



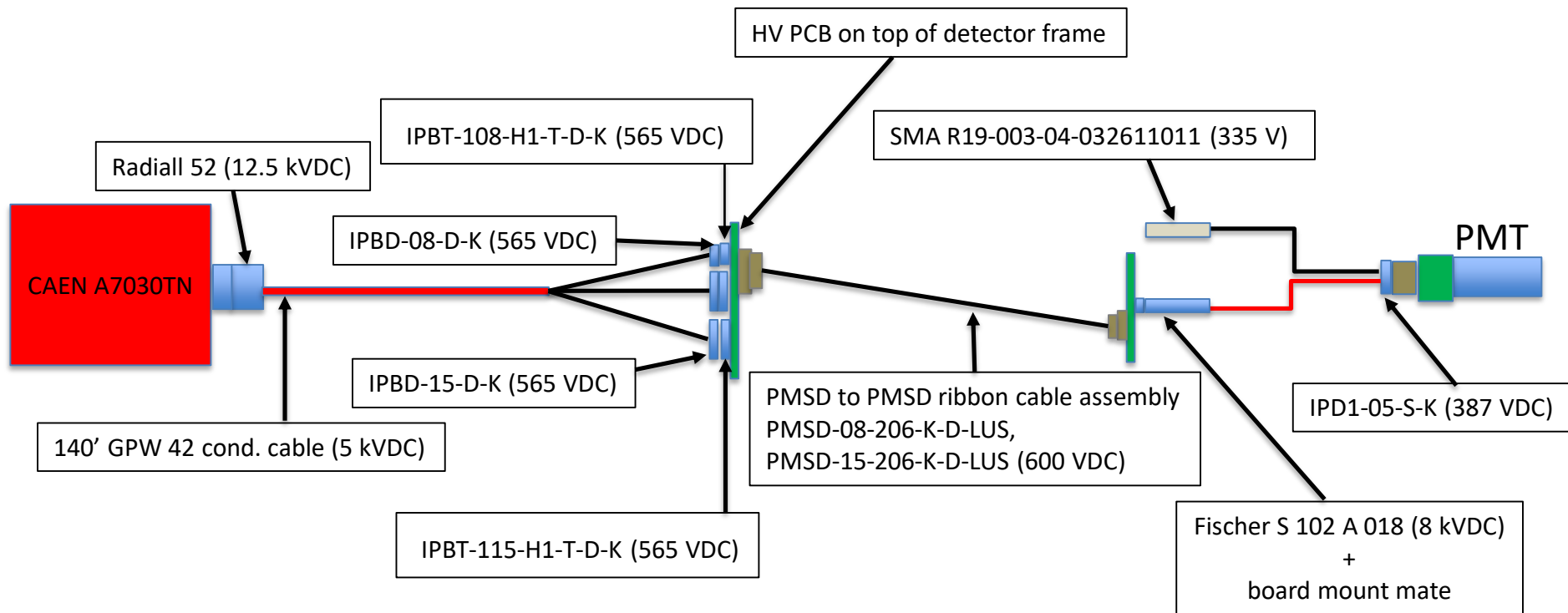
DSG HV Cable Schematic for NPS

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9/3/2020

Contents

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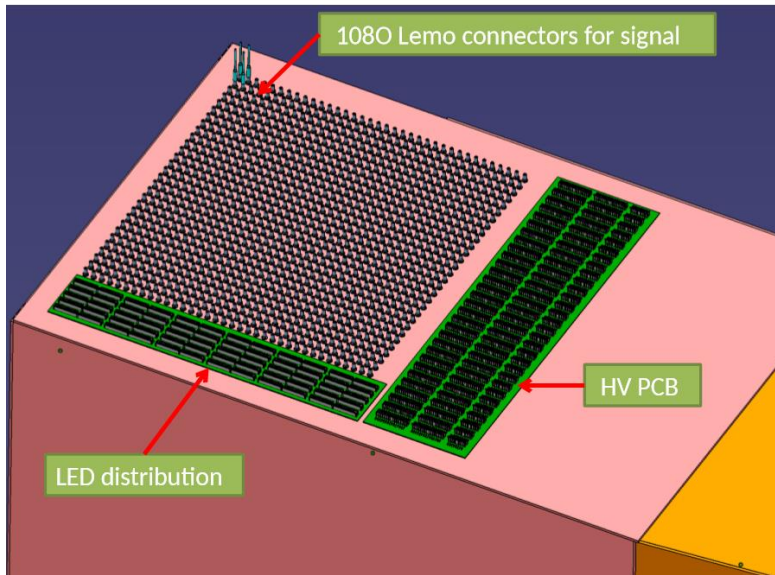
HV Flow Path for NPS



