IR signal DC coupling & Source Intensity variation compensation from the hardware point of view.

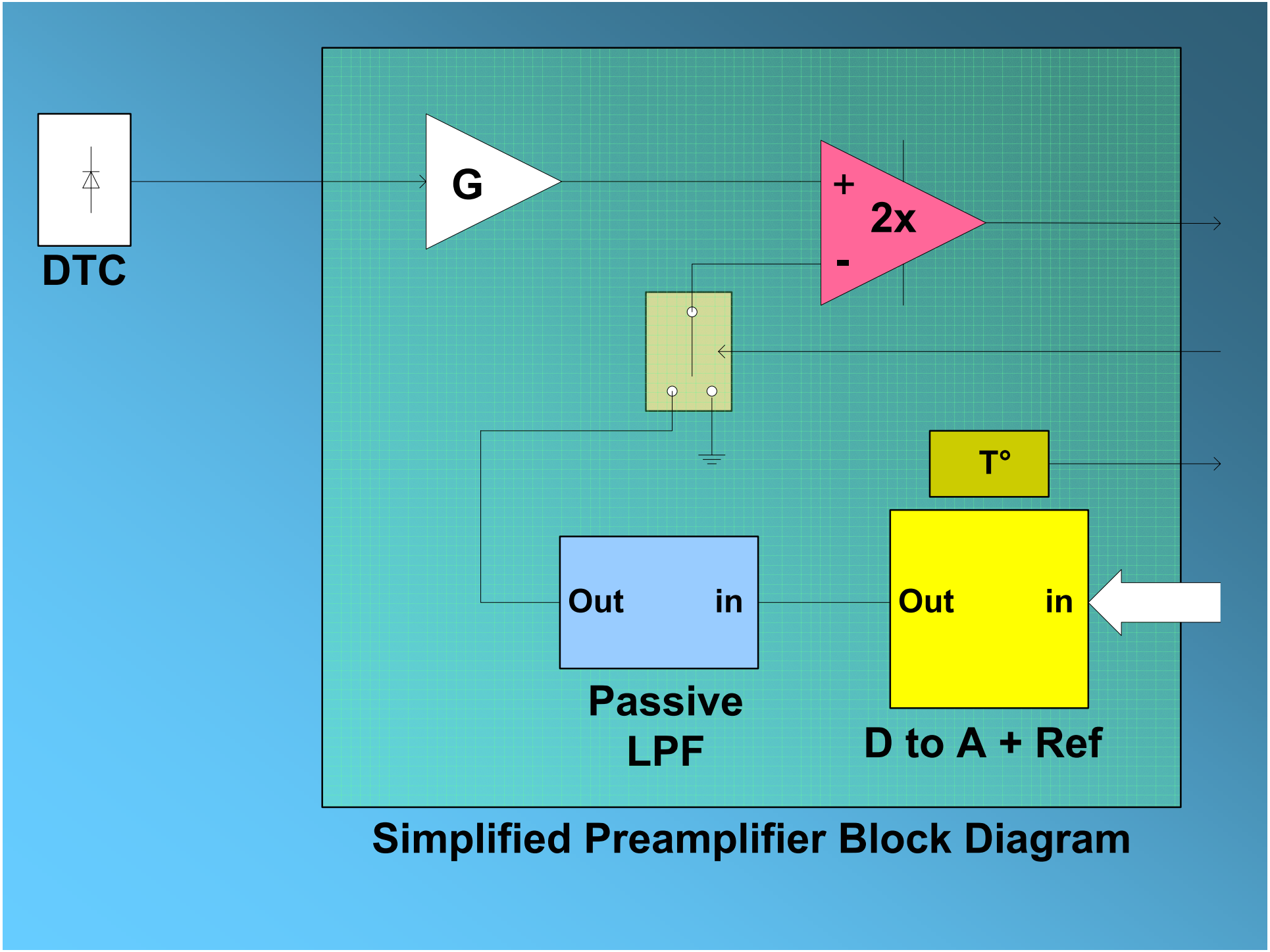
Problems of DC coupling

- IR Signal is always positive

  → Loss of ADC MSB if optimum gain is applied

  → Loss of 1 bit dynamic range (6dB) implies some loss in SNR (-30%)

- Is any compensation possible?



Simplified Preamplifier Block Diagram

Conclusions

- DAC will restore DC level, dynamic range remains unmodified versus AC coupling
- Filter will keep noise to essentially zero
- Temperature monitoring can help to stabilize compensation (only if necessary)
- Regular DC level checks will probably remain necessary
- Some implementation details and additional features have been omitted here.