



Back in 2007 I sold DIY PCBs for an attenuverting mixer designed for eurorack. This project eventually turned into the 1<sup>st</sup> fonitronik product that came into the stores early in 2010. The module provided 4 channels and a final summing stage with a simple RC network to remove DC offset, when desired. Alas, with 12HP the module itself was rather large. Too large for a lot of people today.

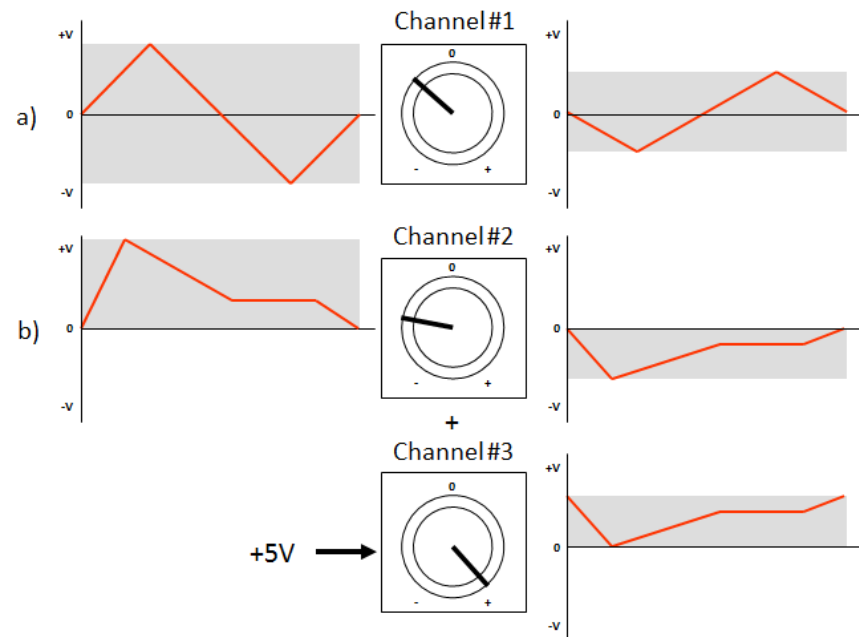
So I decided to redesign the module and I am now proud to be able to present the successor of the fonitronik mh01 as a DIY project via THONK, the CASCADE triple attenuverting mixer/processor in 4HP only. It does

MIX, INVERT, ATTENUATE, ADD GAIN

The module provides 3 channels of ‘attenu-gain-vertion’, each with it’s own bicolor LED. The input of each channel is normalled to a voltage source. There are two modes of mixing the three channels, which could be set by a jumper: CASCADE: output of channel #1 is mixed into channel #2 (as long as no cord is patched into output 1), output of channel #2 is mixed into channel #3 (as long as no cord is patched into output 2).

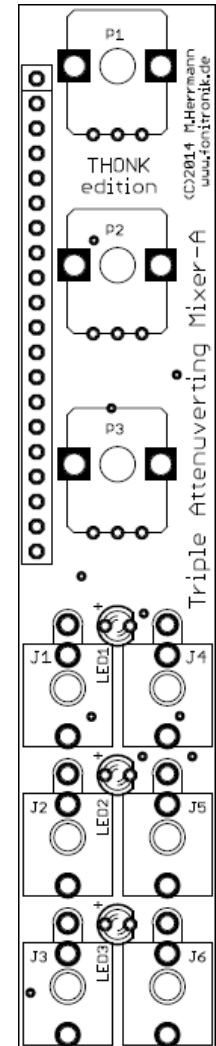
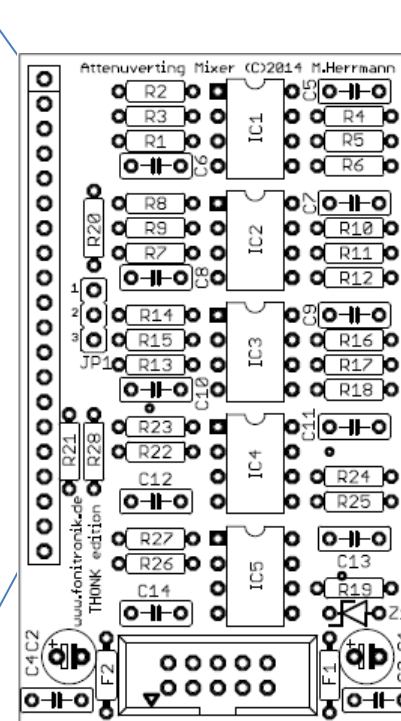
PARALLEL: both the outputs of channel #1 & #2 are mixed into channel #3 (as long as no cords are patched into the outputs).

Again, inputs are normalled to an internal voltage source. As soon as you patch the inputs they are removed from that source. The outputs are normalled to the internal mixing (depending on mode jumper), however, as soon as you patch the outputs they are removed from the internal mixing. This makes this module very versatile. Just guess: when using channel one for attenuverting a signal (Fig. a) you could still use channels 2 & 3 to attenuvert and offset another signal (Fig. b).



