

# External Cabling Update

Pelle

# High Voltage External Cabling

Design for shop specified

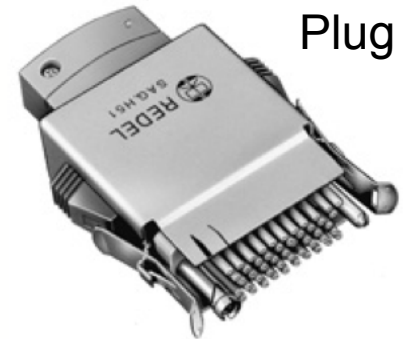
- Redel plug at each end of long cable
- Redel fixed socket at outside flange board pigtail

But Shop mounted plug connector on flange pigtail

- My updated excel file had the wrong connector picture!
- But found then that my original design with plug was not touch safe: so this was actually a better solution

Next issue was that fixed socket connector has no backshell (originally this was designed as a patch panel)

- Have four “straight” socket Redel connectors as spare/testing: use those instead to get a better solution
- But we still need to handle the backshell issue on the patch panel inside; will ask Matt for advice here but depends on space availability (custom lexan support?)
- Ordered 3 more straight sockets for spare flange.



Plug

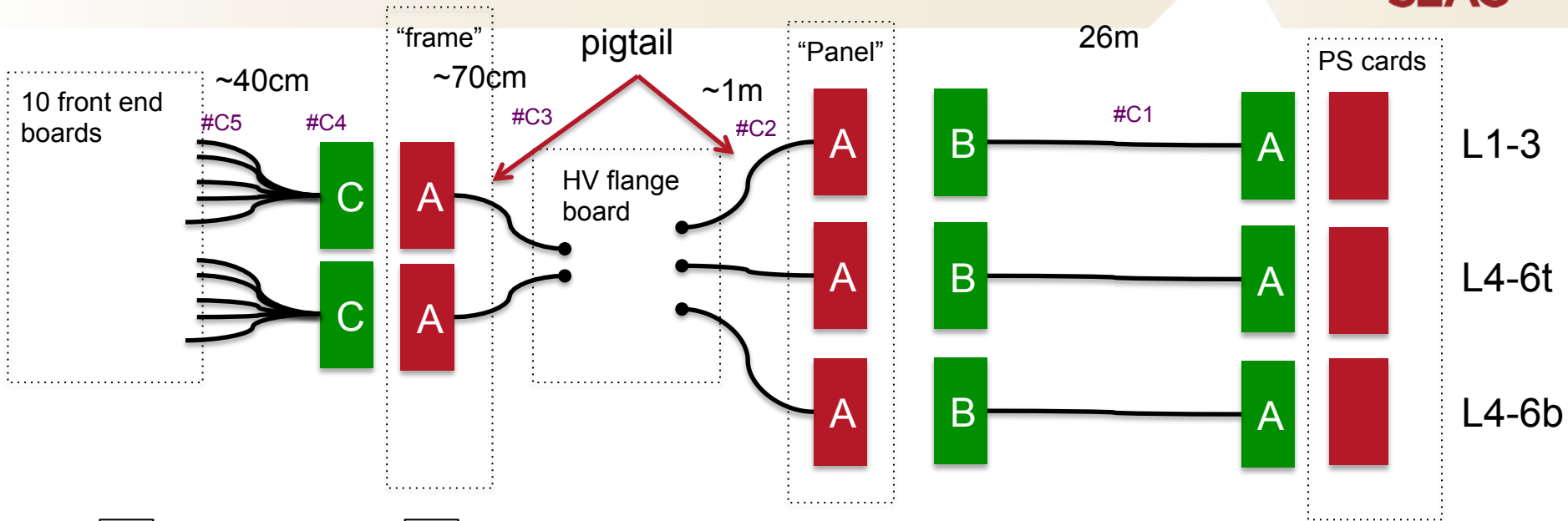
Fixed socket



Straight socket



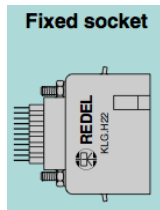
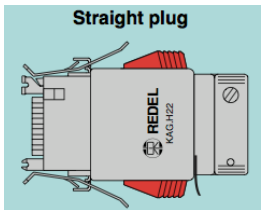
# HPS HV Connector Scheme



