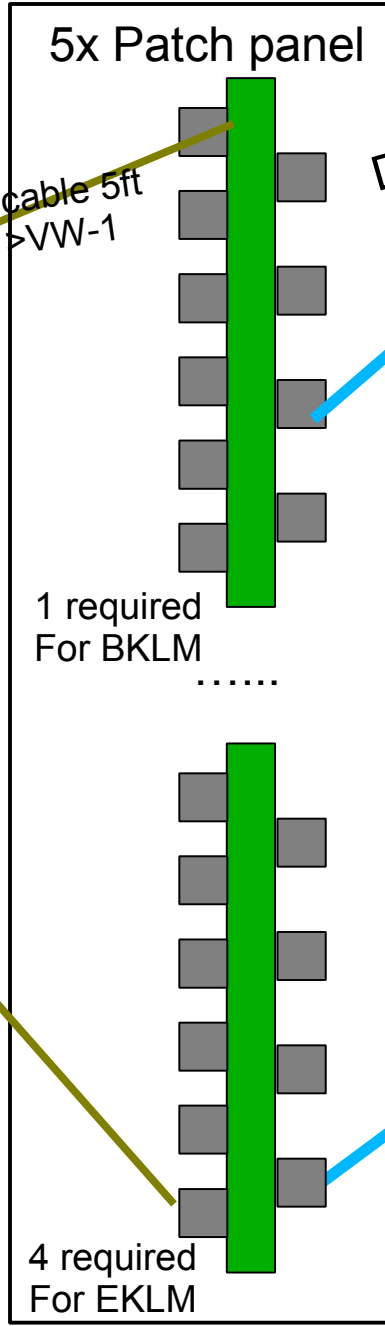
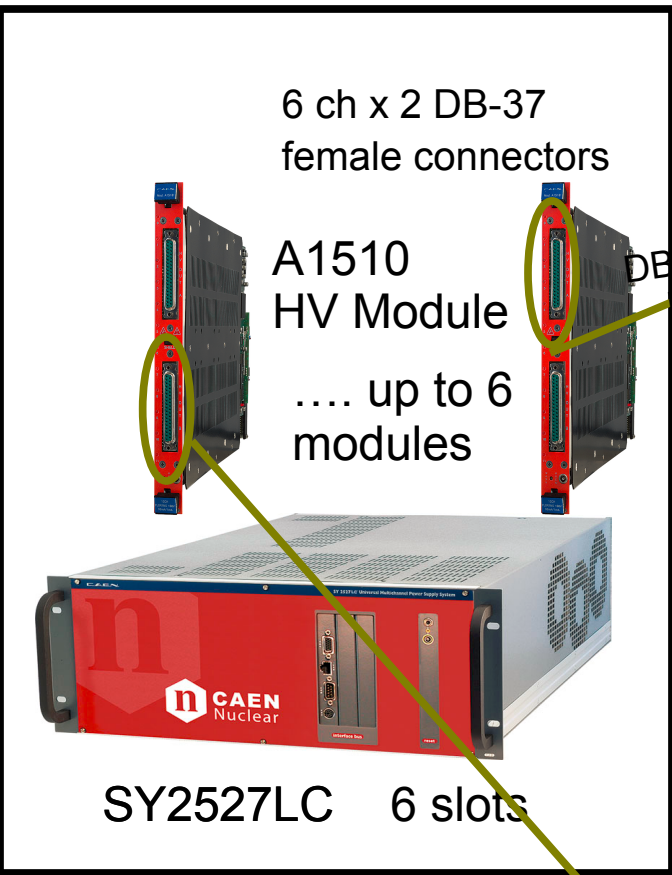


