

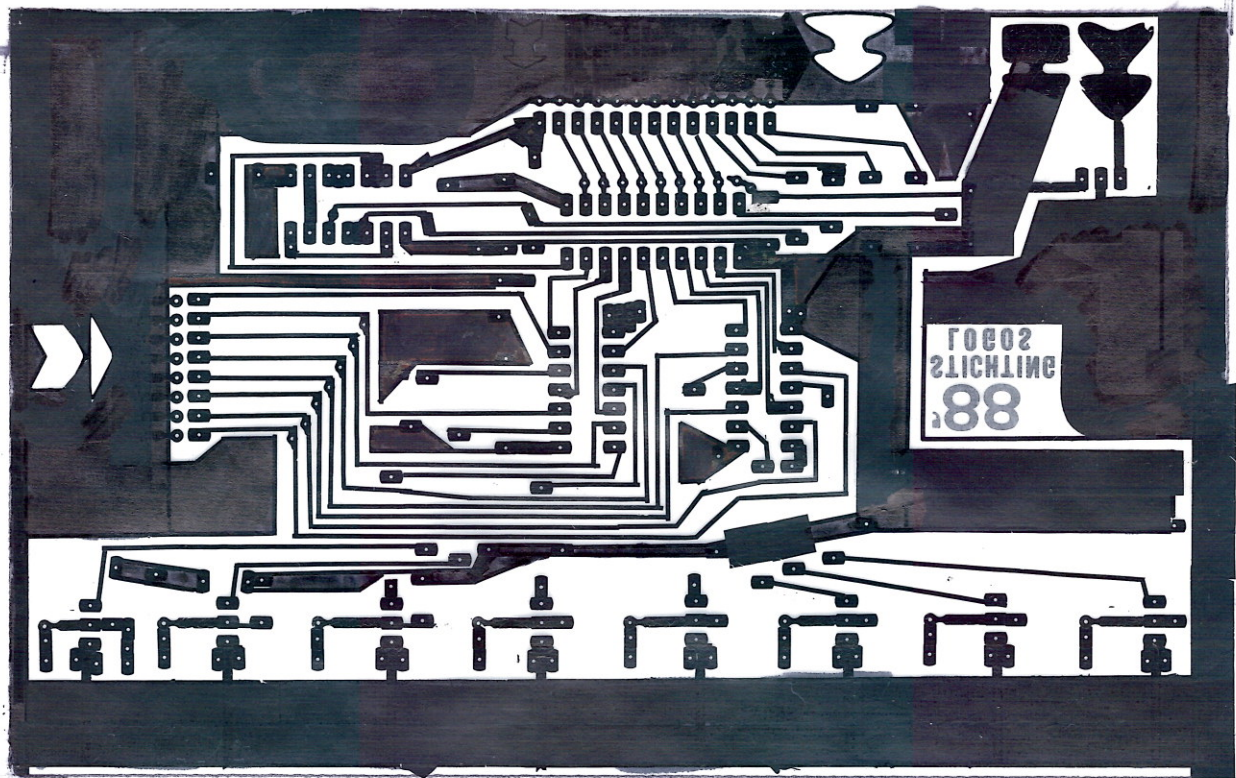
P3

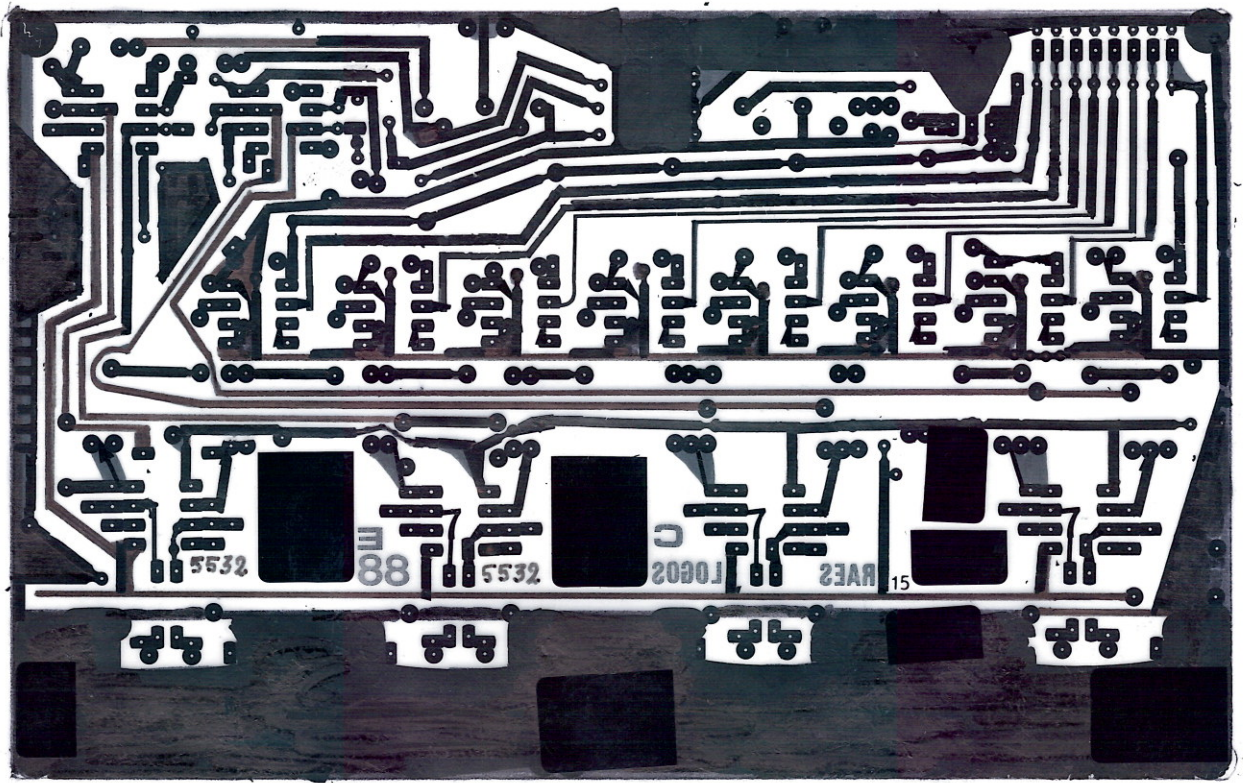
computer controlled
multi-dimensional
oscillators