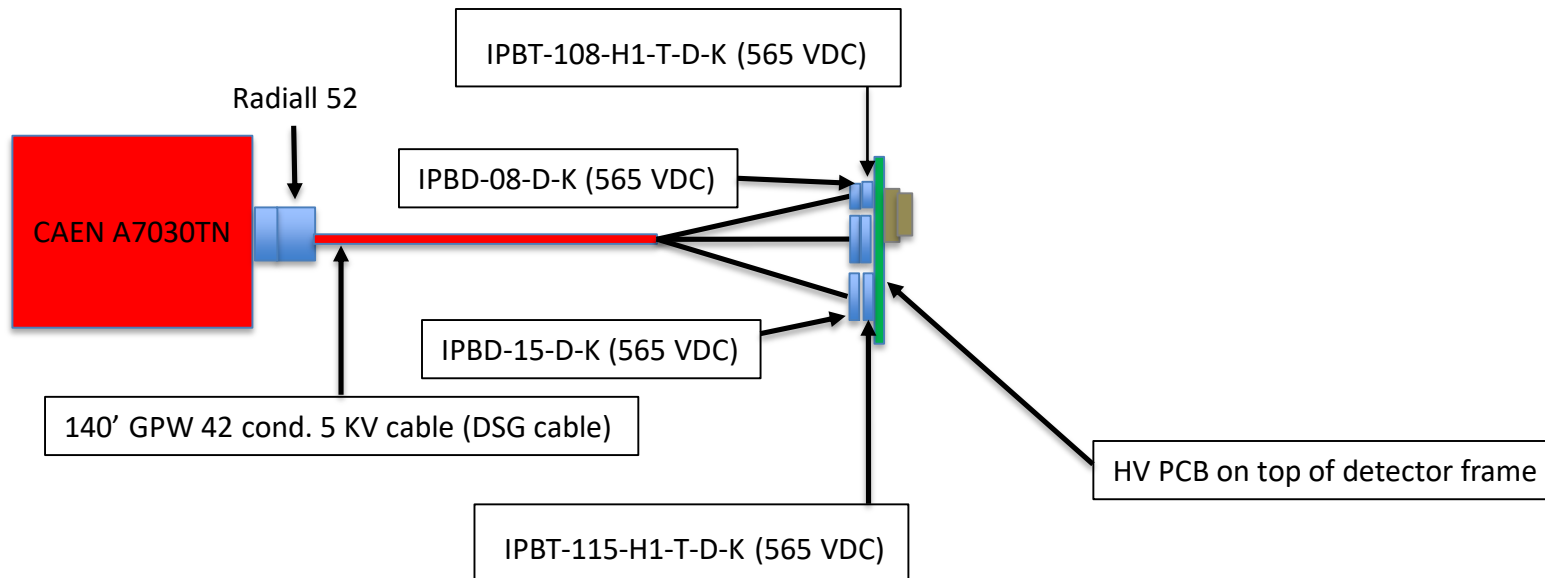
- HV is provided by the CAEN A7030TN module

*Voltage ratings in ()

Top of Detector Frame (Outer)

