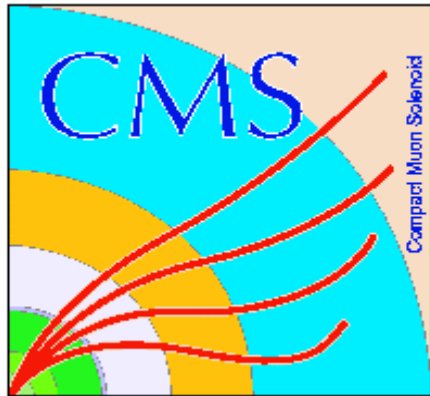
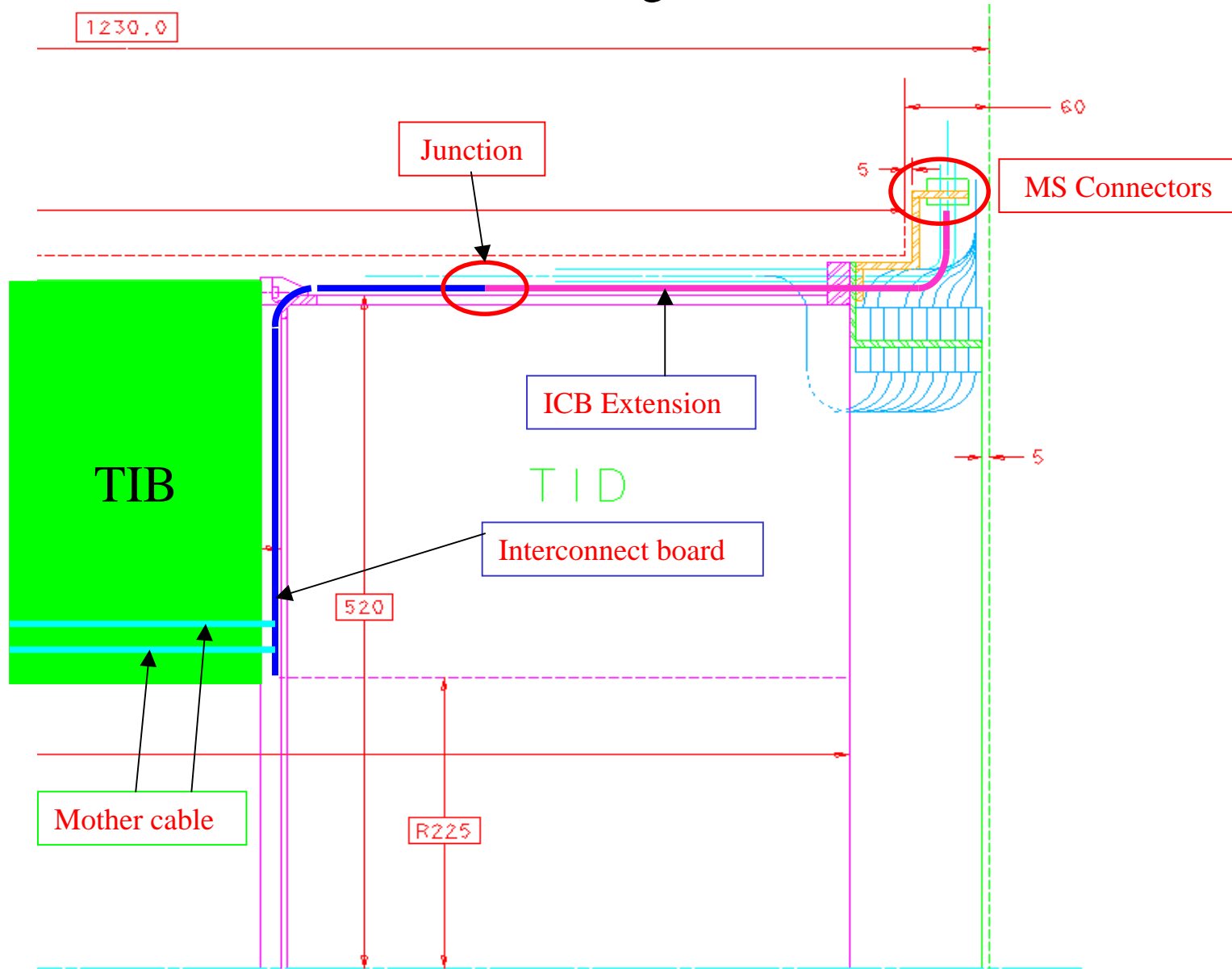


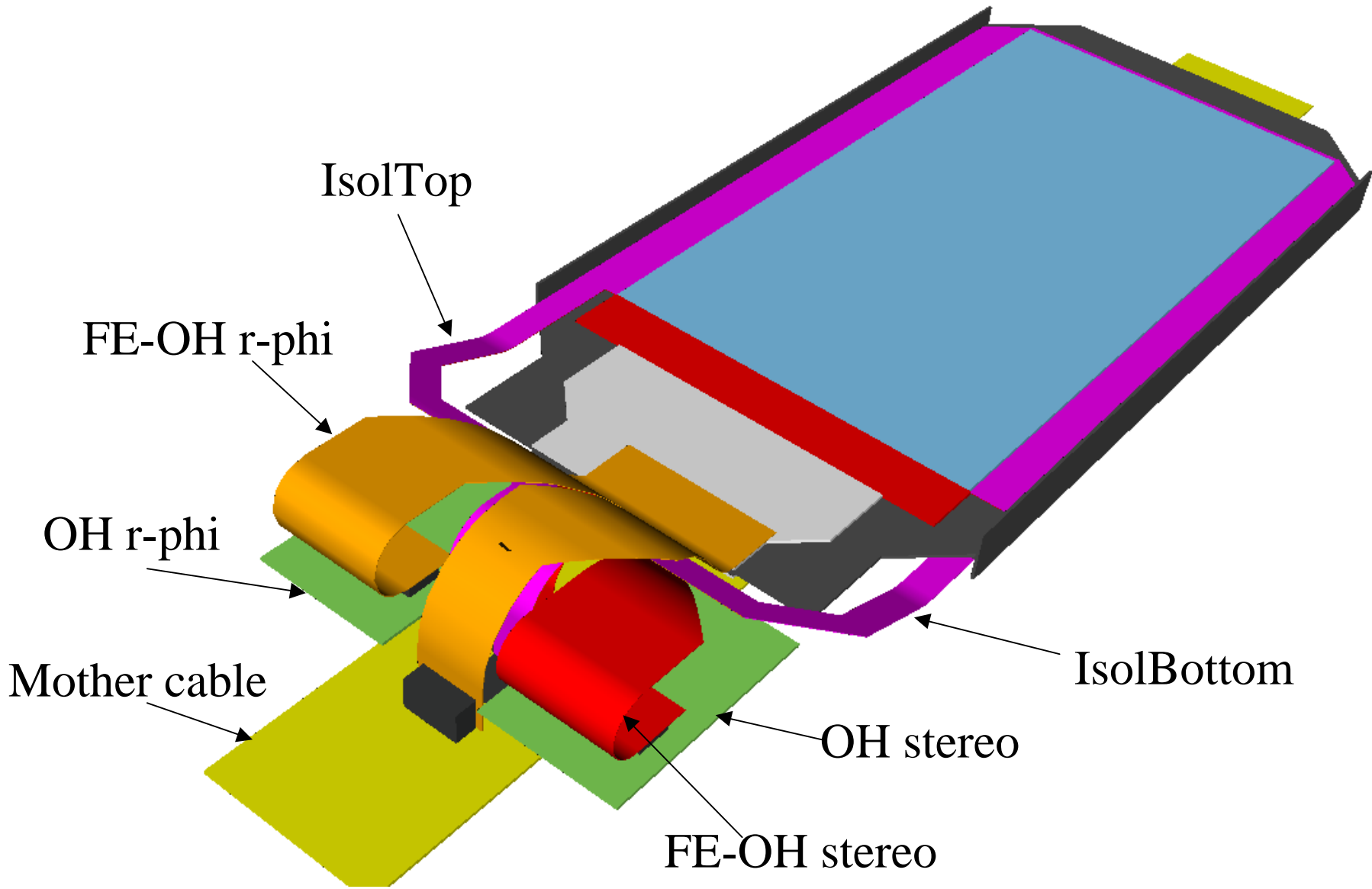
TIB cabling and electrical interconnections



