PROCESSOR V4.0

Not really an effect – better !

OVERVIEW

This is a must-have for your pedalboard. Depending how you use it, it can be:

- Signal Splitter,
- Signal Mixer,
- 24dB Highpass filter
- 24 dB Lowpass filter
- Two parallel effect loops
- ….

The V4.0 release features board mounted jacks, rotary switches and pot fitting in a 1590B or 125B enclosure!

GENERAL

The pro-cessor is designed around standard circuits like OpAmp Buffer, Sallen Key Filter etc. The combination is unique leading to a very flexible workhorse in any effects setup.

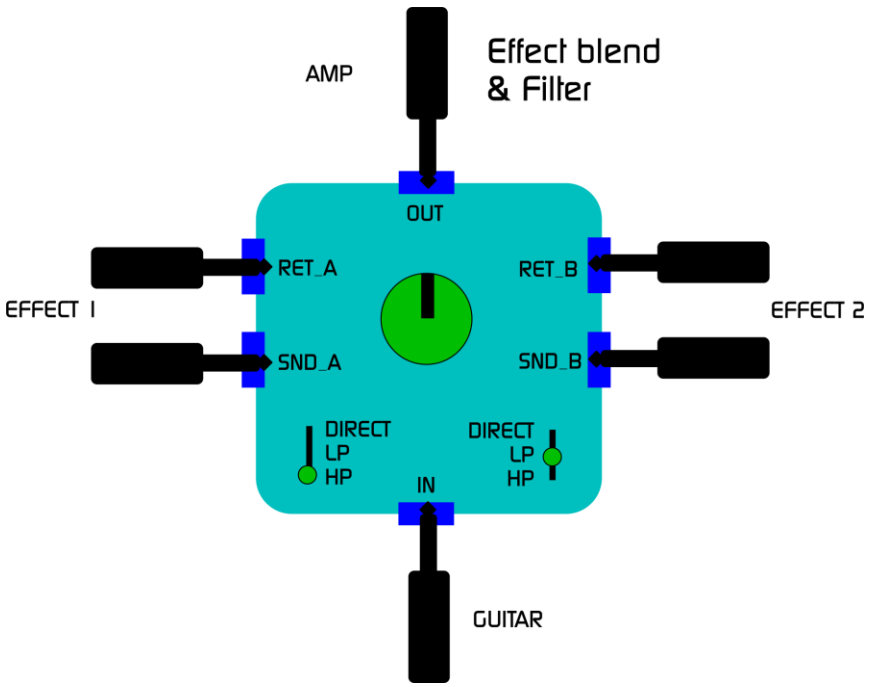
Due to your personal needs regarding filtering you will want to choose other component values for the 4th grade Sallen Key filters. The current values will set corner frequencies for the filters as follows:

Lowpass: 250Hz Highpass: 400Hz.

A lot of work has gone into the development of the filtering. The initial idea I had with variable filters (using pots) did not work as the steepness only is 12dB which was not enough to do efficient frequency cutting.

