Buffered video sync busboard for (DIY) LZX or other video synthesizers.

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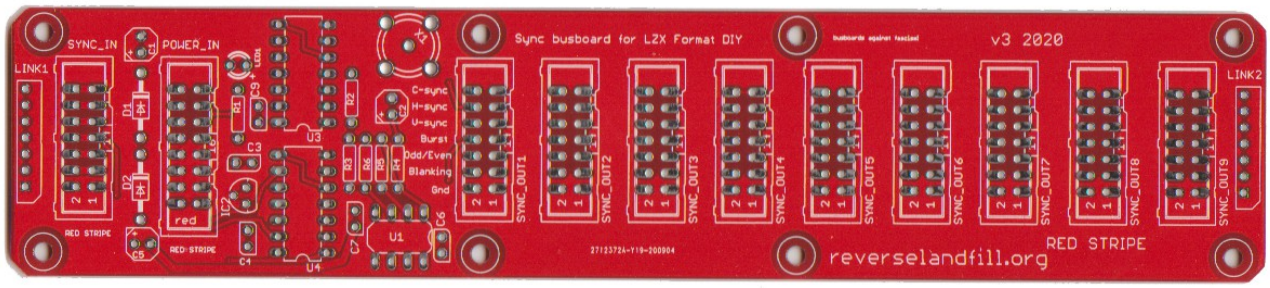

This buffered sync busboard is designed for connecting several Cadet / DIY modules
that use the 14 pin sync bus. You need a Cadet Sync Generator or Visual Cortex as sync source.

Features:
There is one 14pin sync input and nine sync outputs.
The busboard has one C-sync outputs for LZX modules that use RCA connections.
The RCA output has a vertical RCA socket.
This board needs to be powered and has one 16pin power header.
For more custom systems there are also 2 "screw terminal" type connectors.

Resistors:
Start your build with the resistors.
R1: 3k (this sets the brightness of the LED)
R2: 130k
R3: 18k
R4: 75r
R5, R6: 499r (yellow-white-white-black-brown)

Diodes:
These are for the reverse power protection.
D1, D2: 1n4001
LED: a yellow LED. (If you have another color, adjust R1 for brightness. 10K for red)

IC's & sockets:
U1: 8pin socket + LM6172 (C-sync output buffer)
IC2: 78L05 (the 5v regulator)
U3, U4: 14pin socket + 74HC14N (the buffers for the sync signal)

Connectors:
Put all the headers in, flip the board and lay the pcb on a flat surface.
Solder 2 pins of each header. Now flip the board and check if all headers are aligned correctly.
Correct by reheating the soldered pads. Now solder all pins.
Sync in & sync out: 14pin shrouded headers
Power in: 16pin shrouded header

Capacitors:
Start with the smaller ones!
C3: 330nF
C4, C6, C7, C9: 100nF (kit builders: mount these 'standing up')
C1, C5: 10uF (longer leg = PLUS)
C2: 100uF (longer leg = PLUS)

RCA output:
Solder the vertical RCA socket at the X1 location. Make sure it is aligned correctly!

Testing:
The Sync Busboard needs power.
Plug a 16 pin powercable from your eurorack busboard to the sync busboard "power in" header.
Turn on the power supply. The yellow led should light up.
Turn off the powersupply.

Connect a Sync source module (Cadet Sync Generator or a Visual Cortext) to the "Sync in"header.
Connect a module that needs sync (VCO, Ramps or Video input) to the 14pin "sync output" header.
Turn of the power supply and test if the VCO is synced.

The RCA (C-Sync) output can be connected to LZX modules that use this kind of sync method.

note:
If you have a Visual Cortex and a Cadet Sync Generator , use the Visual Cortex as master.

Original design thread:

https://community.lzxindustries.net/t/sync-busboard-design-for-cadet-diy-systems/602 1

This project was made possible by the kind help of L.Larsen and users of the LZX community forum. Special thanks goes to user Agawell for his help testing the RCA sync output.
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