

Charge Sharing Readout

-

Splitting Adapter for APVs

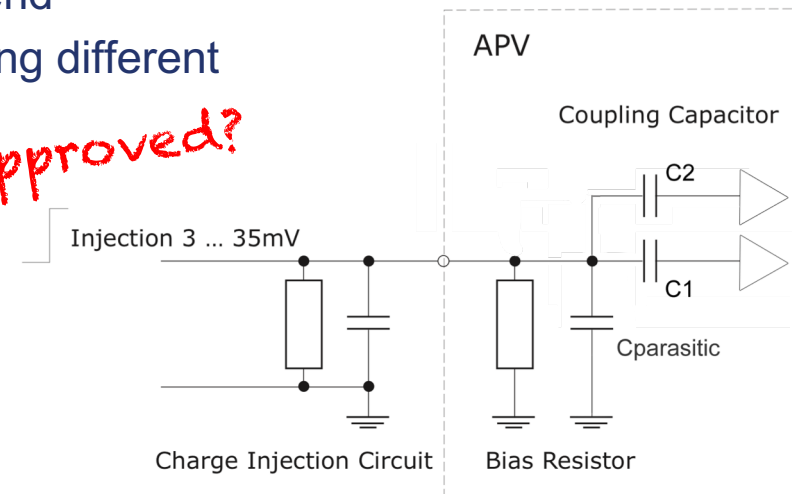
Hans Henschel, DESY Zeuthen

Motivation

- extend the sensitivity range of the APV frontend
- share charge between two APV channels using different coupling capacitors

(C1 standard: 100pF, C2 modified: 10pF) *approved?*

- design new fanout or an adapter board with matching connectors

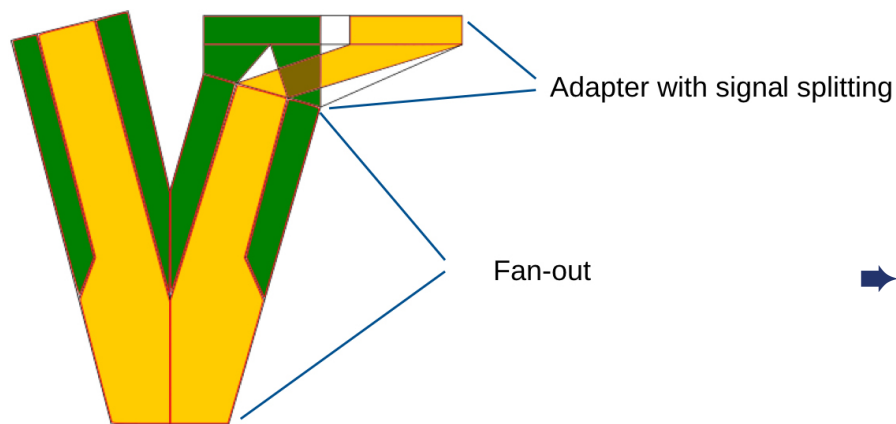
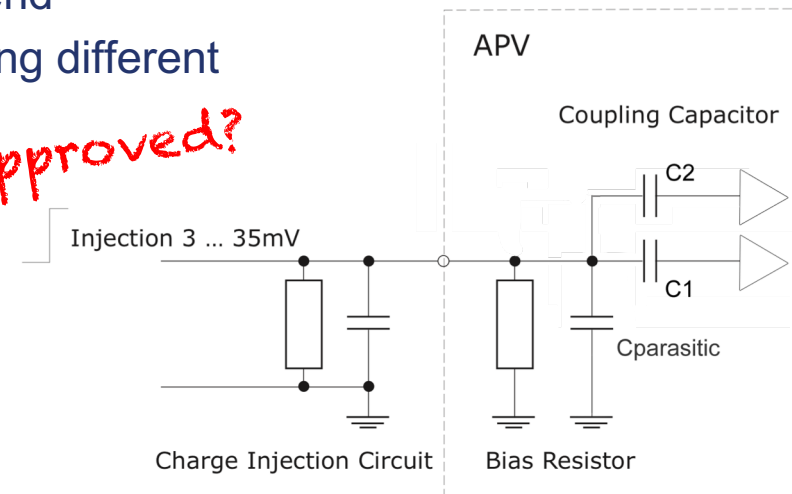


