VU007B using IC sockets, R73 needs to be mounted on the solder side of the board, as there is not enough clearence between the 20pin connector and U11 socket, else you can mount U11 without socket.
Picture on the right shows the orientation of the sync generator board, once all the boards are connected together and the module powered, the power LED on the sync generator board should light up green. (The blue LED is the CDONE indicator, showing that the bitstream have been flashed to the FPGA upon power up).



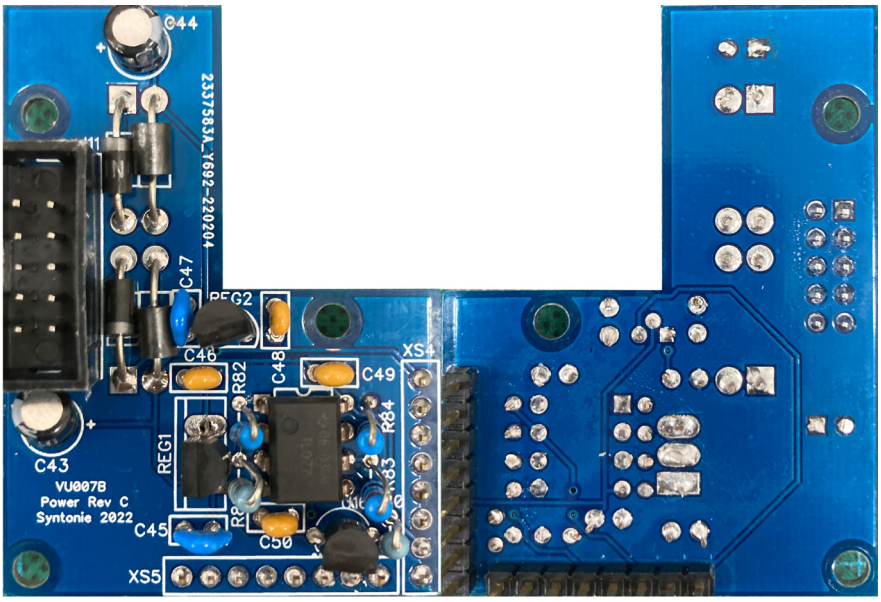
Use the interactive BOM to look for component placement / Find the BOM here

Place and solder components in the following order:

- 1 Capacitors **(pay attention to the orientation of the tantalum (C16,C17), & electrolytic caps, square pad is +)**
- 2 Resistors **(be careful not shorting leads as resistors are standing vertically)**
- 3 IC sockets/ICs **(pay attention to the orientation)**
- 4 8-pin connectors **(check exploded view at the end of the document for orientation)**
- 5 Jack, RCA, Mini-Din connectors
- 6 Switches

Note: the 220uF electrolytic capacitors (C4, C5, C6) are mounted parallel to the board to make clearance for the front panel.

Modifications (optional): Picture (A) shows how the switch pin of each R, G and B input jack can be grounded, so it ensures that no unwanted offset is present when nothing is plugged into the jacks (haven't encountered this issue with the THT version, though the SMD version requires it because it uses different op-amps).
Picture (B) shows how the switch pin of the Green jack can be connected to the signal pin of the Red jack, and the switch pin of the Blue jack connected to the signal pin of the Green jack. This way, when a signal is sent to the Red input, it is also distributed to Green and Blue inputs, resulting in a Black and White output (and Cyan when the signal is plugged in the Green jack).

