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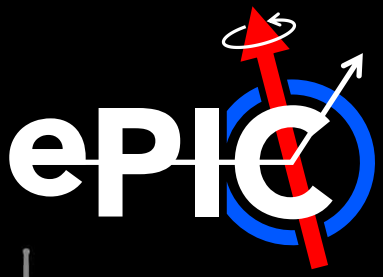
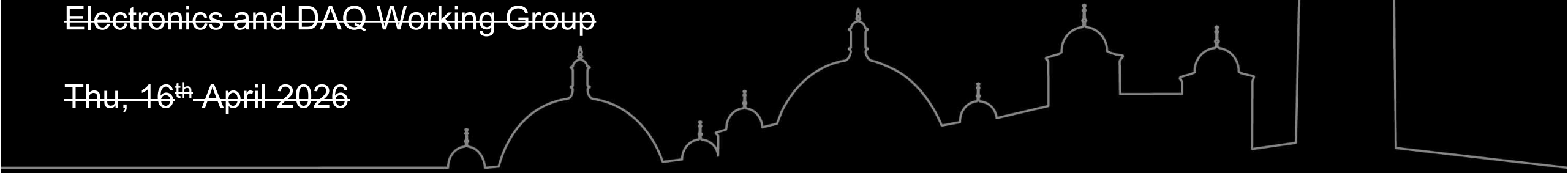