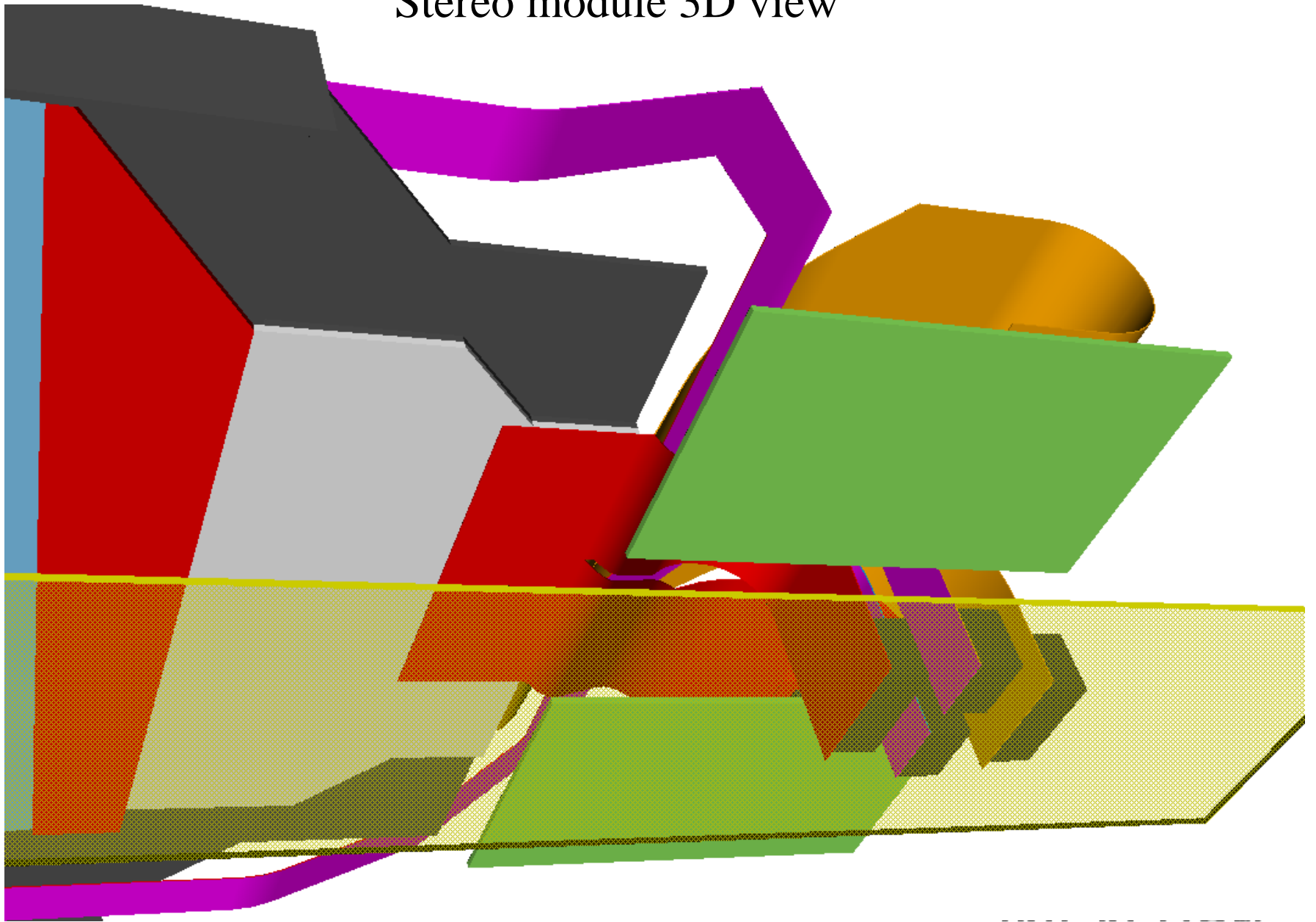
TIB Cabling overview



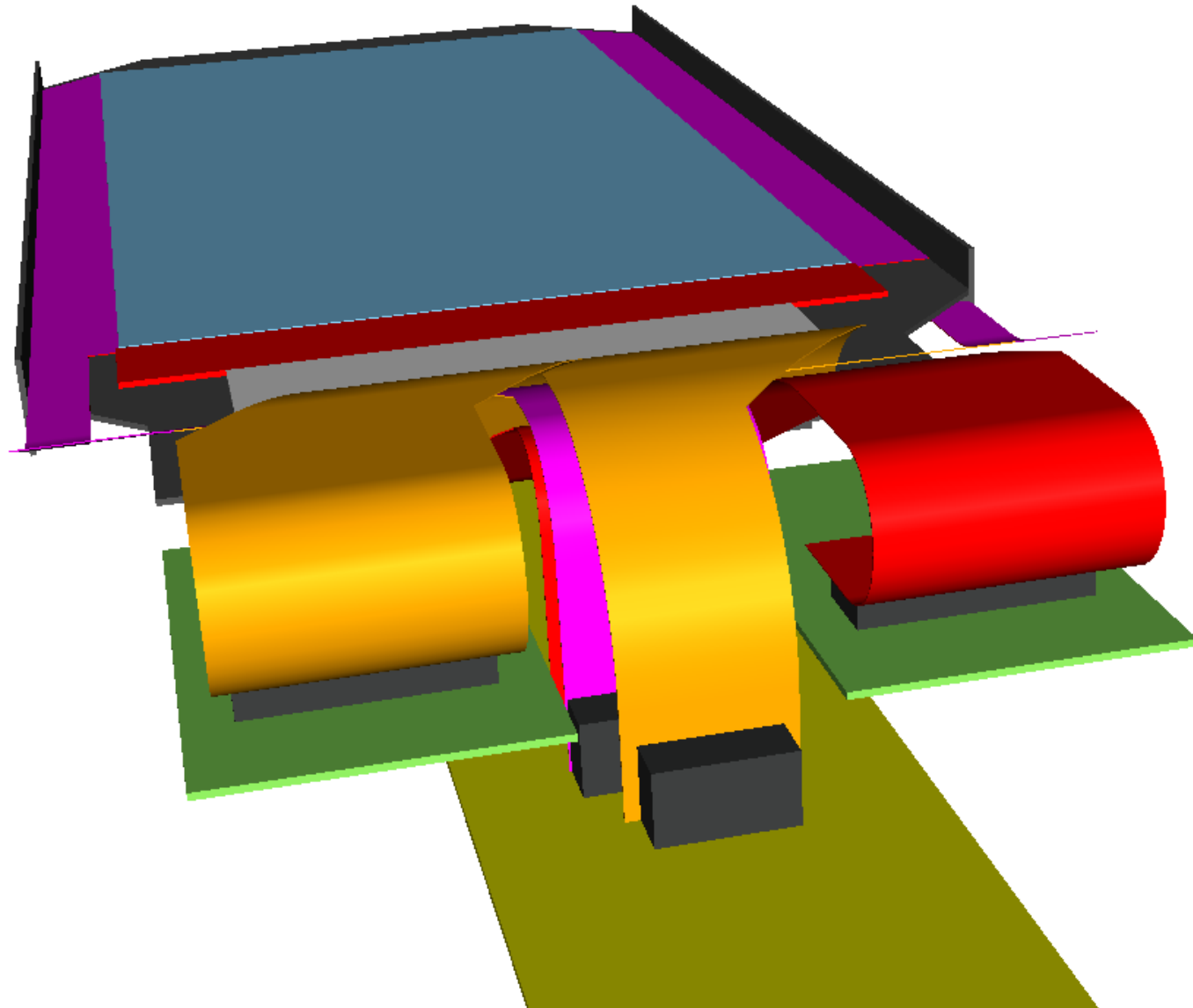
Stereo module 3D view



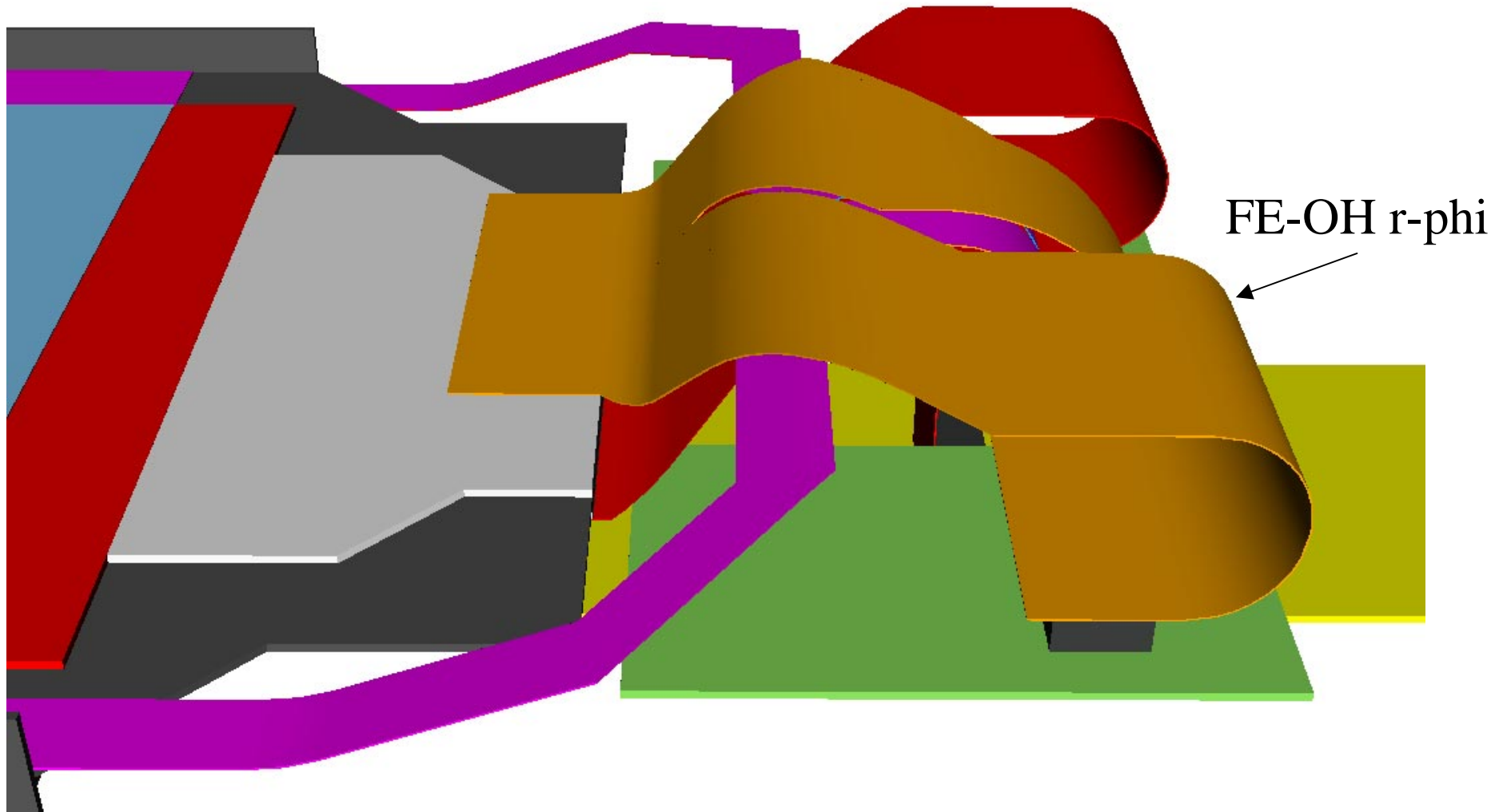
Stereo module 3D view



Stereo module 3D view



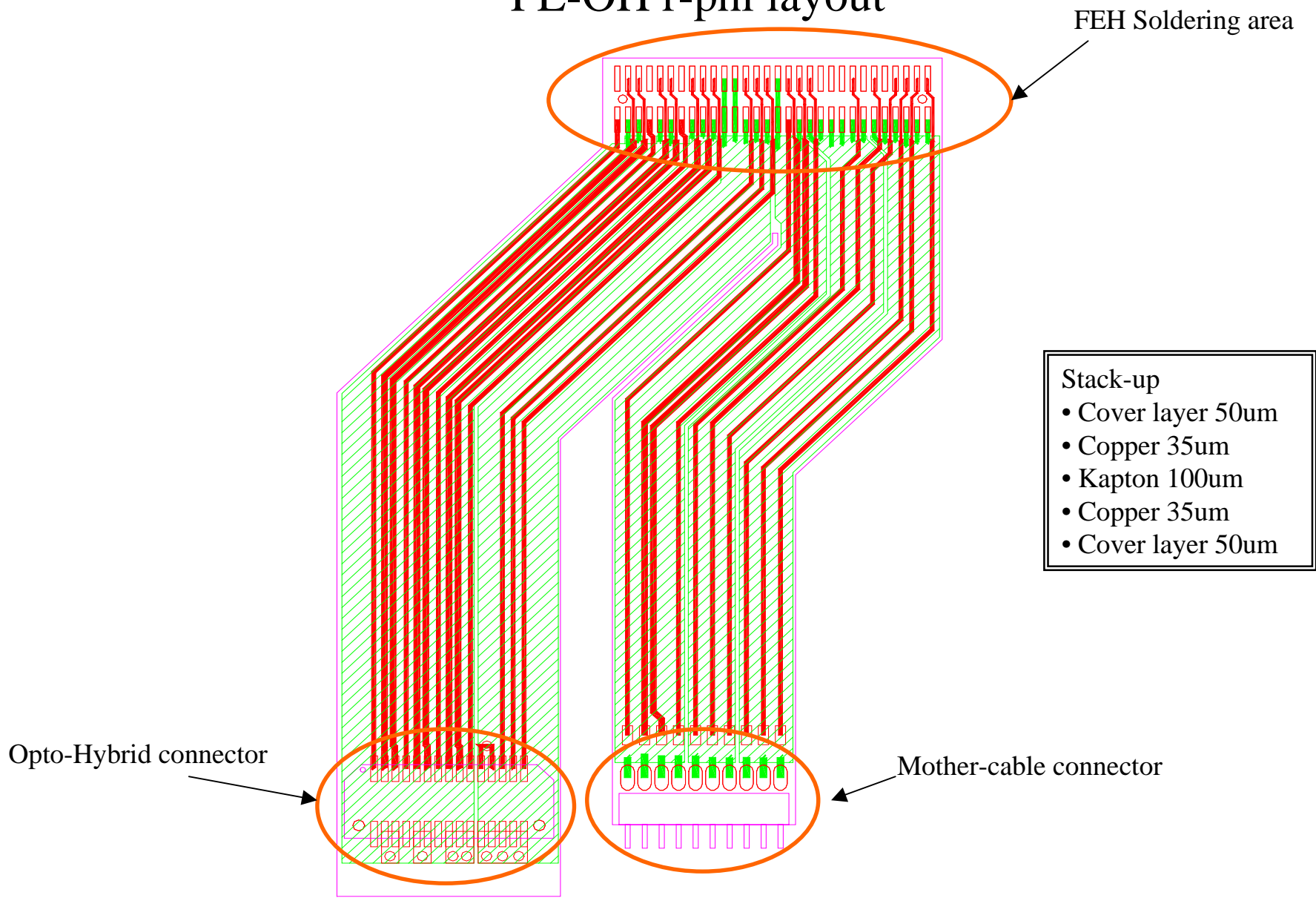
Stereo module 3D view



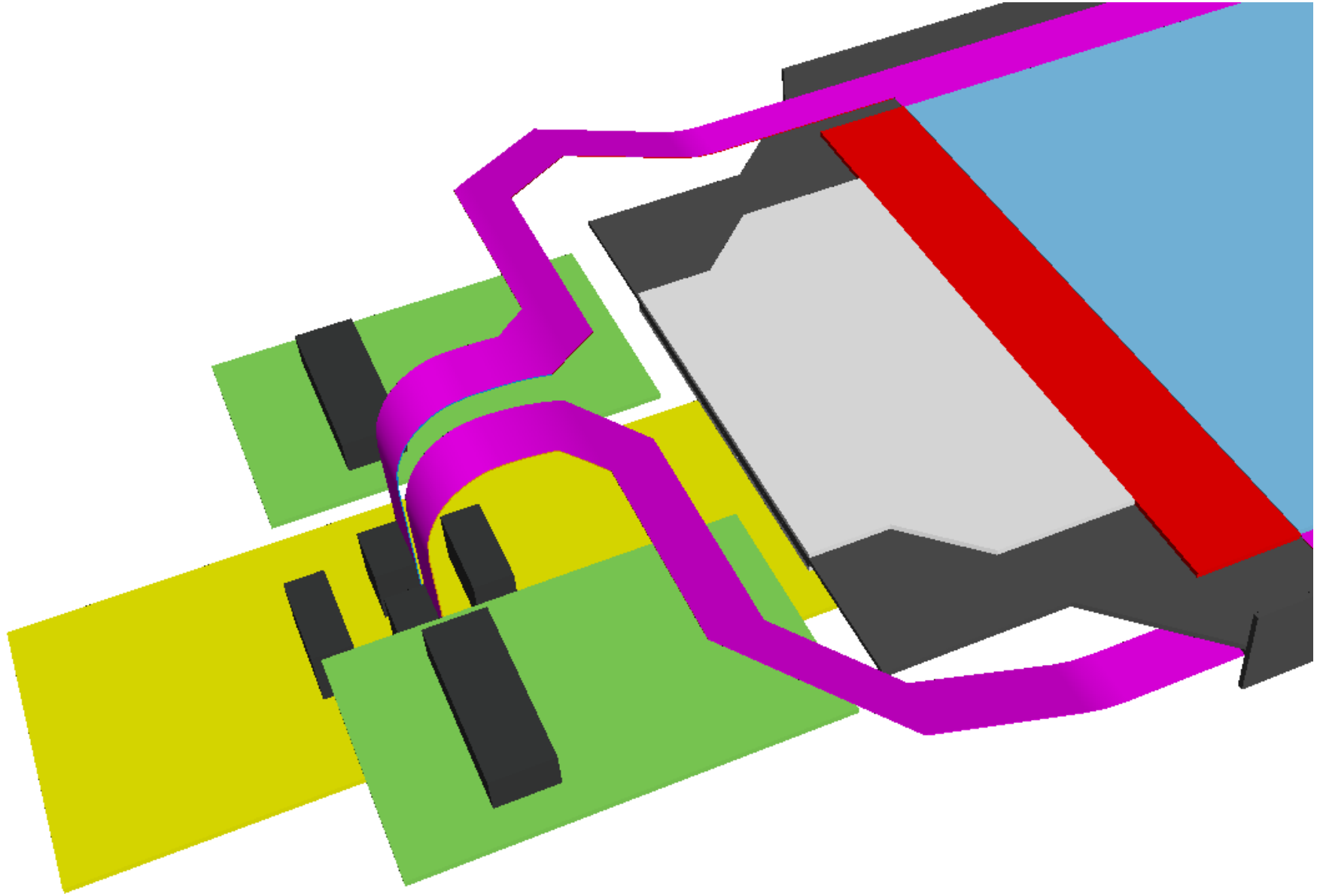
FE-OH Functions

- To carry the LV supply from Mother-cable to the FE-hybrid
- To carry the LV supply from the FE-hybrid to the OH