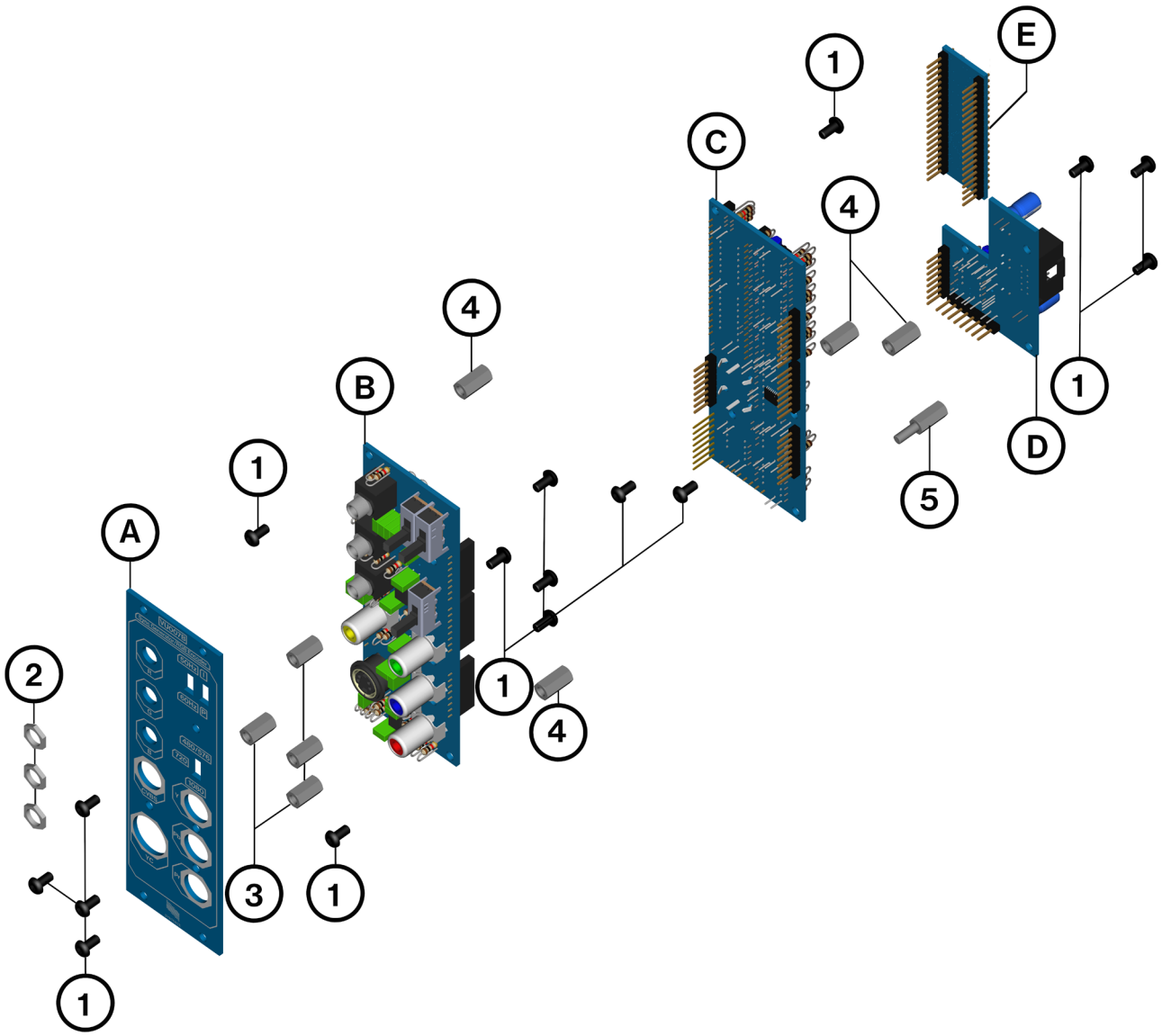


Use the interactive BOM to look for component placement / Find the BOM here

Place and solder components in the following order:

- **1** Diodes/Ferrite Beads **(pay attention to the orientation of the diodes)**
- **2** Capacitors **(pay attention to the orientation of the electrolytics capacitors)**
- **3** Resistors **(be careful not shorting leads as resistors are standing vertically)**
- **4** IC sockets/ICs/Transistor/Voltage regulators **(pay attention to the orientation)**
- **5** 10-pin power box header **(pay attention to the orientation)**
- **6** 8-pin headers **(short pins on the component side, long pins on the solder side)**

Note: REG1 has a TO-220 footprint, whereas a TO-92 part is used (78L05). Check the picture to make sure it is oriented correctly.



(A) Front panel
(B) Control board
(C) Main board
(D) Power board
(E) Sync Generator board

(1) 6mm M3 screw
(2) 3.5mm jack nuts
(3) 10mm M3 FF spacer
(4) 11mm M3 FF spacer
(5) 11mm M3 MF spacer

Revision log

- **Rev C :** initial release

References

- Video Demystified Fourth Edition – YCbCr Color Space, p.17
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- LZX – Cadet RGB Encoder
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- LZX – Reference Designs
  https://github.com/lzxindustries/lzxdocs/blob/master/Reference%20Designs/LZX%20Interface%20Examples%20RevA.pdf

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