HV Bias Power Patch Panel for Scintillator KLM

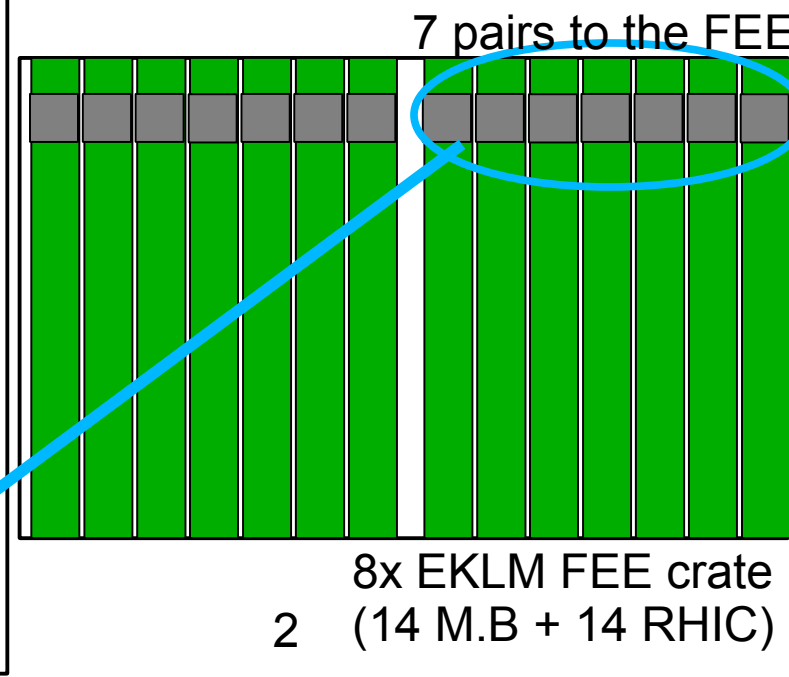
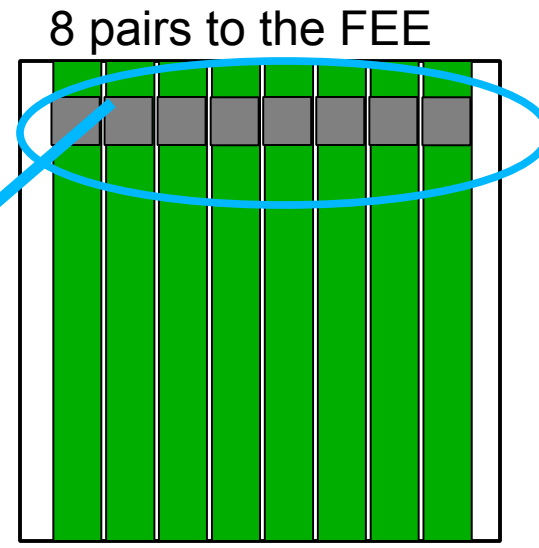
Gerard Visser Xiaowen Shi

