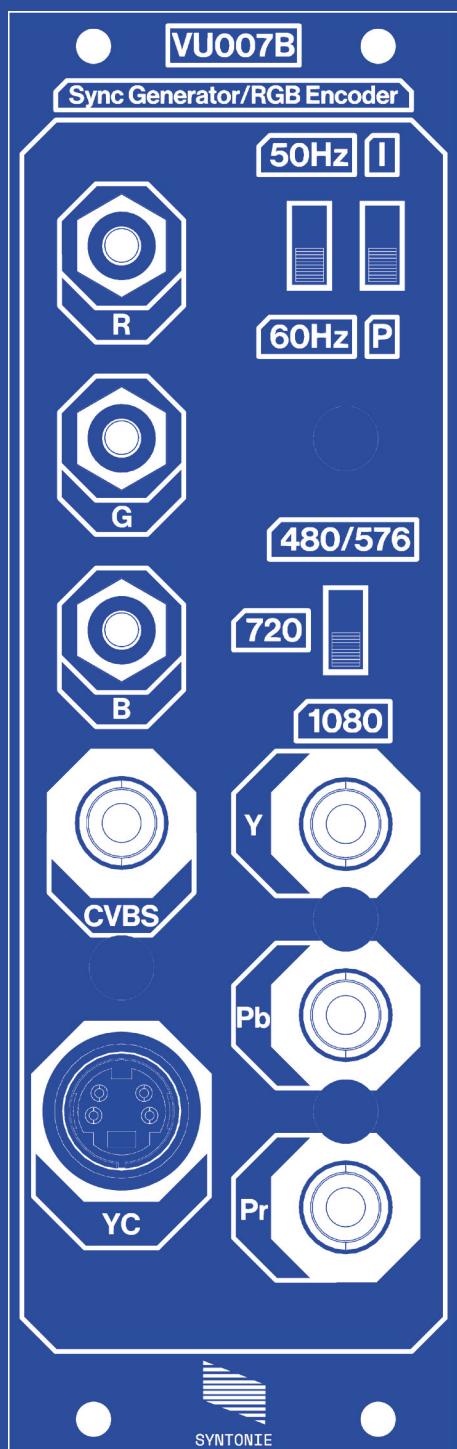
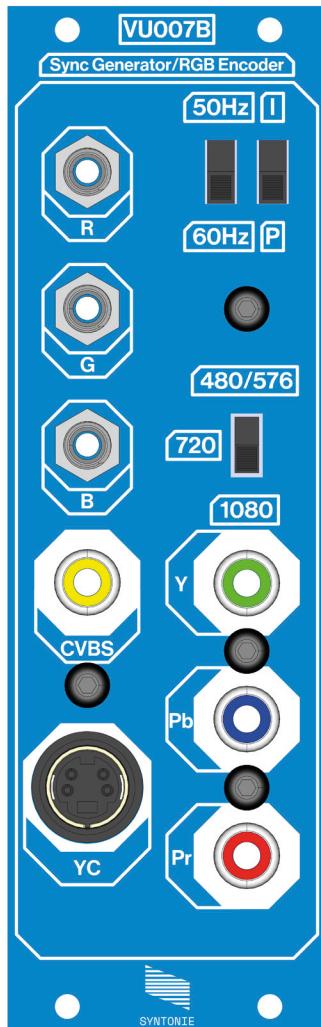


# VU007B

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## Sync Generator / RGB Encoder - User documentation



