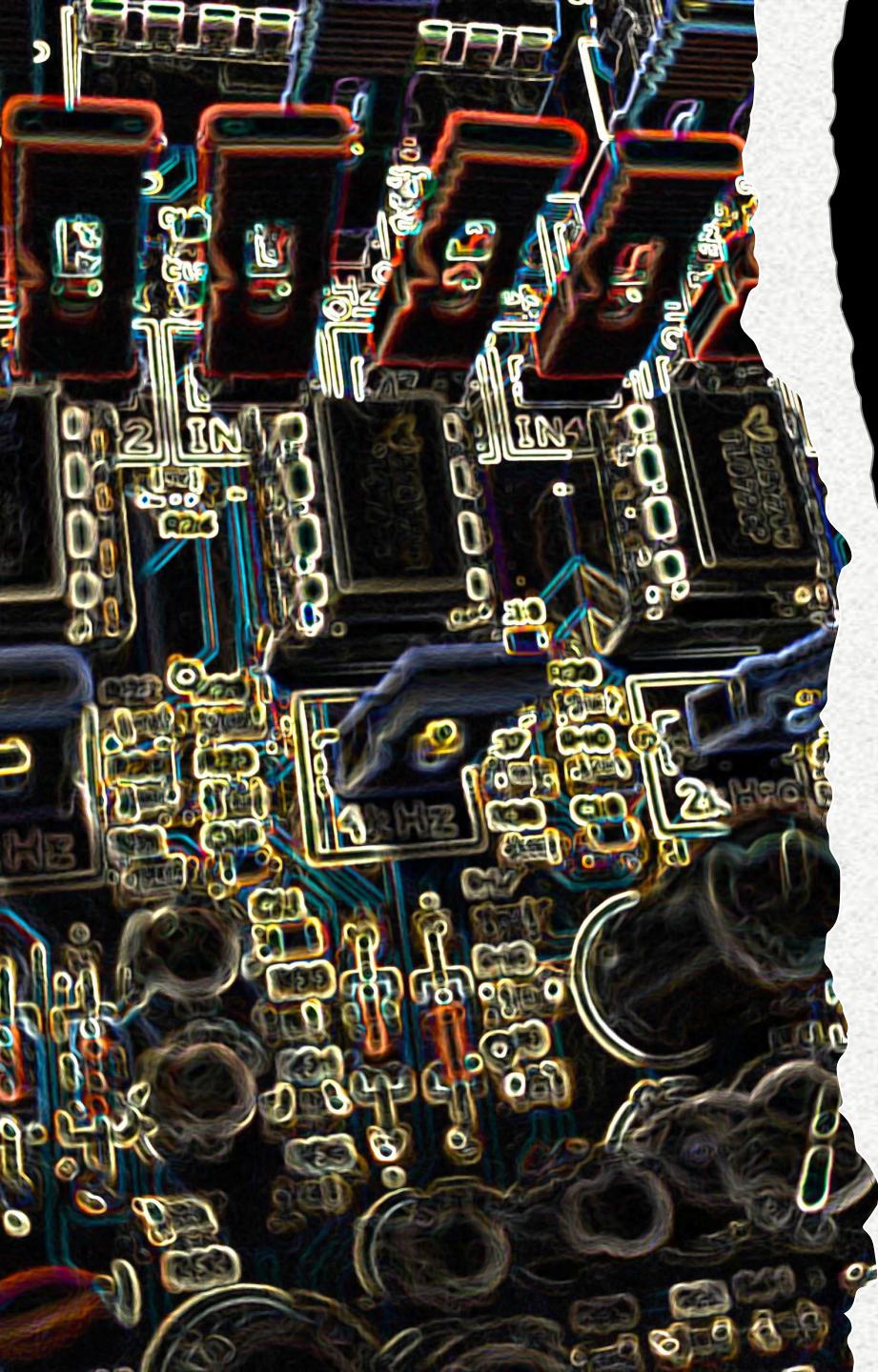


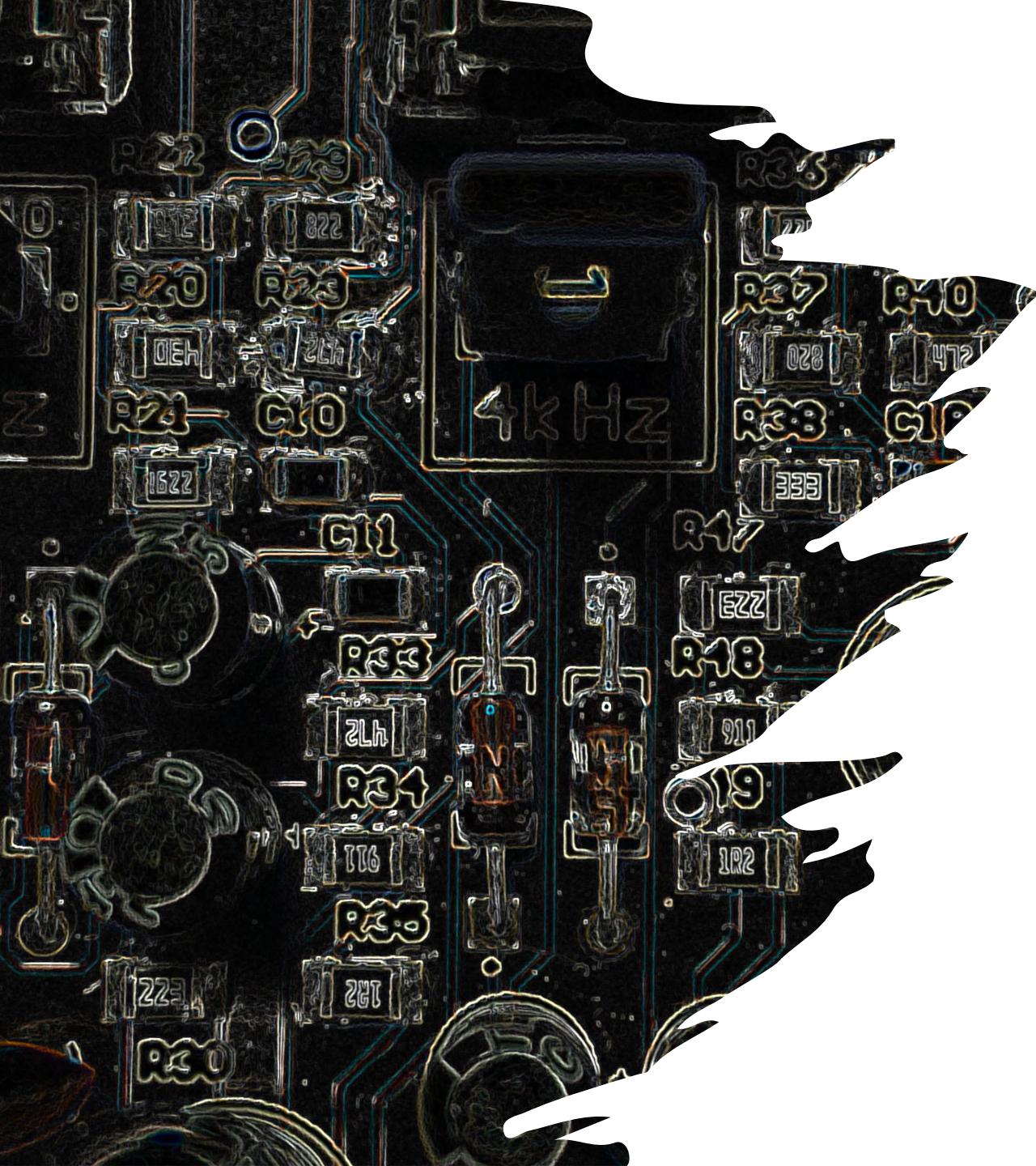
# SPECTRUM ANALYZER

Miguel Nunez || Electronische Systemen 2 || PXL 2022-2023



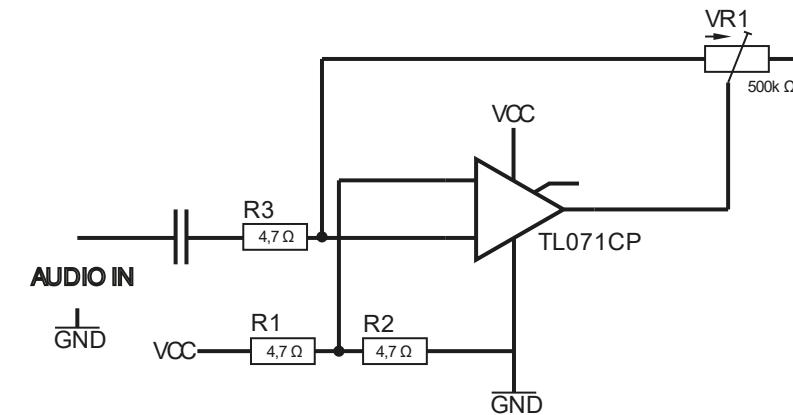
# WAT IS HET?