8 channels

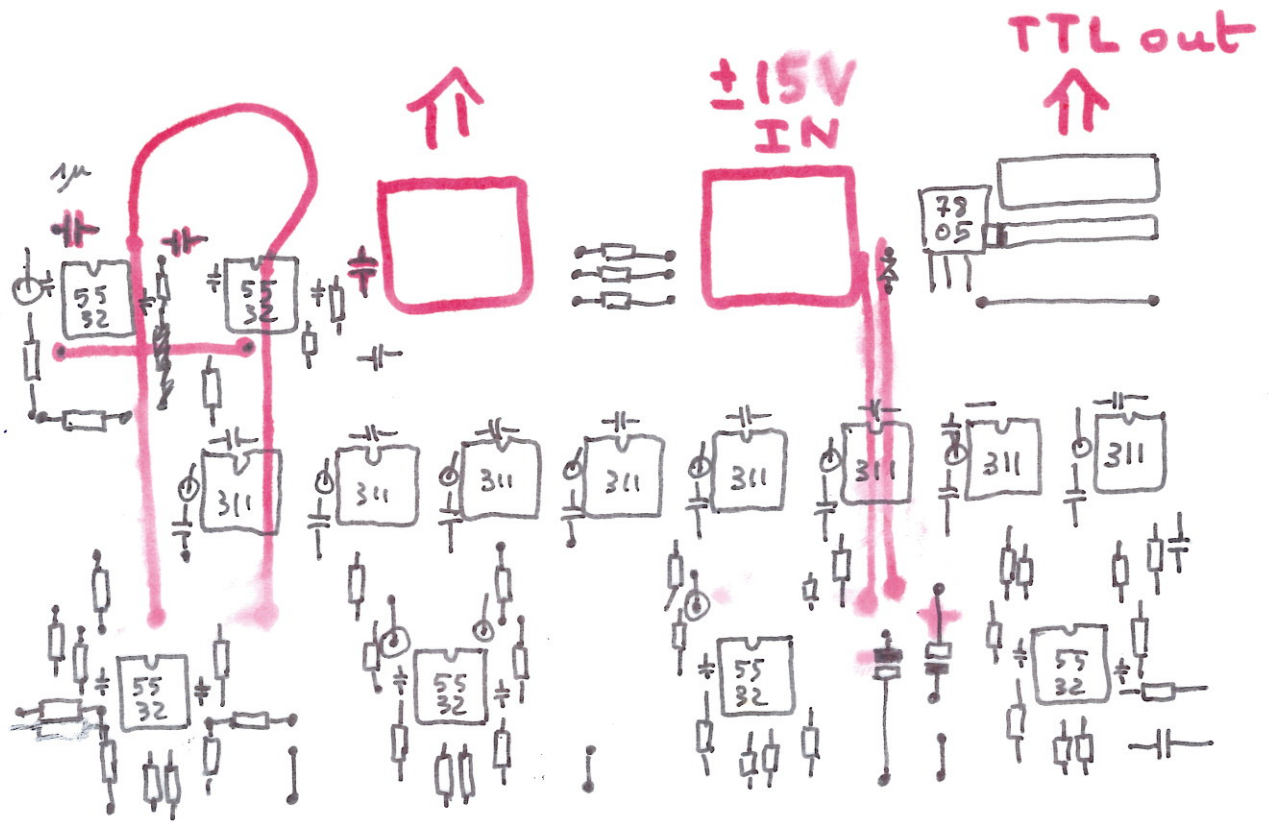
Quad-outputs

- parallel 8-bit input
- 4 channel audio output





deze kaart vegen koppen drukken.



L

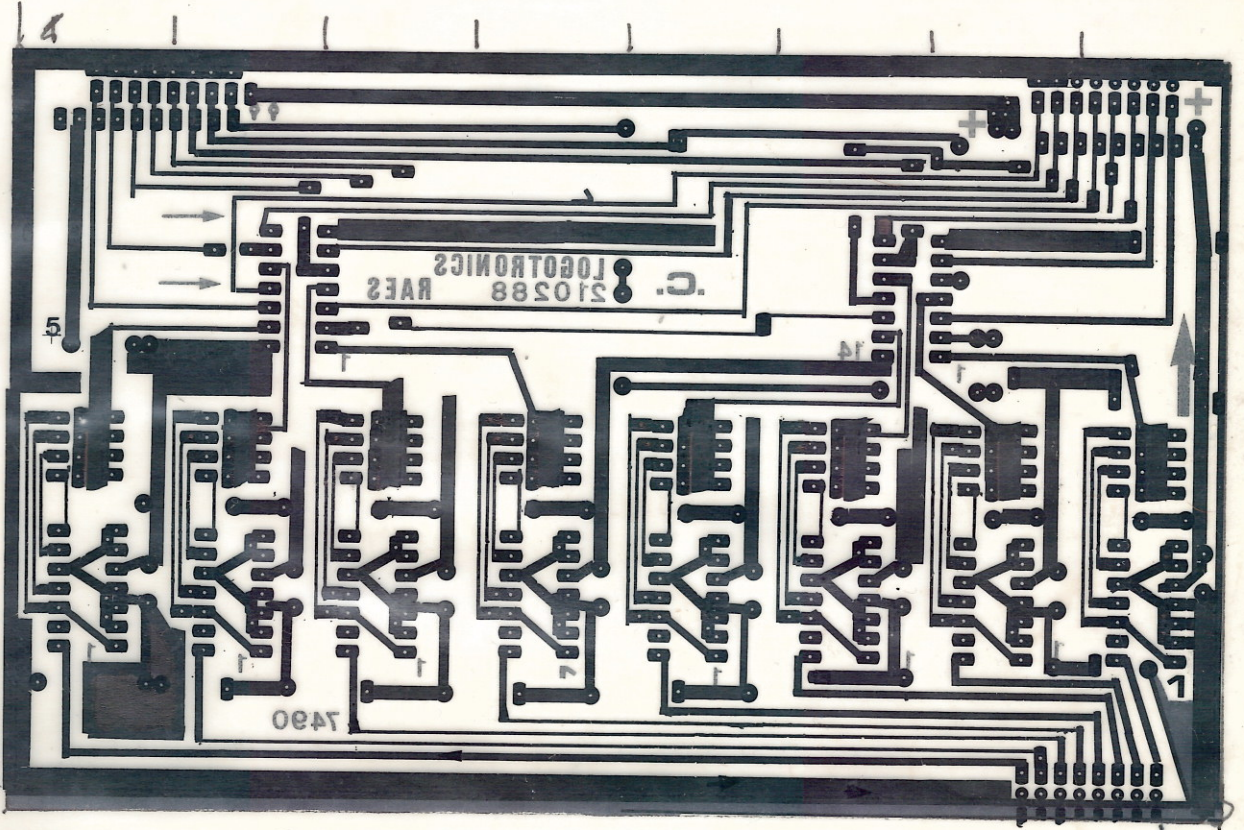
]

