

Recently I got several requests to do a 3rd run of the PS3100 Resonators PCB. I decided to take a step forward to a stereo version. What I came up with is a project based on two PCBs, one resonator PCB and one X-Pan-Fader PCB.

One could build the common mono version using just the Resonaots board, a stereo version using both boards, or just the X-Pan-Fader as single module using the 2nd board only. (BTW both boards provide additional connectors dedicated to interconnect them). The choice is up to you. On the left you can see my PS3100 DoubleTrouble module, built using both boards.

The PS3100 Resonators board provides three votage controlled BPFs, based on vactrols. Each BPF shows up with a LED indicating what's going on in the vactrol, an initial frequency control and an external CV input, which is normalled to the LFOs output. Yes, there is an onboard LFO to control the frequency, the LFO control voltage can get inverted for the 3rd BPF. Usually it is a very simple triangle LFO providing speed and depth control. However, the PCB provides footprints for additional capacitors and wirepads to modify it easily. You could then have a speed-range switch and selectable saw/ramp/triangle (see documentation of modifications below). There is an audio input and an mono output for sure. You will find a power connector, an additional LFO output connector, and the three BPF single outs connector to interconnect with the X-Pan-Fader

The X-Pan-Fader board provides four simple VCAs to fade and pan the incoming signals. It provides three audio inputs (left, center, right), two outputs (left, right), an external CV input, an initial pan/fade control, a switch to operate the PS3100s LFO input, and the additional connectors to interconnect the PS3100 Resonators board. The BPF single outs from the PS3100 are normalled to the inputs.:

PS3100 Resonators v3

Capacitors	
C18-C21	1n
C5-C12	10n
C13, C14	33n
C3, C4, C15-C17	100n
C1, C2	10uF
C22 (LFO)	680n (optional 6.8n)
C23 (LFO)	(optional 680n)
C24 (LFO)	(optional 68n)

Resistors	
F1 ferrite (or 10R)	
F2 ferrite (or 10R)	
R5	47R
R17, R25, R33	470R
R10, R18, R26, R34, R40, R41	1k
R4	1.5k
R36	2.2k
R15, R23, R31	2.7k
R11, R19, R27	4.7k
R16, R24, R32, R42, R43	10k
R2	68k
R1, R6-R9, R37	100k
R3 150k	150k
R38	200k
R12-R14, R20-R22, R28-R30	220k
R39	1M
R35	3.3M
P1, P2, P3 (Freq 1-3)	10k
P4, P5 (LFO Speed/Depth)	50k
T1-T3	50k





Semi's	
D1-D3	low current LED
D4	1N4148
Q1, Q3, Q5, Q7	BC550C
Q2, Q4, Q6	BC560C
VTL1-VTL3	VTL5C3/2
IC1, IC2	LM1458N
IC3	TL072P
IC4	TL074P

Connector	'S	
J1	CV1	
J2	CV2	Switched sockets, normalled to LFO (on PCB)
J3	CV3	
J4	LFO out	
J5	Audio in	
J6	Mono out	
J7	PWR link	V pappar interconnect
J8	R1-3 out	
SW1	SPDT, LFO i	nverted for CV3
WP1	Wirepads for LFO Saw/Ramp mod (see next page)	
WP2		
WP3	Wirepads for LFO Speed mod (see next page)	
WP4		
WP5		
WP6	LFO out (X-p	anner interconnect)
WP7	spare OpAm	p neg in
WP8	spare OpAm	p pos in
WP9	spare OpAm	p out
WP10	GND	

PS3100 Resonators v3 (LFO mods?)

Maybe it is a kind of tradition not to have this options implemented to the PCBoard!? I dunno. They did not make it into the design once again...





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X-Pan-Fader

Capacitors	
C1, C3	10uF
C2, C4	100n
C5-C8	10n

Resistors	
F1, F2	ferrite (10R)
P1 (manual pan)	100k
R1, R2, R4, R5, R12, R13, R15, R16, R23, R24, R26, R27, R34, R35, R37, R38	47k
R3, R8-R11, R14, R19-R22, R25, R30-R33, R36, R41-54, R56-R58	100k
R6, R17, R28, R39, R59, R60	1k
R7, R18, R29, R40	3.9k
R55	560k

Semi's	
Q1-Q12	2N3904
IC1, IC2	TL074

Connect	tors
J1 📕	Left in
J2	Center in
J3	Right in
J4	Left out
J5 <mark>-</mark>	Right out
J6	LFO in (PS3100 interconnect)
J7	R1-3 in (PS3100 interconnect)
J8 <mark> </mark>	Pan/Fade CV
J9	PWR link (PS3100 interconnect)
SW1	LFO CV on/off (SPST)
WP1	GND



The X-Pan-Fader board provides four simple VCAs to fade and pan the incoming signals. A bipolar Control Voltage is required.

It provides three audio inputs (left, center, right), two outputs (left, right), an external CV input, an initial pan/fade control, a switch to operate the PS3100s LFO input, and the additional connectors to interconnect the PS3100 Resonators board. The BPF single outs from the PS3100 are normalled to the inputs.



Wiring Help:









fonitrOnik Stereo Resonators
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X-Pan-Fader Trimmer Modification

The modification explained here will increase the performance of the X-Panner. It will balance out the transistors of each VCA and reduce the CV bleed-trough. Using transistors from the same batch and 1% resistors made the VCAs working guite fine for me, however the trimemrs will bring you to the save side.

Below you can see the amended schematic and the suggested position of the trimmers.

To the right you can see my implementation of the trimmers. Using standing multiturn trimmers will make it easy...





new



Suggested position of the 50k trimmers.

1



Here you can see how I bended the legs of trimmer T1, that will be conencted to R1 and R2. The wiper has to be connected to +15V (the red circle pad on amended silkscreen left below).



T1 and T4, the trimmers for the 1st and the 4th VCA (non-inverted CV) are mounted to the PCB. I bent the legs that will have to be connected to the resistors a little bit upwards.

3



Now take the 47k resistors R1, R2, R12, R13, R23, R24, R34 and R35 and bend one leg to an short angle. Cut the other leg.

4



Solder the resistors into their position, connecting the short leg to the trimmers legs.

Interconnect it!



Power Connect

If you want to interconnect the boards internal, you could do this in several ways. Above you see a diagramm of how I did it.

In case you daisy chain the power from one board to the other, it is obvious that you have only to populate the green shaded components on one of the boards.

For the LFO interconnection only one wire is needed. If you choose not to bring out the LFOs output to the front panel you could use J4 on the PS3100 board for that alternatively. I put in a 2-pole foorprint for J6 in case one wanted to use this for an additional CV input on a stand alone X-Pan-Fader module. J6 on the X-Pan-Fader board is connected to the on/off switch, J8 is not.