ePIC SVT Powering Trees

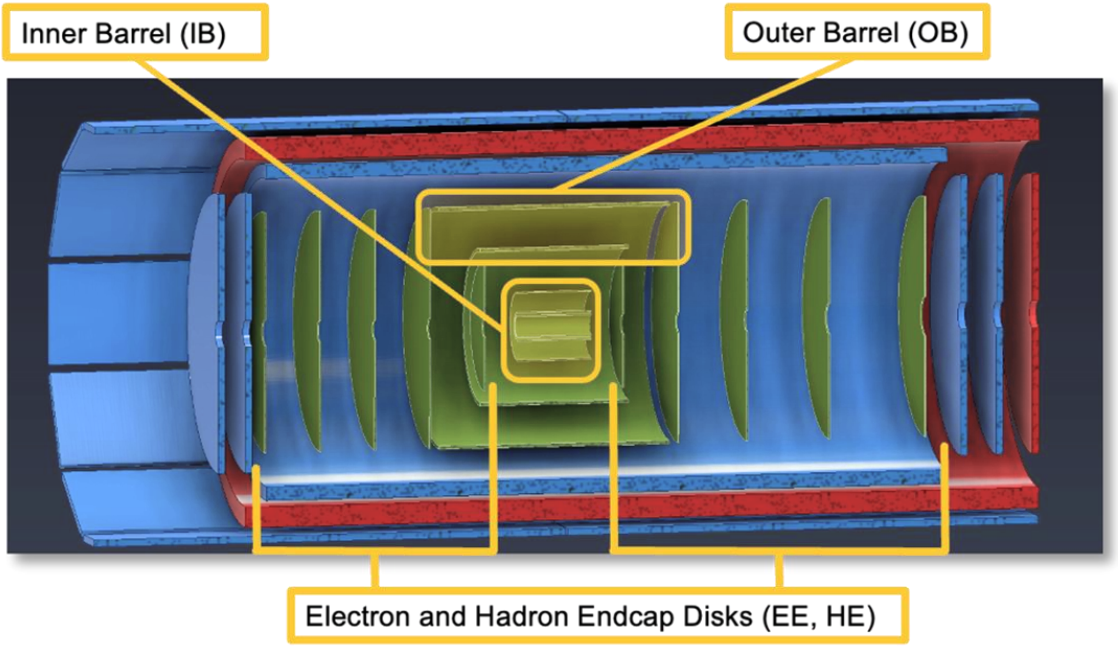
James Glover

~~Electronics and DAQ Working Group~~

~~Thu, 16th April 2026~~

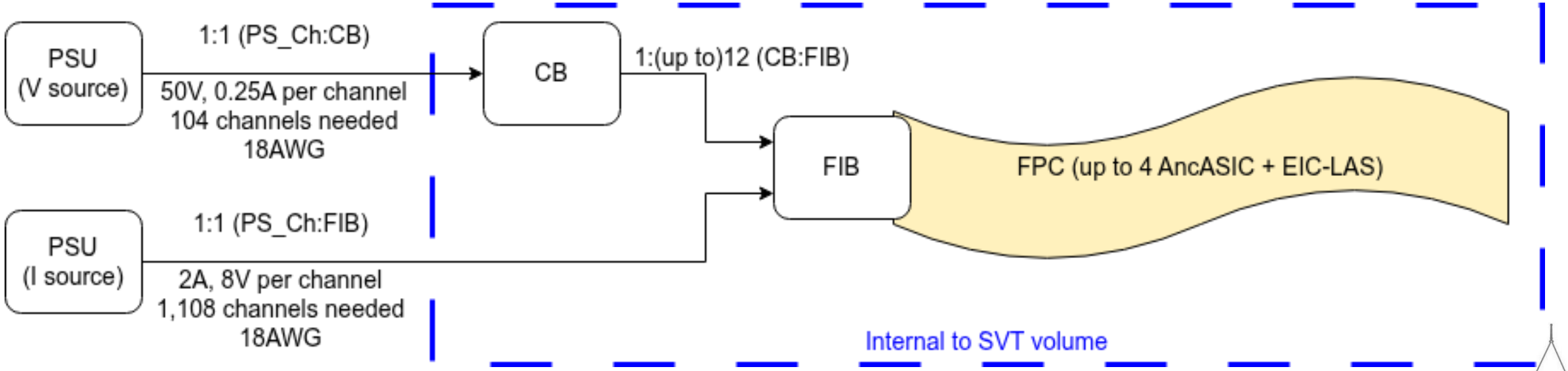


SVT sub-systems



- Inner Barrel (IB).
  - Sensor: MOSAIX
  - Power segmentation: per MOSAIX segment
  - Readout connections: eight per segment
  - Powering scheme: direct power
  - Slow Control scheme: seven direct S/C signals
- Outer Barrel (OB) and Endcap Disks.
  - Sensor: EIC-LAS (with supporting AncASIC)
  - Power segmentation: per Flexible Printed Circuit
  - Readout connections: one per EIC-LAS
  - Powering scheme: serial power
  - Slow Control scheme: daisy chained ePIC_SC interface per FPC

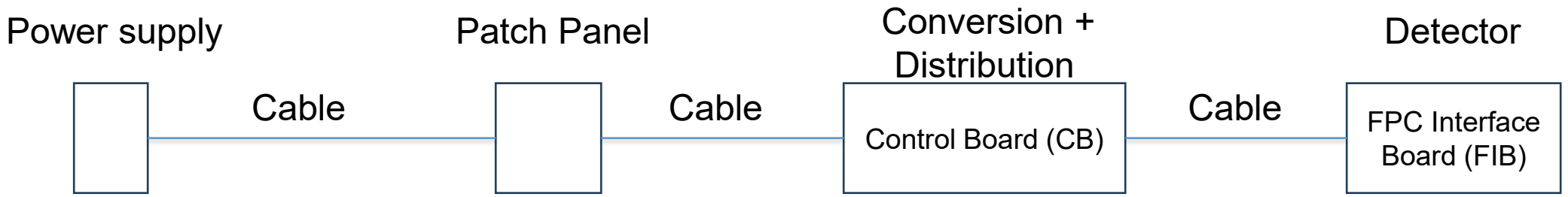
Outer Barrel (OB) and Endcap Disks



WIP
Numbers subject to change

Power Distribution Tree

Sub-Detector: SVT – OB+Disks – V-supplies (for readout) Type: LV



#Ch: 104
Ch V/I: 50V/0.25A
Model: MPV 8060I
(Wiener MPOD, 8ch/mod)
Qty: 13

On-detector: Y
Qty:

On-detector: Y
Qty: 104

DC/DC: bPOL48 (48-10V)
Qty: 1/CB

DC/DC: bPOL12 (10-2.5V)
Qty: 1/CB

DC/DC: bPOL2v5 (2.5-1.2V)
Qty: 1/CB

To Adapter: Y/N
To FEB: Y/N

Wire Gauge: 10AWG
Current/Wire: ~250 mA
Part#:
Length:
Qty: 208

104 ch (source+ret)