- To carry the I2C control lines to FE-hybrid and OH
- To carry the **analog** output from FE-hybrid to the OH
- To carry the 40 MHz CLKPLL to the FE-hybrid

FE-OH r-phi layout



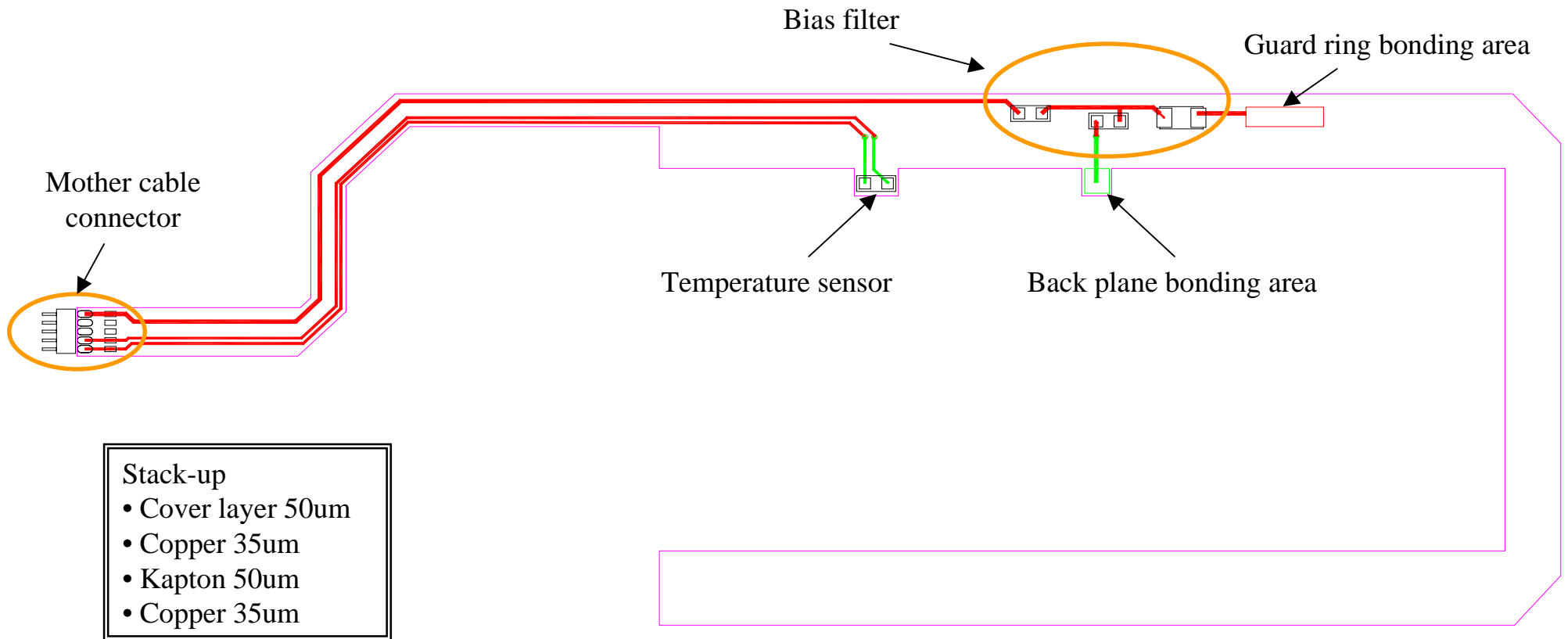
Insulation Kapton foils detail



IsolTop Functions

- To insulate the detector from the carbon fiber frame
- To carry the HV supply from Mother-cable to the detector
- To house the bias filter network