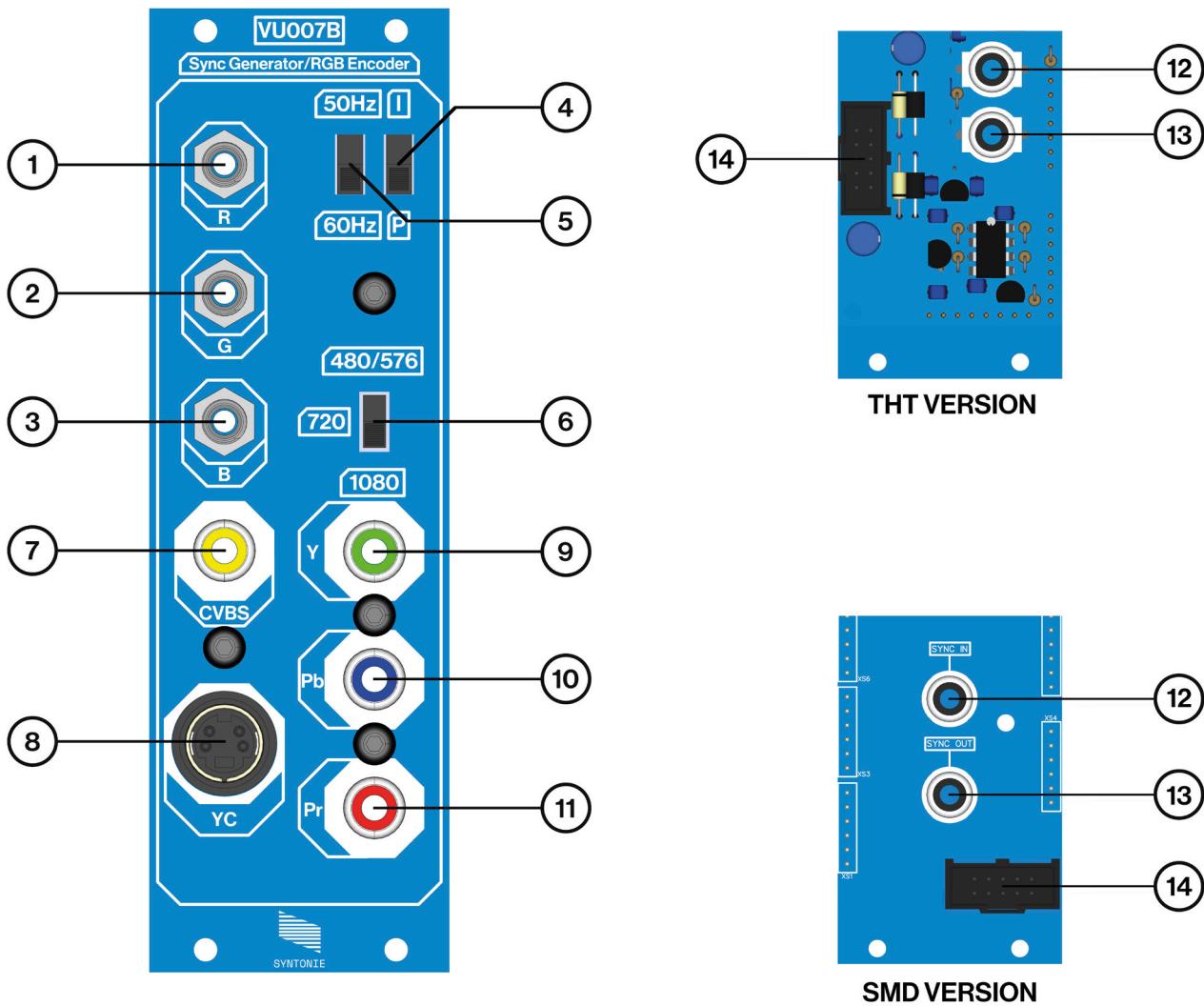


VU007B is a SD/HD sync generator/RGB encoder. It takes 1V RGB inputs and encodes them into Composite, S-Video and Component video signals.

