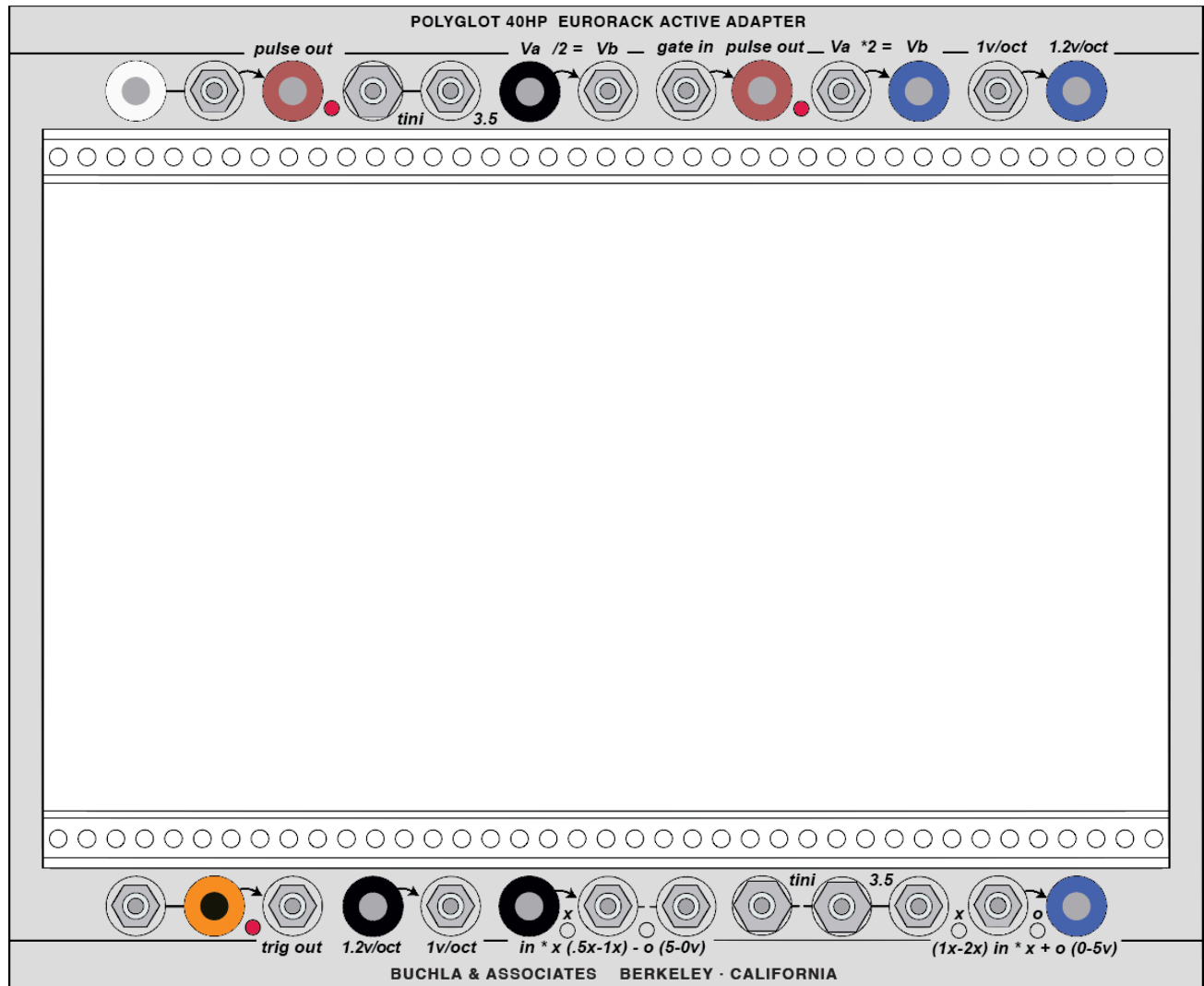


USER'S GUIDE for the Polyglot



by the staff of Buchla USA
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Polyglot 40HP Eurorack active adaptor:

The Polyglot is for adapting cables, converting voltage ranges, and powering Eurorack modules. Like the previous Eurorack adapter known as “the Blade” it holds 40HP worth of Eurorack size modules and has 6 power connections. But it does more than that.