2015-07-16

- overview
- Schematics
- layout
- Parts



DB-25 cable
M-->7 or
8 pairs
At FEE

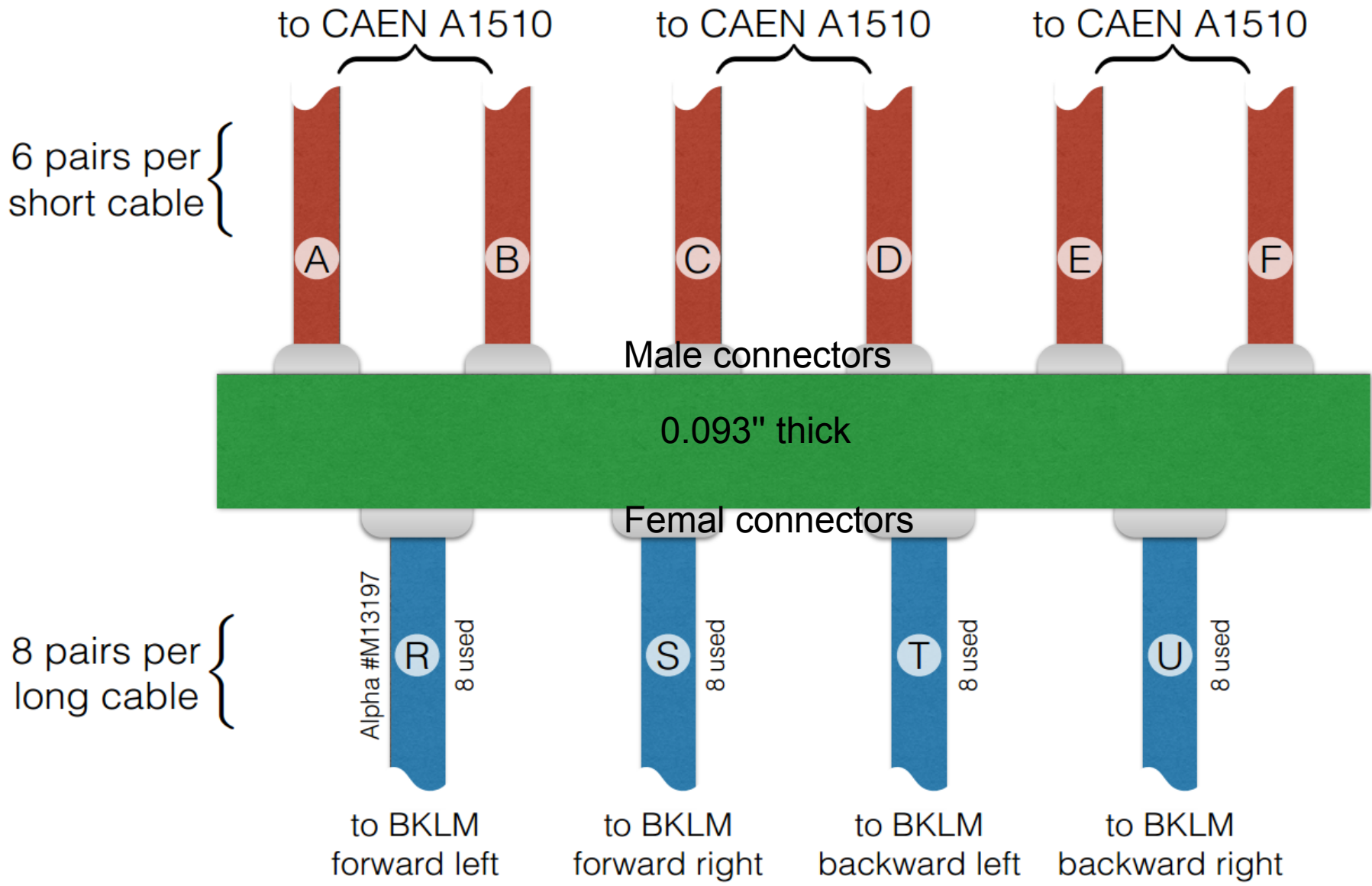


x3 CAEN SY2527LC crates

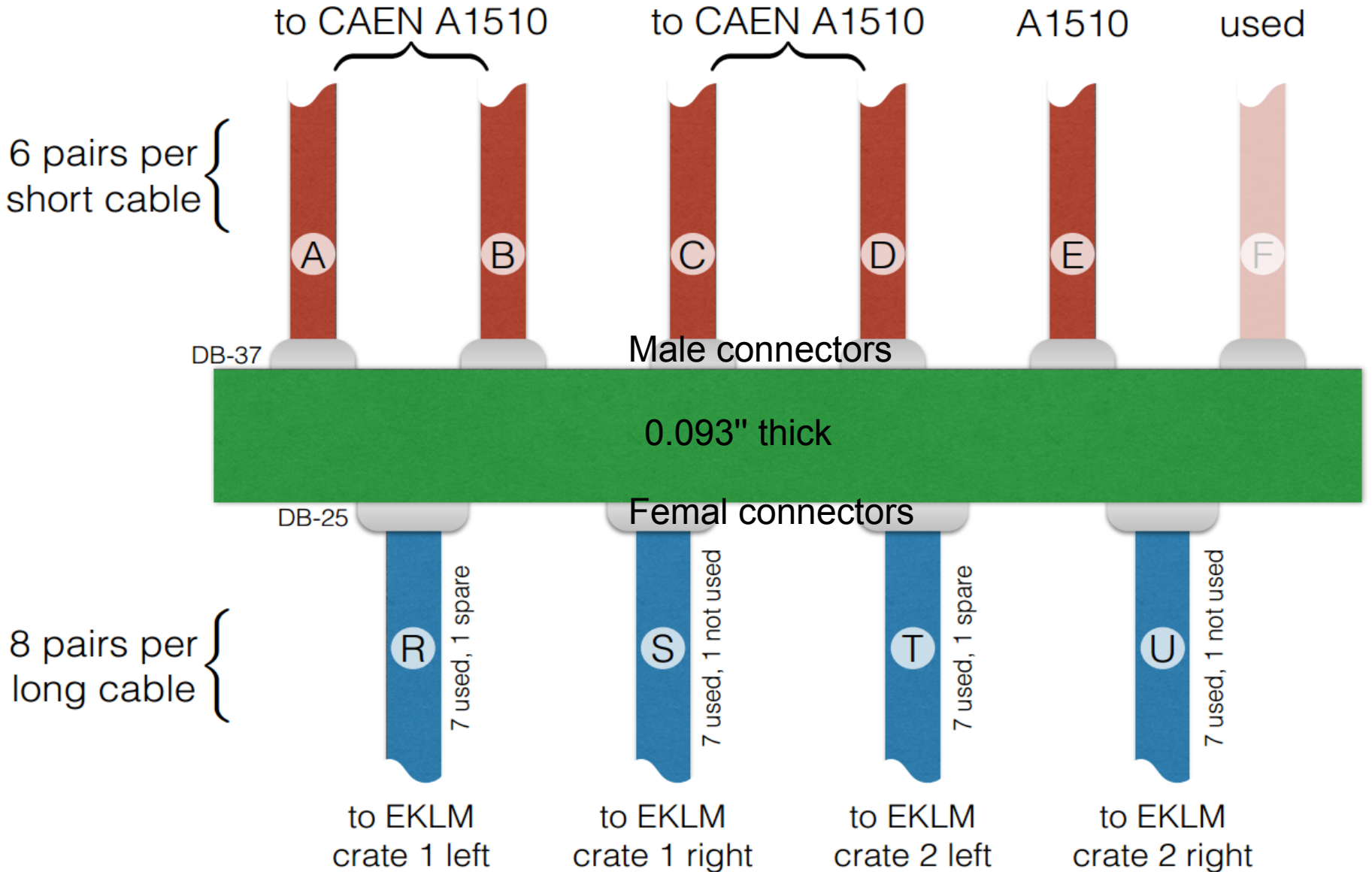
It requires at least
25(19+6)PS cables, which
then requires 13 HV modules.