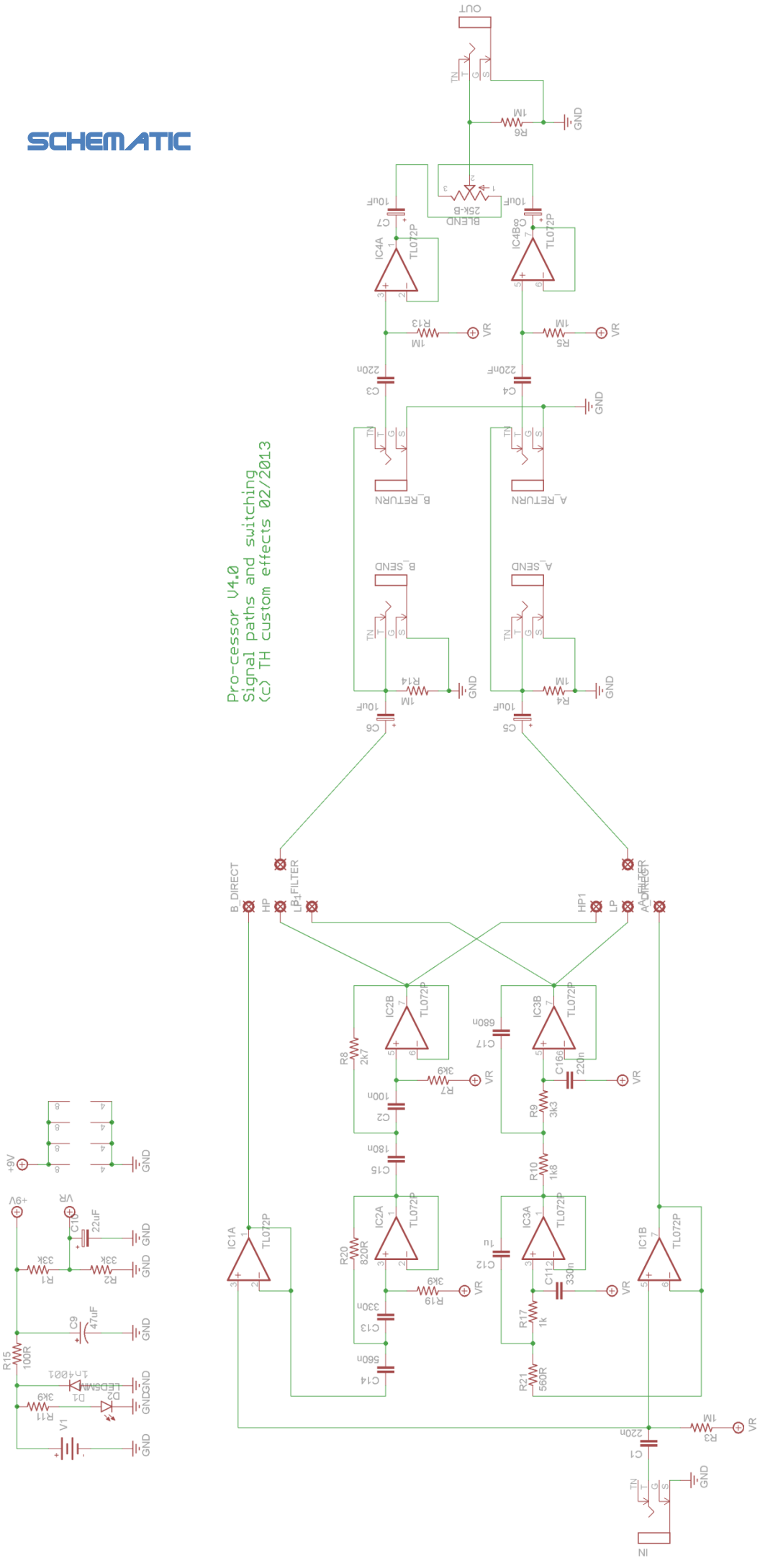
Now with the 4th grade filters there is 24dB action which is highly efficient. Feel free to use other values for your build.

EXAMPLE OF USAGE (see more at the end of the document)



TH CUSTOM EFFECTS

SCHEMATIC



BILL OF MATERIALS

	Device#	Qty	Value	Comment
Resistors	R1, R2	2	33k	
	R3, R4, R5, R6, R13, R14	6	1M	
	R7, R19	2	3k9	
	R8	1	2k7	
	R9	1	3k3	
	R10	1	1k8	
	R11	1	3k9	
	R15	1	100R	
	R17	1	1k	
	R20	1	820R	
	R21	1	560R	
Capacitors	C1, C3, C16	3	220n	
	C2	1	100n	
	C4	1	220nF	
	C5, C6, C7, C8	4	10uF	
	C9	1	47uF	
	C10	1	22uF	
	C11, C13	2	330n	
	C12	1	1u	
	C14	1	560n	
	C15	1	180n	
	C17	1	680n	
Pots	BLEND	1	25k-B	linear
Diodes	D1	1	1n4001	
	D2	1	LED superbright	color of choice
ICs	IC1, IC2, IC3, IC4	4	TL072P	Use OPA2134 or TLC2272 for extra low noise
Other	Jack1-6	6	NRJ6-HM-1	Mouser Link.
	alternative	6	NRJ4-	only metal nuts will fit!
	Rotary Switch	2	rotary 2PT3	Musikding-Link
	alternative on-on-on	2	on-on-on	alternative switch Mouser Link