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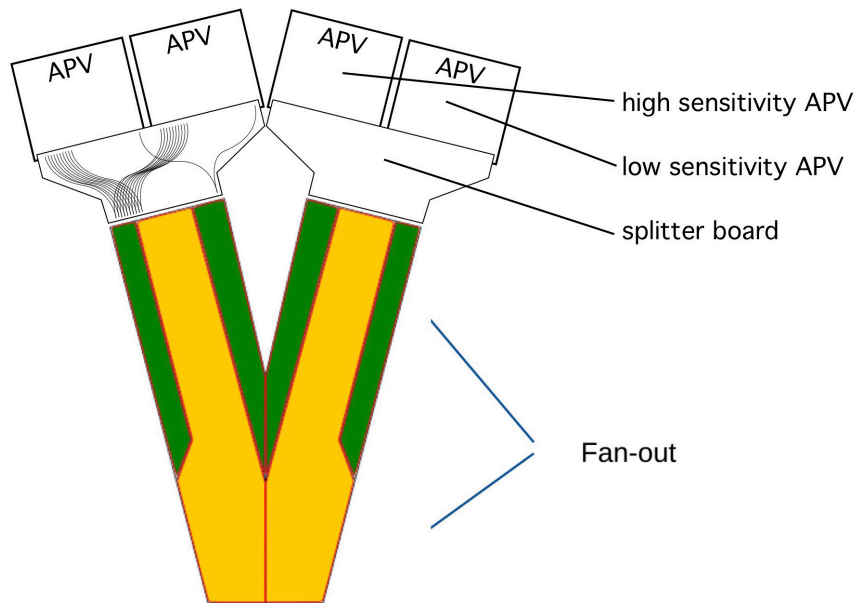
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➡ modify every 2nd channel on APV!

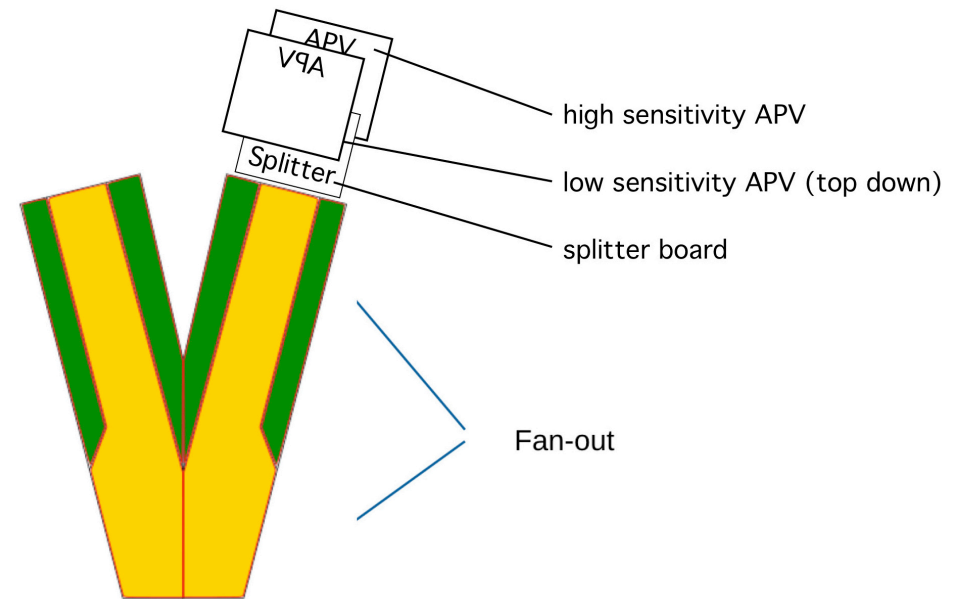
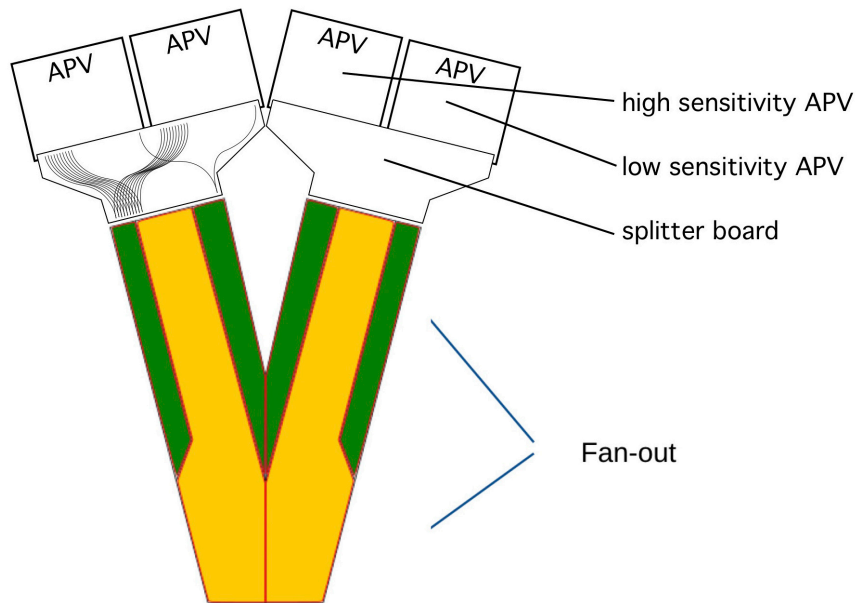
Basic Concepts