Inventory:
16 CAEN A1510 P.S.
4 CAEN SY2527LC MF

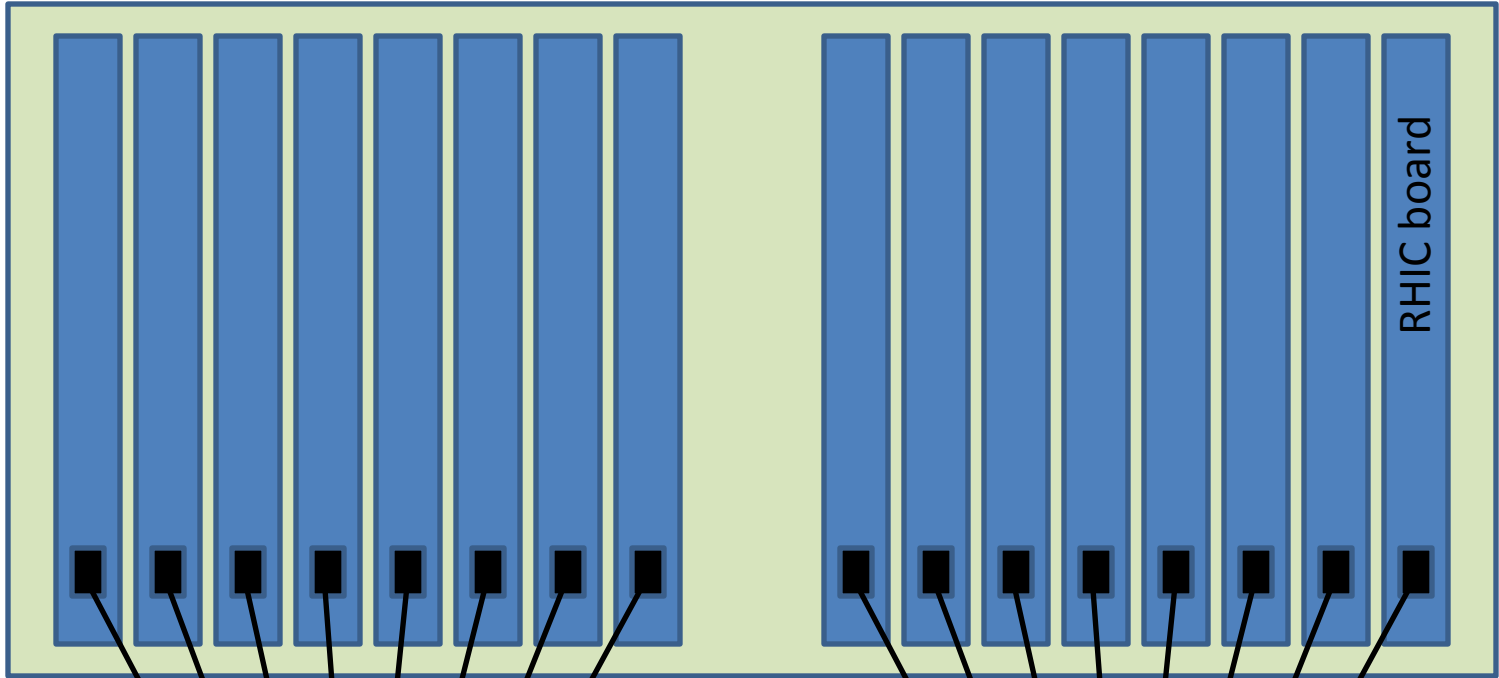
Barrel KLM



Endcap KLM (1 of 4)



Scinti FEE crate (generic; EKLM actually 7 RHIC/section, BKLM actually 1 section per crate not 2)



about 2 feet
broken out,
unshielded

twisted pair
22-26AWG tbd



shield n.c.
here

Alpha #6379 (8pr)



shield n.c.
here

Alpha #6379 (8pr)

5

EKLM:

- 8 crates x 14 Motherboards/crate=112 Motherboards
- 10 PS modules (19 PS cables) required
112ch/(6ch per PS cable)
- 16 bias cables(7 ch x 16 cables to FEEs)
- one line unused in each bias cable
- 4 patch panels

BKLM

- 4 crates x 8 Motherboards/crate=32 Motherboards
- 3 PS module (6 PS short cables) required
- 4 bias cables(8 ch x 4 long cables to FEEs)
- 1 patch panel

3.3 Pin assignment

The following figure shows the pin assignment of the front panel connectors:

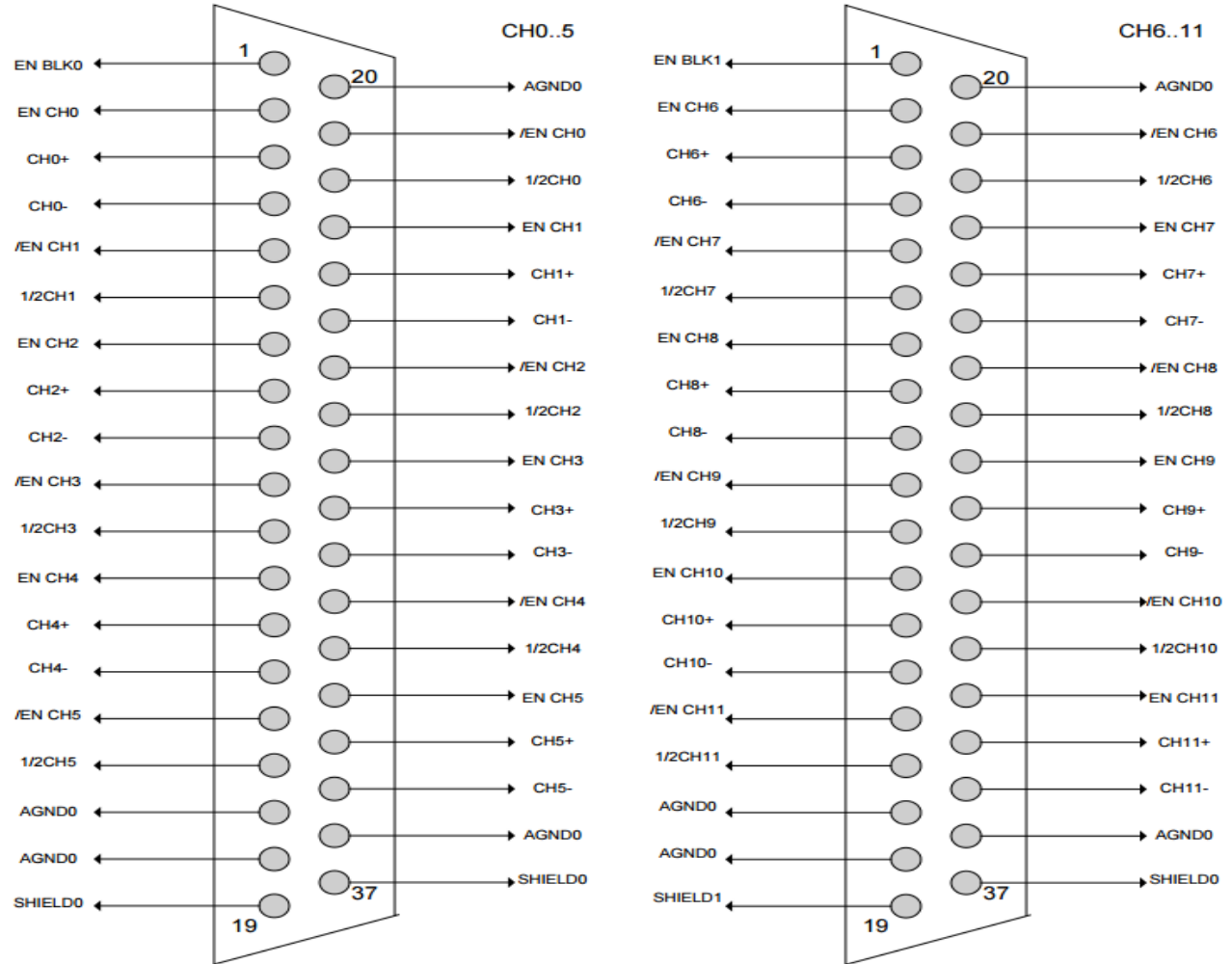
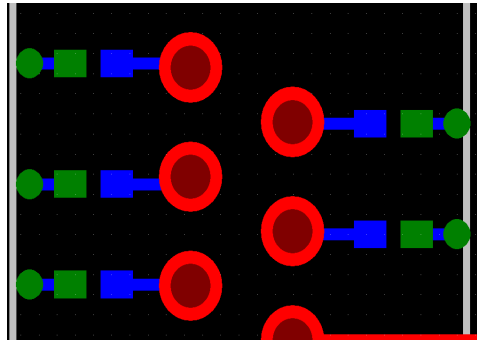