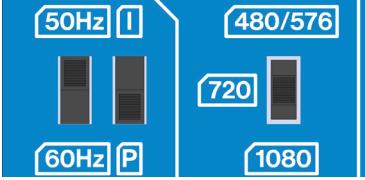
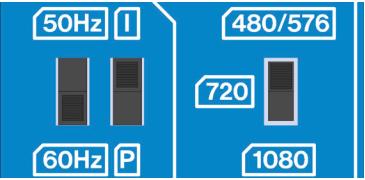
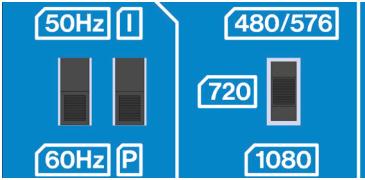
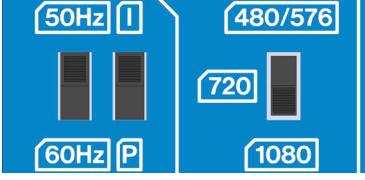
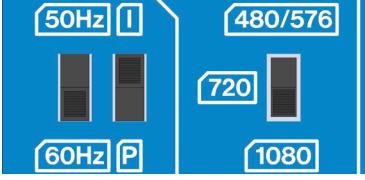
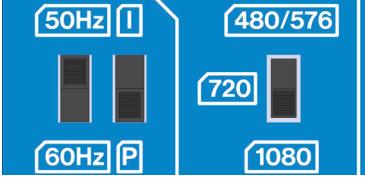
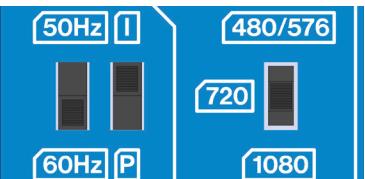
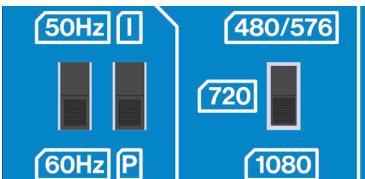
### Specifications

- 8HP
- 120 mA +12V
- 60 mA -12V
- 0 mA +5V
- 50mm (THT)/30mm(SMD) depth

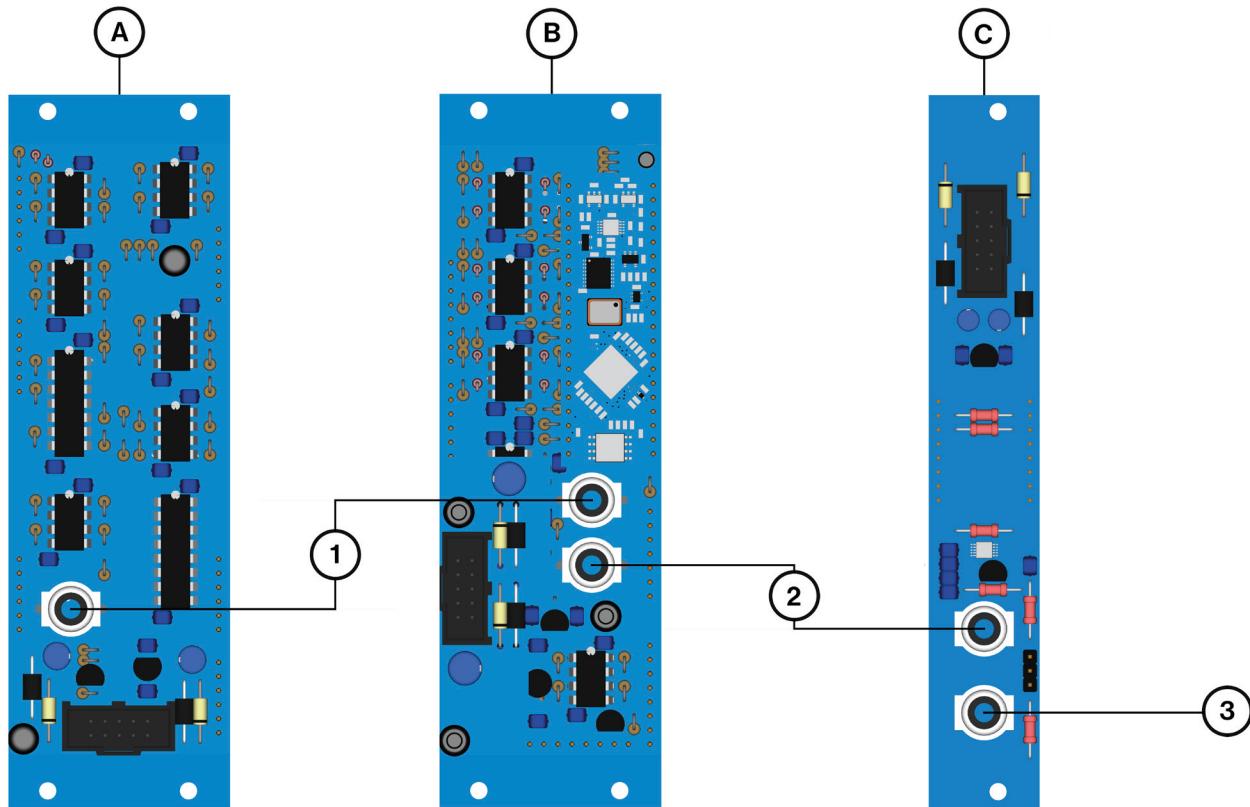
Special thanks to: **LZX Team** for the Cadet series of modules which have been the starting point to develop this module.  
**Eric Schlappi** for the help with FPGA/Verilog for the design the sync generator. **Lorenzo Ferronato** for the documentation design // And of course, **everyone who has supported Syntonie until now & those who will support it in the future.**