Many connections are simple banana to 3.5mm and TINI-JAX to 3.5mm jacks. But there are a variety of useful Eurorack control voltage ranges that are not Buchla 0v-10v ranges, and they use a different volts-per-octave standards. Using these active circuits should help translate your CV's between Buchla and Eurorack modules.

A note about the trimpots: Four trimpots accessible from the front panel even while cables are connected, and three are accessible when the unit is outside the boat. These trims are designed for constant use; They are designed with the idea that the user would “set it and forget it.” For more “hands-on” pot control, consider a 225h or 202h module for your conversion.

Screwdrivers for the trimpots: For the panel-accessible trimpots, use a Phillips head. If you use a typical

Mounting your Eurorack modules:

It may be easier to insert and connect power to your Eurorack modules before you insert the Polyglot into your Buchla boat. If not done this way, then it is recommended that you insert the power cable to the 16-header before connecting it the Eurorack module. Note though that the 16-pin power connectors are on a board that is not screwed down, so be mindful to exert pressure from both sides of the header during insertion.

Putting your Polyglot into a Buchla boat:

The polyglot fits easily into most Buchla boats, but not as easily in later BEMI boats with the slightly fatter lips, especially if the boat is bending in a little. We recommend that you insert the bottom half first, then the top. Note that the bottom PCB has trimpots that could be vulnerable when inserting or removing the Polyglot from a boat. Therefore the bottom has standoffs that demand enough space to keep you from ripping the trimpots off the PCB during insertion.

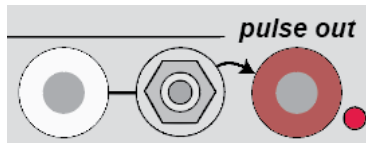
Powering up:

If no Eurorack modules are in the unit, you will see 2 LEDs lit up on the inside of the unit. This is to let you know that the connectors are now powered. Once you put a Eurorack module in, these LEDs will be hidden, but we presume your module will light up.

The factory installed smaller 10 pin (2mm) cable that connects power between the top and bottom PCBs must be connected. (Note: This header is the same style and has the same pinout as an h-series power connection.)

A quick guide:

The Top Row:

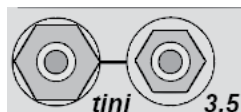


Used to **turn gates or trigger inputs into Buchla pulse outputs**
Plus additional banana to 3.5mm adaption.

Note: Signals below 0 volts will be clipped. Buchla module control voltage inputs are not protected from negative voltages. So it is not advisable to take just any signal and put it in a Buchla banana jack without a diode for clipping voltages below 0 volts.

Alternative: Auto-pulsing of any input signals that go from 0 volts to 3 volts.

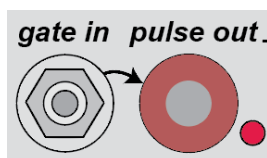
Note: Buchla pulse outputs include a 10v trigger and a 5v gate/sustain and allow pulses to be combined and sustain to be held even while triggering new events.



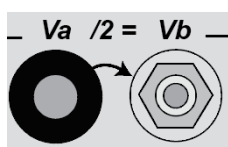
Buchla **TINI-JAX (.14") (3.56mm) to 3.5mm** adaption.

Though 3.5mm cables often work in TINI-JAX, this makes a better connection from Buchla audio to 3.5mm cables.

We have made an effort distinguish the difference by using different nuts and washers.

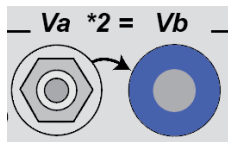


Used to **turn gates or trigger inputs into Buchla pulse outputs, or auto-pulsing**



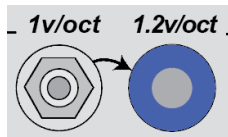
Divides Buchla CV input by 2.