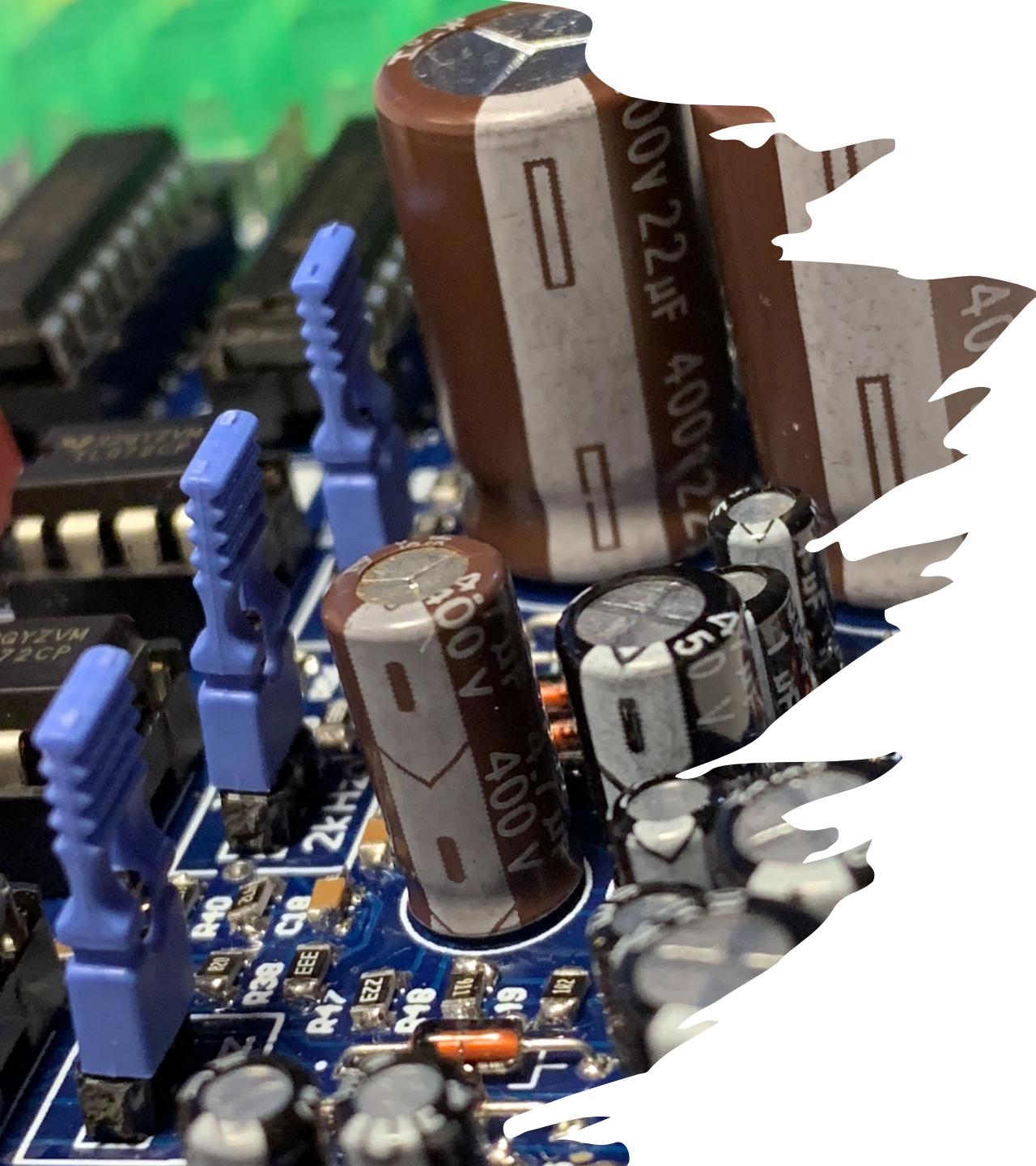
“Een elektronisch instrument voor de meting en visualisatie van frequentie componenten van een elektrisch signaal”



# WERKING : INPUT

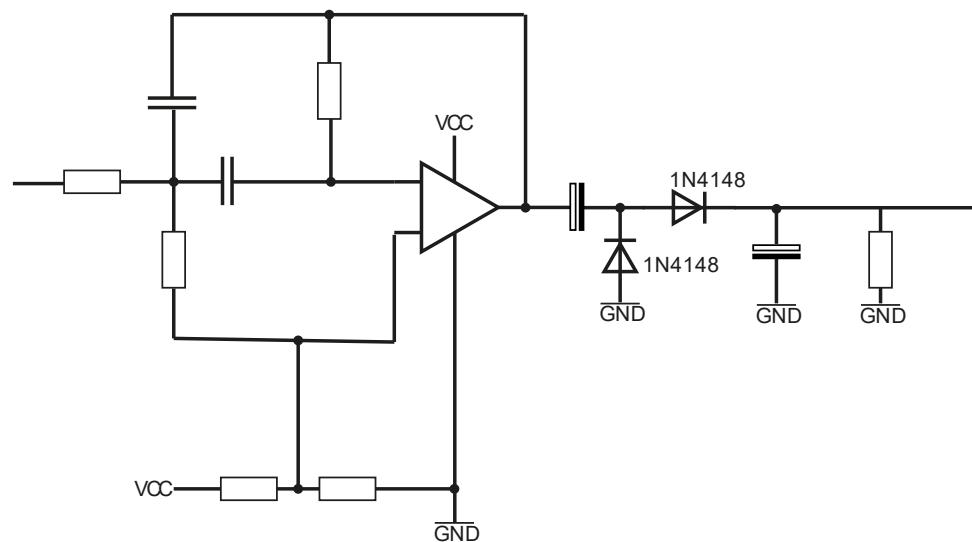
- TL071 opamp versterkt de input
- 500k  $\Omega$  trimmer voor gevoeligheid ( $\frac{-VR1}{R3}$ )

