



DE-4 GBU-12 Paveway II

As of April 2023 the GBU no longer need the 1N4001 Diodes for power protection, SMD equivalent has been pre-soldered. The old version is a green pcb and the new one (1n4001 free) is black. The new version uses 12 pins for both headers and pins. The gate out has also been slightly buffered to about 8v (from slightly below 5v in early version), everything is the same.

GBU-12 is a three channel 8hp chaotic CV generator in Eurorack format. It has two CV outputs (X and Y) per channel as well as a gate out (it fires a gate whenever output X is higher in voltage than output Y) as well as a CV input. Each channel is completely independent of each other and does its own thing. The module is highly sensitive to incoming CV and can receive pretty much anything: gates, triggers, lfo's, envelopes, clocks and audio. A good way to start with this module is to blend it with a static LFO. A typical patch would be OSC to a filter or a VCA. Mix a static triangle LFO with an output of GBU-12. Work with mixer levels so you have something that alters the modulation to your liking. That modulation will never get stale or dull, yet it is not completely random. There are plenty of video explanations on the internet about chaotic CV and I suggest you watch some of them and learn why chaotic doesn't mean random at all. Fun is to be had. Another good way to start learning from this particular circuit (and also to check that it works) and what it does is to inject the outputs into a 1v/oct of an oscillator and listen to what it does.

The GBU-12 is considered a "jerk" circuit, which means it oftentimes starts with a more sudden "pull" that then evens out. It is a bit wilder than the chaotic circuits used in most other modules, but far from random or predictable (as you will learn if you spend enough time with it). The chaotic gate is really useful in triggering other envelopes on a semi regular basis, when

timing is not essential and you want diversity and life in your patch. Use it to reset an LFO. To ping a filter or Lowpass-gate or to trigger drums or “events” in your patch.

The knobs changes the behavior of the waveform of each channel. It tends to get a bit wilder at full CV and slightly more predictable when full CCV (at full CCV it can sometimes even stop in its tracks for a while – this is normal).

The different channels on the GBU-12 has different initial speeds from “fast” on top to slow at the bottom. You can change the initial speed somewhat by sending it CV (why not a clock?) otherwise it will just do its own thing.

Build guide.

Building this is pretty straight forward since all SMD components are pre-soldered. Follow the silkscreen for orientation and place the diodes accordingly. Place the power connector according to the silk screen and solder it. Place the female connectors on the opposite side of the component PCB (once again: follow the silkscreen). Solder just one pin on all the connectors. Move on to the other PCB (the jack PCB).

With this I usually place the potentiometers first and solder only one pin from the top. That way they will not fall off when we turn the PCB. Then I do the same with all jacks, just soldering the ground connector (the one that is sticking out from the jack and has a square pad). Do the male connectors, just like before with just one pin. Fit the two PCBs together like a sandwich and solder all pins for the connectors on both boards. Double and triple check that all solder joints on the connectors look good and that all pins are properly soldered in (this is the most common mistake when soldering this and if something is not working when firing I up you should check this first). I you have some type of magnification that usually helps with these.

Separate the boards.

Follow the silkscreen for the LEDs and in any order: place all 3 DUAL COLOR LEDs (the top of the “LED triangle” on the pcb) labeled D1, D5 and D7, the 3 RED gate LEDs (left of the triangle) labeled D9, D10 and D11 and the bright WHITE LED labeled D2, D6 and D8 (bottom of the triangle). Make sure to follow the silkscreen on the pcb so they are placed right: short leg goes through the square pad. Double check this before soldering.

Mount the panel, align the LEDs so they are peeping out from beneath the panel and solder them in. Solder all reaming pads and you are done! Time to create some chaos.



BOM

1 5x2 Power Connector

3 12 pin headers Male

3 12 pin headers Female

12 Thonkicon jacks

3 100k Lin Potentiometers 9mm Alpha t18.

3 Dual LED 2 pin Warm White / Red

3 Red LED's

3 Ultra bright cold white LEDs