This turns a typical 0-10v Buchla signal into 0-5v signals.



Multiplies 3.5mm input by 2

Typically V_a is a 0v-5v input to become V_b as a 0v-10v output. It's clips at 11v.

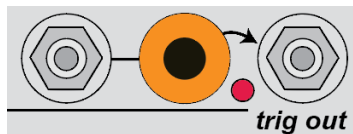


1 volt-per-octave to 1.2 volts-per-octave. Multiplies 3.5mm input by 1.2. Most Eurorack gear is 1v/oct whereas Buchla module inputs expect 1.2v/oct.

Alternate use: 3.5mm input to banana with slight bump up in voltage. It does not need to be pitch CV's. e.g. 0-8v becomes 0-9.6v

Trimpot: There is a trimpot labeled "TR1.2" (for fine tuning the multiply) that is accessible on the PCB when the polyglot is outside of a boat or if gently lifting the front edge. But this fine tuning is usually done at the Buchla oscillator module.

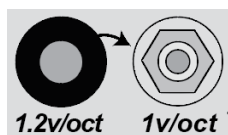
The Bottom Row:



Used for turning Buchla pulse inputs (signified by the orange banana) into trigger outs and tying to another 3.5mm jack.

Eurorack gate inputs are usually protected from overvoltage, so by leaving the second 3.5mm jack tied directly to the banana, this first 3.5 can either be used as gate output or direct 3.5mm to banana adaption. (*See advanced alternatives if you need a gate output that is limited to 5v.)

Alternate use: Auto-triggering for any input that goes above 7volts.



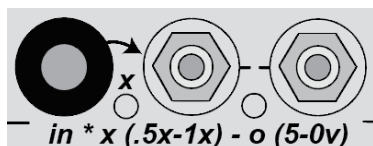
1.2 volt-per-octave to 1 volt-per-octave conversion. Divides 1.2v per octave Buchla input to 1v per octave 3.5mm output.

Alternate use: It does not need to be pitch CV's. (0 to 10v becomes 0 to 8.4v)

Trimpot: There is a trimpot "TR_1V" that is accessible when the polyglot is outside of a boat for fine tuning if ever necessary.

A second offset trimpot "OFFS-1v" allows the user to offset the output from 0v to -1 volts since some Eurorack modules have a range of -1v to 5v inputs.

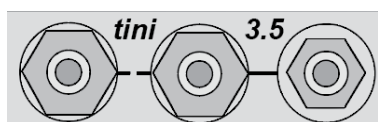
(For a 1.2v to 1v/octave conversion with an offset to -5v instead of -1v, a dealer may be able to reset this offset range on special request.)



Variable multiplication (*) of Buchla CV from ½ to 1 (x), then subtracts (-) a variable offset (o) of 5v to 0v with two 3.5mm outputs.

This allows a 0-10v Buchla input divide into 5v range and then offset down to -5v and every variable in between. For instance, from a 0 to 10v input it's possible to output from 0 to 5v or 0 to 8v or -1v to 5v or -5v to +5v.

TO SET TRIMS: Gently place a small Phillips screwdriver into the holes and let gravity guide the head into the trimpot. (Do not press the driver into the trims or they will stress the solder joints!) Then turn “x” (multiply) trim and “o” (offset) trim as needed.

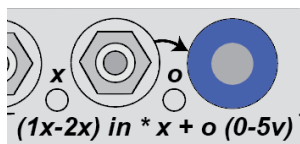


A multiple Buchla TINI-JAX (3.55mm) to 3.5mm adaption.

This is bidirectional, though if the two “tini” jacks are both used as inputs, it's the simplest of passive mixers.

Why dashed lines?

In both the examples above, the dashed connection between the jacks can be broken if changes to the default connections by a qualified technician. See the advance modifications section on the following page.



