

# Master Panel Board

dRICH meeting - Novembre 06<sup>th</sup> 2024

Since 2021 the Ferrara electronics group has contributed to the development of the ePIC experiment with the MasterLogic cards (1 and 2) and Adapters cards (32 and 64 channels). The task of the MasterLogic cards was to regulate the voltages and read the detector temperature.

**Now moving towards the final version of PDU it is necessary to create a new version of the control card compatible with the ePIC framework that we will call MASTER PANEL.**

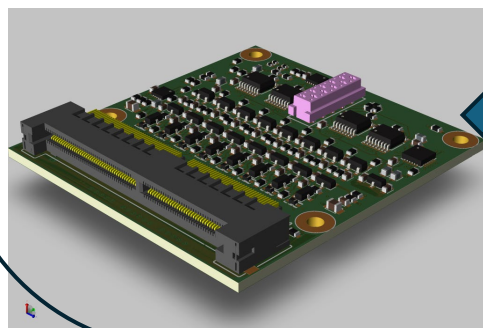
## THE BACKGROUND

MasterLogic1  
(2021)

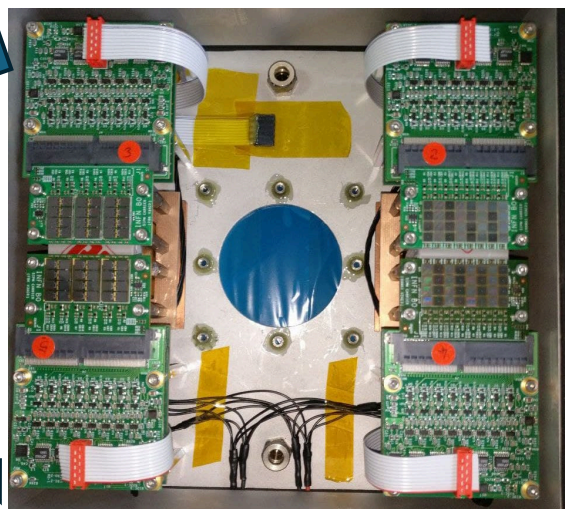


+

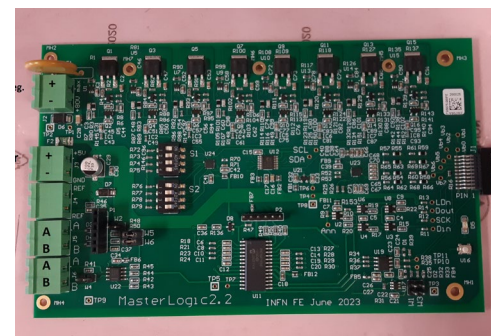
Adapter Carrier to  
ALCOR 32 channels  
(2021)



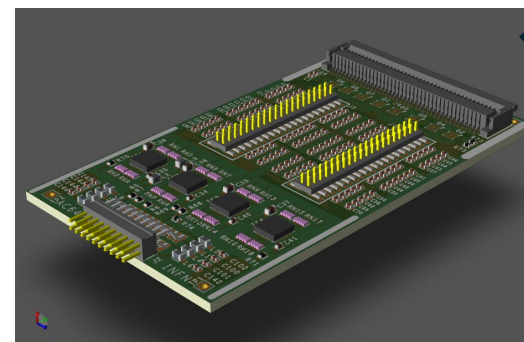
Test beam setup  
(2021)



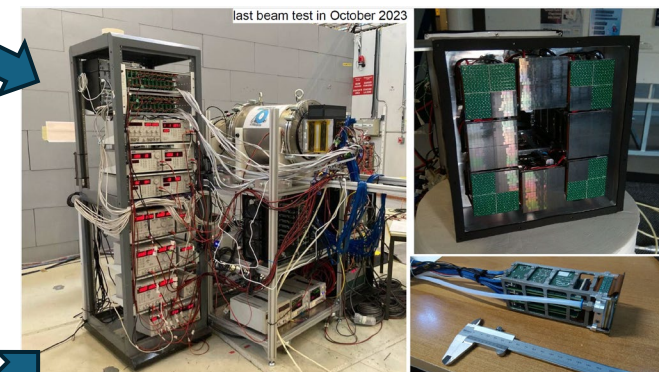
MasterLogic2  
(2023)



Adapter Carrier to  
ALCOR 64 channels  
(2023)