Main PCB			
Qty	Value	Parts	Notes
Resistors			
2	10R	F1, F2	or ferrite beads
3	620R	R23, R25, R27	adjust for desired LED brightness
4	1k	R6, R12, R18, R19	
3	4.7k	R22, R24, R26	
15	10k	R1-R4, R7-R10, R13-R16, R20, R21, R28	
3	20k	R5, R11, R17	or other value to set gain
Capacitors			
10	10n	C5-C14	MLCC, 5mm
2	10uF	C1, C2	Elco 35V, 2.5mm
2	100n	C3, C4	MLCC, 5mm
Semi's			
1	5.1V	Z1	Zener Diode sets voltage source
5	TL072	IC1-IC5	or other pin compatible
Hardware			
1		X1	RIGHTANGLE 20-pin SIL header
1		RC1	IDC header (Power)
1		JP1	3-pin SIL header
Adapter PCB			
Qty	Value	Parts	Device
3	100k	P1, P2, P3	9mm Potentiometer, vertical
1		X1	20-pin SIL receptable
6		J1-J6	Thonkiconn Jack Socket
3		LED1-LED3	3mm LED BiColor, 2PIN

- GND 01
- GND 02
- Pot1 CCW 03
- Pot1 CW 04
- Pot2 CCW 05
- Pot2 CW 06
- Pot3 CCW 07
- Pot3 CW 08
- Out1 09
- Out1 to mix (sw) 10
- LED1 +/- 11
- LED1 -/+ 12
- Out2 13
- Out2 to mix (sw) 14
- LED2 +/- 15
- LED2 -/+ 16
- LED3 +/- 17
- LED3 -/+ 18
- Out 3 (sum) 19
- +5V 20

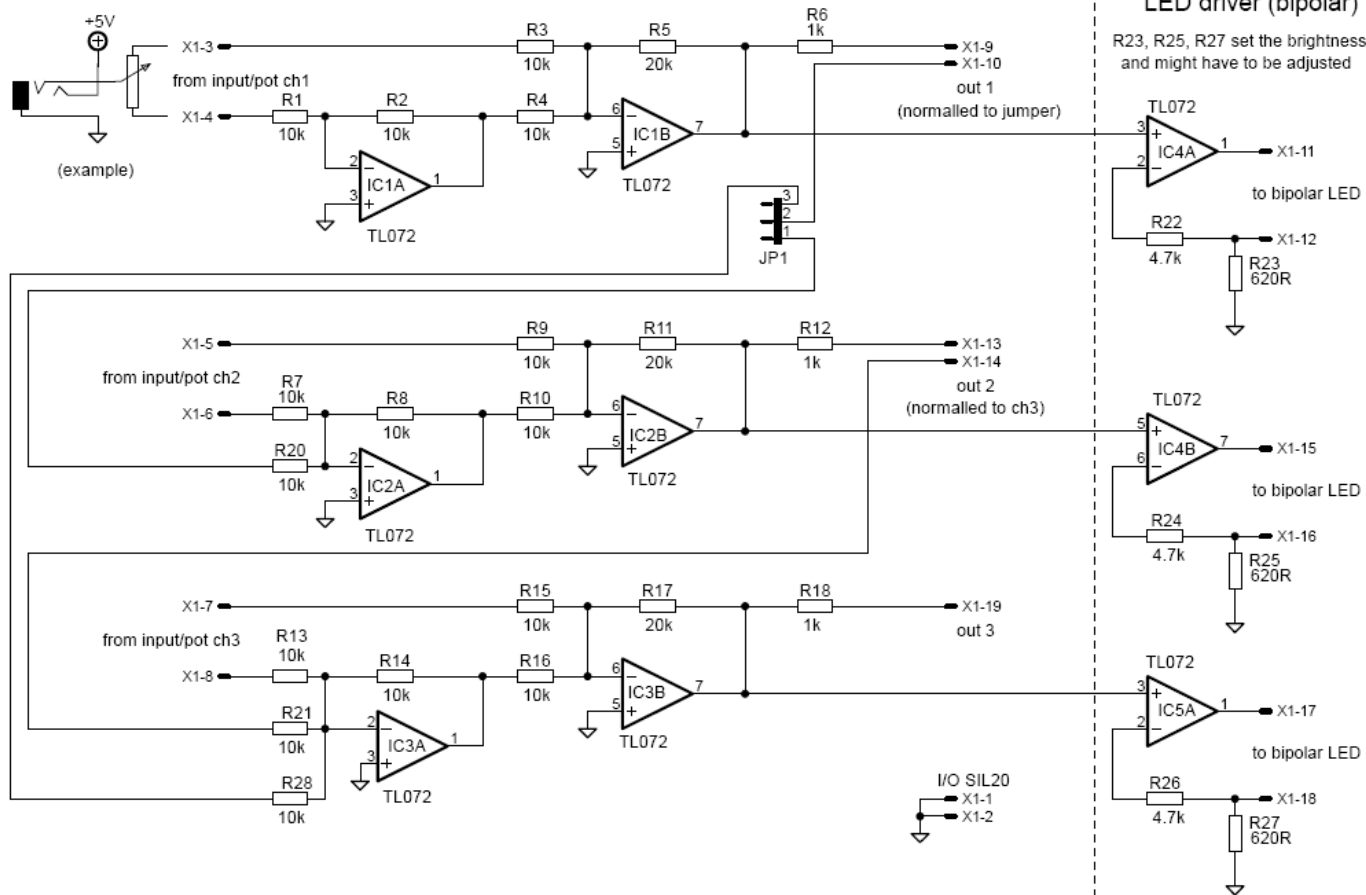


Additional build notes:

R5, R11, R17 set the max gain of the channels. 10k would give unity gain (1x) , 20k would result in a gain of 2x.

# SCHEMATIC (main)

For front panel PCB refer to next page!



## Notes:

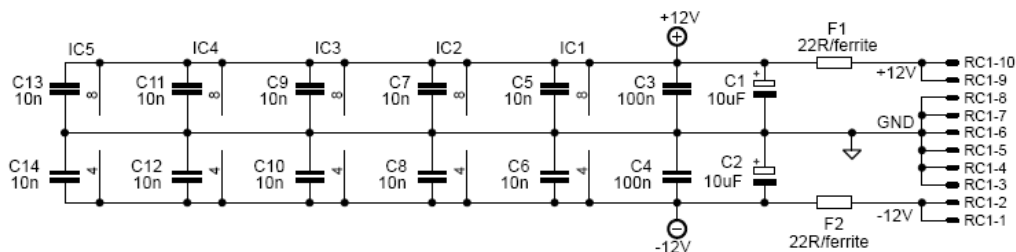
R5, R11, R17 set the max gain of the respective channel.

10k = unity gain  
20k = gain x2

Jumper JP1 selects the mode of mixing.

1+2 = Cascade  
output of channel #1 is normalised to channel #2  
output of channel #2 is normalised to channel #3

2+3 = Parallel  
channels #1 & #2 are normalised to channel #3



**fonitronik 3ch mixer/processor (2014)**  
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TITLE: Thonk-Attenuverting-Mixer-v1

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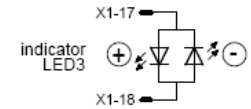
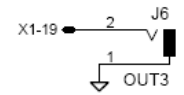
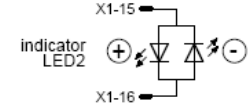
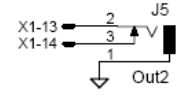
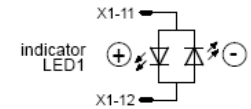
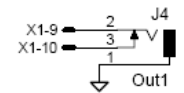
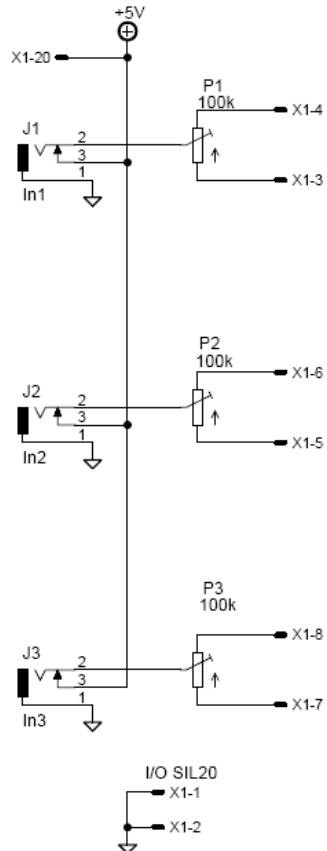
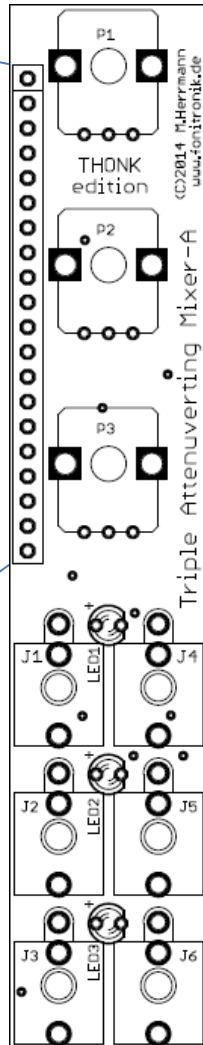
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# SCHEMATIC (eurorack adapter)

- GND 01
- GND 02
- Pot1 CCW 03
- Pot1 CW 04
- Pot2 CCW 05
- Pot2 CW 06
- Pot3 CCW 07
- Pot3 CW 08
- Out1 09
- Out1 to mix (sw) 10
- LED1 +/- 11
- LED1 -/+ 12
- Out2 13
- Out2 to mix (sw) 14
- LED2 +/- 15
- LED2 -/+ 16
- LED3 +/- 17
- LED3 -/+ 18
- Out 3 (sum) 19
- +5V 20



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