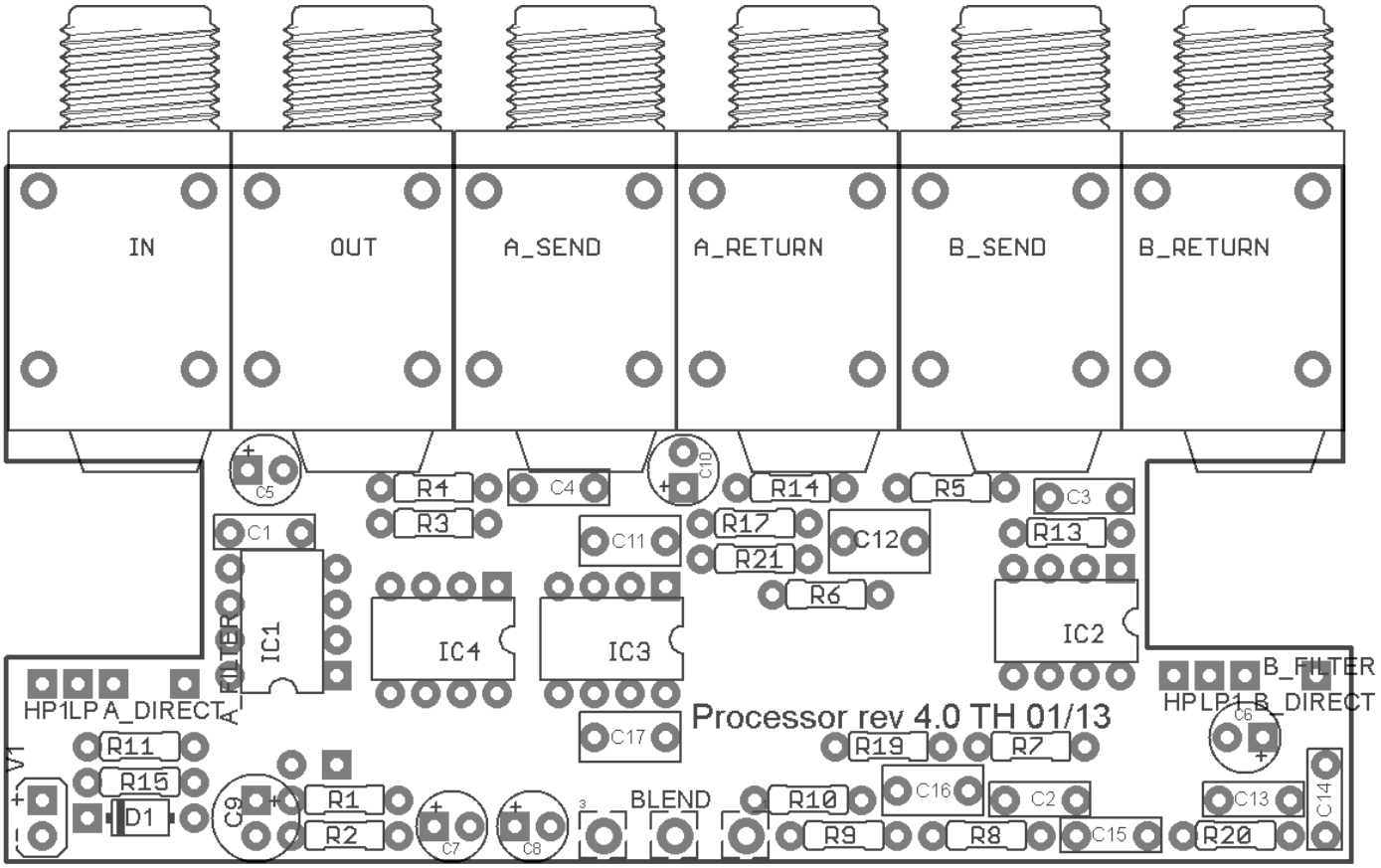
Pay attention when selecting the jacks. Unfortunately there are no NRJ4 with metal tip anymore, so you need to buy the stereo version (NRJ6) when you want them grounded to the enclosure (-HM).