of 7400
7408

7490 }
7492 } 8x
7493 }

& input

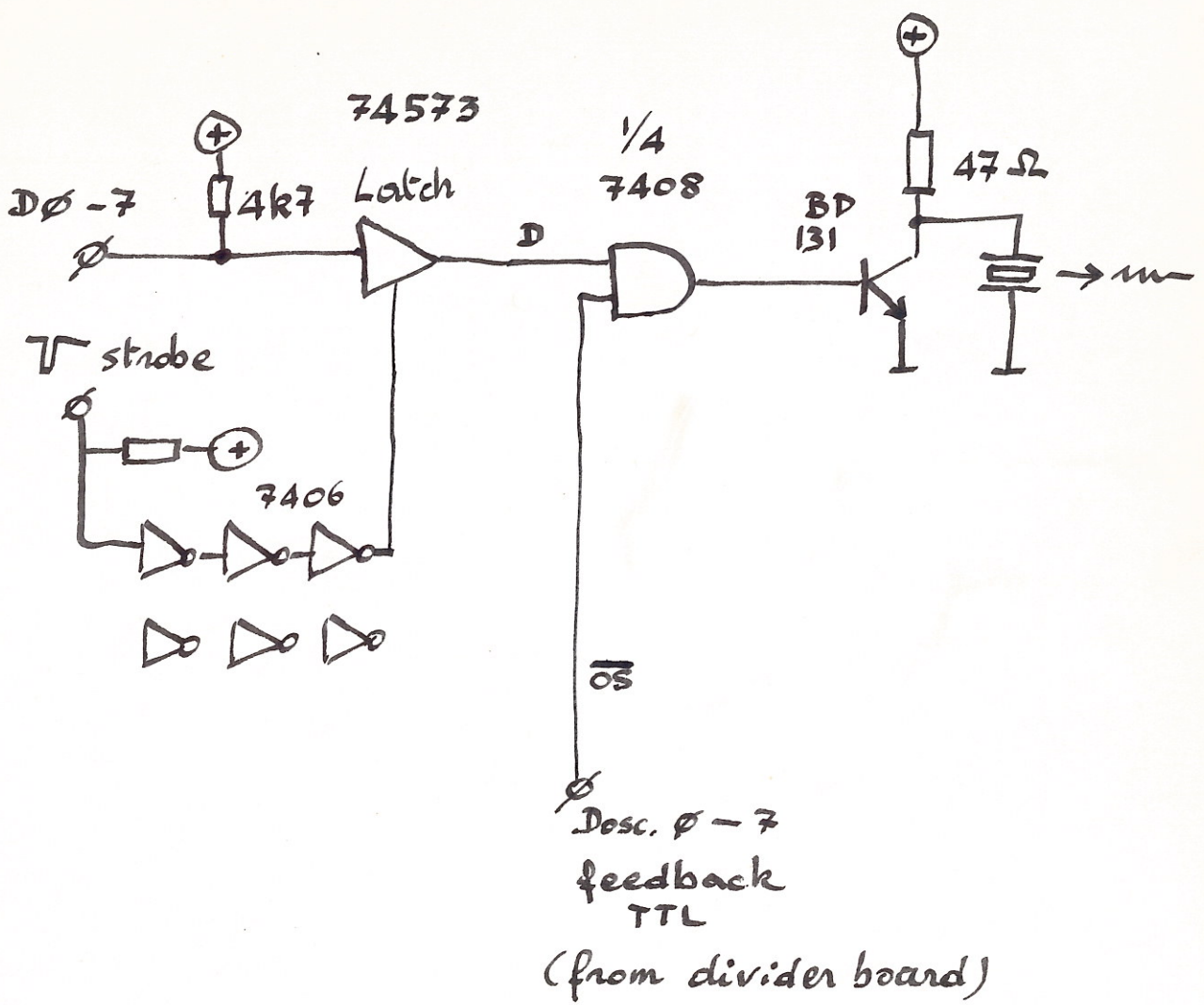
Divided
output



Deze kant tegen
koper aandrukken

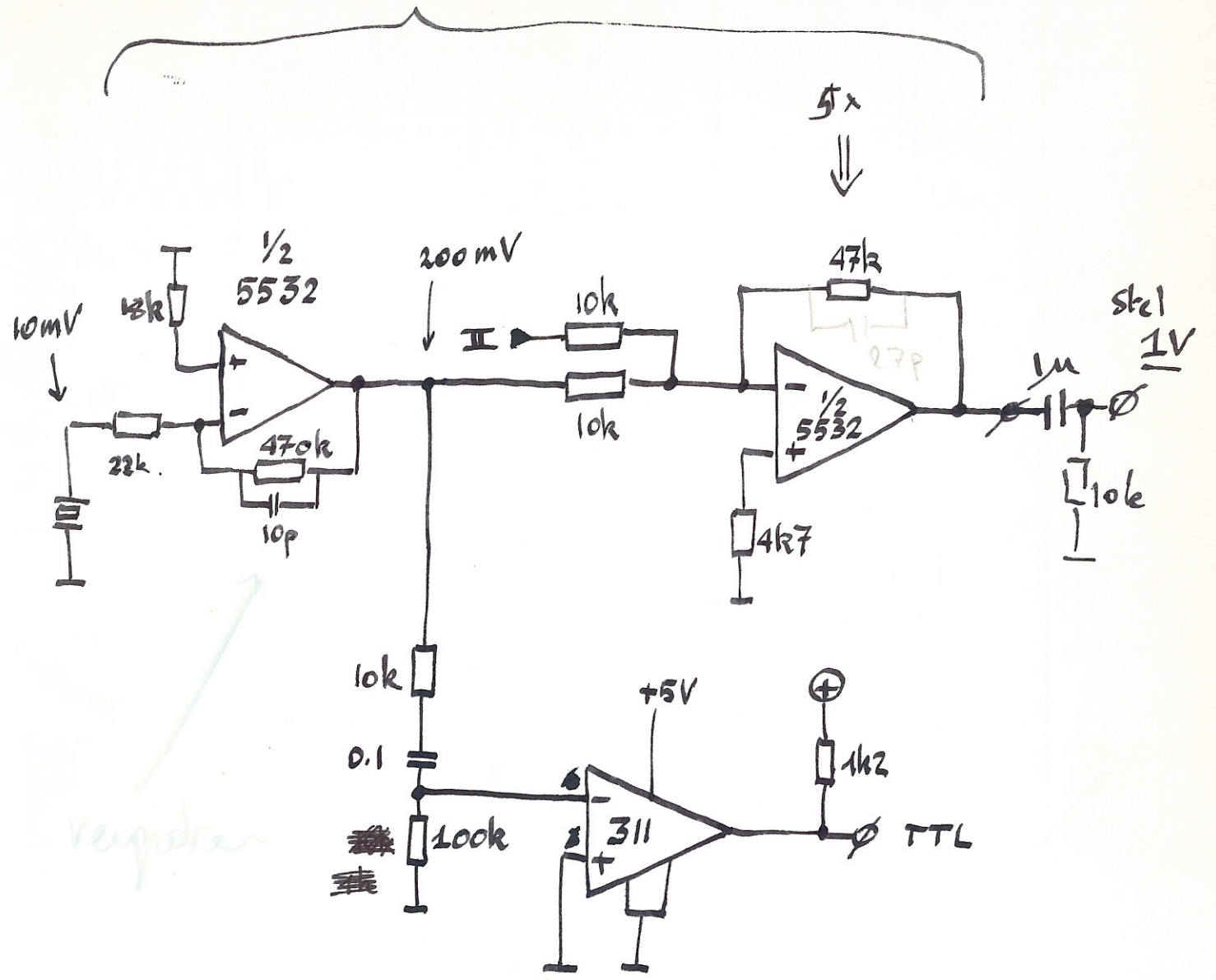
8bit
input

Digital-driver board



RECEIVER-PRINT

gain = 40 dB (100x)



Receiver

