

Build guide

508: Loop Detected ec500 3U (e.g. eurorack) VGA adapter v1.2

Introduction:

The ec500 is an expandable analog video synth system based on the ideas laid out by Jonas Bers in his CHA/V project. Briefly, the core concept is this: VGA monitors are still fairly ubiquitous, especially older flat-panels (although CRTs are more fun, sure). The VGA standard is readily hackable because it breaks out the six necessary components – red, green, blue, hsync, vsync, and ground – into separate pins. It's also fairly forgiving of signals out of spec (although the ec500 tries to keep those to a minimum).

This VGA adapter is how you interface your VGA signal provider with the ec500 system. By default, we use the same little red \$5 VGA tester that Jonas used in the original CHA/V, but you can theoretically use anything else that outputs a VGA signal, up to & including your laptop, which I do **not** recommend, for the sole reason that I do **not** make any promises about this not damaging your laptop.

In essence, your VGA source plugs in to the upper VGA connector (cleverly labeled "IN"), and your VGA display device plugs in to the lower one, and your ec500 error.core connects via the 16-pin ribbon cable in the center. That's all there is to it. This adapter routes the necessary signals – R, G, B, hsync, vsync, ground – to the ec500, and then brings back whatever mangled RGB you generate with the ec500, sending it along to your display device.

Note: Unlike the previous ec500 VGA adapter, this one has two female VGA connectors. You will need a gender changer or any VGA (male-to-male) cable to connect your input source.

There are also three sets of pin headers, which make the R, G & B signals from your source device more directly available for patching. If you're using the \$5 VGA tester, this will just be the color bars. But if you're using another VGA source, there's more fun to be had.

Important note: this is not a Eurorack module!!! DO NOT plug Eurorack power into the 16-pin connector on this thing. You will fry it, and possibly also fry your Eurorack system. YOU HAVE BEEN WARNED.

The build:

The component placement is fairly self-explanatory, and follows the BOM and the labels on the PCB. Do the surface-mount stuff first. Then proceed from shortest (the right-angle 2x8 female header) to tallest (the VGA connectors). That way you can use gravity to kinda hold things in place. For all of the through-hole components I strongly suggest tacking one pin and then

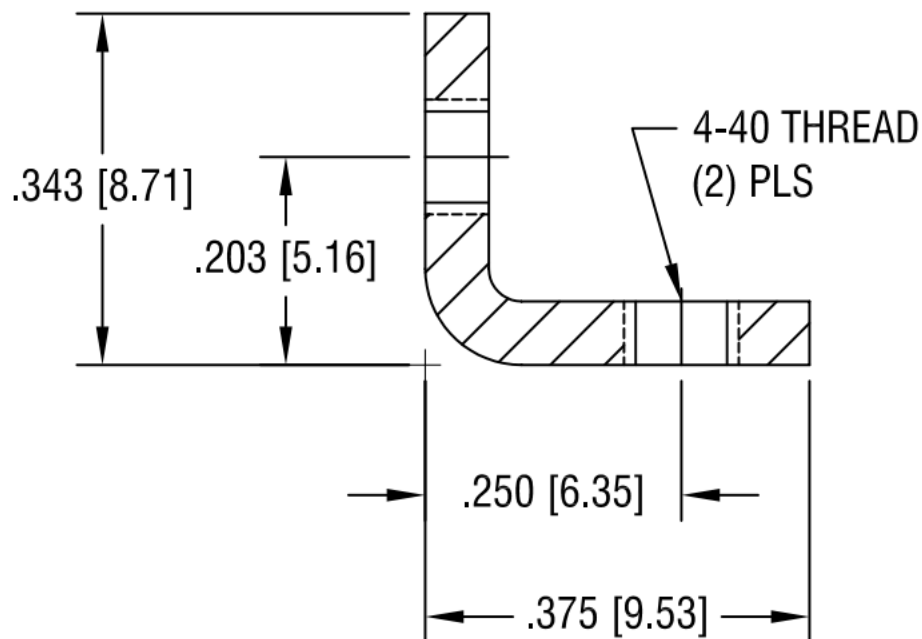
double-checking whether they're flush to the board before continuing. Blue masking tape is also your friend.