- modify a whole APV board (all channels) ✓
- neighbour APVs or



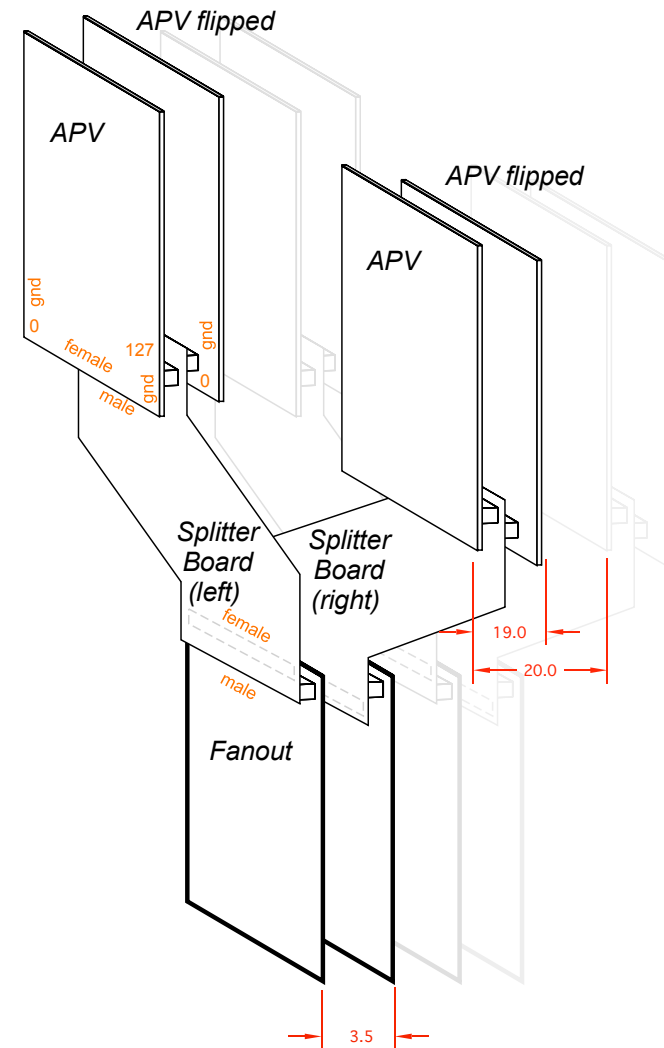
Basic Concepts

- modify a whole APV board (all channels) ✓
- neighbour APVs or
- stack them (one flipped, preferred!) ➔ less stub line length and easier routing



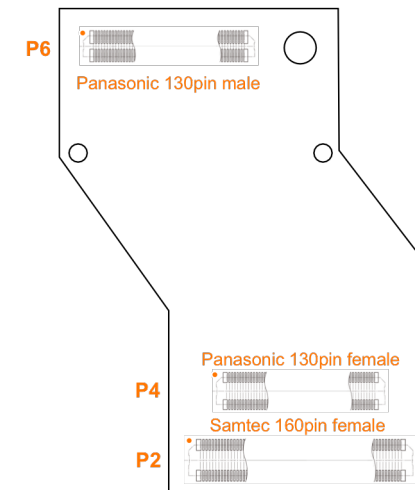
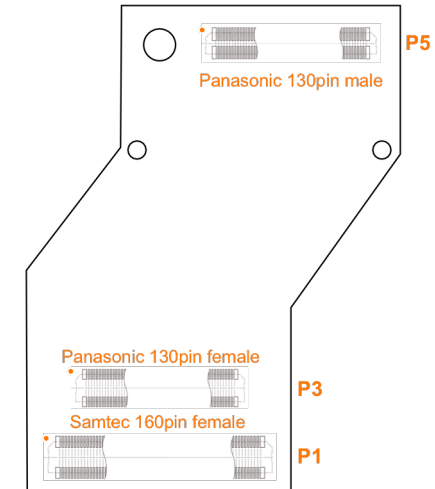
Geometrical constraints (1)

- consecutive sensor planes: just 3.5mm!
- existing fanout (Panasonic connector): ~9mm
- two flipped APVs: 19mm
- use bulged adapter to place APVs of two consecutive sensor planes side by side instead of stacked in a series
 - ➔ no more space needed than now