- |  |  |
|--|--|
| <b>(1)</b> Red input : 0-1V, 100kΩ, minijack                             | <b>(8)</b> S-Video output : 0-700mV, 75Ω, Mini Din-4 |
| <b>(2)</b> Green input : 0-1V, 100kΩ, minijack                           | <b>(9)</b> Y output : 0-700mV, 75Ω, RCA              |
| <b>(3)</b> Blue input : 0-1V, 100kΩ, minijack                            | <b>(10)</b> Pb output : 0-700mV, 75Ω, RCA            |
| <b>(4)</b> Scan type switch : Interlaced/Progressive                     | <b>(11)</b> Pr output : 0-700mV, 75Ω, RCA            |
| <b>(5)</b> Frame rate switch : 50Hz/60Hz                                 | <b>(12)</b> Sync input : 0-700mV, 75Ω, RCA           |
| <b>(6)</b> Resolution switch : 480 or 576 lines / 720 lines / 1080 lines | <b>(13)</b> Sync output : 0-700mV, 75Ω, RCA          |
| <b>(7)</b> Composite output : 0-700mV, 75Ω, RCA                          | <b>(14)</b> Power input : +12V/-12V, IDC 10pin       |

	576i50 (PAL)		720p50
	480i59.94 (NTSC)		720p60
	576p50		1080i50
	480p59.94		1080i60
	288p50		1080p25
	240p59.94		1080p30

→ Note: Composite and S-Video outputs only work in 576i50/480i59.94/288p50/240p59.94



- |  |   |
|--|---|
| <b>(A)</b> VU003B Component2RGB/Luma Proc      | <b>(1)</b> External video signal to sync generator<br>(RCA cable)     |
| <b>(B)</b> VU007B Sync Generator / RGB Encoder | <b>(2)</b> Generated sync to oscillator<br>(RCA cable)                |
| <b>(C)</b> VU009 Sawtooth Oscillator           | <b>(3)</b> Generated sync to next modules in the chain<br>(RCA cable) |

Displayed here are the basic connections for sync distribution accross a modular system:

- The sync contained in the external video signal plugged into the Y input at the front of VU003B is duplicated at the back of the module at the Y Thru output.
- It is then sent to VU007B Sync Input so the sync generator can lock to the external signal.
- VU007B Sync Output is connected to VU009 Sync Input so the oscillator is in-sync with the sync generator (or external video signal if it is present).