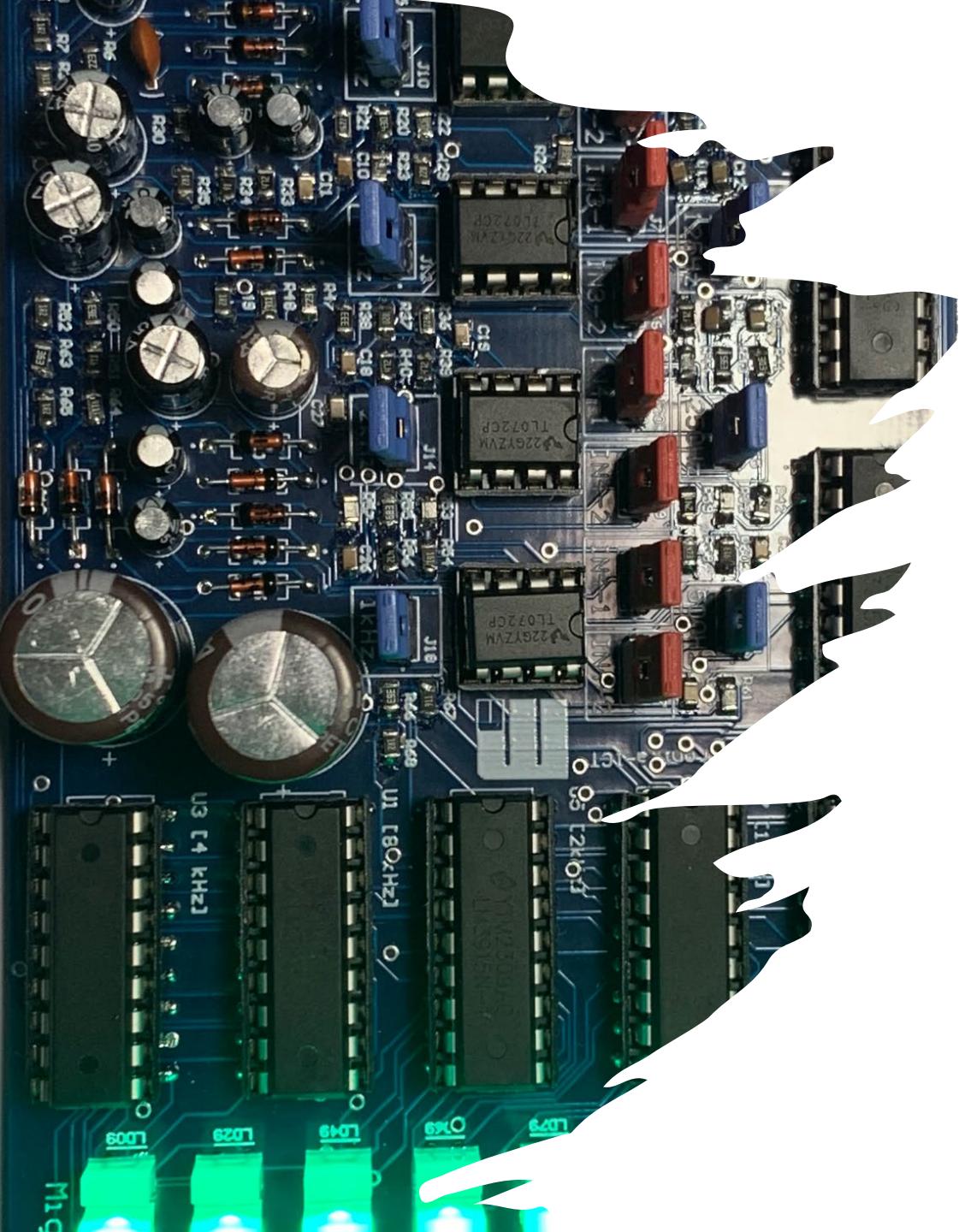




# WERKING : FILTERING

- 8 band pass filters
- Bandpass helling Q 10    ( $B = \frac{f}{Q}$ )
- Voorbeeld :  $B = \frac{1kHz}{10} \rightarrow B = 100Hz$   
 $\rightarrow$  Bandpass van 950 tot 1050 Hz

