Perimeter lock: some considerations on SNR / 1

- "Best case": FEMTO- pre amplifier:

  let 200 uW = fiber coupled power of stabilized laser = Ps

  1 nW = power of gyrolaser = Pg (P>1 nw → multi mode)

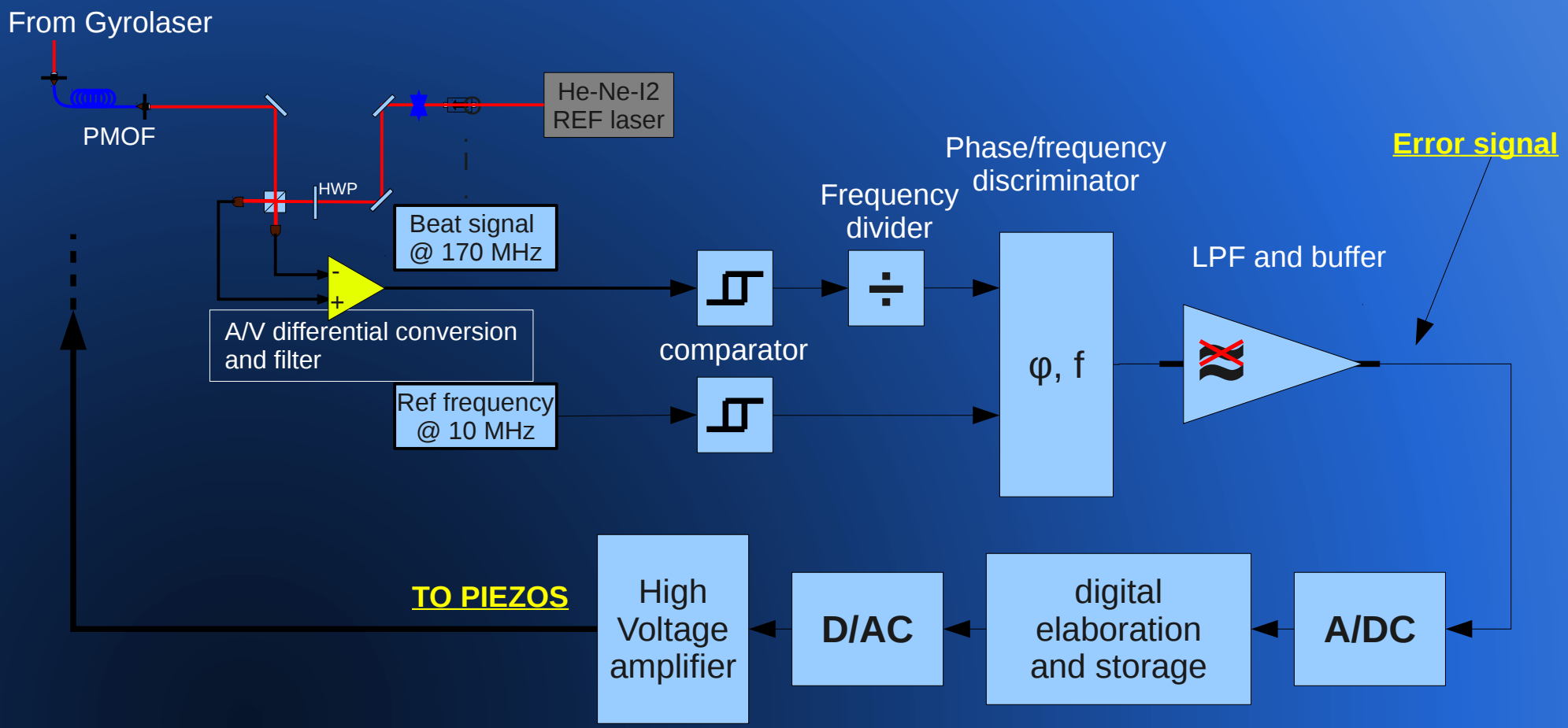
  power of beat = 2*sqrt(Ps*Pg) (peak value) = 894 nW peak