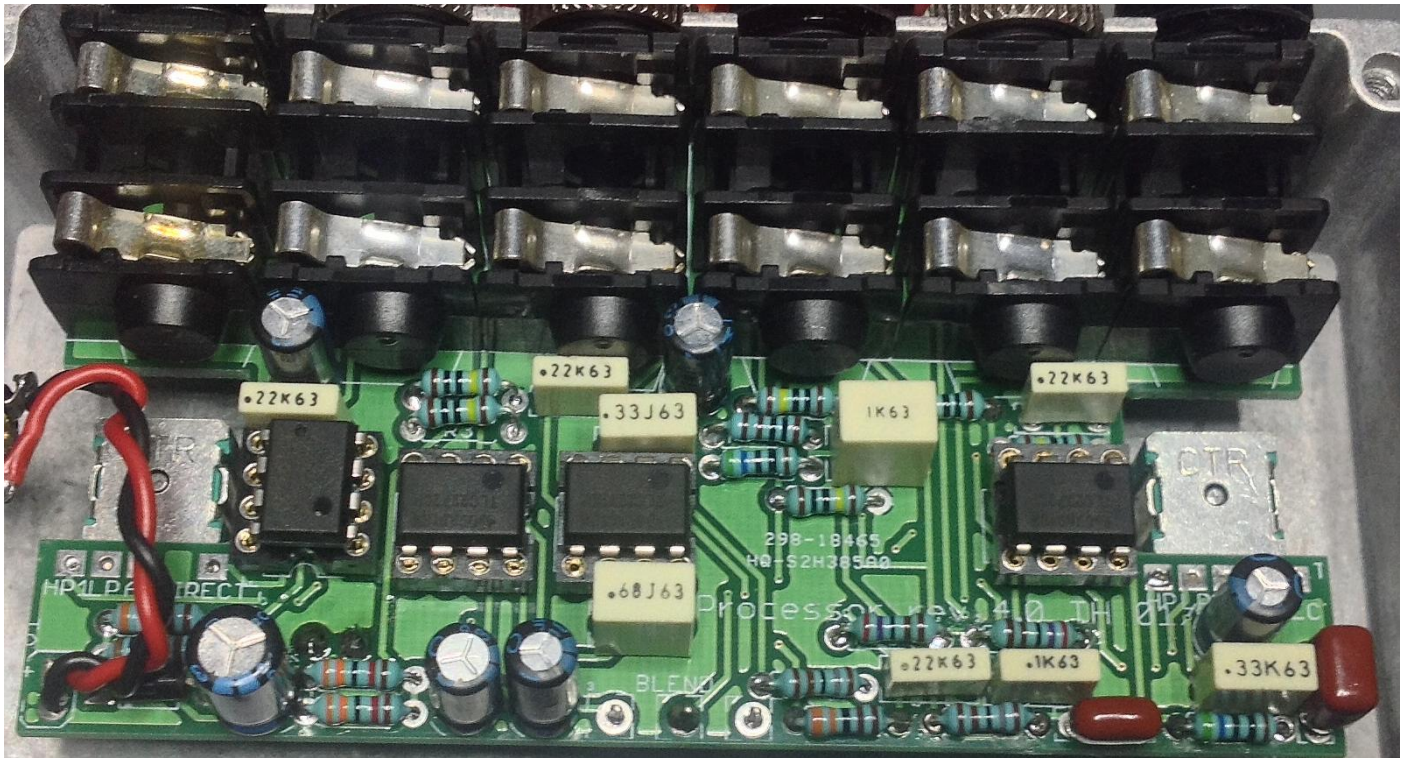
You can also use the plastic version but you will need to ground your enclosure via a piece of wire. Also the plastic nuts will not fit next to each other as they are too close. There are round metal nuts which will work on the plastic shaft.