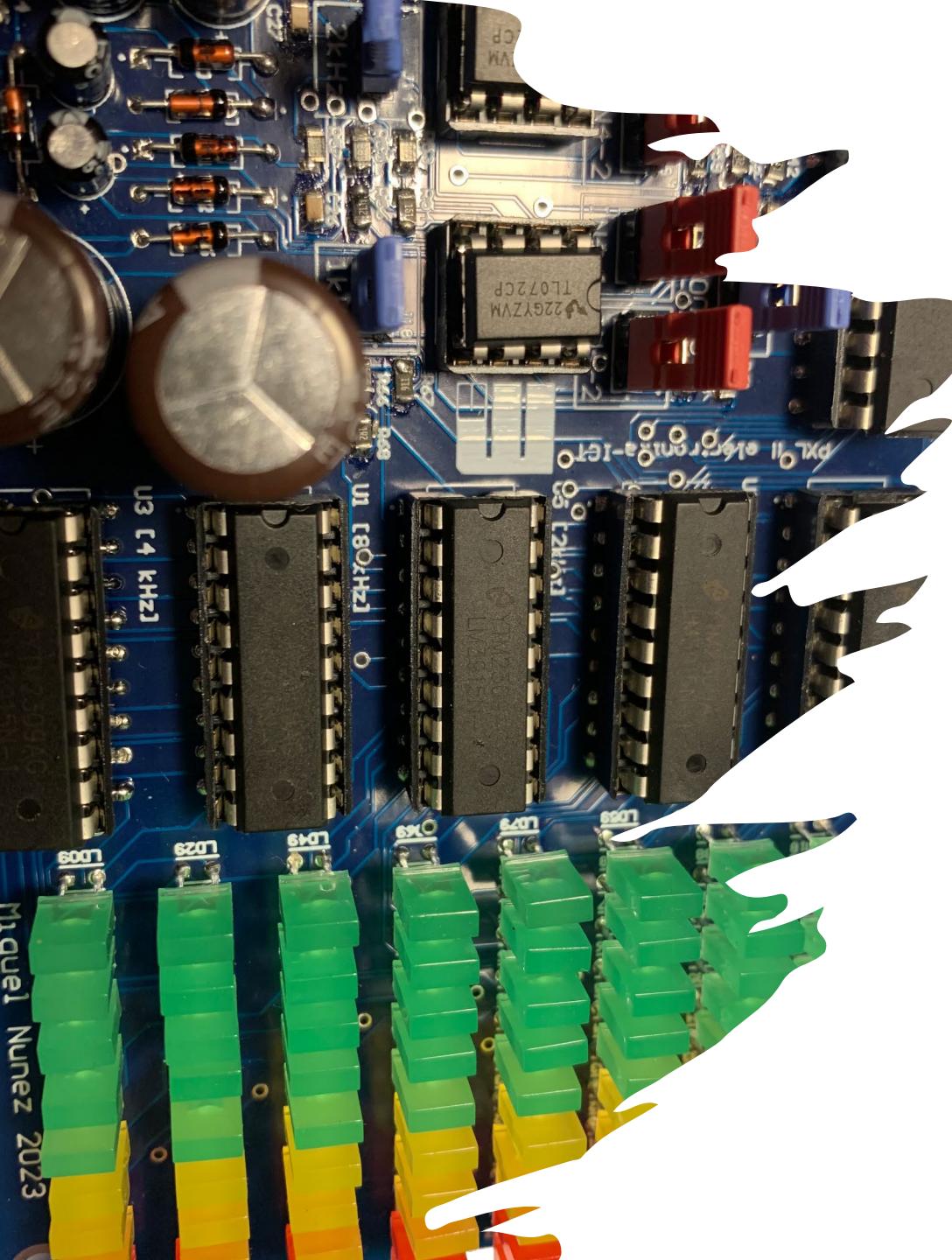




# WERKING : **(HER)INVERTERING**

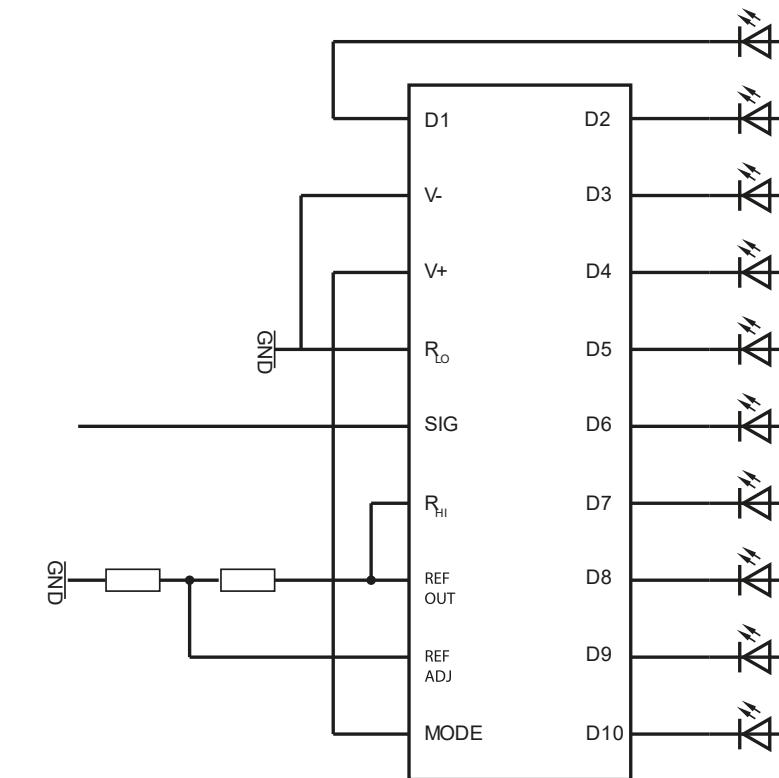
- 4x TL072CP dual opamps
- Rectificatie van het geïnverteerde signaal
- Bandbreedtes in gewicht verdeeld over de opamps :