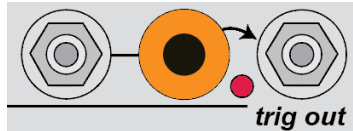
Variable multiplication (*) of Euro CV input by 1 to 2 times (x) then adds (+) an offset (o) from 0v to +5v

This allows a -5 to 5v or 0v to 5v input to output a 0-10v range.

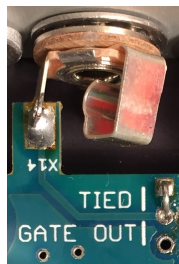
TO SET TRIMS: Gently place a small Phillips screwdriver into the holes and let gravity guide the head into the trimpot, then turn “x” (multiply) trim and “o” (offset) trim as needed.

Advanced modifications on the bottom row PCB:

Nobody's needs are the same. Therefore a couple alterations can be made to the Polyglot. Any changes to your Polyglot should be done someone with moderate soldering skills.

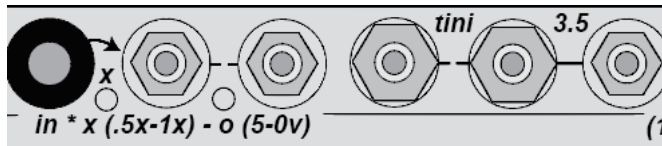


Changing the leftmost 3.5mm connection to a gate output. As mentioned earlier, this is usually unnecessary since most gate inputs can exceed 5v briefly. And this modification will limit this

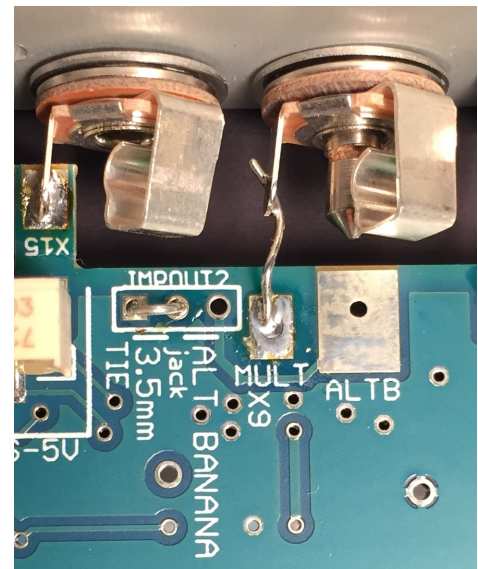


jack to be an output only jack--removing the possibility of using this as a bi-directional 3.5mm input to banana connection. But if you insist, there is a set of 3 pins below this connection on the PCB. If you remove the soldered connection between pins 1 and 2 (as pictured marked "TIED") and instead solder together pins 2 and 3 (marked "GATE OUT"), you will get a gate output that lasts the full length of time the orange Buchla pulse input remains above 3 volts.

Changing multiples to an additional adaption



As pictured to the right and as represented on the panel, the "jack" (X15, the jack above "(5-0v)") is "TIE"d to the 3.5mm jack to it's left--Pins 1 and 2 on JMPOUT2 soldered together. The wire from the TINI jack on the right is wired to the "MULT" pad. This connects the TINI jack to the other TINI jack to it's right (through a resistor.)



Alternatives that break the dashed panel line and instead connect the 2 middle jacks. (variation from picture.)

Alternative #1: another 3.5mm to TINI jack connection

instead: Remove the wire between pins 1 and 2 of JMPOUT2. Then remove the "MULT" pad connection from the TINI jack and insert its wire directly into the middle pin 2 "jack" (of JMPOUT2) for a direct connection between the X15 3.5mm jack and that TINI jack.

Alternative #2: another 3.5mm to Banana connection

instead. Remove the wire between JMPOUT2 pins 1 and 2 and connect pins 2 and 3 instead for a connection between

"jack" (X15) and "ALT BANANA" pads. Then remove the TINI jack (above "ALTB") and replace with a white banana jack. (The panel is already drilled for it.) Solder the banana jack to the ALT B pad. It will much more difficult to reverse this back to a TINI jack. (The ALT B pad includes a diode that limits output to positive voltages.)