Fig. 3.3 - Mod. A 1510 front panel connectors pin assignment

Schematics

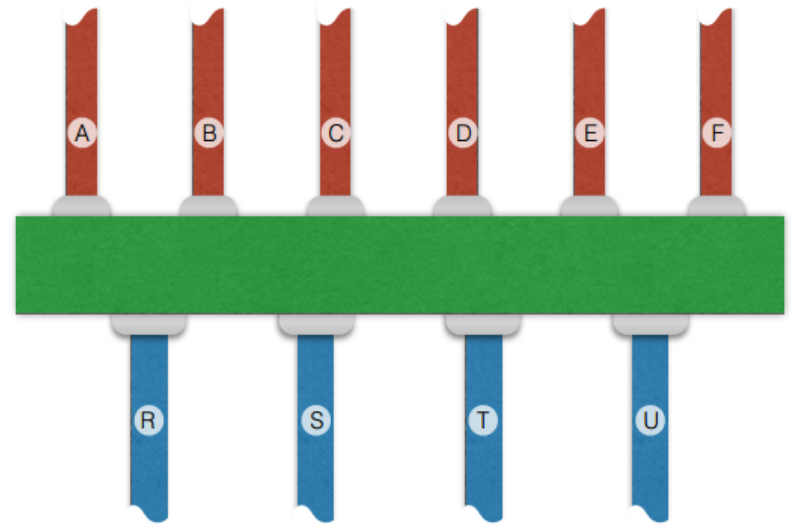
- Chx+/- from CAEN power supply ↔ HV/GND pairs at FEE
- AGND and SHIELD from CAEN PS ↔ solder bridges ↔ GND



- Connect the M. H. of DB37 and DB25 connectors to GND
- the enable pins on the PS connector are left floating
 - ENMODE0 is the default mode(ENCHx AND /ENCHx pins are not connected and Chx is enabled)
- To enable channels in blocks by six (0-5 and 6-11), respective ENBLKx should be connected to the AGND(Not to patch panel ground).
 - Add solder bridge between the ENBLKx and AGND
- Leave rest of the pins floating
- [Link to the schematics\[pdf\]](#) [\[PADS file\]](#)

Patch Panel Connections

same for all 5 panels



A1 — R1
A2 — R2
A3 — R3
A4 — R4
A5 — R5
A6 — R6

B1 — R7
B2 — R8
B3 — S1
B4 — S2
B5 — S3
B6 — S4

C1 — S5
C2 — S6
C3 — S7
C4 — U1
C5 — T1
C6 — T2

D1 — T3
D2 — T4
D3 — T5
D4 — T6
D5 — T7
D6 — T8

E1 — U2
E2 — U3
E3 — U4
E4 — U5
E5 — U6
E6 — U7

F1 — S8
F2 — U8
F3 — x
F4 — x
F5 — x
F6 — x

- 1) **R8** and **T8** are spare channels for EKLM, assigned channels for BKLM.
- 2) **S8** and **U8** are not used for EKLM [no **F**], assigned channels for BKLM.
- 3) F3, F4, F4 and F6 are not used – *is there any way to make these spares?*

DB25 Connector Pin Assignment

Pair #	Color A	Color B	Conn pin A	Conn pin B
1	black	red	1	2
2	black	white	4	5
3	black	green	7	8
4	black	blue	10	11
5	black	yellow	23	24
6	black	brown	20	21
7	black	orange	17	18
8	red	white	14	15

Terminate the pair to TE # 1-794610-2 contacts and # 1445022-2 pin housing.