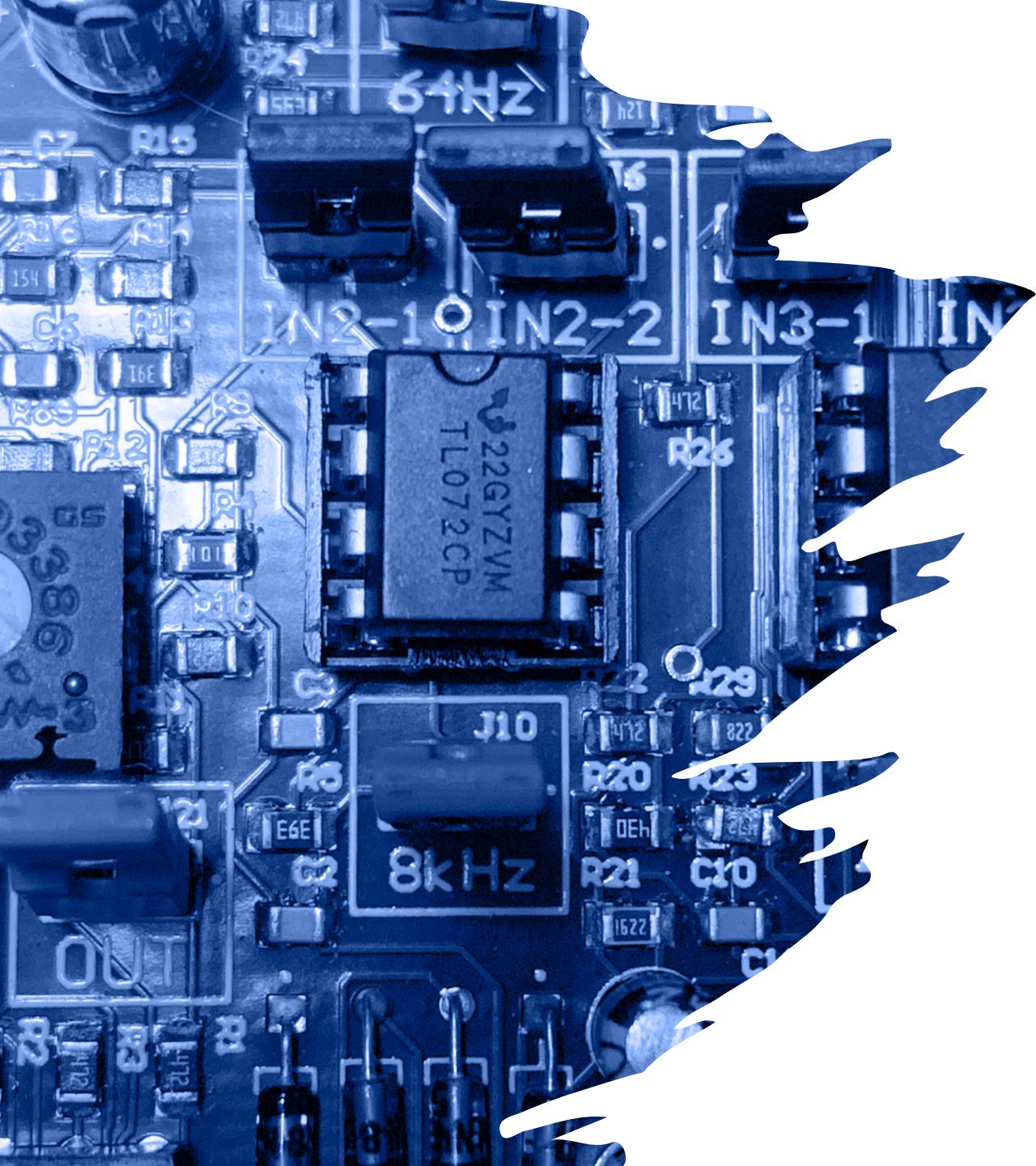
opamp 1	→	8kHz	+	64Hz
opamp 2	→	4kHz	+	125Hz
opamp 3	→	2kHz	+	250Hz
opamp 4	→	1kHz	+	500Hz



