

## nonlinearcircuits

### THE BIG ROOM (REVERB) build & BOM

This module merges the Polyfusion reverb driver circuit with the NLC Segue for VC panning between wet and dry signals. It also has a VC feedback circuit....be careful with that one 😊

The driver circuit was used in the NLC CellF voice panel; I always liked it and received good feedback from people who owned these panels, so stuck with the design. The downside is it requires a particular reverb tank, which is easily available for USD19, so not really a big deal. Builders could try experimenting with the driver circuit to make it work with other tanks but imho it sounds thick and cavernous with the tank it is designed for.

Please note the build pictures below when constructing to make the box fairly light-proof. A little bit of leakage does not seem to matter much but you could add a bit of black silastic sealant around the edges if you really want to, I have never bothered. When soldering the connector pins, use the SIP connectors, jumped across 1 or 2 pins (see pics) to ensure they are nicely perpendicular to the PCB. When soldering the PCB to PCB connectors, I press lightly on the PCB to help keep the connectors tight against the board.

The Top PCB is 2mm thick with black soldermask to prevent light getting in.

Also, please note the pots go on the side of the PCB that has the pot symbol screenprinted, this is different to previous NLC PCBs.....just look at the pictures, if you have time and it isn't too much trouble.

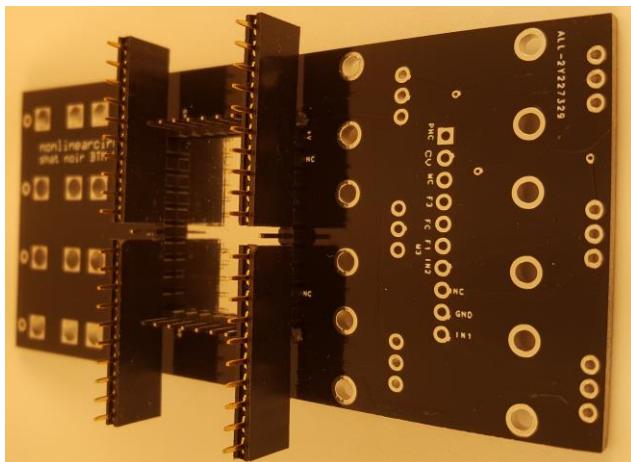


**BOM** – The Tayda part numbers are given as examples, feel free to buy from your favorite retailer if you prefer.

VALUE	QUANTITY	DETAILS
2.2p	1	0805 OR 1206
47n	1	0805 OR 1206
100n	2	0805 OR 1206
1μF	2	0805 OR 1206
10μF	2	0805 OR 1206 25V rating or higher
47R	1	0805
470R	6	0805
1k	5	0805
2K	2	0805
4K7	2	0805
12k	2	0805
22k	6	0805
33k	3	0805
47K	6	0805
56K	1	0805
100k	13	0805
180k	1	0805
470k	1	0805
4FB3A1B REVERB Tank	1	see notes #8
Stereo RCA cable	1	see notes #7
RCA connectors	2	Cliff FC68400 or cheap copy off ebay
100k trimpot	4	Tayda: A-2506
BCM847DS	1	
BC857	1	Tayda: A-1345
BC547	2	Tayda: A-137 YES - thru hole!!!
LM13700M	1	SOIC
TL072 or TL082	4	SOIC Tayda: A-1139
Light dependent resistor (LDR)	4	SEE NOTES #5. THESE GO ON THE BOTTOM OF THE UPPER PCB
LED for vactrol boxes	2	3mm best, diffused Red, green or yellow. THIS GOES ON THE BOTTOM OF THE UPPER PCB
LED for panel	1	5mm
100k (B) pot	6	Tayda: A-1848
Eurorack 10 pin power connector	1	Tayda: A-198
Schottky, power rectifier or 10R, optional - for reverse voltage protection...or not	2	SMD, Schottky (best option) or standard power rectifier diode 50-600v 1A or more, dot on PCB indicates CATHODE (stripe on component) Or use a resettable fuse or just a 10R. SEE NOTES #2
3.5MM SOCKET Kobiconn style	7	Tayda: A-865 or preferably get Thonkiconn jacks (PJ301M-12) from Thonk or Modular Addict
10 Pin 2.54mm Single Row Pin Header Strip	7	Tayda: A-197 (cut to size)
10 Pin 2.54mm Single Row Female Pin Header	7	Tayda: A-1306