- one of eight channels shown

G.

Sic

Z_{10pF}

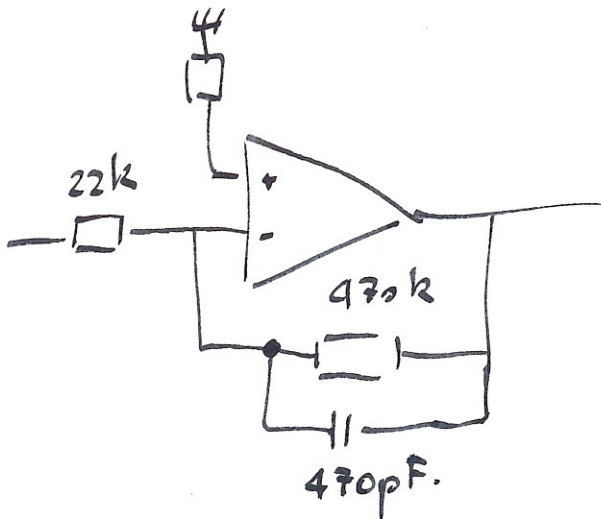
$$Z_c = \frac{1}{2\pi f C}$$

10kc : 1,6 nΩ!

20kc : 800kΩ!

? C zo dat $Z_c = 470k\Omega @ 1kc$.

$$C = \frac{1}{2\pi \cdot 10^3 \cdot 470 \cdot 10^3} = \underline{\underline{338pF}}$$