Wire A of the pair → pin2(GND) of the connector on RHIC

Wire B of the pair → pin1(HV) of the connector on RHIC

3.6 Connector wiring

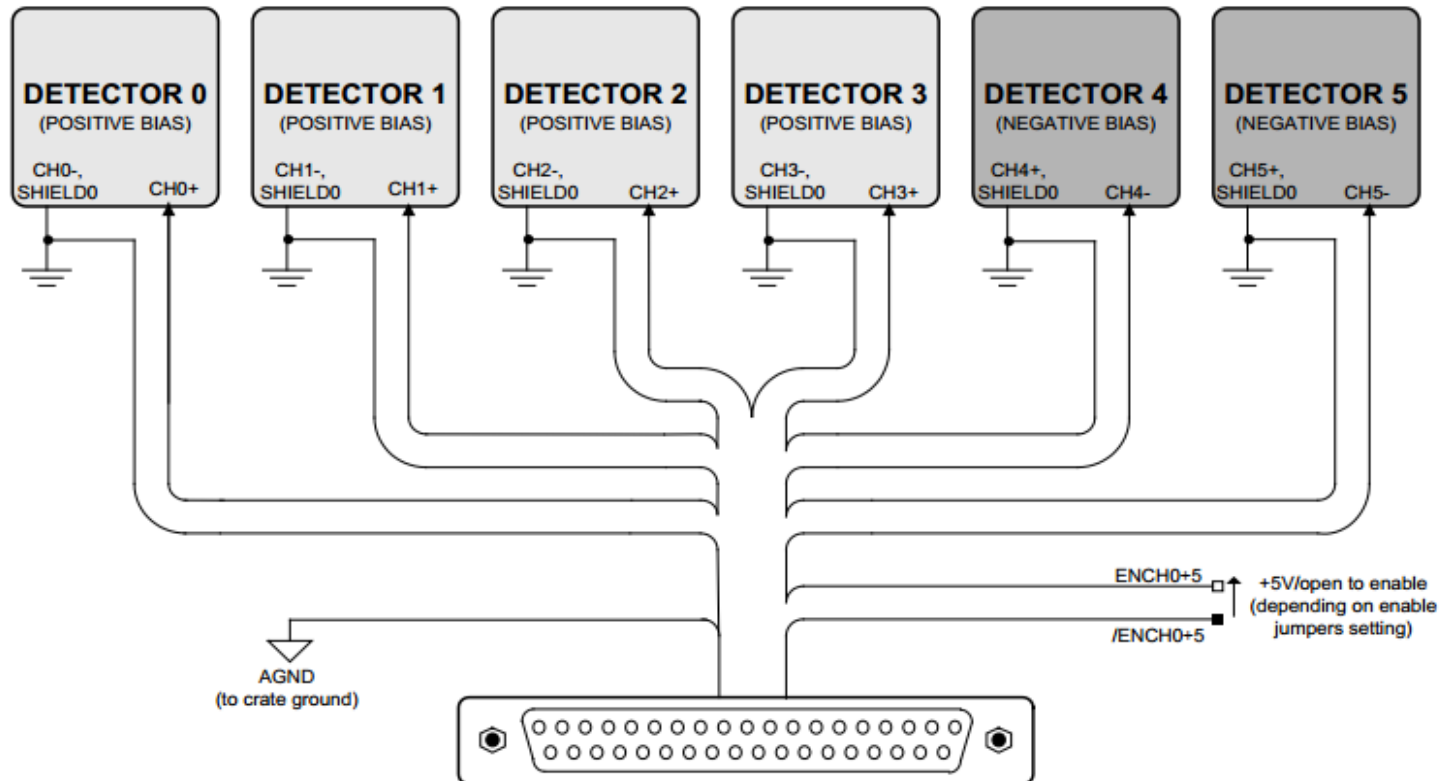


Fig. 3.7 – Example of connector wiring

The figure above shows an example of detector supplying using the Mod. A151x power supply boards. See also § 3.3 and § 3.4 for pinout and enable details.

Parts

- For the connectors on both panel boards:
Vertical through hole D connectors with retainers at jackscrews holding them to PCB
- 2015/04/21 decide to use M-F cables
 - <http://www.cablesondemand.com/category/DB37/product/CS-DSDMDB37MF/URvars/Items/Library/InfoManage/CS-DSDMDB37MF.htm>
 - 5 foot long
- Mating connectors are:
 - DB-37 connector (M): Voltage rate: 125V; pin length: 0.125"
<http://www.digikey.com/product-detail/en/5787686-1/A35180-ND/1279893>
 - DB-25 connector (F): Voltage rate: 125V; pin length: 0.125"
<http://www.digikey.com/product-detail/en/5748612-1/A35183-ND/1279896>

Layout

- 6.5 inch x 4 inch / 2-layer board
- 0.093" thick
- GND copper planes on top and bottom layers
- Add GND solder holes
- Strong mechanical support
 - [Link to Chris's 3D drawing \(requires Adobe\)](#)
 - [Link to the Dimension Drawing \[pdf\]](#)
- [Link to the layout \[pdf\]](#) [\[PADS\]](#)

Chris's email

Here is a preliminary idea for the patch panel support. (You must download file and open through Adobe to get 3D to work.)