# **WERKING : VISUALISATIE**

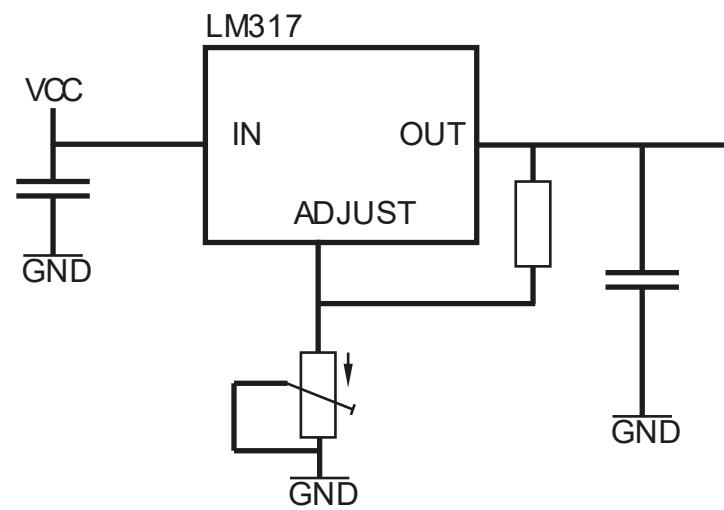
- 8x **LM3915N** display drivers
  - 80 LEDS (40 groen, 24 geel en 16 rood)