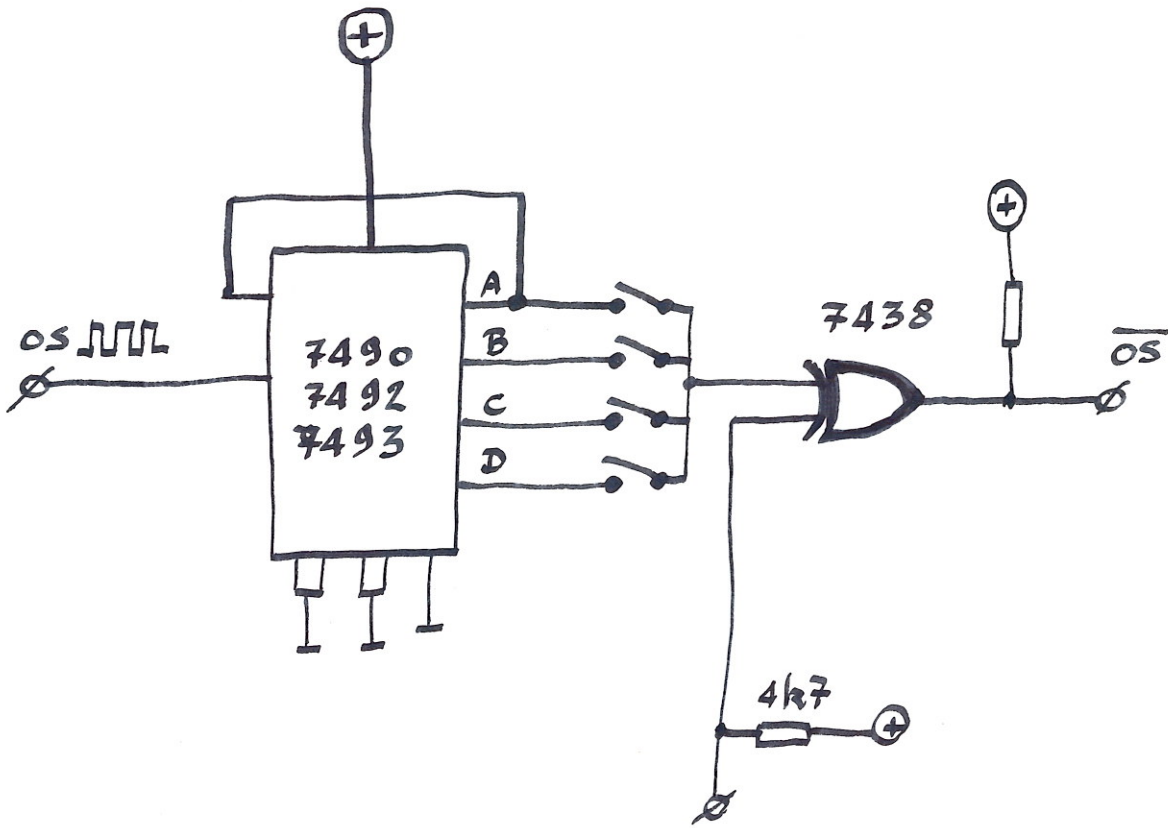
stel $C = 470pF$

$$\Rightarrow f_{-6dB} = \frac{1}{2\pi \cdot 470 \cdot 10^3 \cdot 470 \cdot 10^{-12}} = \underline{\underline{720Hz}}$$

2/ chips veranderen!

TLO 72 of 82 nemen
i.p.v. 5532's.

Divider board

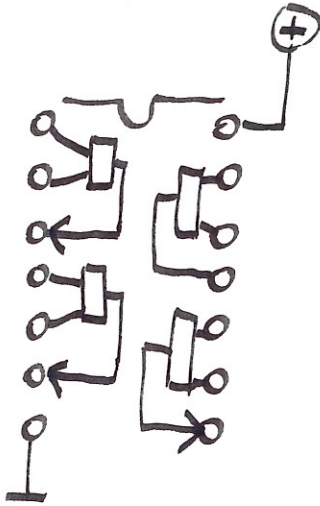


- one of eight channels shown

G.

7400

pin-compatible gates:

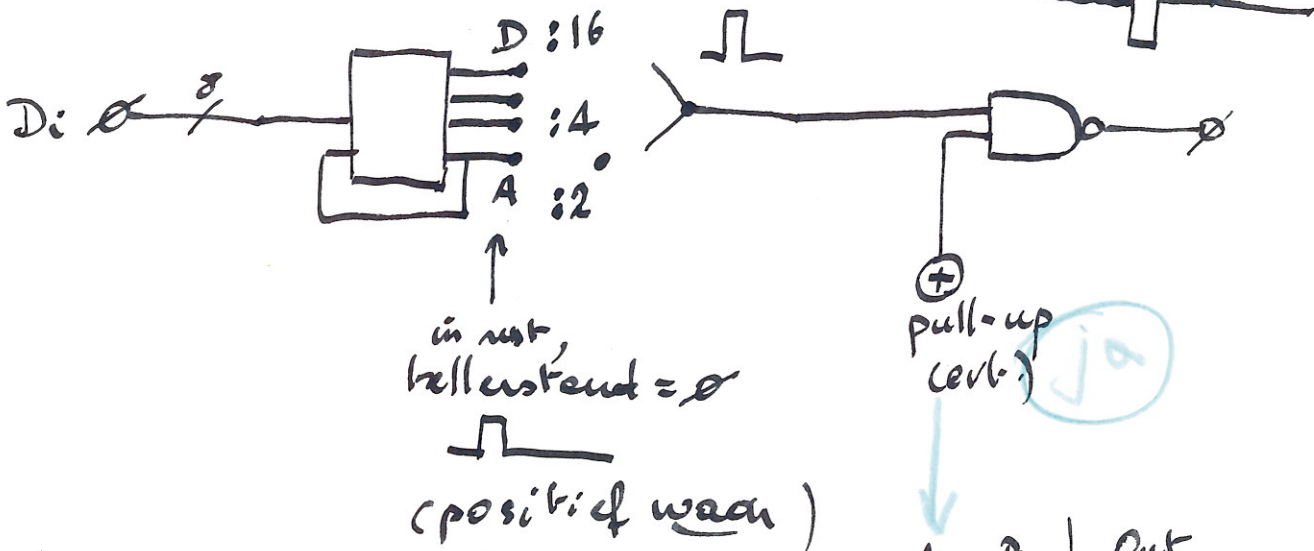


- 7400 - NAND
- 7403 - NAND o.c.
- 7408 - AND
- 7426 - NAND o.c.
- 7432 - OR
- 7437 - NAND buffer
- 7438 - NAND buffer o.c.
- 7486 - EXOR
- 74125 3 state buffer
- 74126 3 state buffer
- 74132 NAND Schmitt-trip.
- 74136 EXOR O.C.