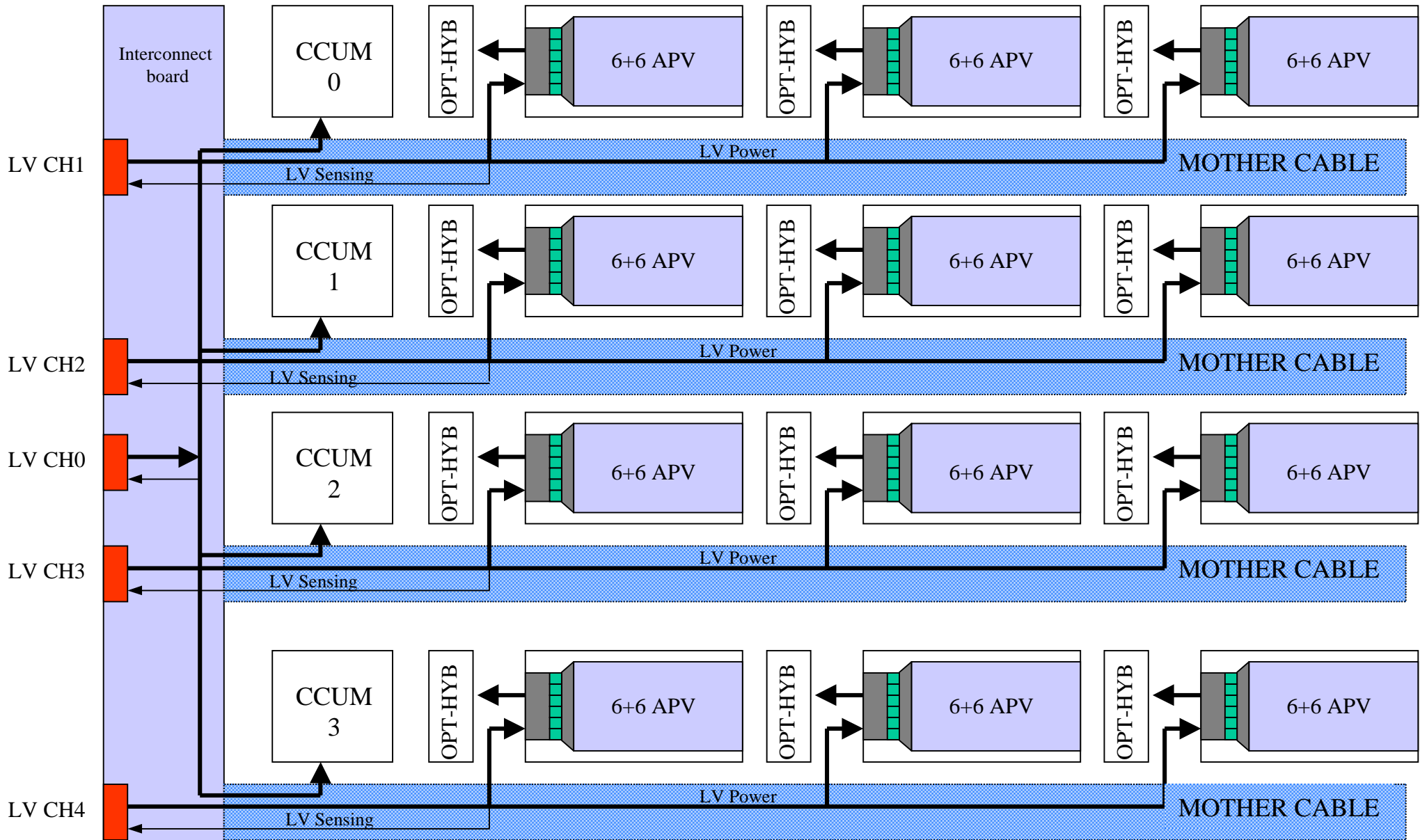
IsolTop Layout



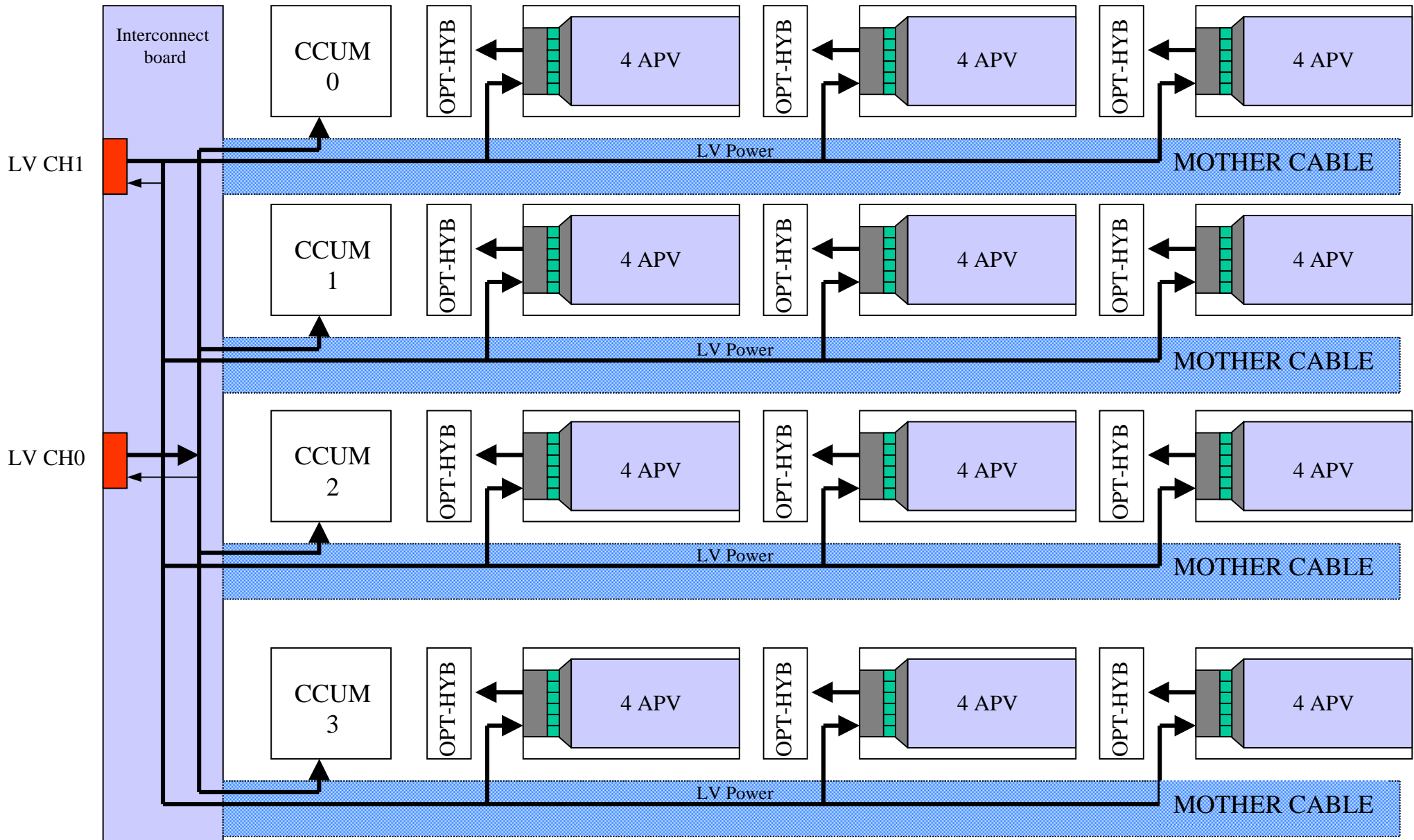
Mother-cable Functions

- To carry the HV and LV supply to the modules
- To carry the I2C control lines from CCUM to the modules
- To distribute the 40 MHz CLKPLL from CCUM to the modules
- To route the CCUM ring signals to the Interconnect board