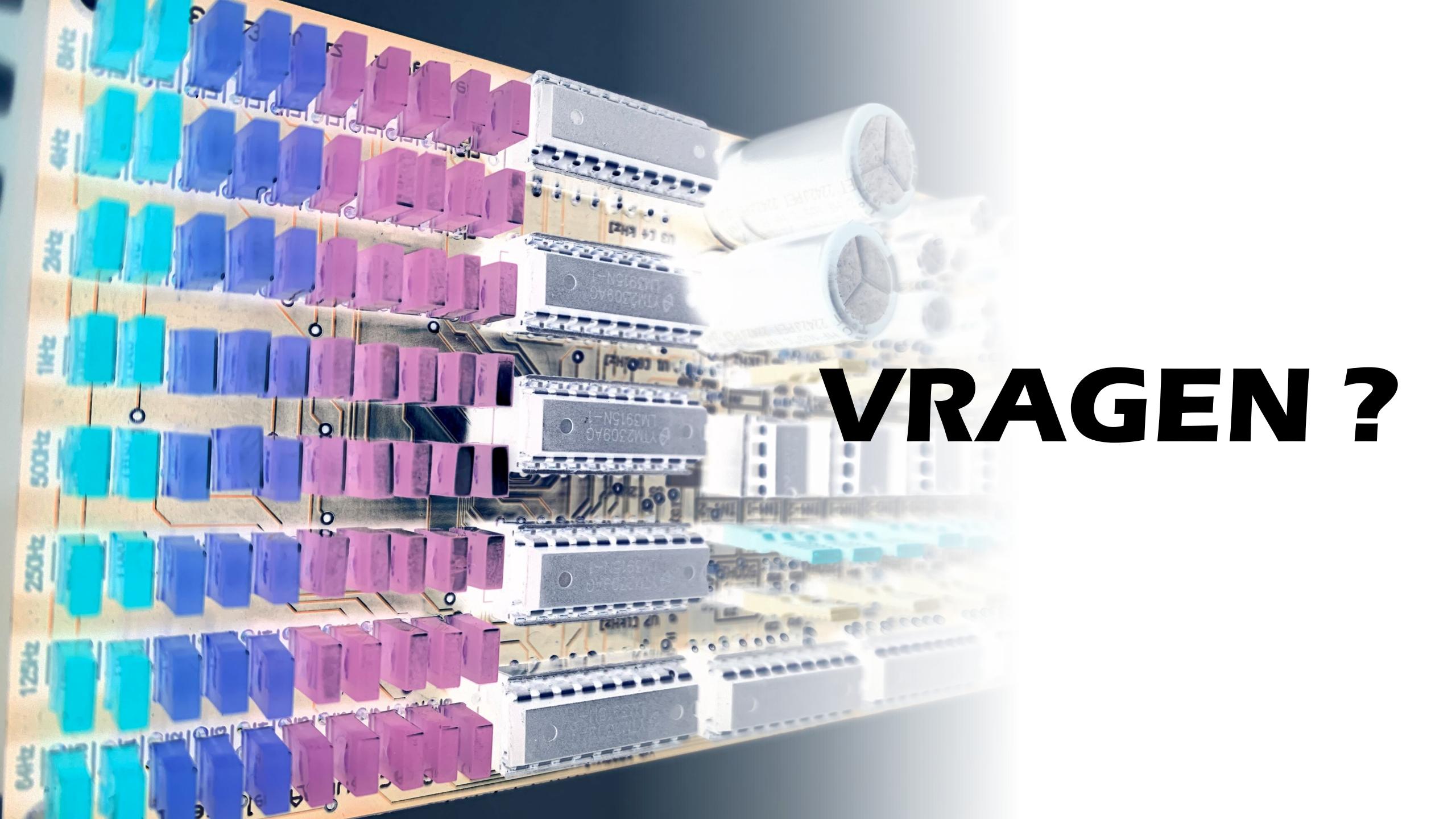




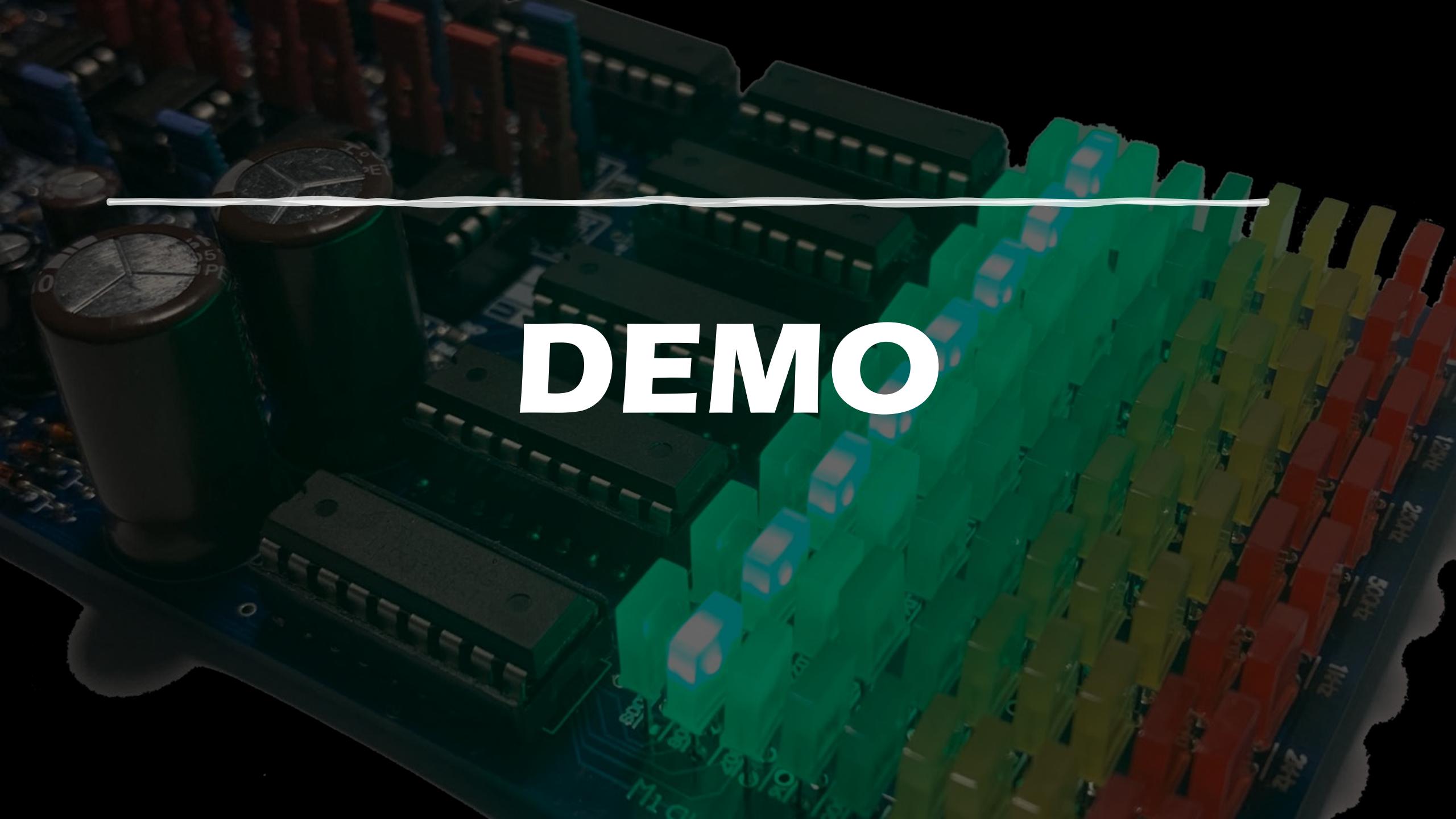
# **WERKING : VOEDING**

- LM317 voltage regulator
  - 10k  $\Omega$  trimmer voor adjust





# VRAGEN ?



# DEMO