Logische analyse

D_i : in rust \emptyset

(van komparators
LM311
met 1k pull-ups)



pull-up
(verb.)

| A | B | Out |
|---|---|-------------|
| 0 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | \emptyset |

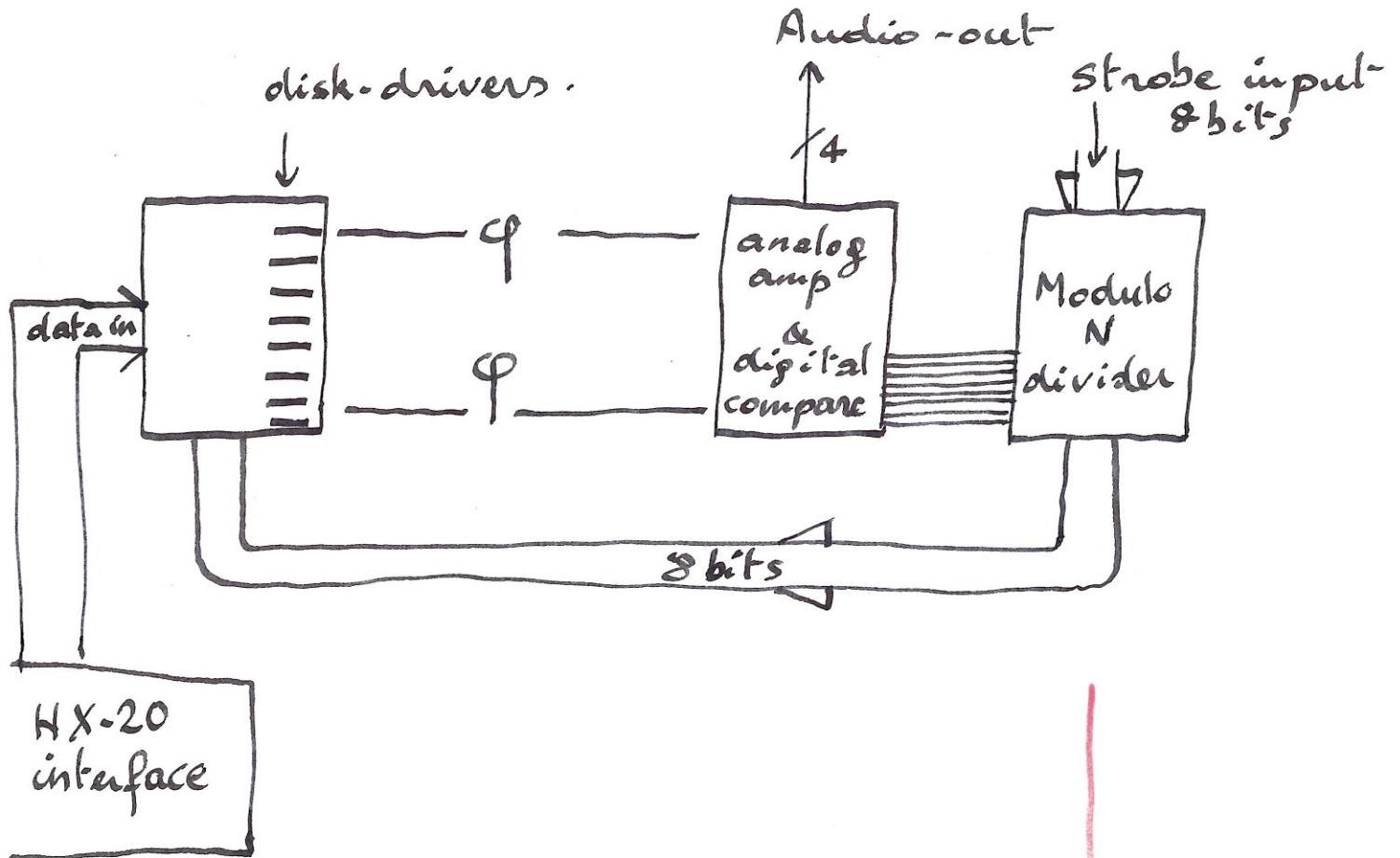
Zelfde-pin-out:
mogelijke chips als buffers:

- 7400 Nand = 7437 buff.
- 7403 Nand met o.c. = 7426 o.c. (H.V.)
- 7408 And
- 7409 And met o.c. = 7438 "
- 74132 Schmitt-nand
- 7432 OR-gate.
- 7486 EXOR-gate.
- 74136 " " o.c.

Multi-dimensionele oscillator

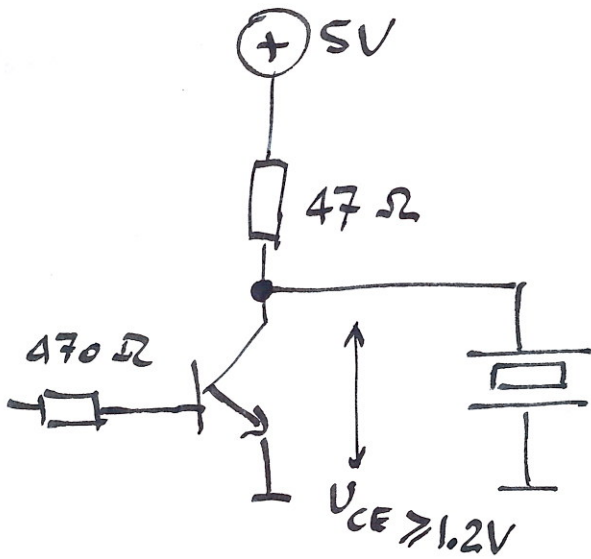
System Overview

1. System opbouw.



If Length = investing — Then : use ~~7432~~ - OR gate

Disk-driver board.