When ordering make sure you order the version with nut included or order the nuts separately!

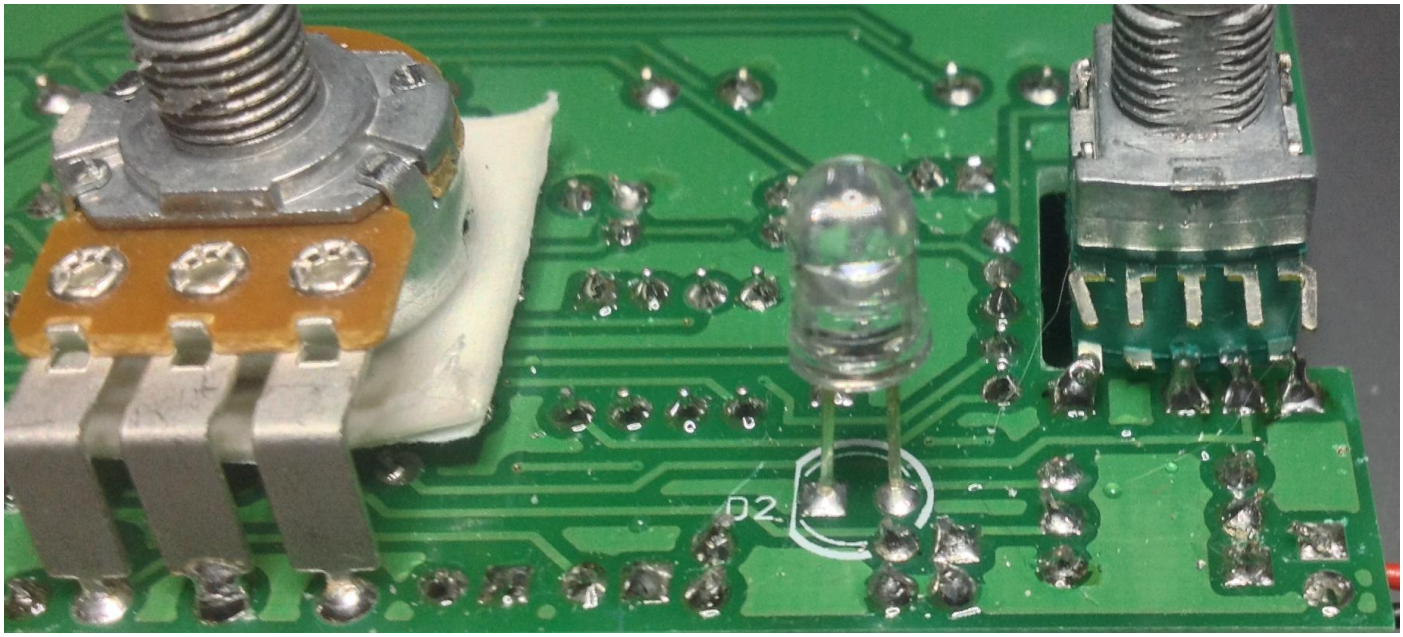
BUILDING

Start populating resistors and diode first, then IC sockets and capacitors. Then go the jacks. You need to clip of the middle contact row and any plastic pins to fit it in. Last mount the BLEND pot and the rotary switches from the backside(see detail). Due to the small size of the PCB and the narrow layout you should check if the capacitors you choose do fit in.





