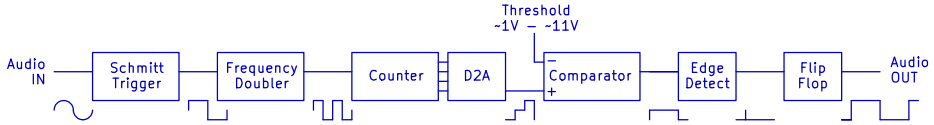
Block Diagram



Issues with rev1

1. needs frontend filter to remove freqs > ~4kHz
   (or: the frequency doubler needs tweaking to support higher freqs)
2. output vol seems v low
3. need to add CV override to Threshold input
4. phase of output is unpredictable – freq doubler can see a –ve change before a +ve one
5. bonkersness when Threshold set very close to an exact level coming from D2A
   maybe need some hysteresis?
6. might be nice to add a second counter to allow for more subharms
   or perhaps use a CD4060 or such instead of CD4516 – we're not using the preset
7. output square wave has a significant spike on the leading edge

Schematic

File: subharmolizer–rev1–schem.kicad_sch

molen, inc.

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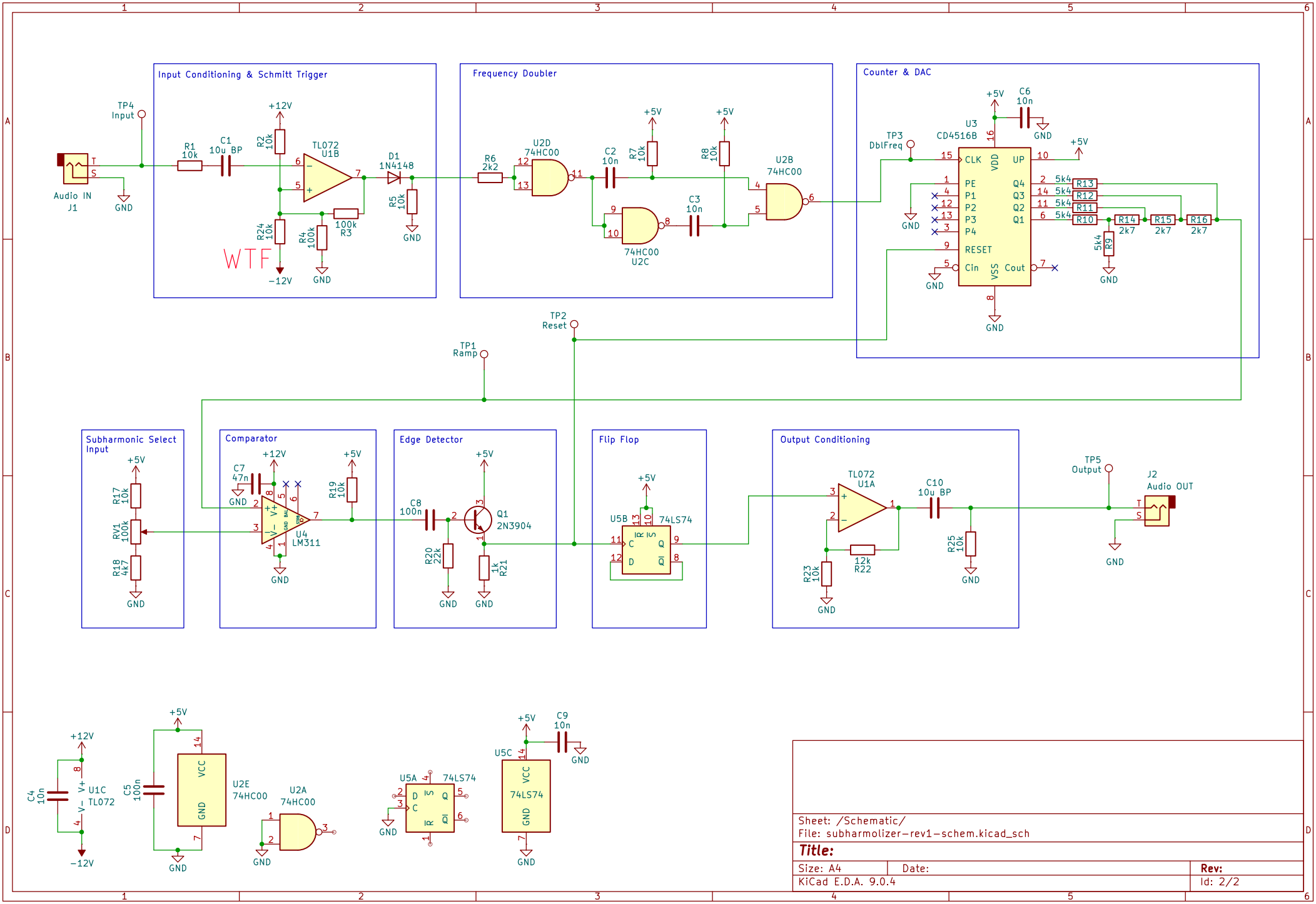
File: subharmolizer–rev1.kicad_sch

Title: Subharmolizer Overview

Size: A4	Date: 2025–09–20	**Rev: 1**
KiCad E.D.A. 9.0.4		Id: 1/2


Input Conditioning & Schmitt Trigger
Frequency Doubler
Counter & DAC
Subharmonic Select Input
Comparator
Edge Detector
Flip Flop
Output Conditioning
TP4 Input
Audio IN J1
R1 10k
C1 10u BP
R2 10k
TL072 U1B
D1 1N4148
R5 10k
R24 10k
R4 100k
100k R3
WTF
+12V
-12V
GND
R6 2k2
U2D 74HC00
C2 10n
R7 10k
R8 10k
U2B 74HC00
74HC00 U2C
C3 10n
+5V
TP3 DblFreq
U3 CD4516B
C6 10n
CLK
PE
P1
P2
P3
P4
RESET
Cin
VDD
VSS
UP
Q4
Q3
Q2
Q1
Cout
R13
R12
R11
R10
R14 2k7
R15 2k7
R16 2k7
5k4 R9
TP2 Reset
TP1 Ramp
R17 10k
RV1 100k
R18 4k7
C7 47n
R19 10k
U4 LM311
C8 100n
Q1 2N3904
R20 22k
1k R21
U5B 74LS74
TL072 U1A
C10 10u BP
R22 12k
R23 10k
R25 10k
TP5 Output
J2 Audio OUT
C4 10n
C5 100n
U1C TL072
U2E 74HC00
U2A 74HC00
U5A 74LS74
U5C 74LS74
C9 10n
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File: subharmolizer-rev1-schem.kicad_sch
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