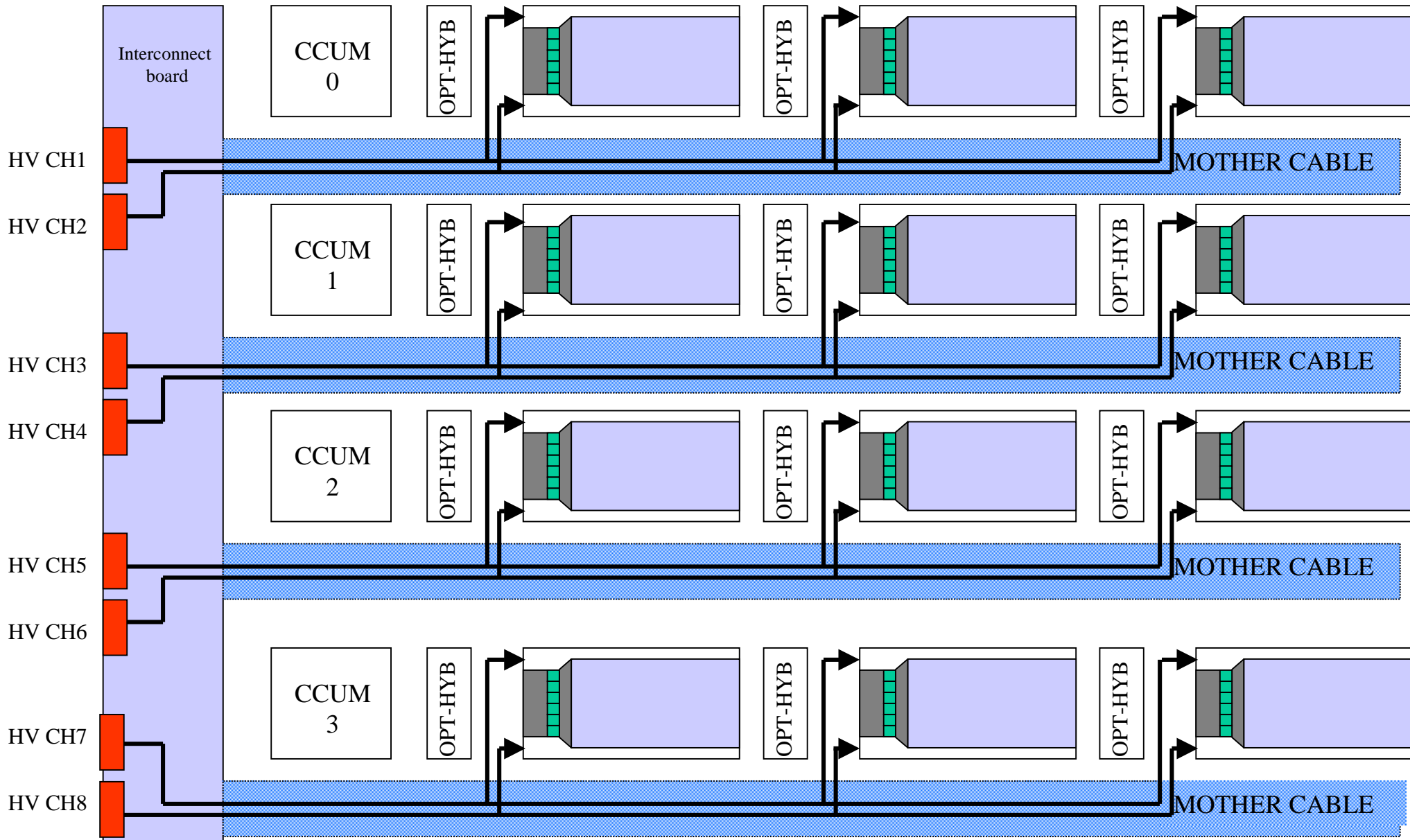
Inner Barrel - LV Distribution (Layer 1 & 2)



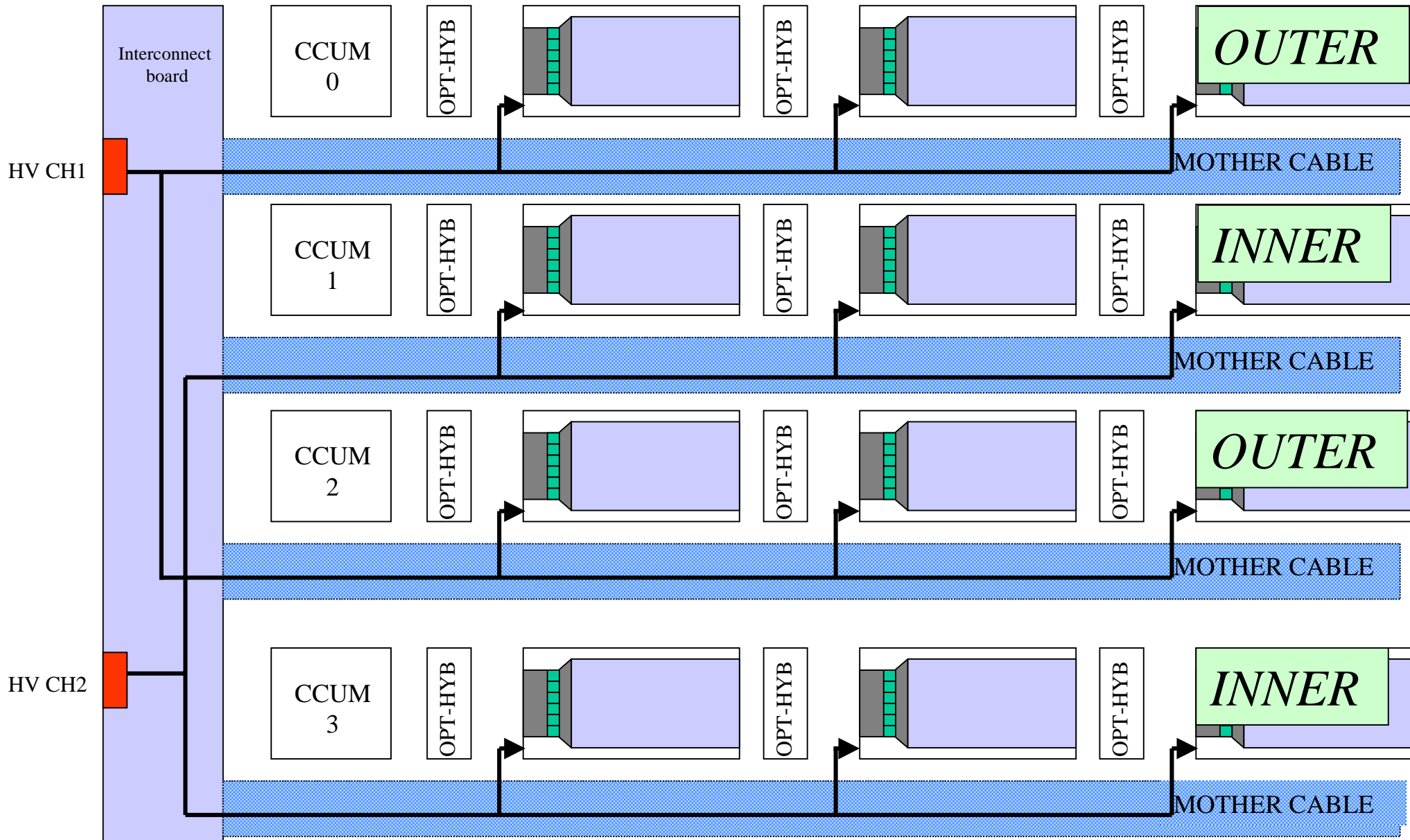
Inner Barrel - LV Distribution (Layer 3 & 4)



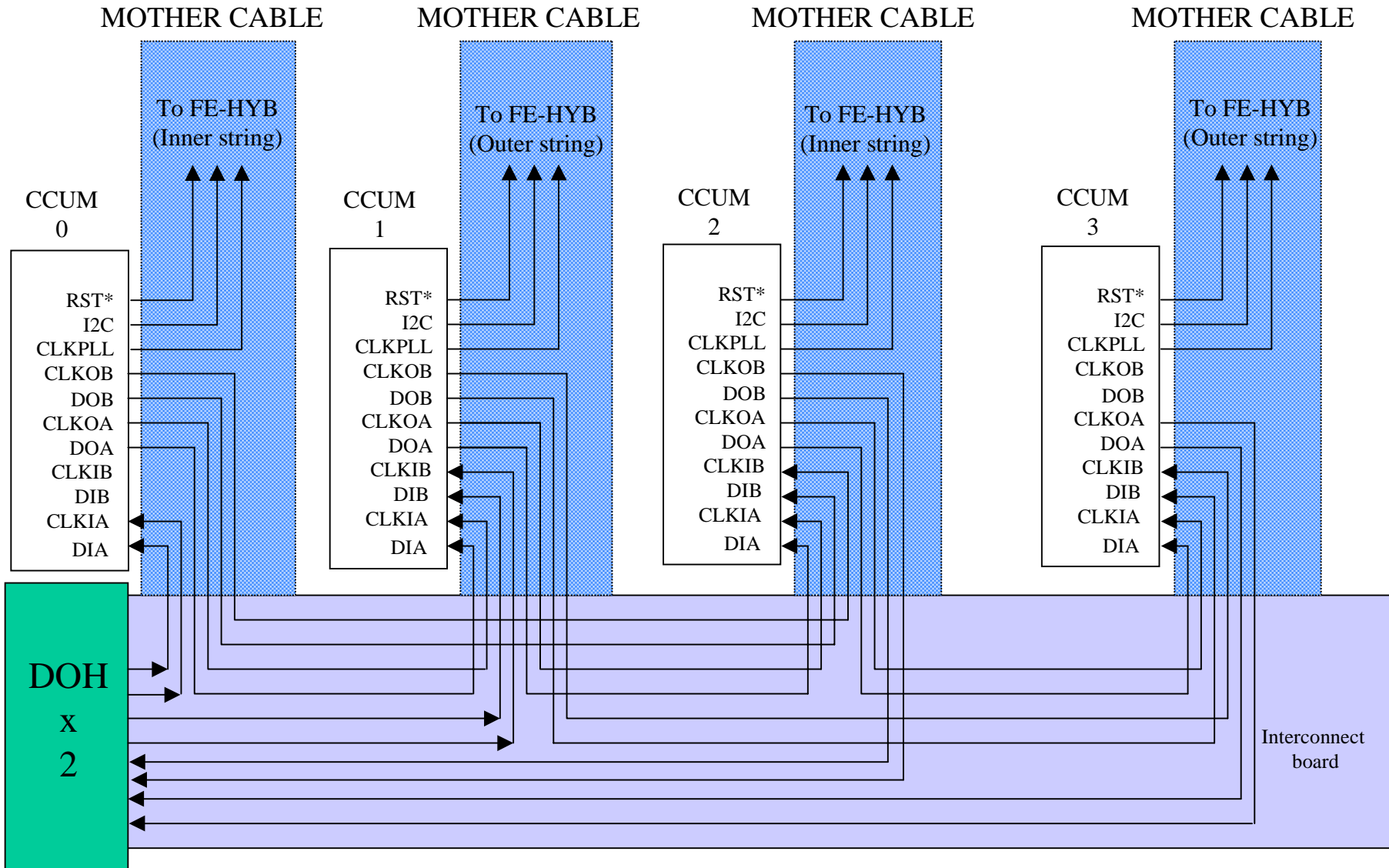
Inner Barrel - HV Distribution (Layer 1 & 2)