- After the P.D. and the pre-amplification we get 1,58 mVrms of signal
- Preamp data sheet:
  - equivalent input noise current @100 MHz = 21 pA/sqrt(Hz)
  - many others noise sources ignored

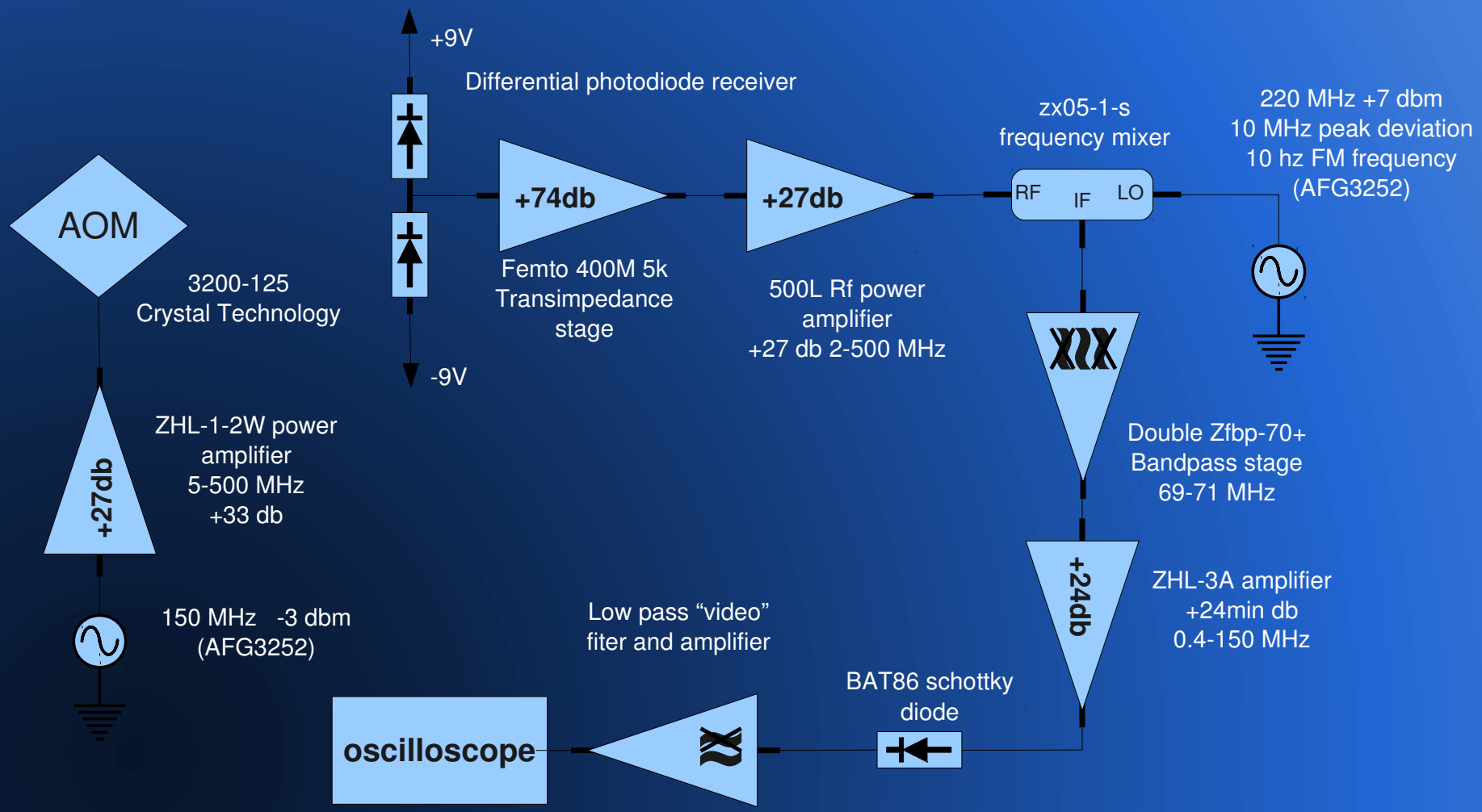
SNR= 13 dB @bandwidth = 10 MHz

In "*IDEAL*" conditions

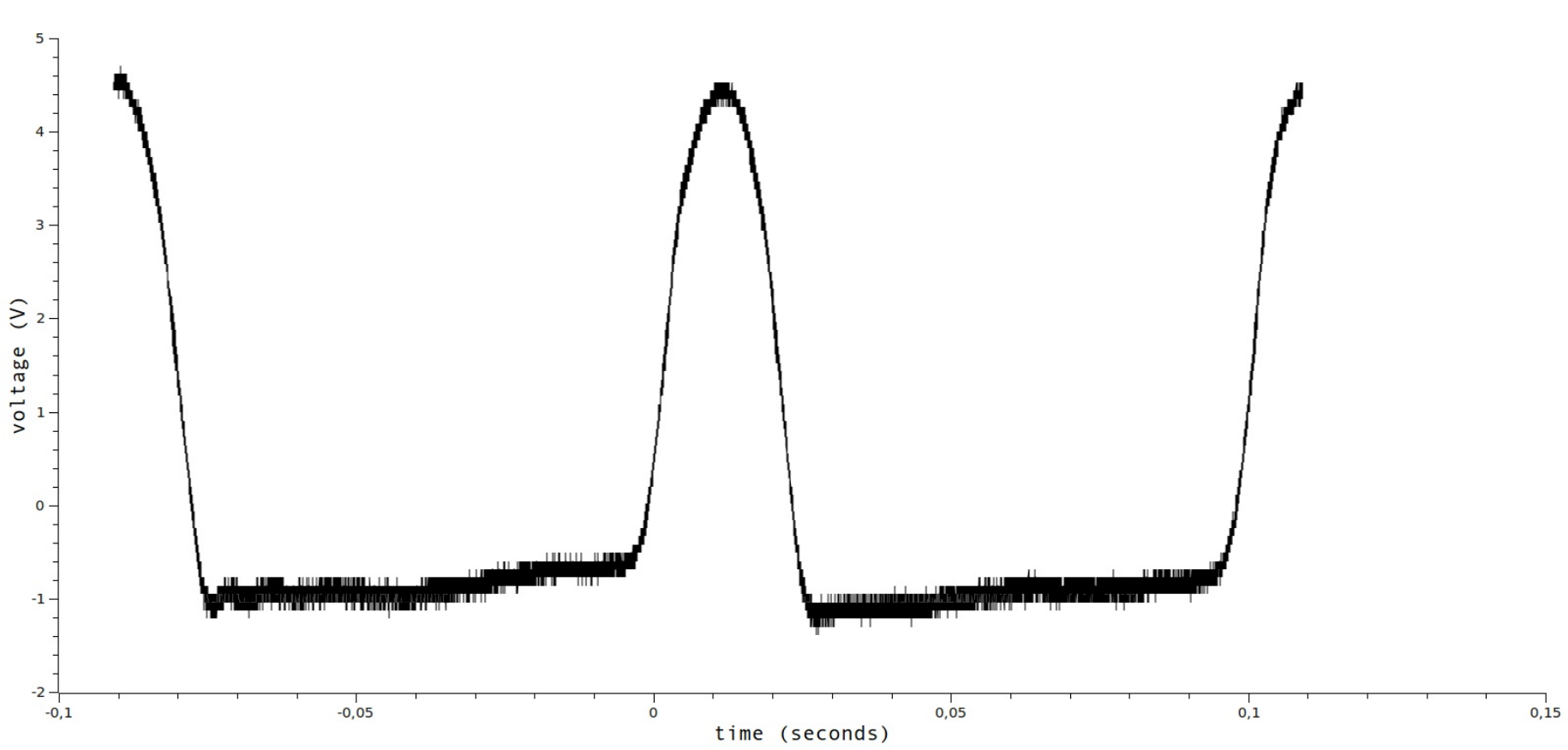
Perimeter lock:
PLL phase and frequency lock