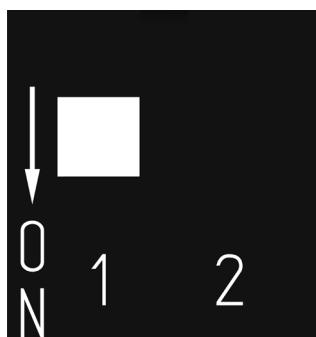
**Note:** The sync generator needs to be set to the same video format as the external video source.

- Addition of 5 new formats not supported by the previous sync generator board:

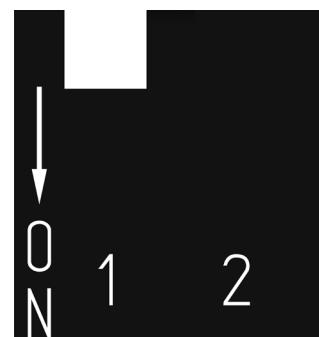
- 720p59.94
- 1080i59.94
- 1080p29.97
- 1080p23.98
- 1080p24

To select those formats, a DIP switch (position 2) has been added to the sync generator board, check the format selection page for details.

- Format autodetection feature: the previous sync generator board asked to set the format of the module to be the same as the format of external video. Format autodetection allows the sync generator to detect the external video format and automatically switch the internal format accordingly. The autodetection can be turned on or off with the DIP switch (position 1).



Autodetection OFF

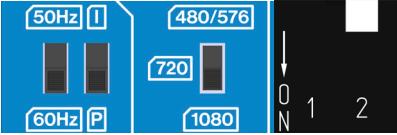
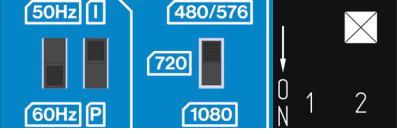
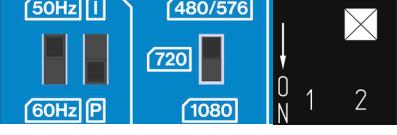
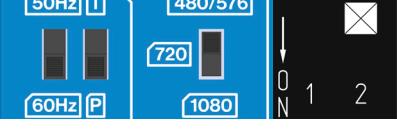
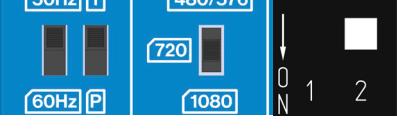
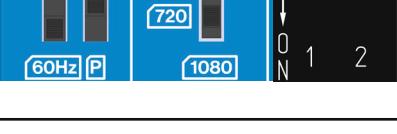
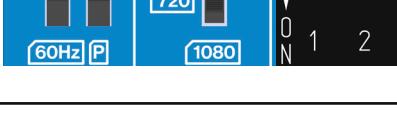
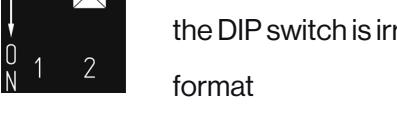


Autodetection ON

You can leave the autodetection on, as there is no particular issues after testing it for a couple months. When no external signal is present, the sync generator reverts to the format set by the front panel switches + DIP switch (position 2), until an external video signal is connected to the rear sync input on VU007B.

- Improved genlock: the previous sync generator board could take some time to fully lock to the external video signal, resulting in the external video slowly hovering left and right. It now locks (virtually) instantaneously.

**Note:** Assembled VU007B up to serial number **75** included are equipped with the previous sync generator board.

	576i50 <b>(PAL)</b>		1080p29.97
	480i59.94 <b>(NTSC)</b>		1080p30
	576p50		1080i50
	480p59.94		1080i59.94
	288p50		1080i60
	240p59.94		720p50
	1080p23.98		720p59.94
	1080p24		720p60
	1080p25		This indicates that the position of the DIP switch is irrelevant for this format

The updated sync generator board is a drop-in replacement of the existing board.

