

## NPS HV Cabling Meeting

**Date:** October 7, 2020

**Time:** 9:30AM – 10:15AM

*Attendees:* Aaron Brown, Carlos Munoz-Camacho, Chris Cuevas, Brian Eng, Marc McMullen

### 1. Detector Frame Assembly (Carlos Munoz-Camacho)

- 1.1. The detector will be completely enclosed and light-tight.
- 1.2. Because there are potential touch points, the service door will be interlocked to turn off HV when the door is opened.
- 1.3. Need for strain relief was noted, since HV multi-conductor cables will be connected to HV PCBs on top of the detector frame.

### 2. Voltage Rating Concerns (Chris Cuevas)

- 2.1. Discussed difference between the manufacturer's rated voltage and the Dielectric Working Voltage (DWV), also quoted by the manufacturer.  
**Rated voltage is what one should be focusing on.**
- 2.2. *Testing underrated components (cables and connectors) at JLab is not a solution to circumvent problems of using underrated components.*
- 2.3. RG174/U cables used in the HV divider cables being made by DSG have been tested to a UL specification rating of 30 V and to a *non-UL* specification rating of 1500 V, according to Olympic, the manufacturer.
- 2.4. **Chris Cuevas stated that using the non-UL rating for the RG174/U cable will not be a problem.**
- 2.5. Chris Cuevas will discuss voltage rating concerns of other components (*cf.* Table), such as SAMTEC connectors, with Fernando Barbosa.

<b>NPS Cable Components</b>			
NPS Assembly/Board	Component	Part Number	Voltage Rating
HV supply cable	CAEN HV connector	Radiall A996 52 pin	12.5 kV
	HV 42-conductor cable	GWP 030-23904	5 kV
	Samtec 8-pin (male cable mount)	IPBD-08-D-K	424 V
	Samtec 15-pin (male cable mount)	IPBD-15-D-K (x2)	424 V
HV board	Samtec 8-pin (female PCB mount)	IPBT-108-H1-T-D-K (1/side of patch panel)	565 V
	Samtec 15-pin (female PCB mount)	IPBT-115-H1-T-D-K (2/side of patch panel)	565 V
Samtec ribbon cables	Samtec 8-conductor ribbon cable	PMSD-08-206-K-15.40-D-LUS	600 V
	Samtec 15-conductor ribbon cable	PMSD-15-206-K-15.40-D-LUS (x2)	600 V
Interface card	Samtec 8 pin (female PCB mount)	IPBT-108-H1-T-D-K	565 V
	Samtec 15 pin (female PCB mount)	IPBT-115-H1-T-D-K (x2)	565 V
	Fischer jack connector	D 102 A018	8 kV
	SMA right angle jack	142-0701-501 (1/side of patch panel)	335 V
PMT HV/signal Y cable	Fischer plug connector	S 102 A018	8 kV
	SMA female cable mount	R19-003-04-032611011 (1/side of patch panel)	335 V
	Coax cable	RG-174u	30 V
	Samtec 5-pin male connector	IPD1-05-S-K	387 V