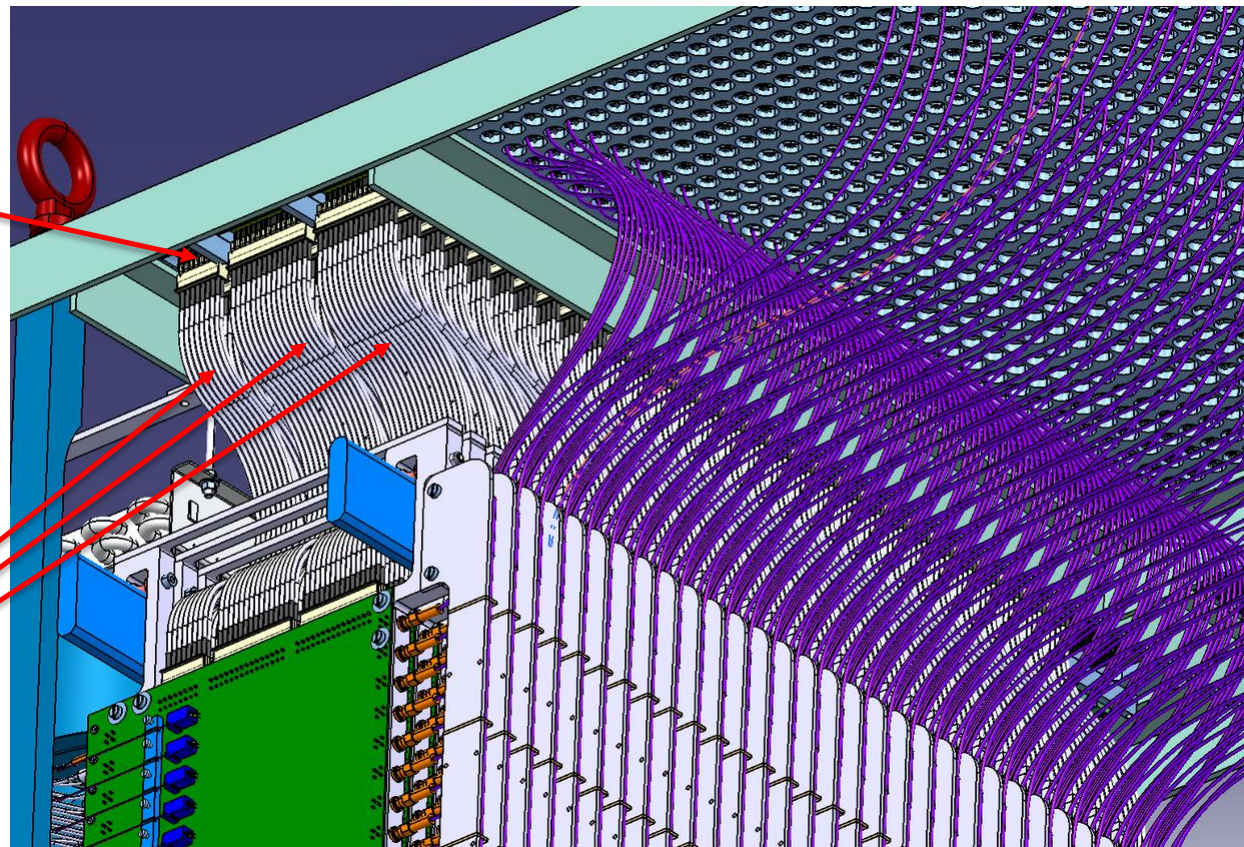


- A 140' multi-conductor cable DSG is fabricating will run from CAEN A7030TN module to row on HV PCB on top (outside) of the NPS Detector Frame.
- Cable and board use SAMTEC connectors
 - Cable IPBD-15-D-K to board IPBT-115-H1-T-D-K (x2)
 - Cable IPBD-08-D-K to board IPBT-108-H1-T-D-K (x1)



Top of Detector Frame (Inner)

Under-side of HV PCB

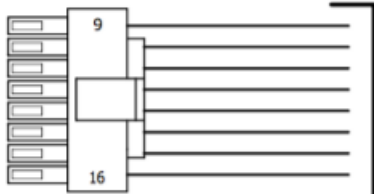


Ribbon cables attach to HV board on top of detector frame supplying HV to PMT bases.

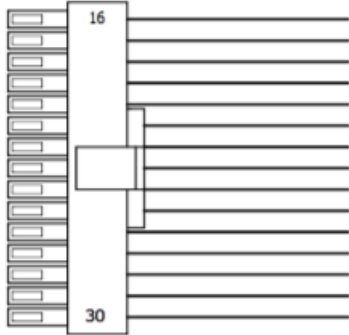
Ribbon Cable Connectors

Vue de dessus
Languettes ressort visible

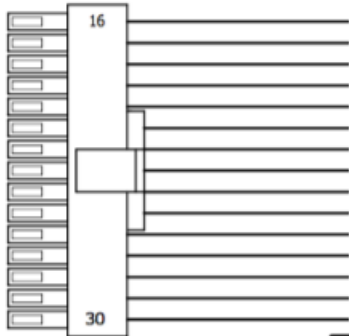
P3
Connecteur SAMTEC
PMSD-08-206-K-D-LUS