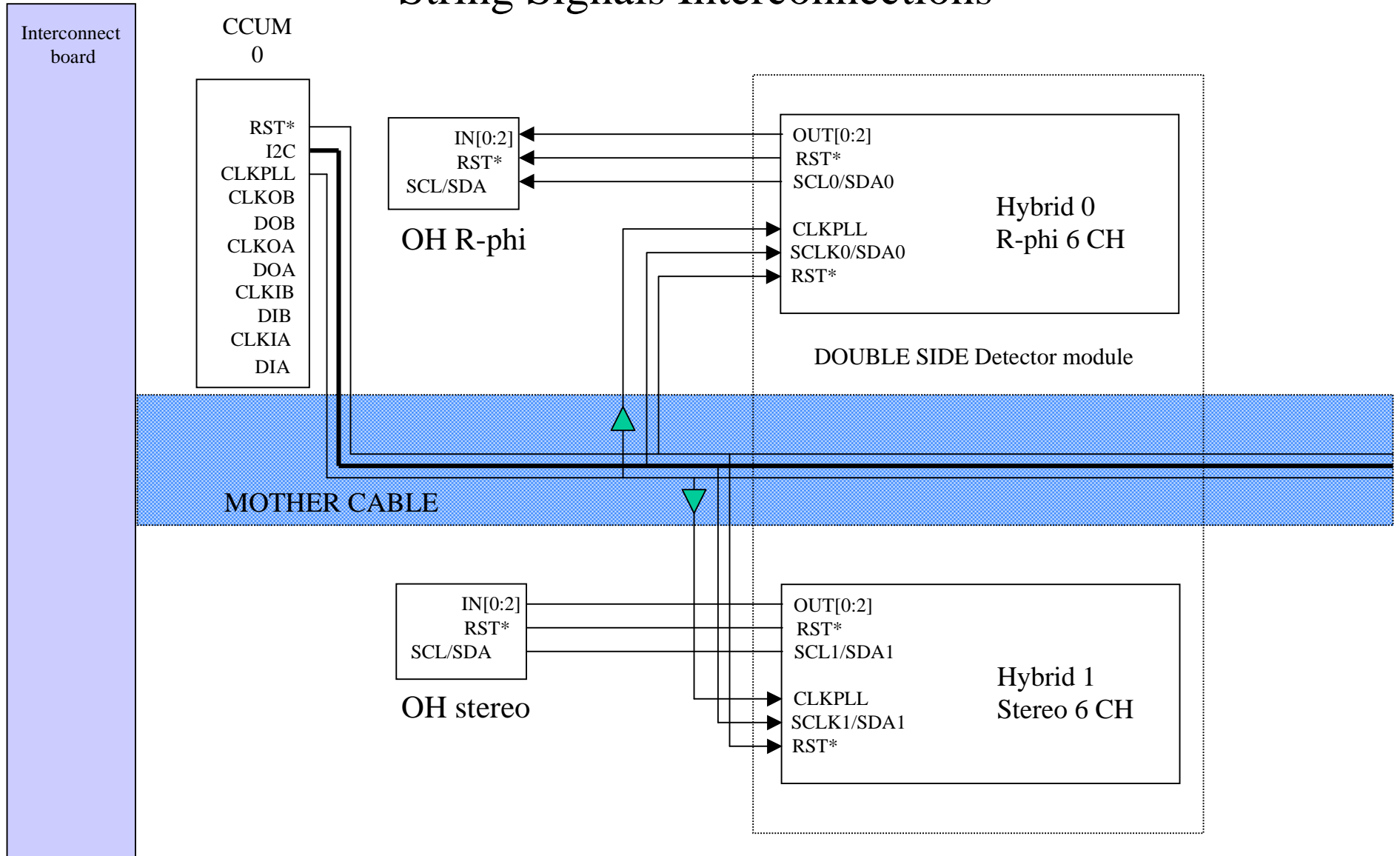
Inner Barrel - HV Distribution (Layer 3 & 4)



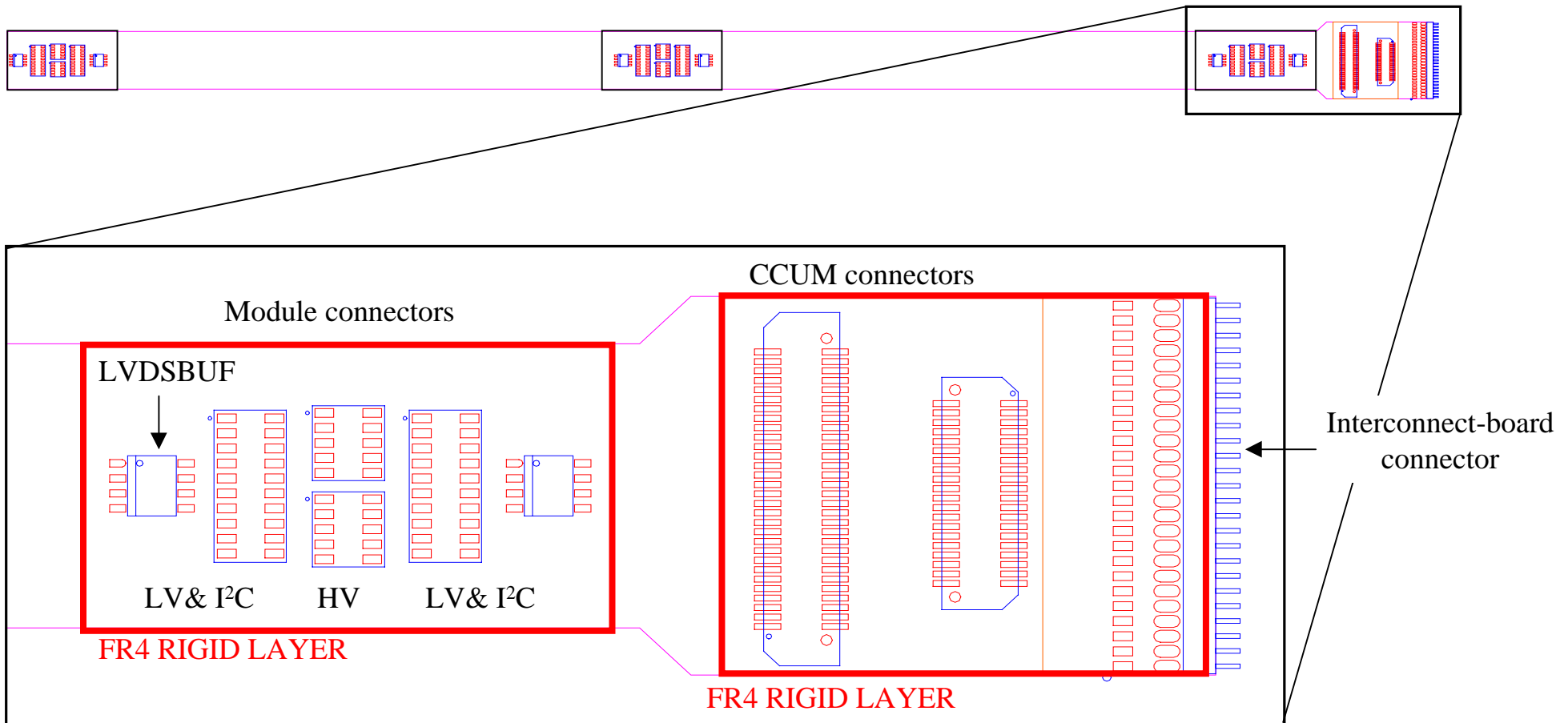
Control Logic interconnections



String Signals Interconnections

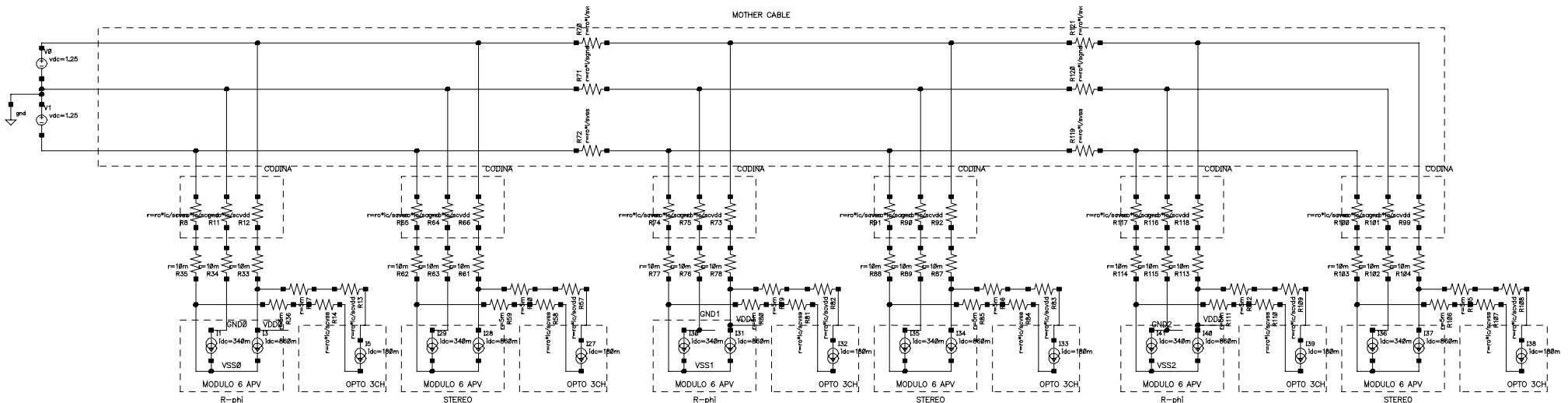


Mother-cable layout (SYSTEM TEST)