When it's time to attach the panel, the hardware is a little fiddly. If you bought a kit from me, you should have received the following:

- 3 right-angle brackets with threaded holes
- 6 4-40 screws 3/16" long
- 4 4-40 male/female hex standoffs (a.k.a. D-Sub Hex-head screws)

If you're sourcing things on your own, there are some Mouser part numbers in the BOM. The right-angle brackets are Keystone 621. I can't vouch for any other hardware.

Note the tricky bit with the Keystone 621:

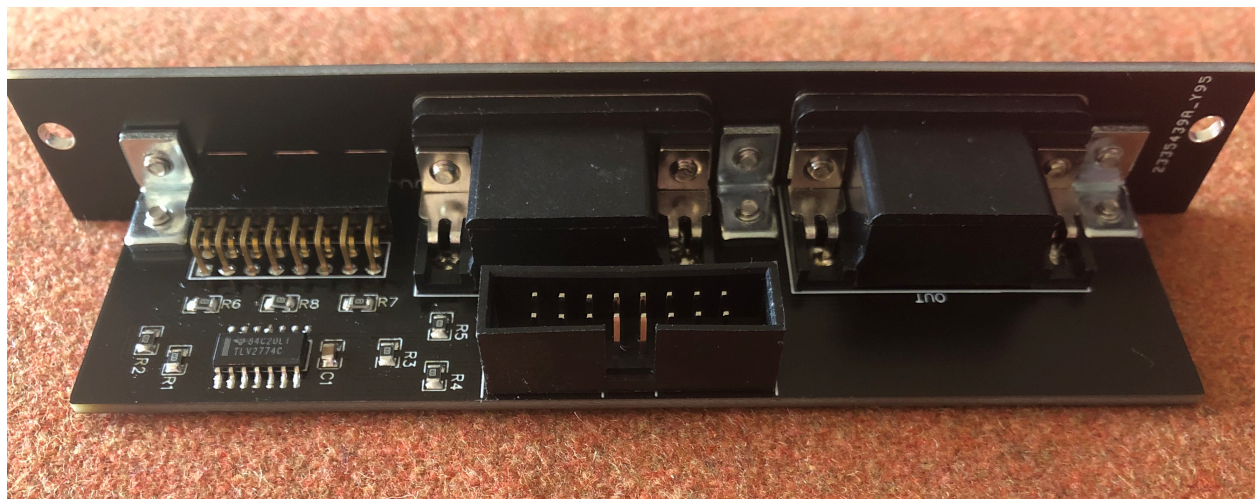
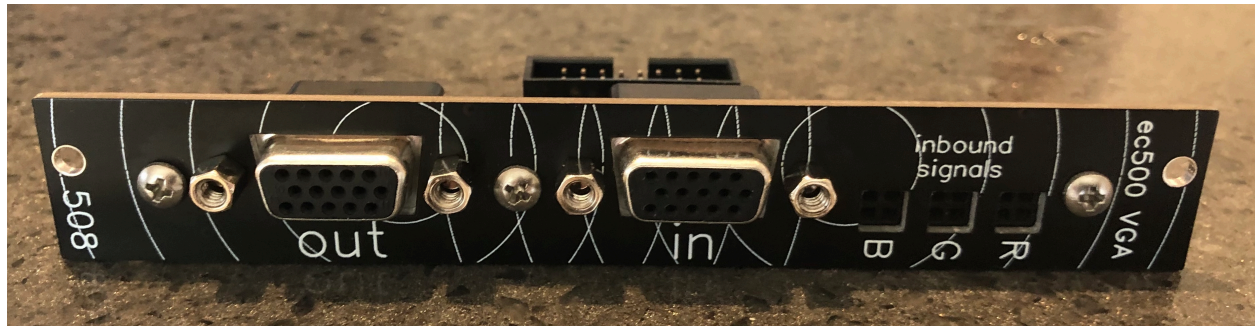


That's right, it's longer in one dimension than the other. Good times!

The ec500 Eurorack VGA adapter was designed so that it will fit together most correctly if the longer side of the 621 is on the PCB, and the shorter side is on the panel.

The D-Sub hex-head screws screw through the panel & into the corresponding holes on the VGA connectors.

When everything is together, it should look like this:



Good luck!

-- Ross Grady, August 16, 2020