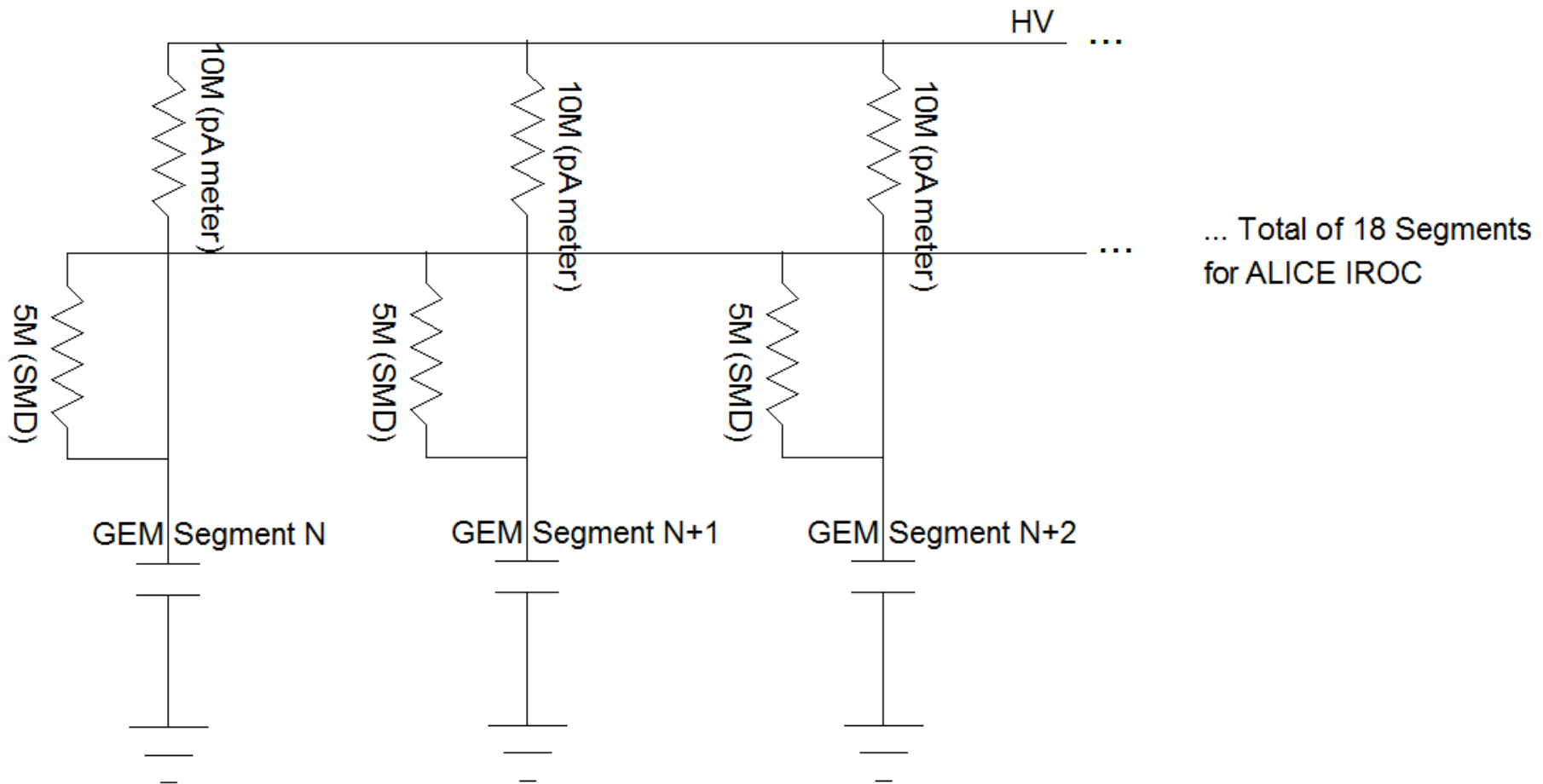


Current measurements for individual segments on ALICE IROC GEM foils

The test box is designed to supply HV to the active area side of the $5\text{M}\Omega$ SMD resistor on each segment.

ALICE IROC foils have 18 segments. Part of the network is shown below. Each segment is connected to HV through a pA meter ($10\text{M}\Omega$) and to a common bus through the $5\text{M}\Omega$ SMD resistor. That means a given segment has a second connection to the HV through its local $5\text{M}\Omega$ SMD in parallel with 17 ($5\text{M}\Omega$ SMD + $10\text{M}\Omega$ pA meter) for the other 17 segments.



For a given IROC segment a simplified circuit is shown. One is interested in the current through the GEM segment resistance shown in red.

The $0.88\text{M}\Omega$ depends on how many segments the foil has. For the outermost GEM stack in ALICE there are 24 stacks. To be a bit conservative and just have one limit for all ALICE GEM stacks the “network” resistance was assumed to be 0 and then the current reading on the pA meter is just $1/3$ the total GEM segment current. For a 500 pA limit, the meter should read less than 167 pA.