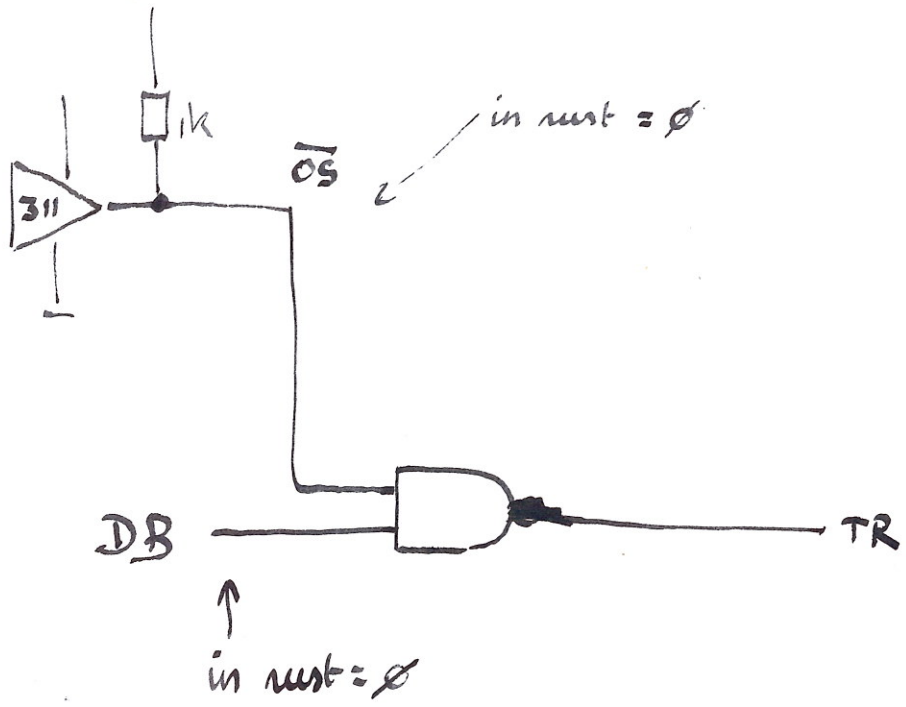
$$V_{\text{over } 47\Omega} = 5 - 1,2\text{V} = 3,8\text{V}$$

$$\Rightarrow I_c = 80\text{mA}$$

$$P_{\text{transistor}} = 0,08 \times 1,2\text{V} = \underline{\underline{9\text{mW}}}$$

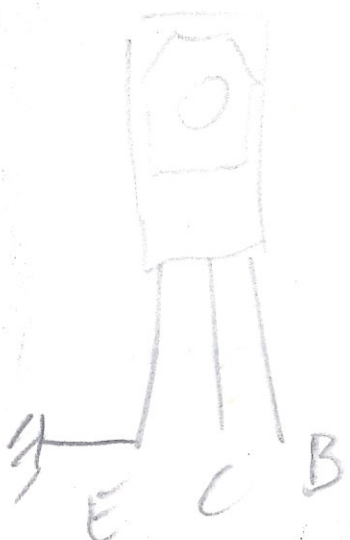
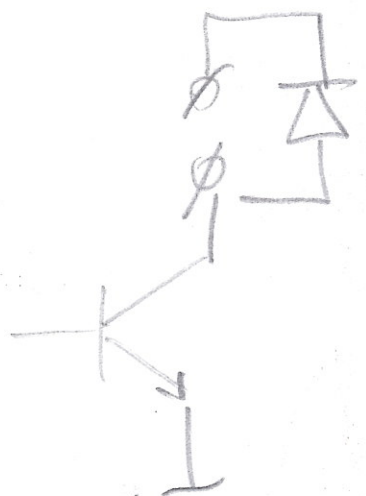
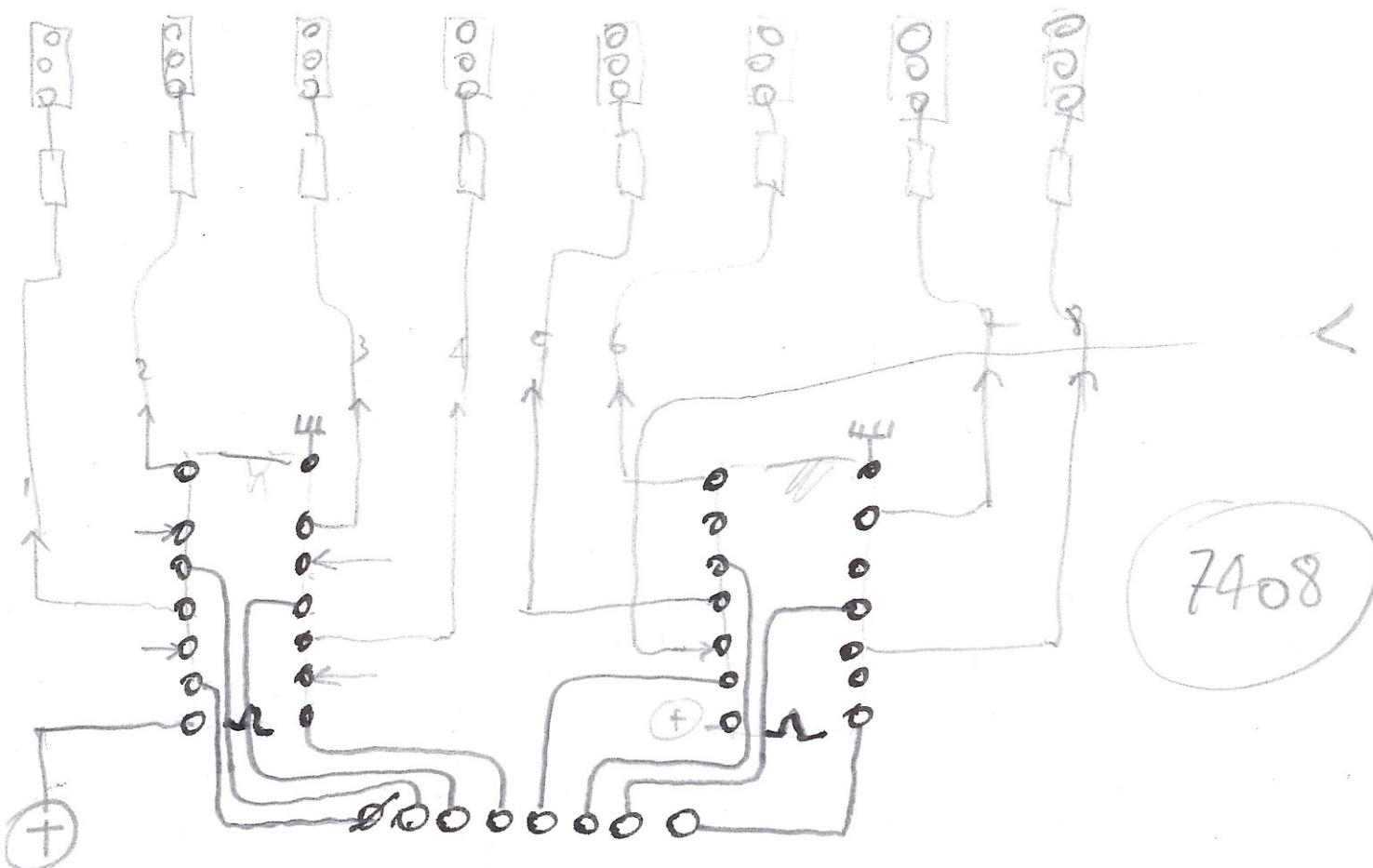
$$P_R = 0,08 \times 3,8 = \underline{\underline{0,3\text{Watt}}}$$