## **Additional notes:**

1. Capacitors can be 0805 or 1206, whatever is easiest to find.
2. Some power diodes: PMEG2005EGWX SCHOTTKY RECT, AEC-Q101, 20V, SOD-123, PMEG2005EH DIODE, SCHOTTKY, 0.5A, 20V, 1N400x or S1JL or similar
3. The resistors, caps and transistors are cheapest from Tayda. Diodes from Mouser/E14/Farnell/etc.
4. Join the Nonlinearcircuits Builders Guild on FB:  
<https://www.facebook.com/groups/174583056349286/> and ask questions there if you have any. If you prefer not to FB then email is fine.
5. Most LDRs will work fine. I liked GL5539 and GL5549. The trimpots are used to adjust for any differences. One point - it is best to solder the LDRs in standing 8mm or so off the PCB, then bend them over towards the LEDs.
6. When soldering on the pins, use the SIP connectors to hold them on straight. This pic below is of the Shat-noir but the method is the same.



7. **RCA cables** as per pic, shorter length is best but get what you need to reach the tank.



8. **Reverb Tanks** available from

<https://www.tubesandmore.com/products/reverb-tank-mod-4fb3a1b>

or

<https://www.amplifiedparts.com/products/reverb-tank-mod-4fb3a1b>

In Australia, Evatco sell them, but compare prices 1<sup>st</sup>.

There is also an Accutronics version available, but is a lot more expensive. Make sure these details match:

Long (16 ¾") 2 Spring Unit , Long Decay (2.75 – 4.0 seconds)

**Input Impedance 1475 Ohms, Output Impedance 2250 Ohms**

Input Grounded/Output Grounded

## SETUP:

The trimpots are used to tweak the wet/dry signal levels for each output. The two outer trimpots tweak the wet levels, inner ones - dry.

Keep in mind that reverb tanks respond better to some frequencies than others, so test with different signals.

Generally an oscilloscope is required for this, but ears are ok, reverb is not going to be precise. Usually setting the trimpots around middle position will be okay.

Feed in a signal to the W/D input, turn the In W/D and In wet pots to max. Feedback pot to zero. Turn the Pan pot to 0 or 10. Monitor one output, if it is dry adjust the corresponding inner trimpot to set its level to be the same as the incoming signal (usually +/-5V), do the same for the other output (it will be wet if the 1<sup>st</sup> is dry).

Turn the Pan pot full lock the other way then adjust the appropriate trimpot to get the wet signal to approx +/-5V (I like the wet signals to be a little hotter).

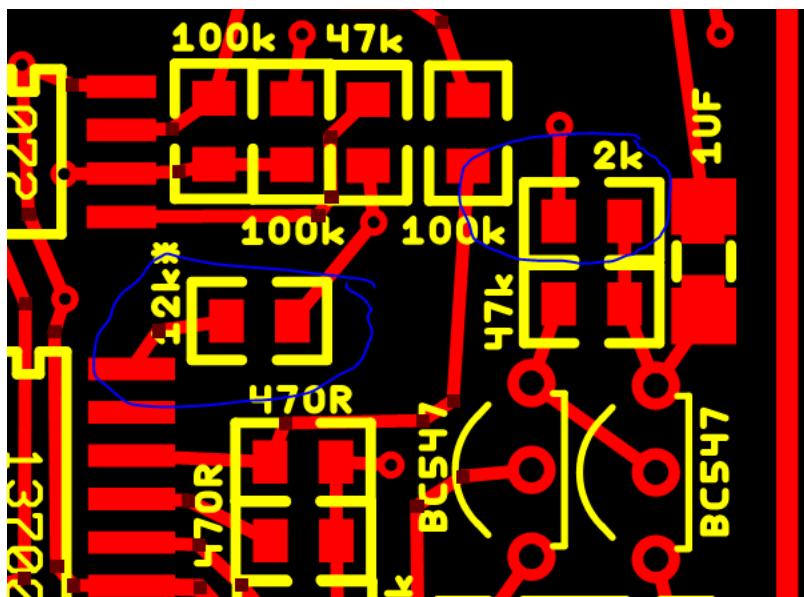
This module is quite deep, with RCA sockets and RCA jacks it will need 7-8cm behind it. This can be reduced by using right angled RCA jacks, or even leaving out the RCA sockets and soldering the wires directly to the PCB. The reverb tank needs to be mounted away from power supplies and other potential noise sources, experiment a little before bolting it down. It will just fit into a 84HP case.