Backside mounting detail:

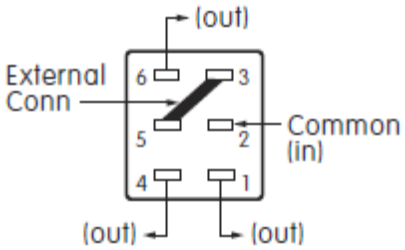


This is how the rotary switches, pot and LED are mounted.

If you use the on-on-on switch you need to wire it externally but it should fit through the holes in the board.

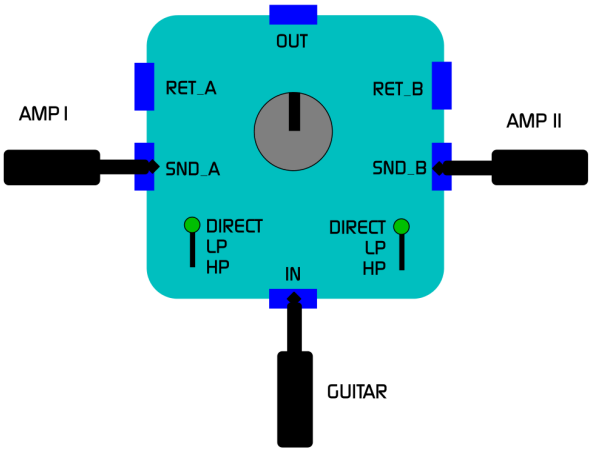
First make the connection between pin 3 and 5 of the switch.

Then wire 2 to X_FILTER, 1 to X_DIRECT, 4 to LP, 6 to HP.