Analog & Compane board



| AND | | |
|-----|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

| NAND | | |
|------|--|---|
| | | 1 |
| | | 1 |
| | | 1 |
| | | 0 |



BD 131

Fig 12/29

BD681
29

AND

| A | B | Out |
|---|---|-----|
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

NAND

(7400)
7437
7438

| A | B | Out |
|---|---|-----|
| 0 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

OR (7432)

| A | B | out |
|---|---|-----|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 1 |

NOR

~~7428~~
~~(7402)~~

| A | B | out |
|---|---|-----|
| 0 | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 0 |


EXOR

| A | B | out |
|---|---|-----|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

EXNOR

| A | B | out |
|---|---|-----|
| 0 | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

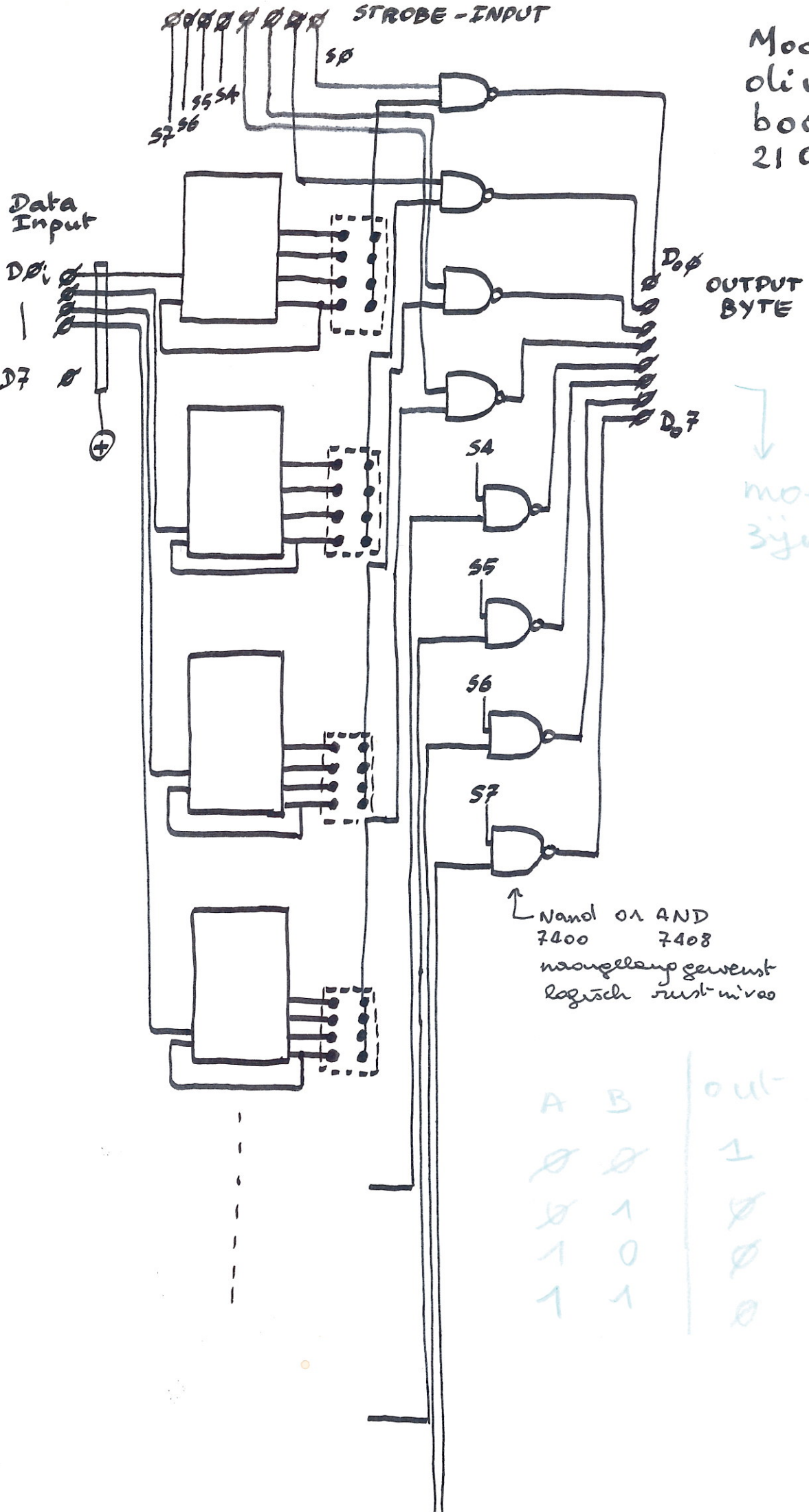
3-state buf. 

3 state Buf. 

| A | B | Out |
|---|---|------|
| 0 | 0 | 0 |
| 0 | 1 | Hi-Z |
| 1 | 0 | 1 |
| 1 | 1 | Hi-Z |

| A | B | Out |
|---|---|------|
| 0 | 0 | Hi-Z |
| 0 | 1 | 0 |
| 1 | 0 | Hi-Z |
| 1 | 1 | 1 |

Modulo-N
 divider
 board
 21 02 88



moet 1
 zijn in rust

↑ Nand of AND
 7400 7408
 na omgeleerd geweest
 logisch rust-niveau

| A | B | out |
|---|---|-----|
| 0 | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 0 |

74LS90
93