Wire Gauge: 18AWG
Current/Wire: ~250 mA
Part#:
Length:
Qty: 208

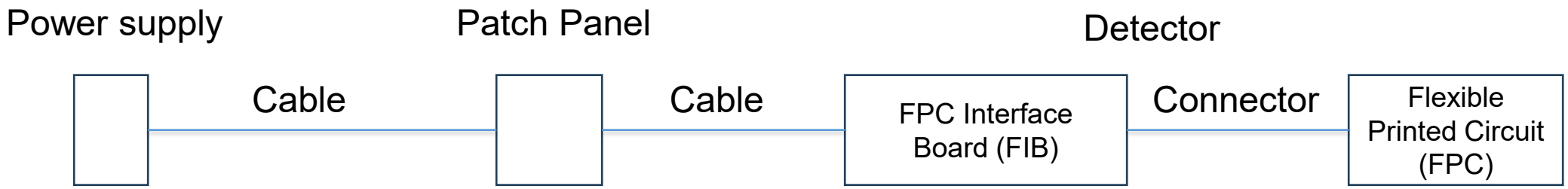
Wire Gauge: 30AWG
Current/Wire: < 55 mA
Part#:
Length:
Qty: 4,432

Power Loss: ~10% *40%* *2%*

WIP
Numbers subject to change

Power Distribution Tree

Sub-Detector: SVT – OB+Disks – I-supplies (for active Si) Type: LV



#Ch: 1,108
Ch V/I: 8V/2A
Model: MPV MPV 8030H*
*Modified as I-source (Wiener MPOD, 8ch/mod)
Qty: 139

On-detector: Y
Qty:

On-detector: Y
Qty: 1,108

Each FPC contains a serial powering chain with up to 4 AncASIC. Each AncASIC converts the current supply to power one EIC-LAS.

5*S-LDO/AncASIC

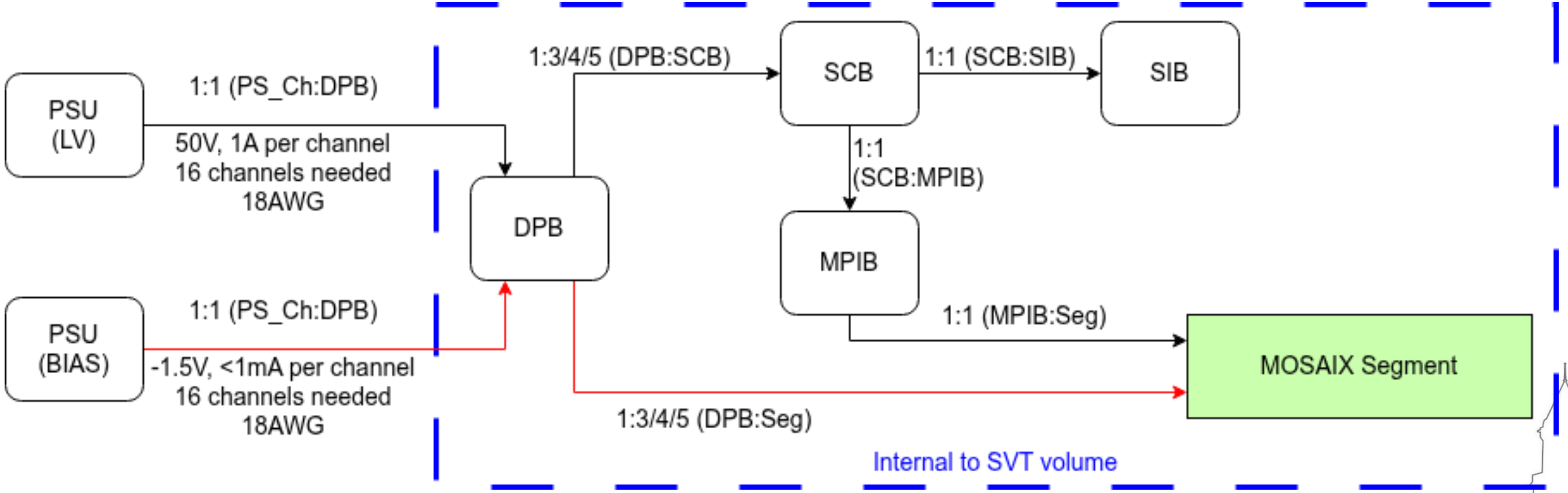
Wire Gauge: 10AWG
Current/Wire: < 2 A
Part#:
Length:
Qty: 2,216