COPPER THICKNESS EVALUATION

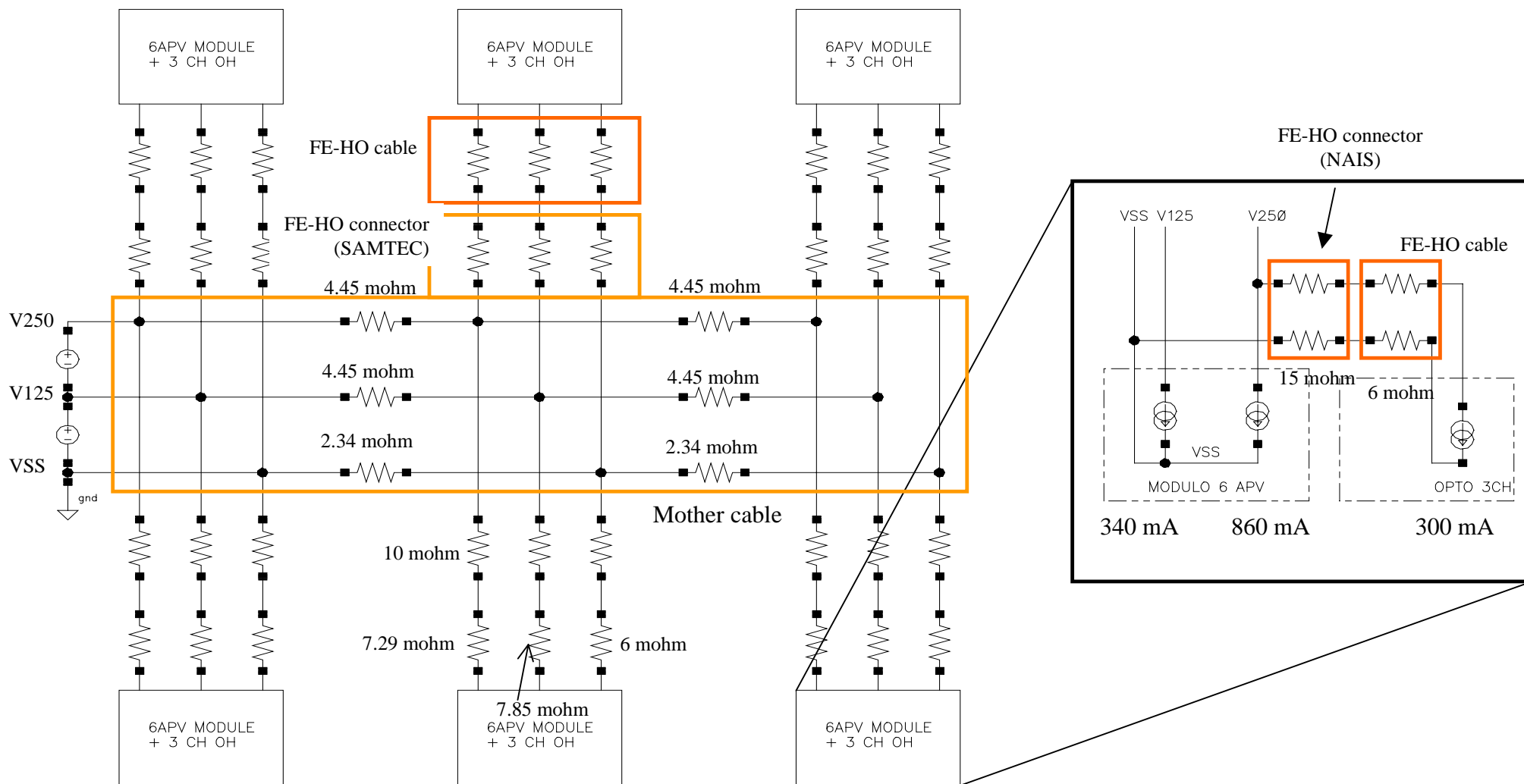
vdd	1.28V	Positive voltage at cable begin	scvdd	0.140 mm ²	tail vdd section
vss	-1.28V	Negative voltage at cable begin	scgnd	0.130 mm ²	tail gnd section
svdd	0.8 mm ²	vdd section	scvss	0.170 mm ²	tail vss section
sgnd	0.8 mm ²	gnd section	lc	60 mm	tail length
svss	1.6 mm ²	vss section	Rc	0.01 ohm	contact resistance
l	230 mm	Frame distance			



↑
Worst case

Vdd-Vss = 2.46 V
Gnd-Vss = 1.22 V

LV Distribution model



MOTHER CABLE STACK-UP (Layer 1 & 2)

The cable

- Cover layer
- Cu 35 um - V250
- Kapton 100 um
- Cu 35 um - V125
- Kapton 100 um
- Cu 70 um - Signals
- Kapton 100 um
- Cu 70 um - VSS
- Cover layer

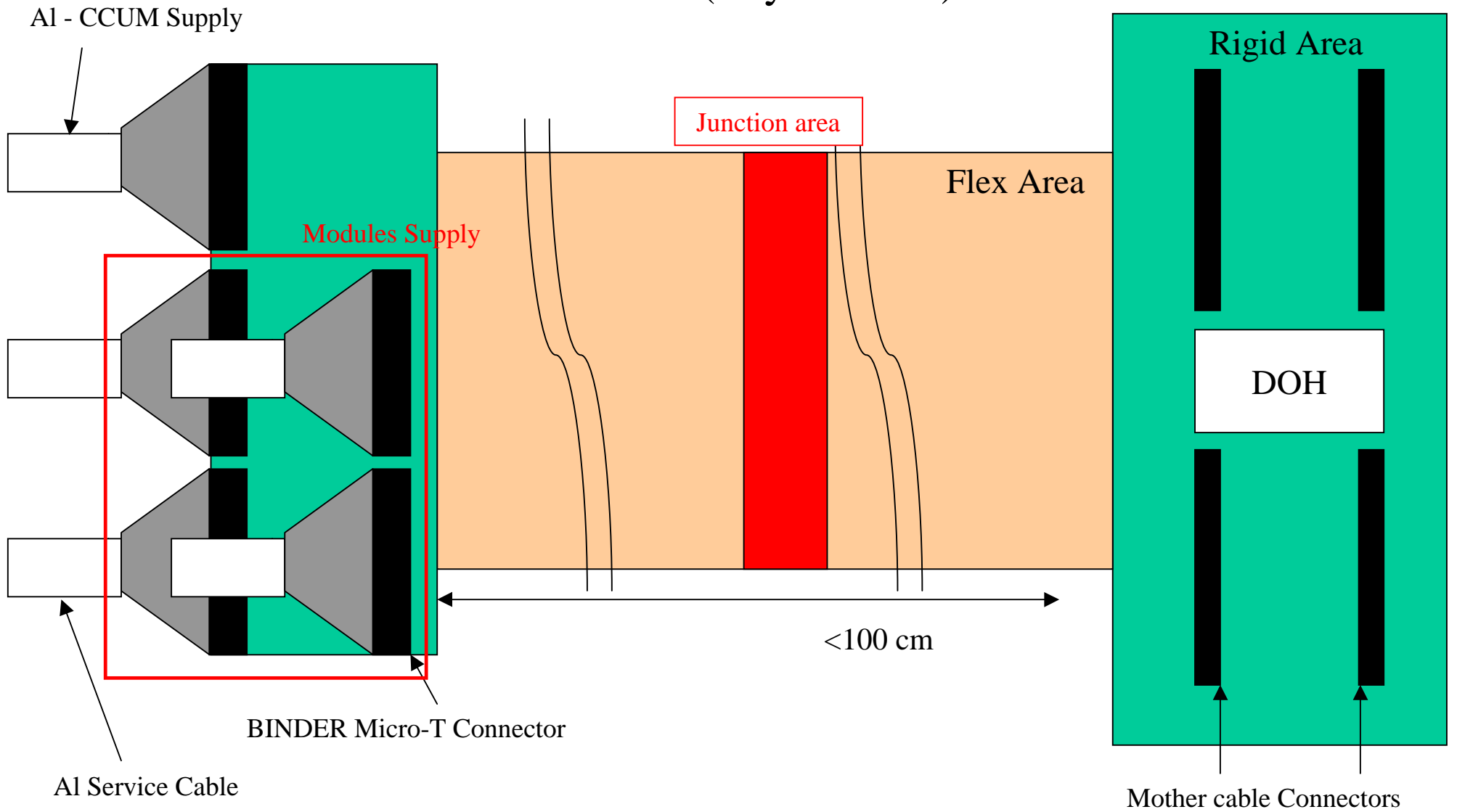
The connector area

- Cu 35um - SMT
- FR4 200 um
- Cu 35 um - V250
- Kapton 100 um
- Cu 35 um - V125
- Kapton 100 um
- Cu 70 um - Signals
- Kapton 100 um
- Cu 70 um - VSS
- Cover layer