I have a few suggestions I would like to make, then, pending your agreement,

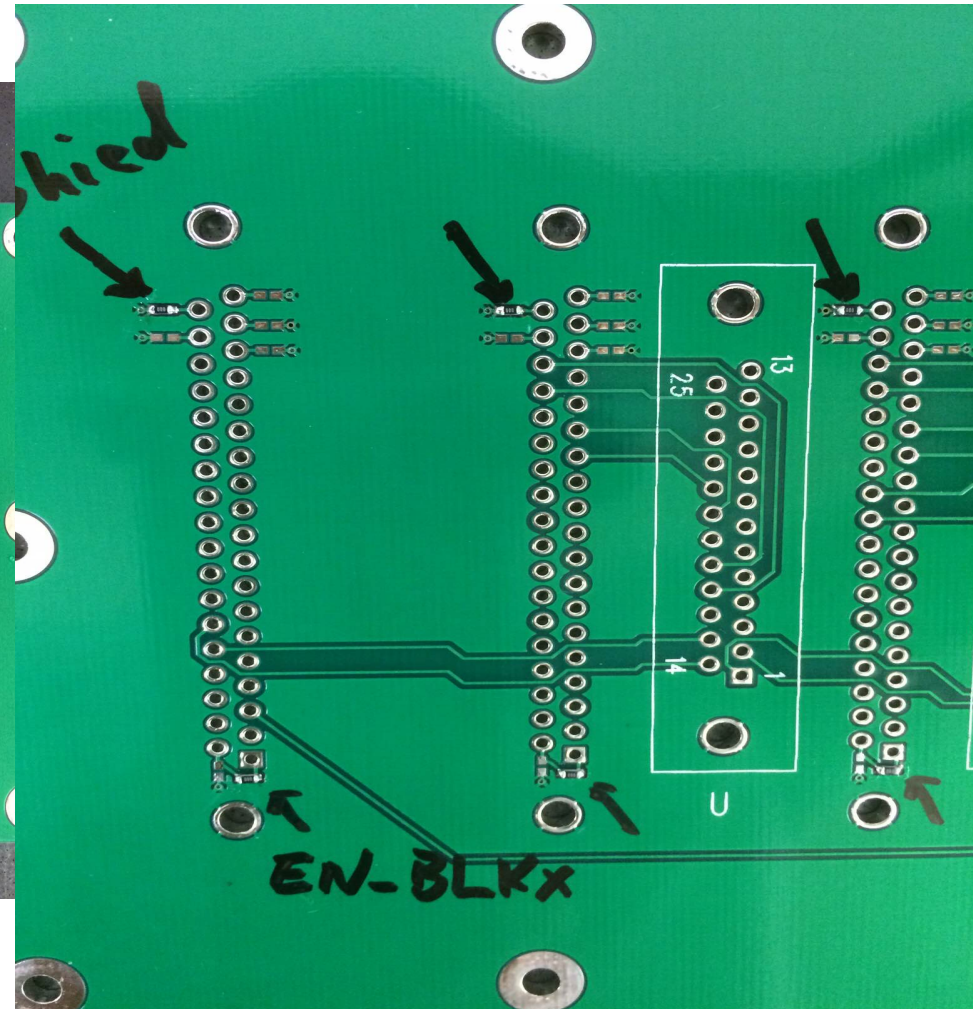
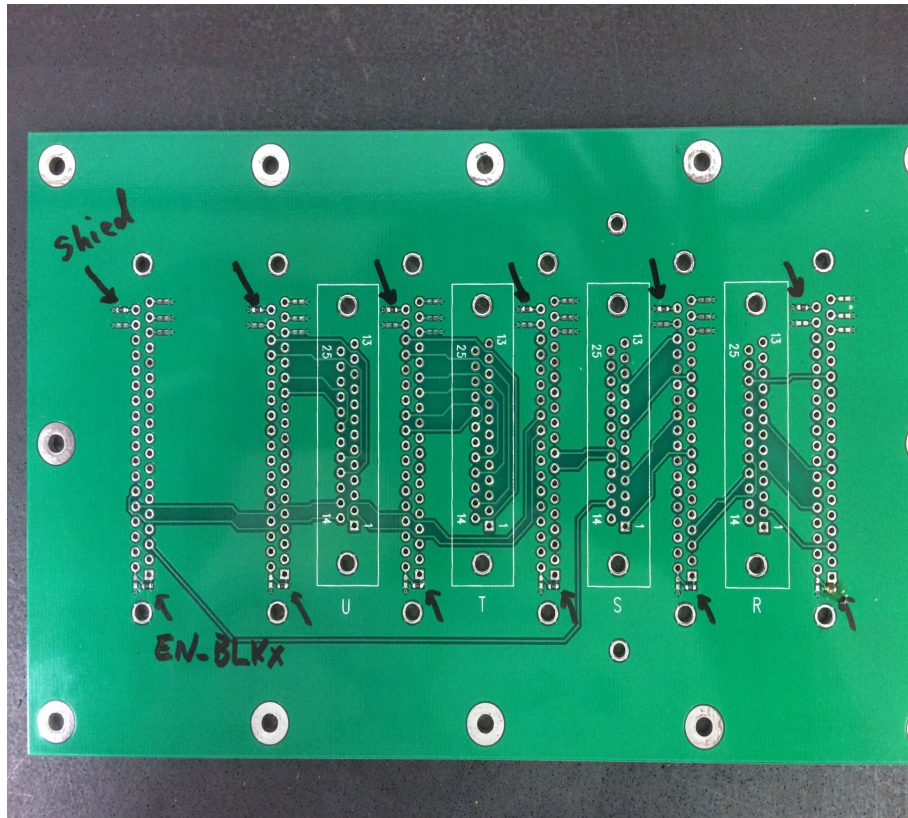
I will be ready to share model with others for comments.

1. Holes are not symmetric with respect to board outline.
2. Adding 2 more mounting holes would make this much tougher.
3. If board was bigger, say 4.5 x 7 inches, then I could make the cutouts in the patch panel bigger and have more room for connectors to plug in.

Here is the link to the bolt we should use. <http://www.mcmaster.com/#91292a110/=x1fvxn>

Finished hole size of 134 mil will allow manufacturer to use a #29 drill bit (136 mil). This will give 16 mils of play around the bolt, which is regarded as a "loose fit."

0 ohm Resistors to enable channels in blocks (ENBLKx) by six (0-5 and 6-11)



Questions, Notes and Summary