1,108 ch (source+ret)

Wire Gauge: 18AWG
Current/Wire: < 2 A
Part#:
Length:
Qty: 2,216

Power Loss: ~10% *TBD* *TBD*

Inner Barrel (IB)

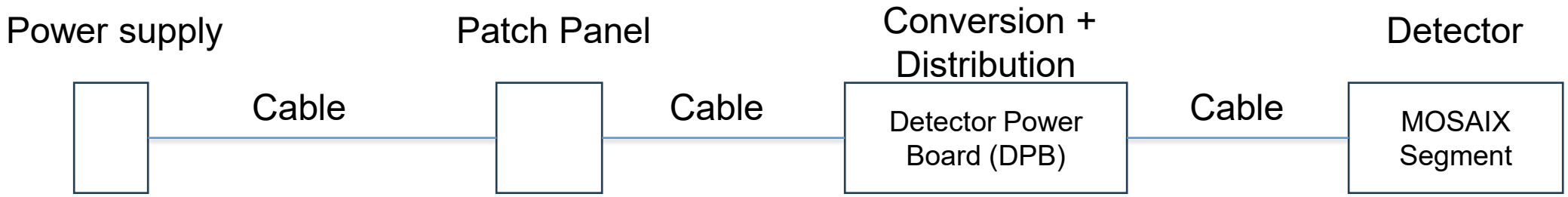


WIP
Numbers subject to change

Power Distribution Tree

Sub-Detector: SVT – IB

Type: BIAS



#Ch: 16
Ch V/I: -1.5V/<1mA
Model: MPV 8060I
(Wiener MPOD, 8ch/mod)
Qty: 2

On-detector: Y
Qty:

On-detector: Y
Qty: 16

LDO: linPOL12 (-1.5V to -1.2V)
Qty: 1/DPB

Wire Gauge: 10AWG
Current/Wire: < 1 mA
Part#:
Length:
Qty: 32

16 ch (source+ret)

Wire Gauge: 18AWG
Current/Wire: < 1 mA
Part#:
Length:
Qty: 32

Wire Gauge: 30AWG
Current/Wire: < 1 mA
Part#:
Length:
Qty: 32

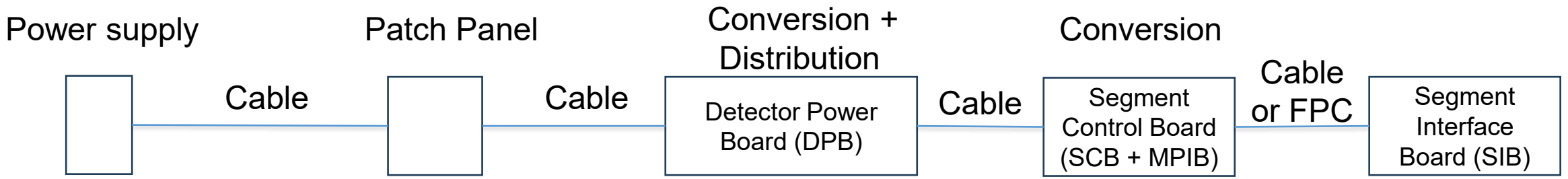
Power Loss: 1% *20%* *1%*

WIP
Numbers subject to change

Power Distribution Tree

Sub-Detector: SVT – IB (for readout)

Type: LV



#Ch: 16
Ch V/I: 50V/1A
Model: MPV 8060I*
*If current needs <1A/ch (Wiener MPOD, 8ch/mod)
Qty: 2