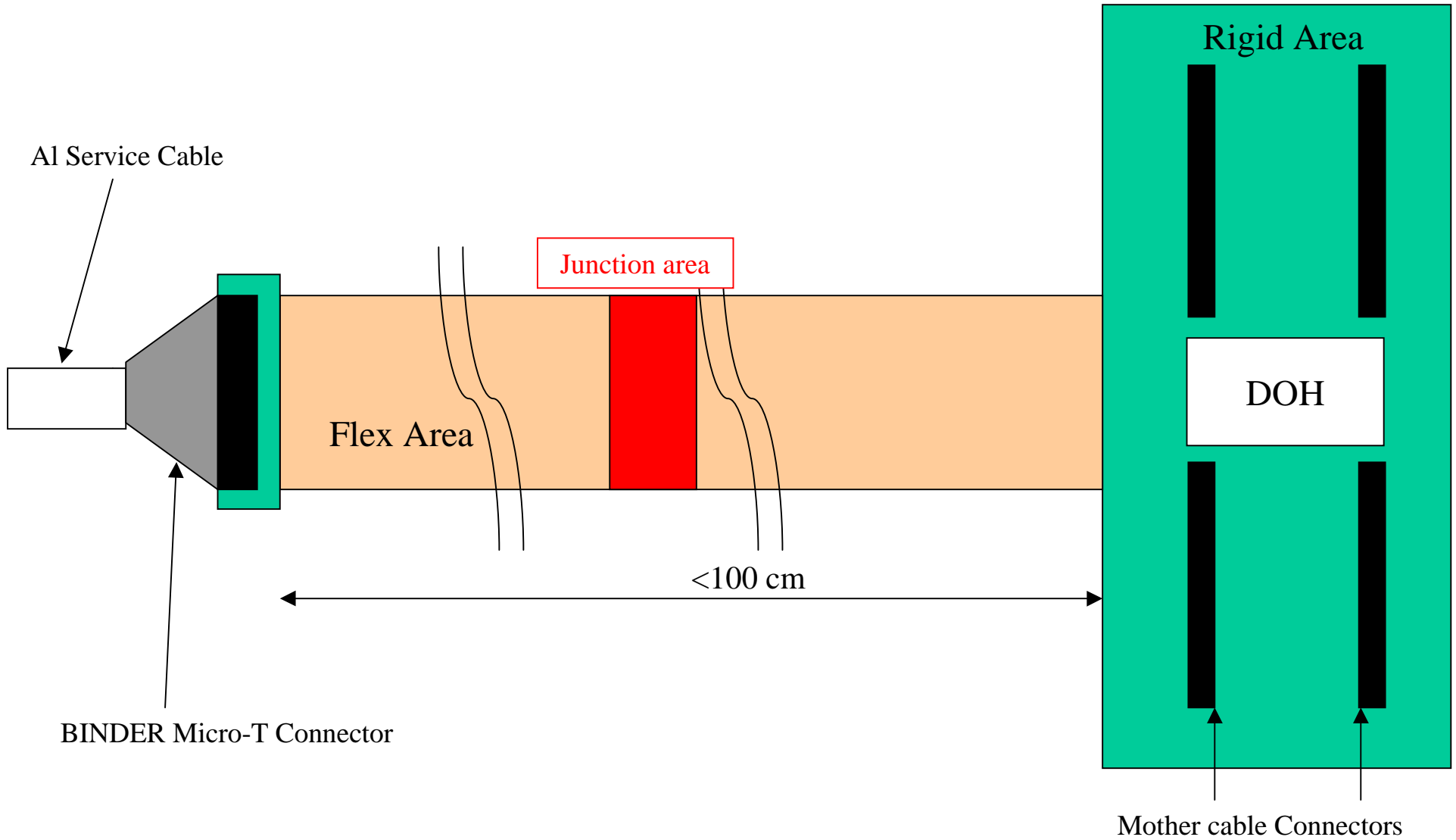
Interconnect-board Functions

- To carry the LV supply from MS-cable to the mother-cables
- To carry the HV supply from MS-cable to the mother-cables
- To house the DOH
- To route ring signals (CCUM \Leftrightarrow DOH)

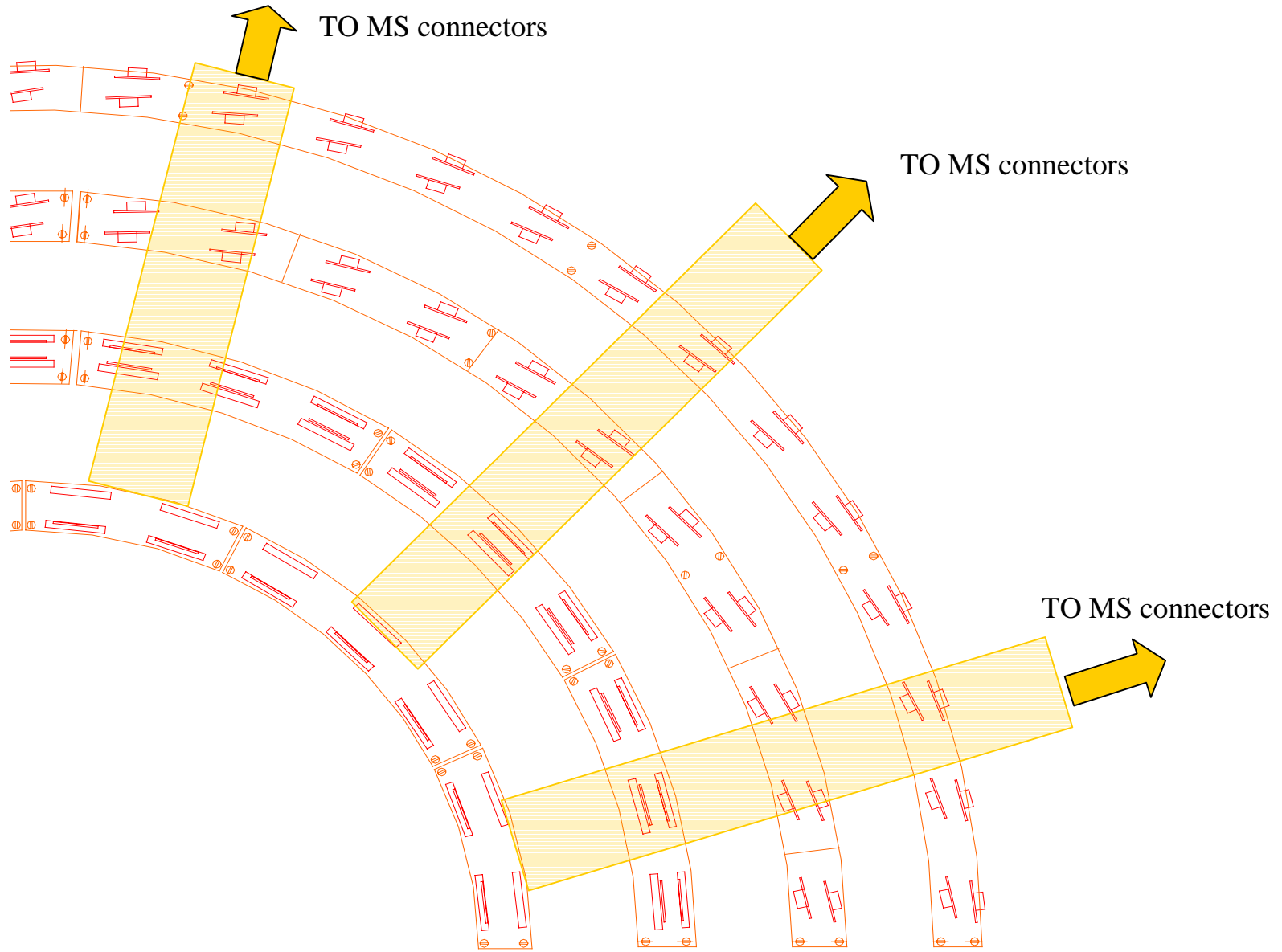
Interconnect board (Layer 1 & 2)



Interconnect board (Layer 3 & 4)



Interconnect board geometry (preliminary)



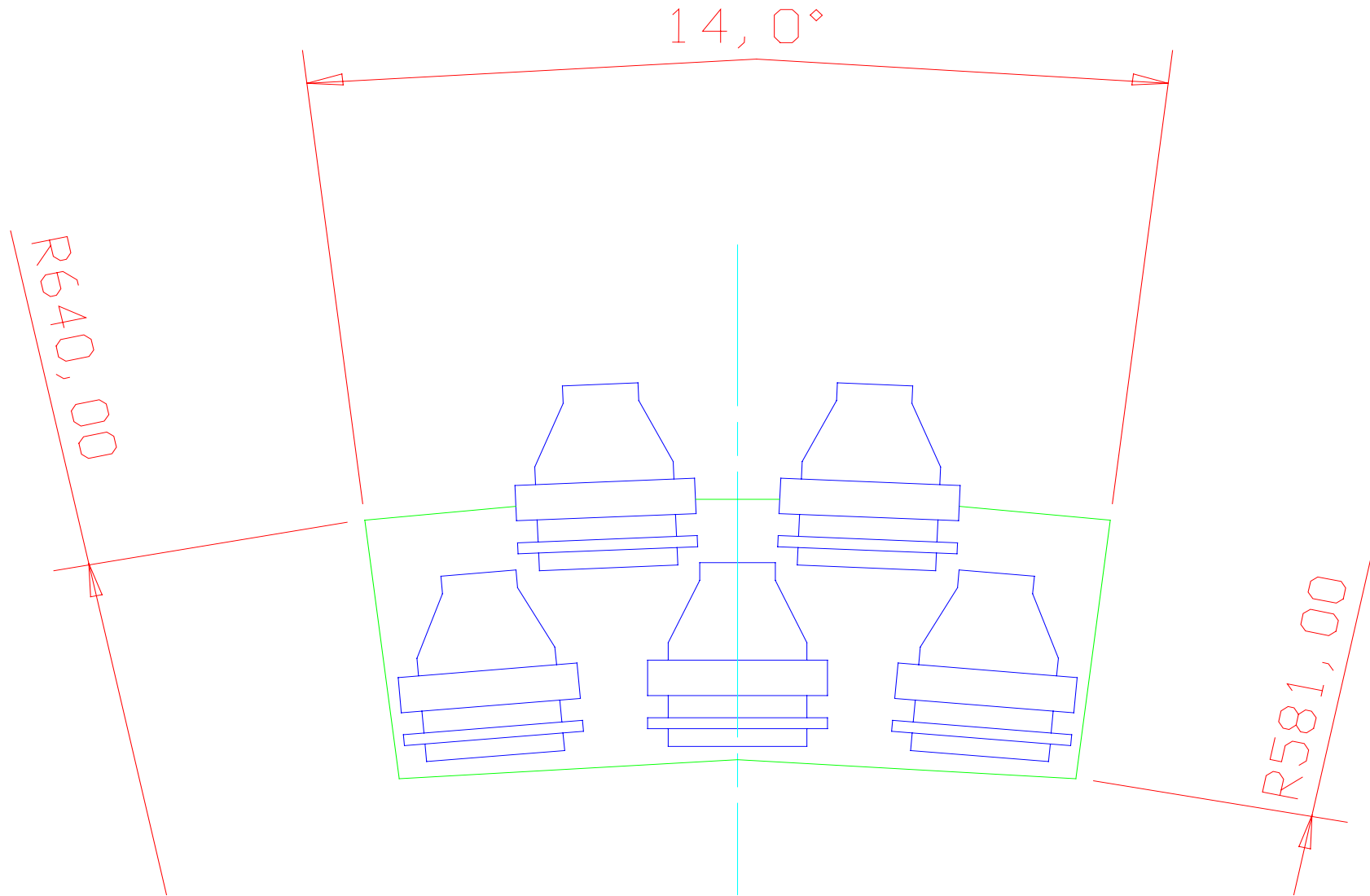
Project state

- **Isoltop**: Designed & ordered 20 prototypes - Ready 23/02/01
- **FE-OH**: Designed & ordered 20 prototypes - Ready 23/02/01
- **Mother-cable**: Advanced design (system test type)
- **Interconnection boards**: Mechanical definition

Ring size...

- Layer 1&2
 - Per semplicita' non conviene collegare fra loro le interconnect-board
- Layer 3 & 4
 - La modularita' delle alimentazioni e' 4 stringhe/canale
 - Quante I-B vogliamo collegare fra loro a formare in ring?

Connector board layout



Connector board Vs MS cable

Kapton

- Struttura uniforme
- Minore ingombro dei connettori
- Minore ingombro nel service cylinder

MS AI

- Maggiore flessibilita' tridimensionale
- Minore sforzo progettuale
- Minore material budget
- Minore costo