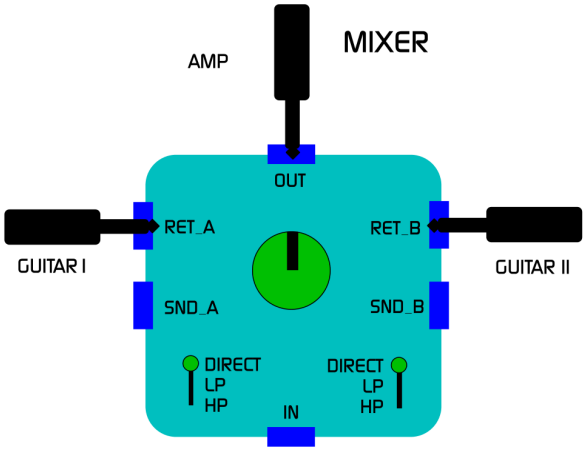


EXAMPLES OF USE

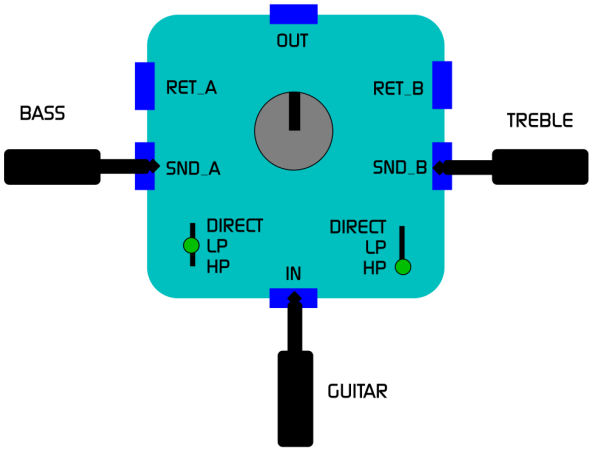
SPLITTER



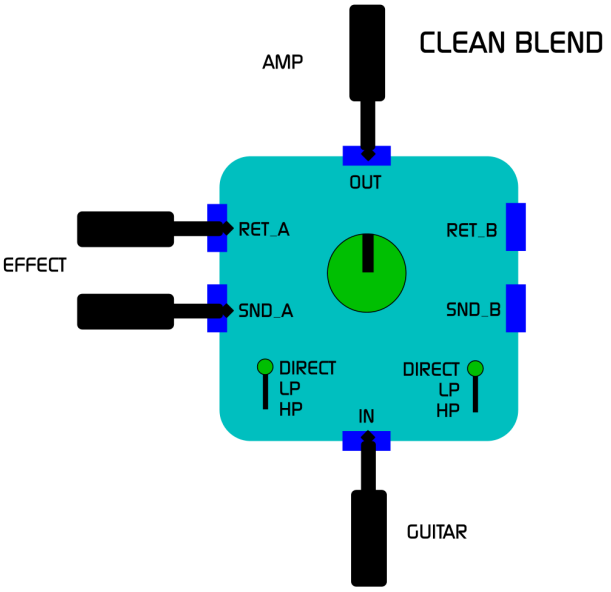
MIXER



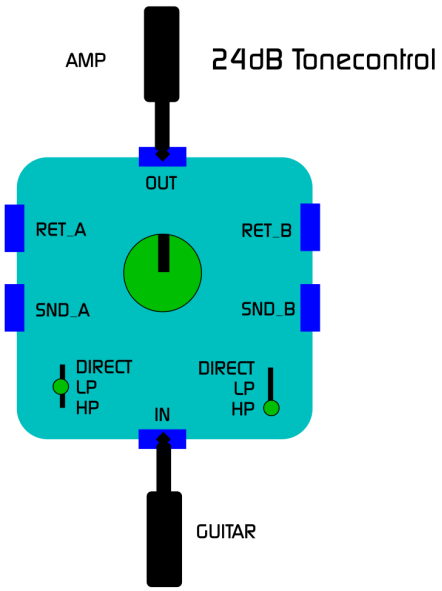
SPLITTER & FILTER



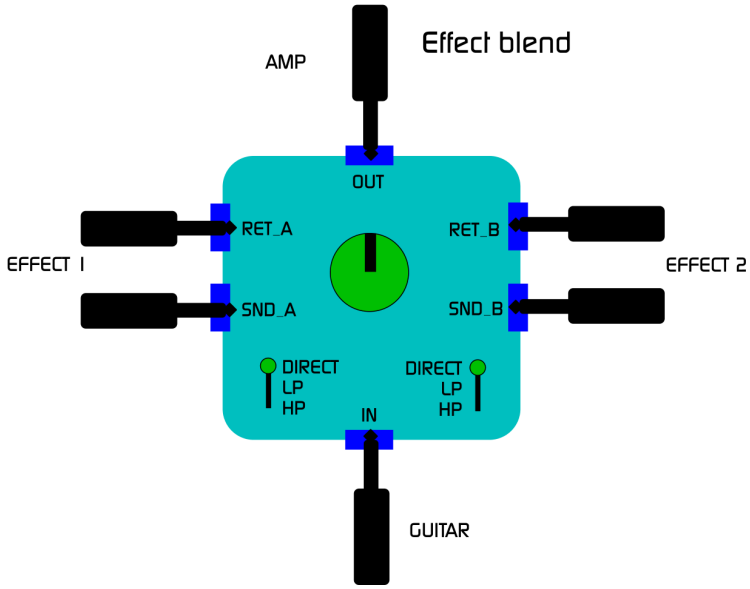
CLEAN BLEND



24dB Tonecontrol



Effect blend



FINALLY

I did develop this for someone telling me he needs something for his acoustic guitar setup where only the lower frequencies should go through an Octaver effect whereas the higher frequencies should stay intact untouched.

The pro-cessor can do that by activating the LP-Filter for Channel B, sending it via B_Send to the Octaver, returning the signal via B_Return. Mixing it with the unaltered signal that runs via Channel A at the same time.

This is only one out of the possible uses of this tool. And if you only want to put effects on your pedal board: Try it with Channel A running through LP, Channel B running through HP and use the Blend-control to apply 24dB filtering. That can be called effect for sure.

It will be interesting what you did with the Pro-cessor. Please let me know !

This is a picture of one of the prototypes.

DISCLAIMER & LICENSE