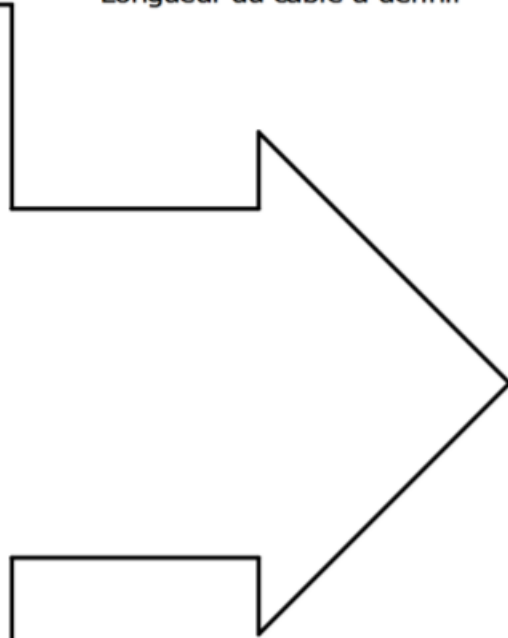
P2
Connecteur SAMTEC
PMSD-15-206-K-D-LUS



P1
Connecteur SAMTEC
PMSD-15-206-K-D-LUS



Longueur du câble à définir

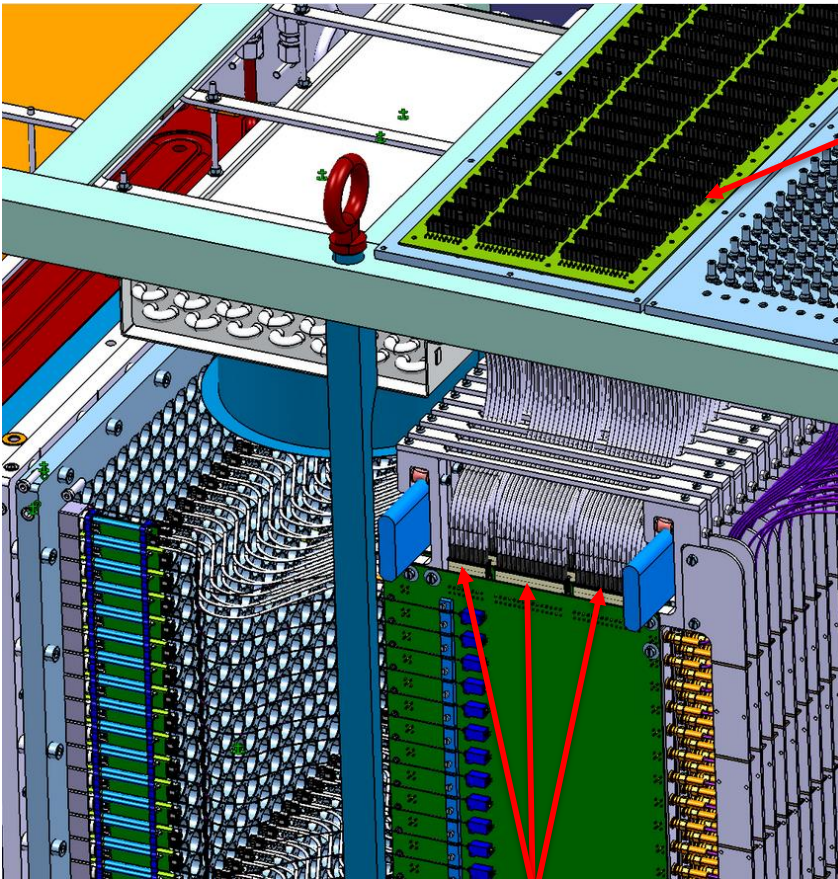


Connecteur
RADIALL

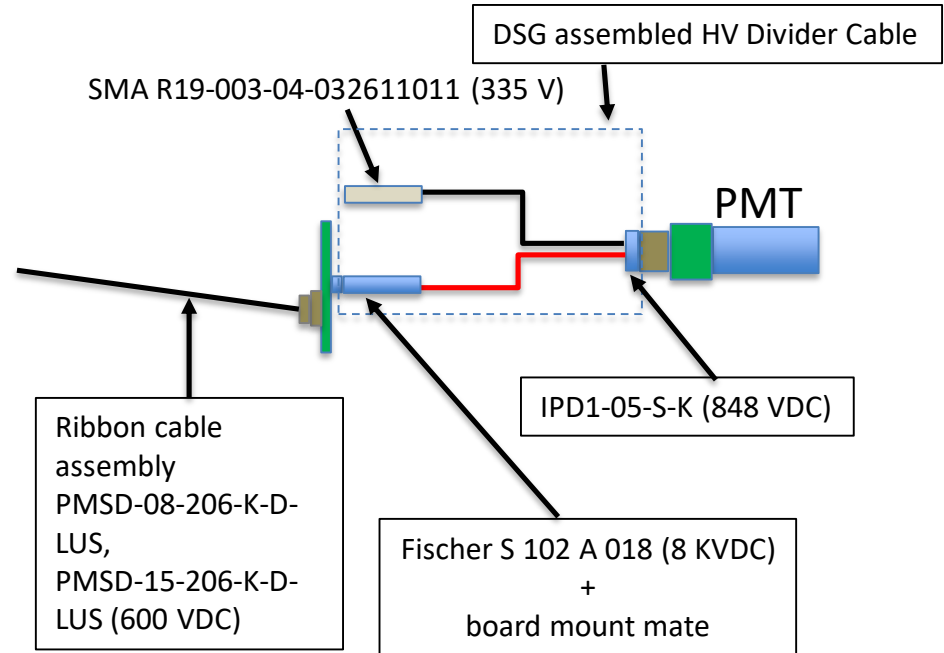
Projet NPS		INSTITUT DE PHYSIQUE NUCLEAIRE Recherche et Développement Détecteurs			
DESINE: TNT		TITRE : SCHEMA			
DATE: 11/01/2019		Câblage Distribution HT <--> Power Supplies			
VERIFI: TNT	DATE: 11/01/2019	CODE: -	FORMAT: A3	DESIGN NO: b282A-S-1000-TNT	REV: A
CONTROLE: TNT	DATE: 11/01/2019				
MISE A JOUR: TNT	DATE: -	ECHELLE: -			FEUILLE: 2 / 3

- Three SAMTEC connectors attach to underside of HV PCB on top of detector (inner).
- Other end attaches to PCB connected to PMTs.