On-detector: Y
Qty:

On-detector: Y
Qty: 16

DC/DC: bPOL48 (48-10V)
Qty: 1/DPB

DC/DC: bPOL12 (10-2.5V)
Qty: 1/DPB

DC/DC: bPOL2v5 (2.5-1.2V)
Qty: 1/DPB

On-detector: Y
Qty: 68

DC/DC: bPOL12 (10-2.5V)
Qty: TBD

DC/DC: bPOL2v5 (2.5-1.2V)
Qty: TBD

Wire Gauge: 10AWG
Current/Wire: ~1 A
Part#:
Length:
Qty: 32

16 ch (source+ret)

Wire Gauge: 18AWG
Current/Wire: ~1 A
Part#:
Length:
Qty: 32

Wire Gauge: 30AWG
Current/Wire: 0.8A
Part#:
Length:
Qty: 136

68 SCBs (source+ret)

Wire Gauge: TBD
Current/Wire: < 55 mA
Part#:
Length:
Qty: 136

68 SIBs (source+ret)

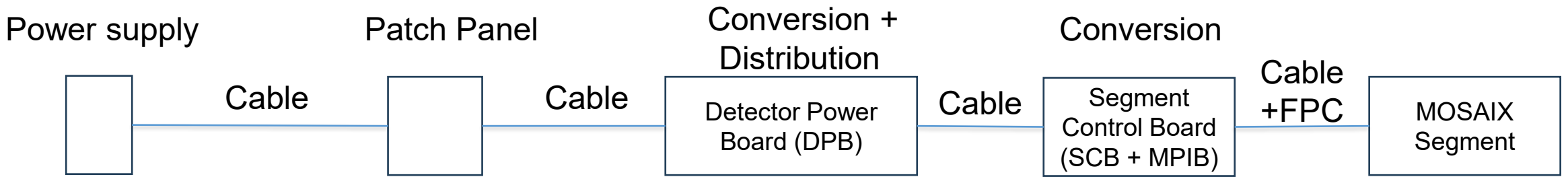
Power Loss:	3%	*11%*	*1%*	*40%*	*TBD*	*TBD*

WIP
Numbers subject to change

Power Distribution Tree

Sub-Detector: SVT – IB (for active Si)

Type: LV



#Ch: 16
Ch V/I: 50V/?A
Model: MPV 8060I*
*If current needs <1A/ch (Wiener MPOD, 8ch/mod)
Qty: 2

On-detector: Y
Qty:

On-detector: Y
Qty: 16

DC/DC: bPOL48 (48-10V)
Qty: 1/DPB

DC/DC: bPOL12 (10-2.5V)
Qty: 1/DPB

DC/DC: bPOL2v5 (2.5-1.2V)
Qty: 1/DPB

On-detector: Y
Qty: 68

DC/DC: bPOL12 (10-2.5V)
Qty: TBD

DC/DC: bPOL2v5 (2.5-1.2V)
Qty: TBD

Wire Gauge: 10AWG
Current/Wire: ~1 A
Part#:
Length:
Qty: 32

16 ch (source+ret)

Wire Gauge: 18AWG
Current/Wire: ~1 A
Part#:
Length:
Qty: 32

Wire Gauge: 30AWG
Current/Wire: 0.8A
Part#:
Length:
Qty: 136

68 SCBs (source+ret)

Wire Gauge: TBD
Current/Wire: 1.2A
Part#:
Length:
Qty: 544

68 Segs, 4 domains (source+ret)

Power Loss:	3%	*11%*	*1%*	*40%*	*TBD*	*TBD*

PSU counts

Manufacturer	Series	Module	# of channels /module	# of modules needed	# of crates needed§	V/I source	Voltage limit (V)	Current limit (A)
Wiener	MPOD	MPV 8060I	8	19	2	V-source	60	1
Wiener	MPOD	MPV 8030H	8	139	14	I-source*	30	2.5

§ Crates hold up to 10 modules (irrespective of crate type).
* I-source requires special modification from the manufacturer, needs to be discussed prior to order (e.g. are number of units enough to warrant the modification?).

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ePIC

Thank you very much!

Any questions?