ST Readout Update

F.J. Barbosa, JLab, 8 May 2012

The ST readout consists of 3 types of PCBs: ST1, ST2 and ST3.

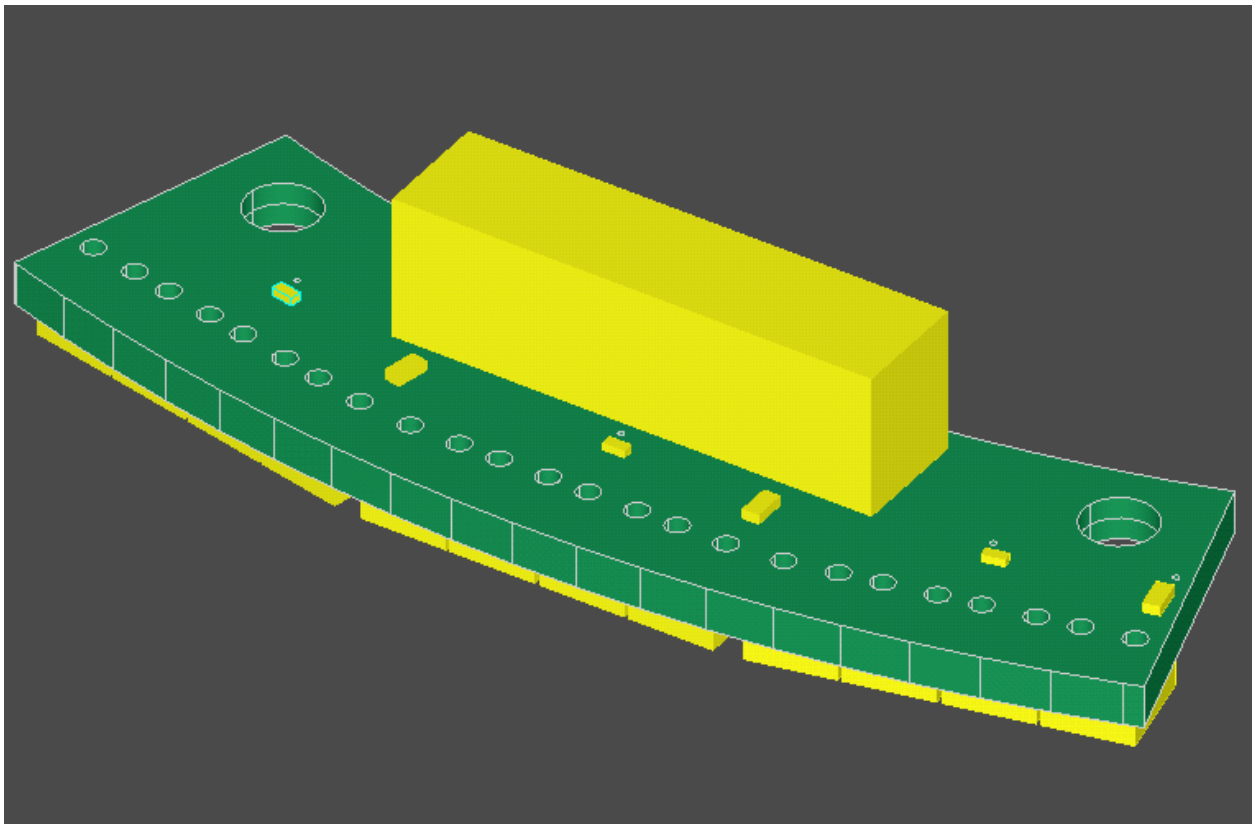
ST1 – This PCB (a Sector) holds 12 SiPMs, summed in groups of 4. There is one temperature regulated bias fed to each group.

ST2 – This PCB has all the readout electronics (preamp, buffer to ADC and X5 amp to TDC), temperature regulation of each of the 3 biases via thermistors and a thermocouple for remote temperature readout. ST2 plugs perpendicularly into ST1.

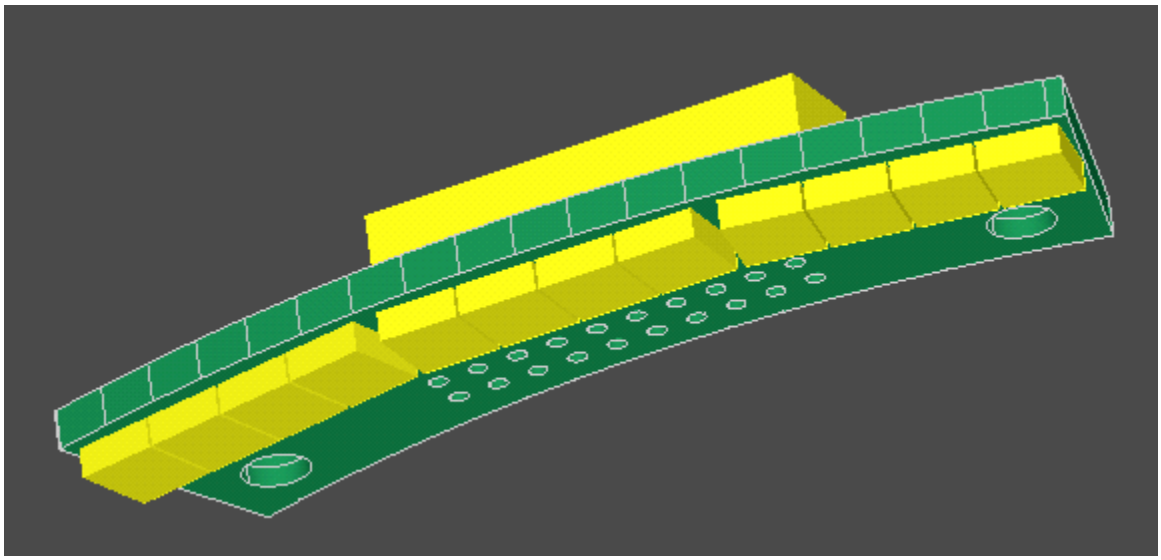
Micro-Coax ribbon cable assembly – One cable assembly is all that is needed to connect each sector set (ST1 & ST2) to the ST3 chassis.