Ribbon Cables to PMT HV

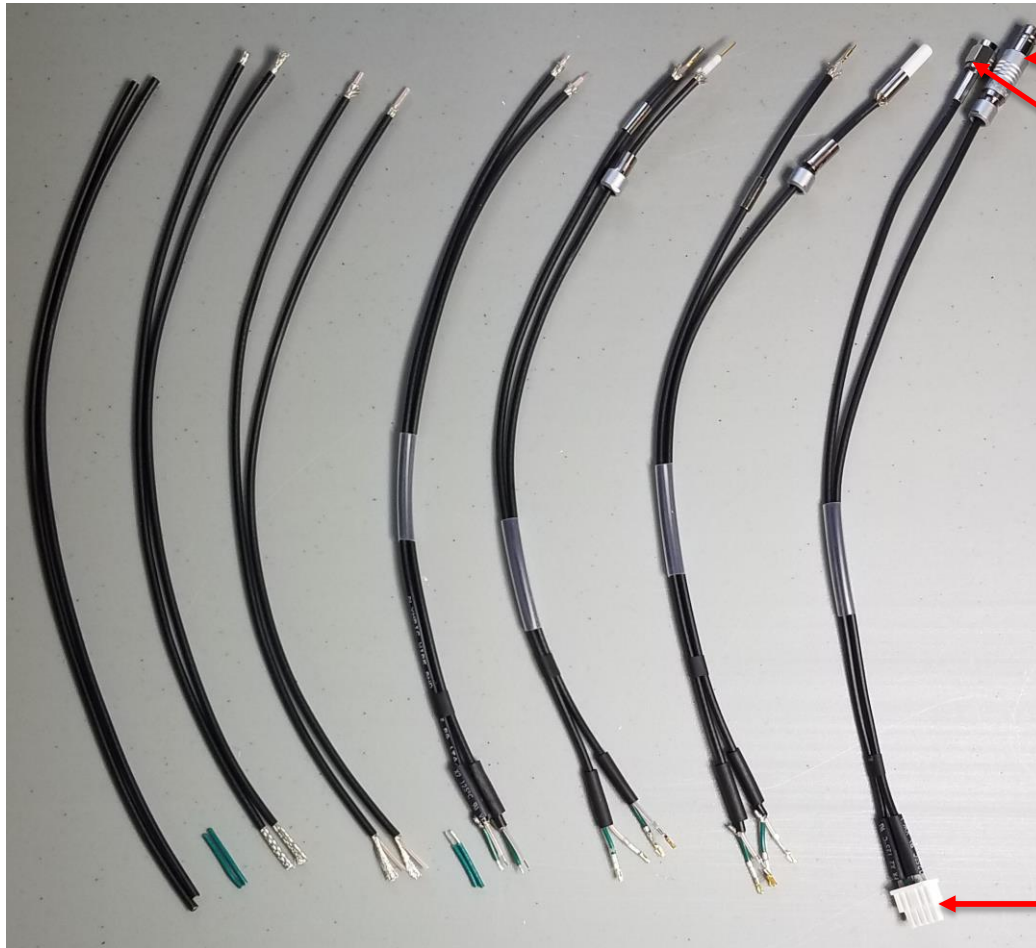


HV PCB



- The ribbon cables route from underside of HV PCB to a board where the HV side of the divider cable for each PMT is connected via a Fisher “S 102 A 018” connector
- One ribbon cable for each column of PMTs (36)

HV Divider Cable



Fischer S 102 A 018 connector

SMA R19-003-04-032611011
connector

- Divider cable provides HV to the PMT (Fischer to SAMTEC – right hand side)
- Left hand side of divider cable is for signal (SMA to SAMTEC)

SAMTEC IPD1-05-S-K connector

Connector Voltage Ratings

- SAMTEC IPD1-05-S-K
 - Connects divider cable to PMT base
 - Rated for 848 VDC per: <https://octopart.com/ipd1-05-s-k-samtec-11550047#Specs>
- Fischer S 102 A 018
 - Connects PMT HV to PCB
 - Rated for 8 kVDC per: <http://www.farnell.com/datasheets/1271240.pdf>
- SAMTEC PMSD-08-206-K-D-LUS
 - Ribbon cable assembly
 - Rated for 600 VDC per: <https://static6.arrow.com/aropdfconversion/61d13c16bd11ffd18e988b15ce2de65ffa6e53ee/pmss.pdf>

Connector Voltage Ratings (cont'd)

- SAMTEC IPBT-115-H1-T-D-K
 - Connector mounted on HV PCB located on top of detector frame (outer)
 - Mate for SAMTEC IPBD-15-D-K
 - Rated for 565 VDC per:
http://suddendocs.samtec.com/catalog_english/ipbt.pdf
- SAMTEC IPBT-108-H1-T-D-K
 - Connector mounted on HV PCB located on top of detector frame (outer)
 - Mate for SAMTEC IPBD-08-D-K
 - Rated for 565 VDC per:
http://suddendocs.samtec.com/catalog_english/ipbt.pdf

Connector Voltage Ratings (cont'd)

- SAMTEC PMSD-15-206-K-D-LUS
 - Ribbon cable assembly connecting from HV PCB on top of detector frame (inner) to PCB where the PMT's Fischer connectors attach
 - Rated for 600 VDC per:
<https://static6.arrow.com/aropdfconversion/61d13c16bd11ffd18e988b15ce2de65ffa6e53ee/pmss.pdf>
- SAMTEC IPBD-15-D-K (2), IPBD-08-D-K (1)
 - Connect to the HV PCB on top of the detector frame (outer)
 - On one end of the 140' multi-conductor cable DSG will be fabricating
 - Rated for 565 VDC per:
http://suddendocs.samtec.com/catalog_english/ipbd.pdf

Conclusion

- DSG is fabricating HV divider cables and 140' multi-conductor cables for NPS
- There are safety concerns as none of the chosen connectors are rated for the operating voltage of ~1100 VDC

Thank You