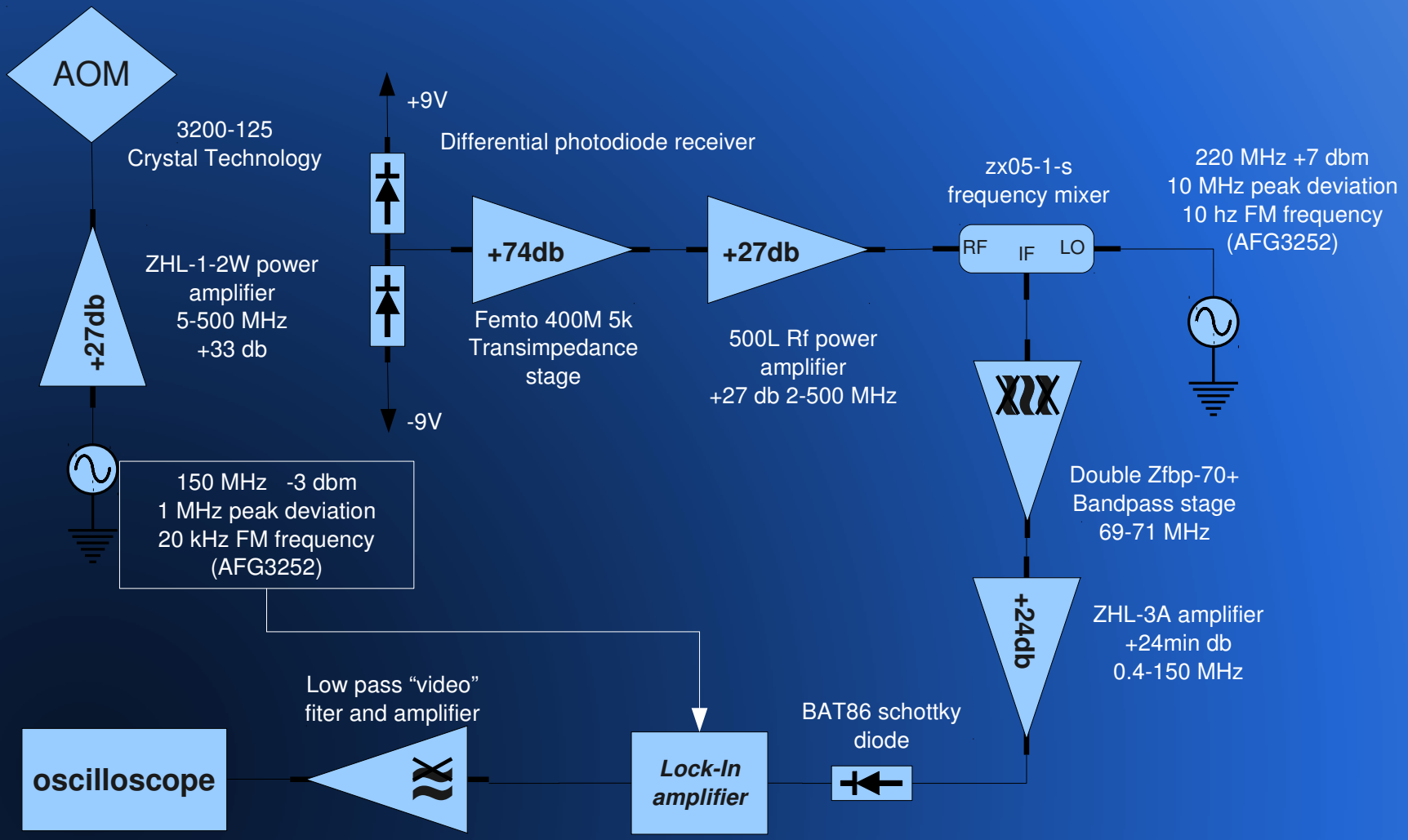
Perimeter lock: home made spectum analyzer



Perimeter lock:
home made spectum analyzer



Perimeter lock: lock-in demodulation



Perimeter lock: lock-in demodulation