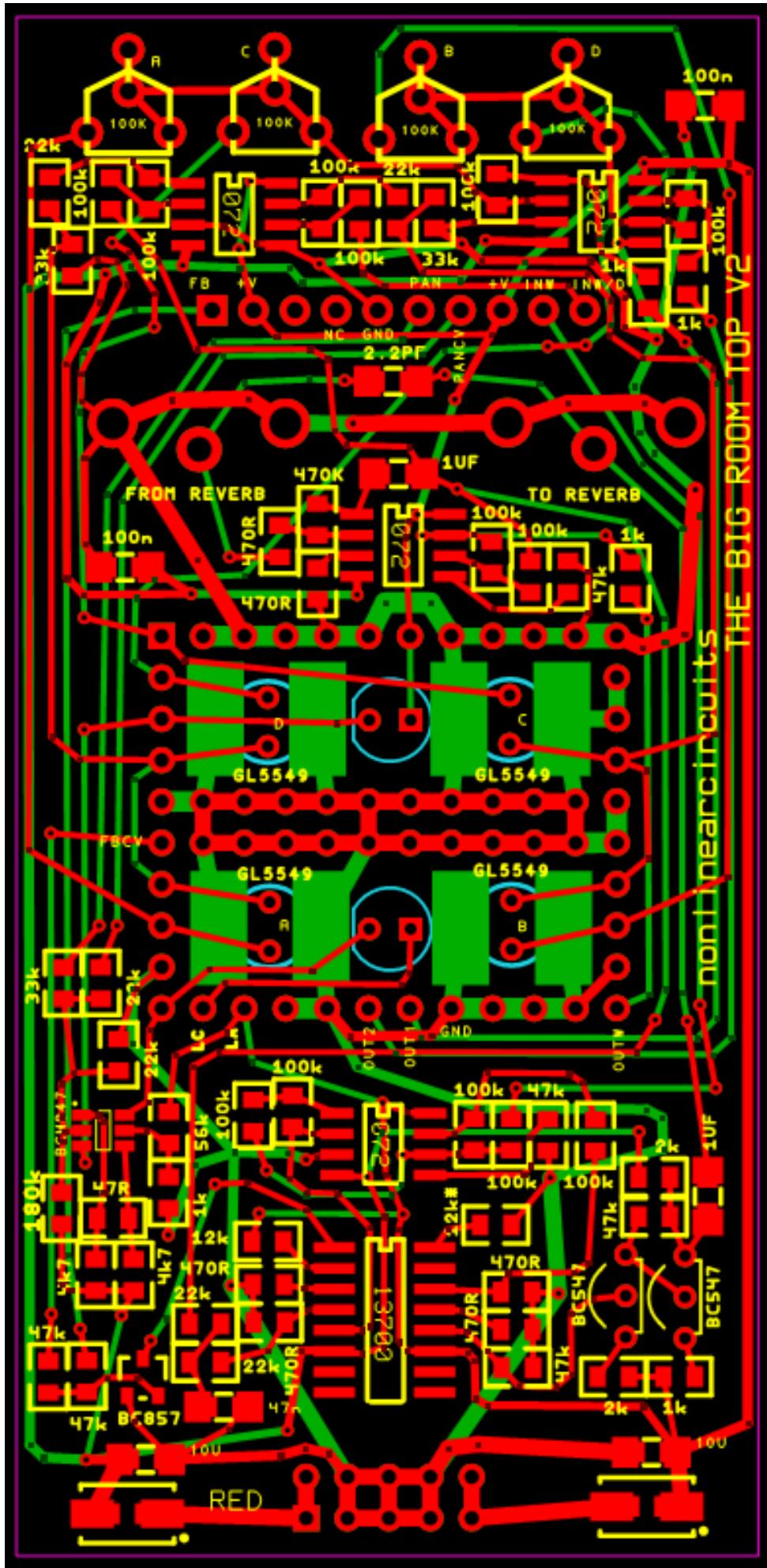
## USE:

'In Wet/Dry' socket feeds to the switch of the 'In wet' socket, so you can process one signal. If you want to pan between different signals, patch the signal to get the reverb treatment into 'In Wet' and the other signal into 'In Wet/Dry'. Make sure the attenuator pots are turned up.

Feedback can be CV controlled or set with a pot. It will slowly but easily self-oscillate, so be careful with it. The Feedback circuit has a simple low pass filter that means it will tend to self-oscillate at around 200Hz. Feel free to adjust this as you like by changing the 47nF capacitor near the power pins.

If you want to try other tanks (I haven't), you will need to experiment with the 2k resistor and probably the 12k\* drive resistor (circled below), do not go under 10k or risk damage to the LM13700.





nonlinear circuits

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tr-imports here to adjust gain on each signal to unity rather than matching LDRS