¬ **VU007B SMD/Production version:**

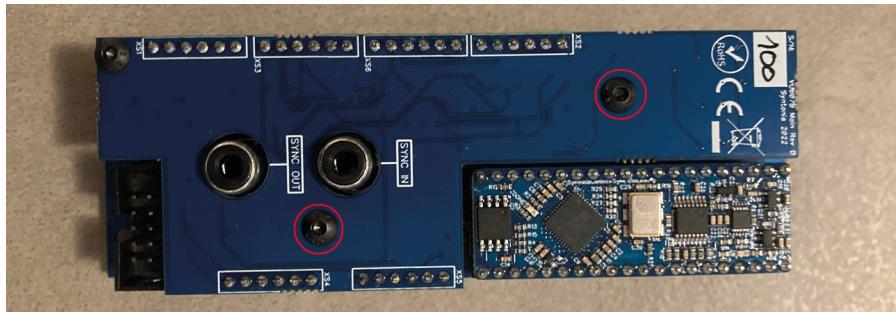
- 1) Unscrew the module from the case and disconnect the power cable.
- 2) Locate the sync generator board (top right when looking at the module from the rear).
- 3) Remove the old sync generator board by lifting it up. Since only one side of the board is accessible, it may ask to use something long and thin in order to lift it on the side that isn't accessible.
- 4) Insert the new sync generator board and make sure the DIP switch located on the sync generator board is accessible from the top of the module. This will ensure that the sync generator board is oriented correctly.
- 5) Connect the power cable and screw the module back in place.

¬ **VU007B THT/DIY version:**

- 1) Unscrew the module from the case and disconnect the power cable.
- 2) Locate the sync generator board (top right when looking at the module from the rear).
- 3) Remove the old sync generator board by lifting it up.
- 4) Desolder R77, R78 and R79 resistors, and solder them on the other side of the board, or replace them with 0805 or 0603 SMD 100ohm resistors, otherwise, they'll be in the way of the DIP switch.
- 5) Insert the new sync generator board and make sure the DIP switch located on the sync generator board is accessible from the top of the module. This will ensure that the sync generator board is oriented correctly.
- 6) Connect the power cable and screw the module back in place.

VU007B production version now comes with a DC power add-on board. Here are the instruction to attach and use this board to your module if you're getting it separately.

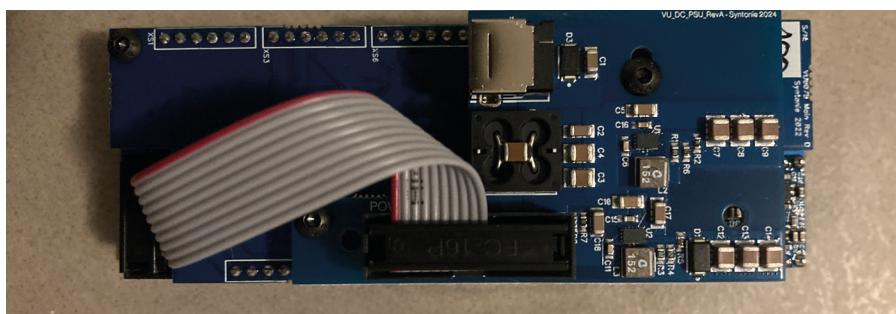
- 1) Unscrew the two screws circled in red



- 2) Add the two 8mm MF spacers in place of the screws



- 3) Mount the PSU add-on board on the spacers using the previously removed screws, and use the 8cm ribbon cable to connect the PSU board to the module



- 4) Connect +12VDC power to the DC barrel input. VU007B +12VDC current consumption: 230mA.

- 5) To revert to Eurorack power, simply connect the ribbon cable to the 10pin connector on VU007B on one side, and to the 16pin connector on the Eurorack power supply on the other side.

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# VU007B

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