A

C

B



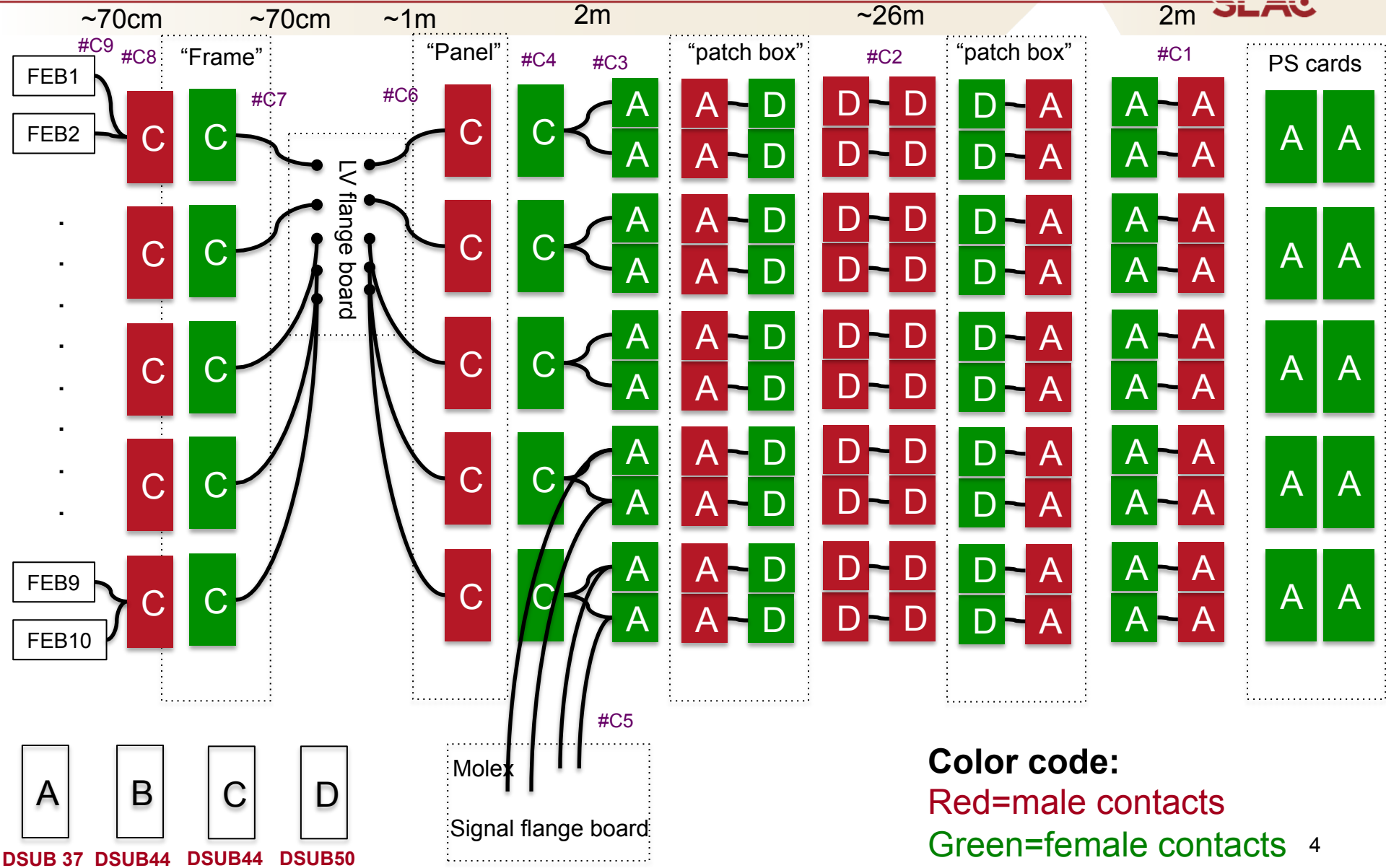
**Color code:**  
 Red=male contacts  
 Green=female contacts

SAG.H51.LLLB1G female

SLG.H51.LLA1G male

Plug in vac. Chamber is not touch safe; no space.

# SVT LV Scheme



# Low Voltage Power

	AVDD+	AVDD-	DVDD	Flange
Voltage (V)	5.5	-5.5	5.5	5.0
Meas I (0 hybrids)	1.4	0.25	1.2	0.25
Meas I (1 hybrids)	2.0	0.27	1.2	0.25
Meas I (2 hybrids)	2.6	0.29	1.2	0.25
Meas I (3 hybrids)	3.0	0.31	1.2	0.25
Meas I (4 hybrids)	3.4	<b>0.33 (hit 8V limit)</b>	1.2	0.25

d

# Voltage drops

	AVDD+	AVDD-	DVDD	Flange
Voltage (V)	5.5	-5.5	5.5	5.0
Calc. I (A) - originally	4.3	0.26	0.7	0.5
Meas. I 3hyb (A)	3.0	0.31	1.2	0.25
Meas. SRC 3hyb (V)	7.361	7.922	7.503	5.912
Calc SRC (V)	7.37	8.09	7.41	5.70

Drops close to expected after adjusting for reality

- 22m long cable->26m
- Total flange pigtails 1m->5m
- AVDD- is 26AWG instead of 22AWG!!

Original design was too tight (and wrong)...

# Modification needed

	AVDD+	AVDD-	DVDD	Flange
Voltage (V)	5.5	-5.5	5.5	5.0
Calc. I (A) - originally	4.3	0.26	0.7	0.5
Meas. I (4 hybrids)	3.4	<b>0.33</b>	1.2	0.25
Meas. SRC 4hyb (V)	7.644	<b>8.1</b>	7.486	5.912
Calc. SRC (V)	7.6	8.3	7.4	5.70
Mod1 Calc. SRC	7.3	6.39	6.92	5.70
Mod1 Calc. max I (A)	4.7	0.92	2.1	1.07

## Mod1:

- Add single 20AWG to FEB power channels in long 26m cable between boxes; no other change
- Brings AVDD- safely below limit and adds safety factor on all channels