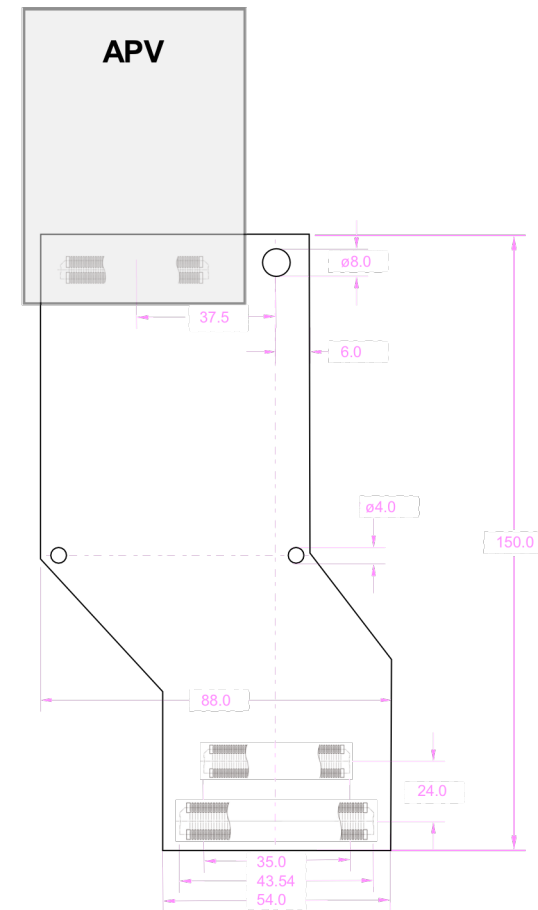
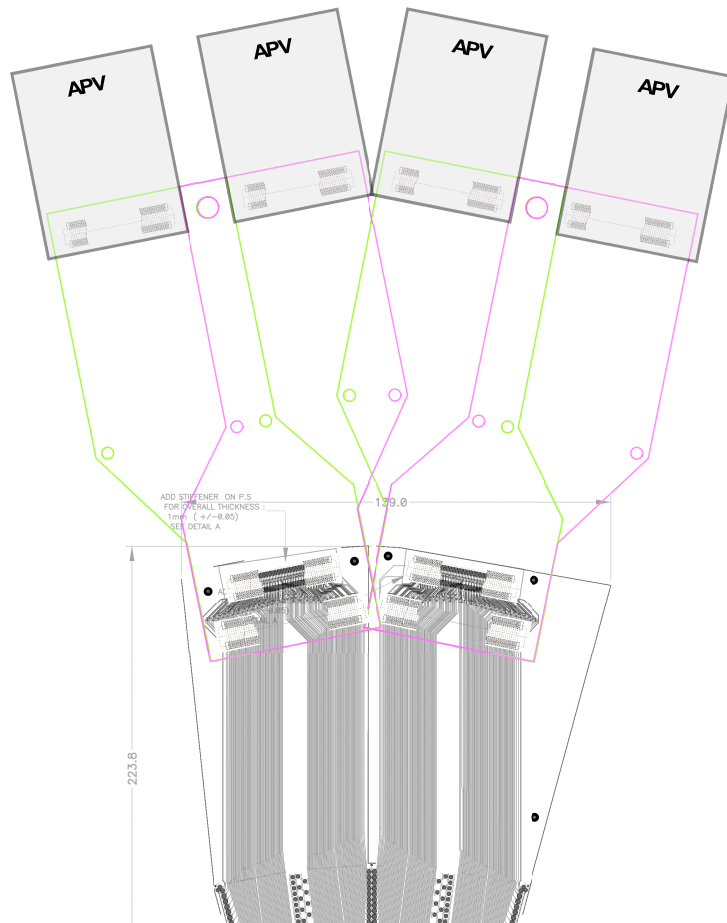
Versatility considerations

- place connector footprints on both sides to allow for a single (reversible) design
- which side to solder is a matter of later decision
- place Panasonic as well as Samtec footprints on fanout bound end (Samtec has less height, therefore at the very end)
- place a hole for a carrying rod



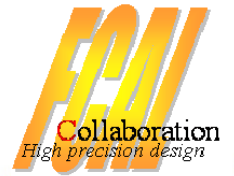
Geometrical constraints (2)

- Given fanout angle results in a required minimum adapter length (150mm) ➔ too much?



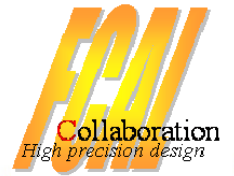


Twin APV adapter



Status

- APVs
 - 20 pcs. to modify arrived in Zeuthen
 - will be put into the workshop next week ➔ modifications still possible! (**10pF?**)
 - Twin Adapter
 - pcb design just started ➔ modifications still possible!
 - manufacturing and soldering due
- Panasonic connectors available @ CERN store
➔ have to be ordered and sent to Zeuthen!
- Samtec connectors: few free samples delivered



**Thank you for your
attention!**

Looking forward for a fruitful discussion.