ST3 – This is part of a chassis residing upstream of the target and functions as power, bias and signal collection and distribution. The chassis receives bias from 2 supplies (32 channels), power from one LV supply, interface connectors for temperature readout from thermocouples on ST2 and LEMO connectors for outputs (30 A for ADC and 30 T for TDC). For prototyping, this will be a simple PCB for readout of one sector.

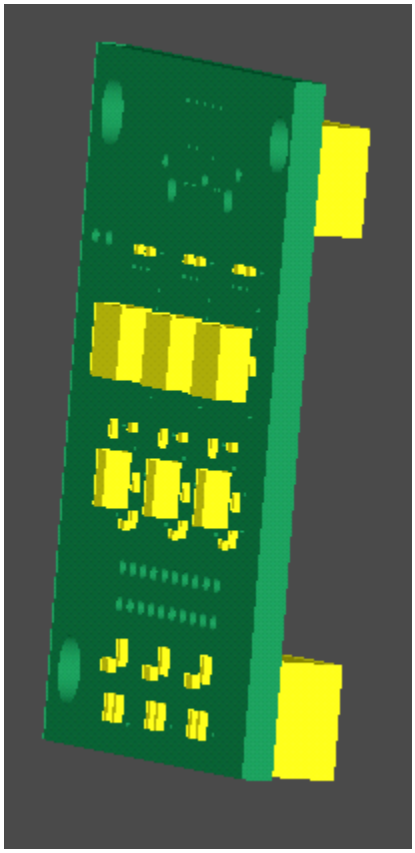
ST1 – Perspective, readout side. PCB is 0.52” (13.2 mm) wide with a 35.8 degree span



ST1 – Perspective, SiPM side



ST2 – Perspective, Readout component side (CDC side). PCB is 1.5” x 1.5”.



ST2 (profile) attaching to ST1 – left is towards CDC; right is towards vacuum chamber; top is towards upstream.

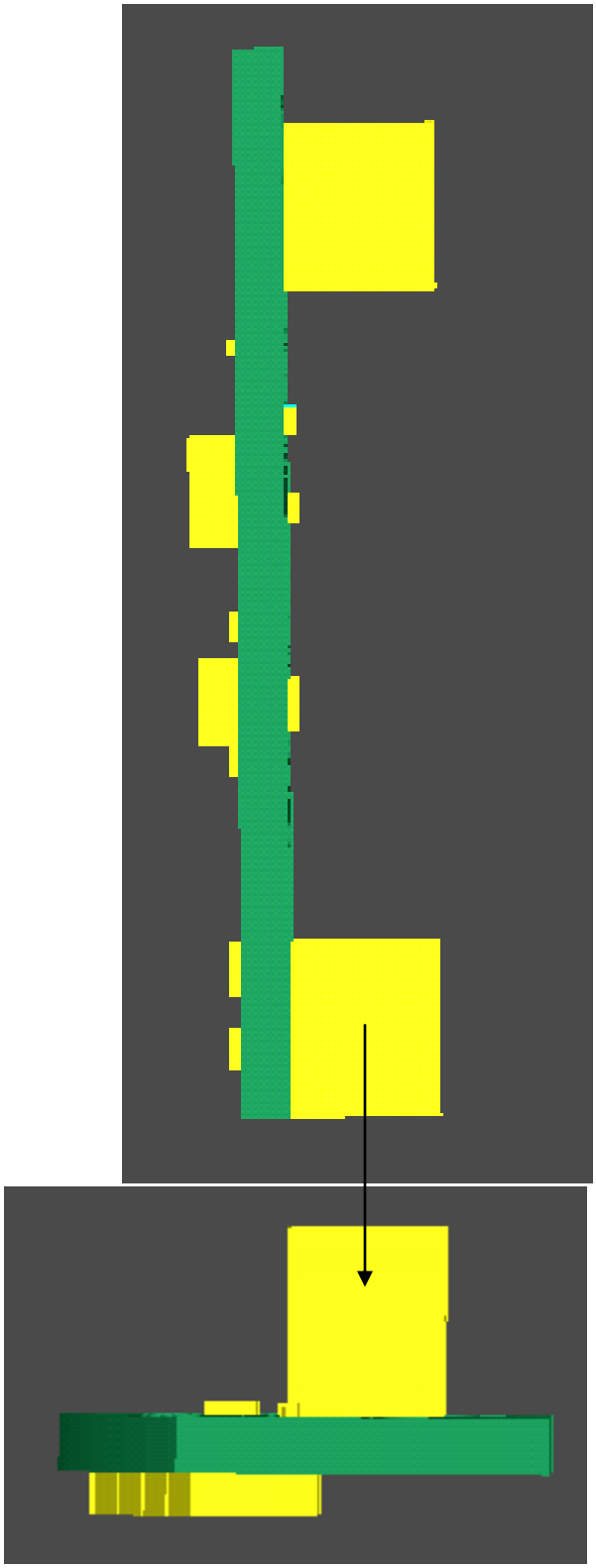


Diagram of ST readout assembly showing approximate dimensions (not to scale).