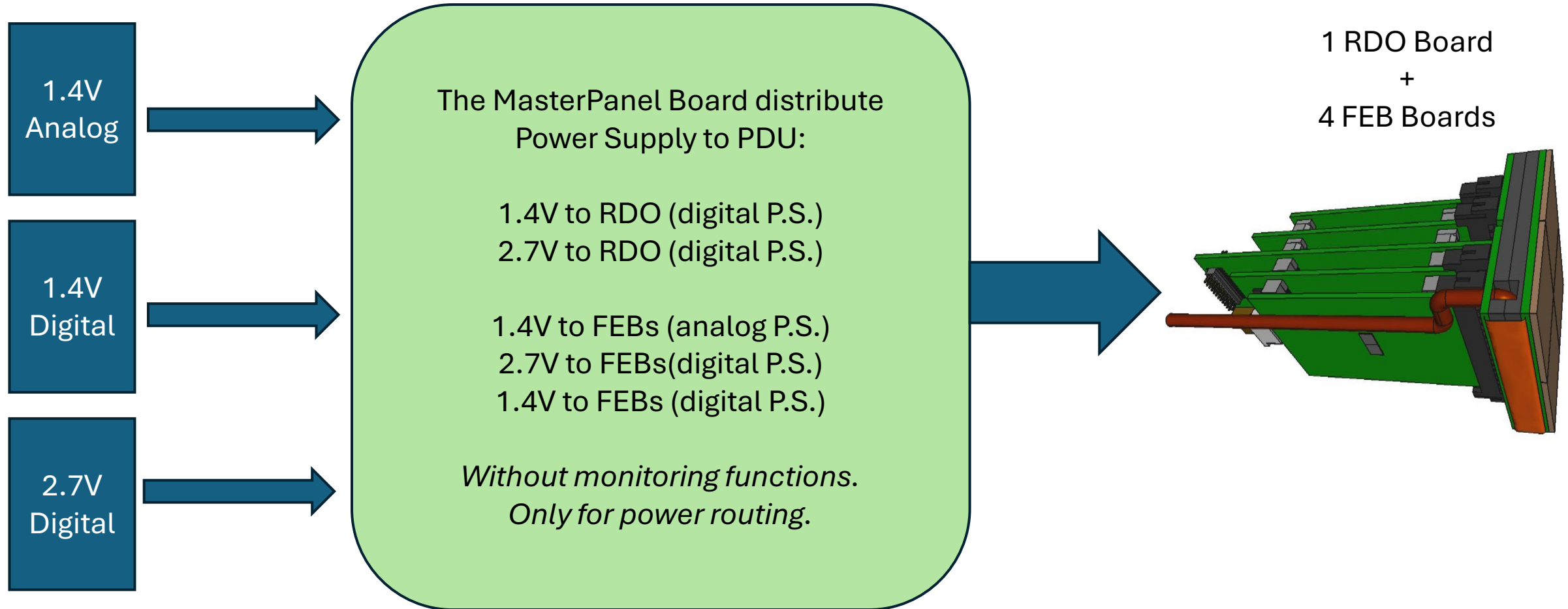


Test beam setup  
(2023)



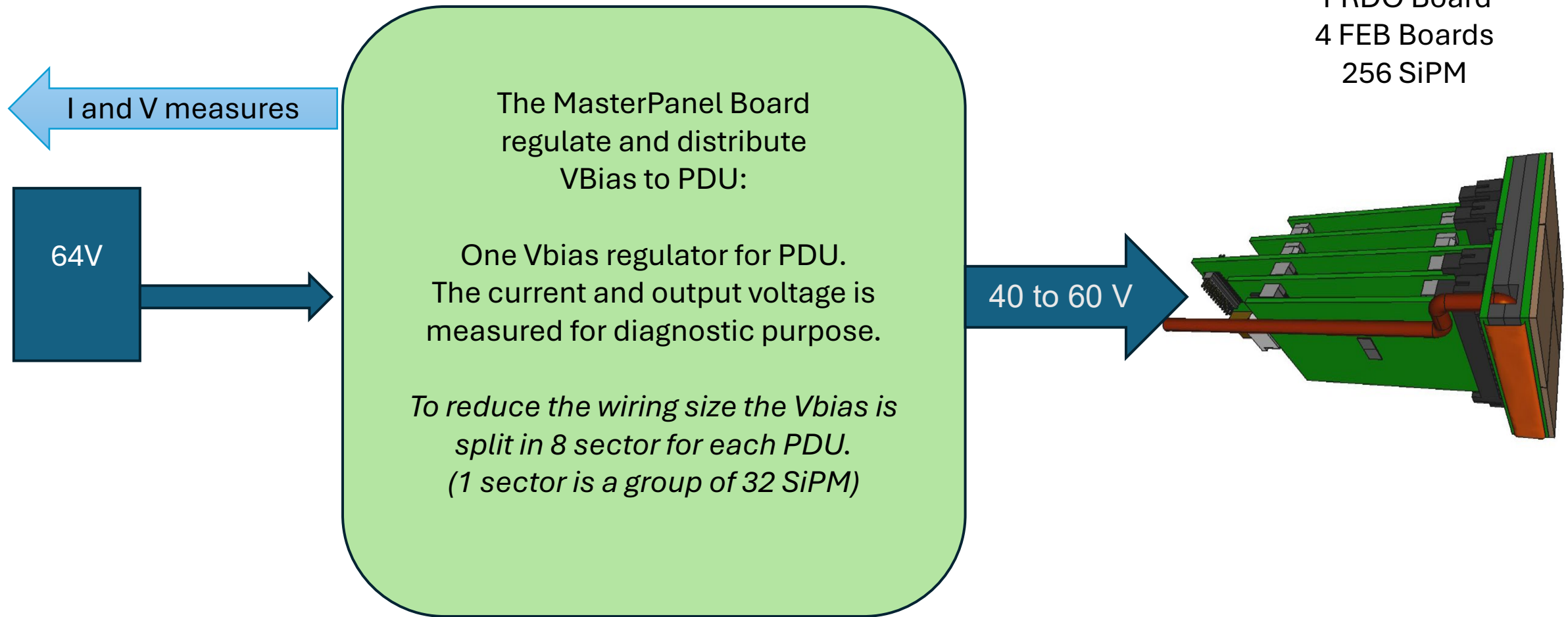
## Master Panel Block Diagram

### 1: Power supply distribution



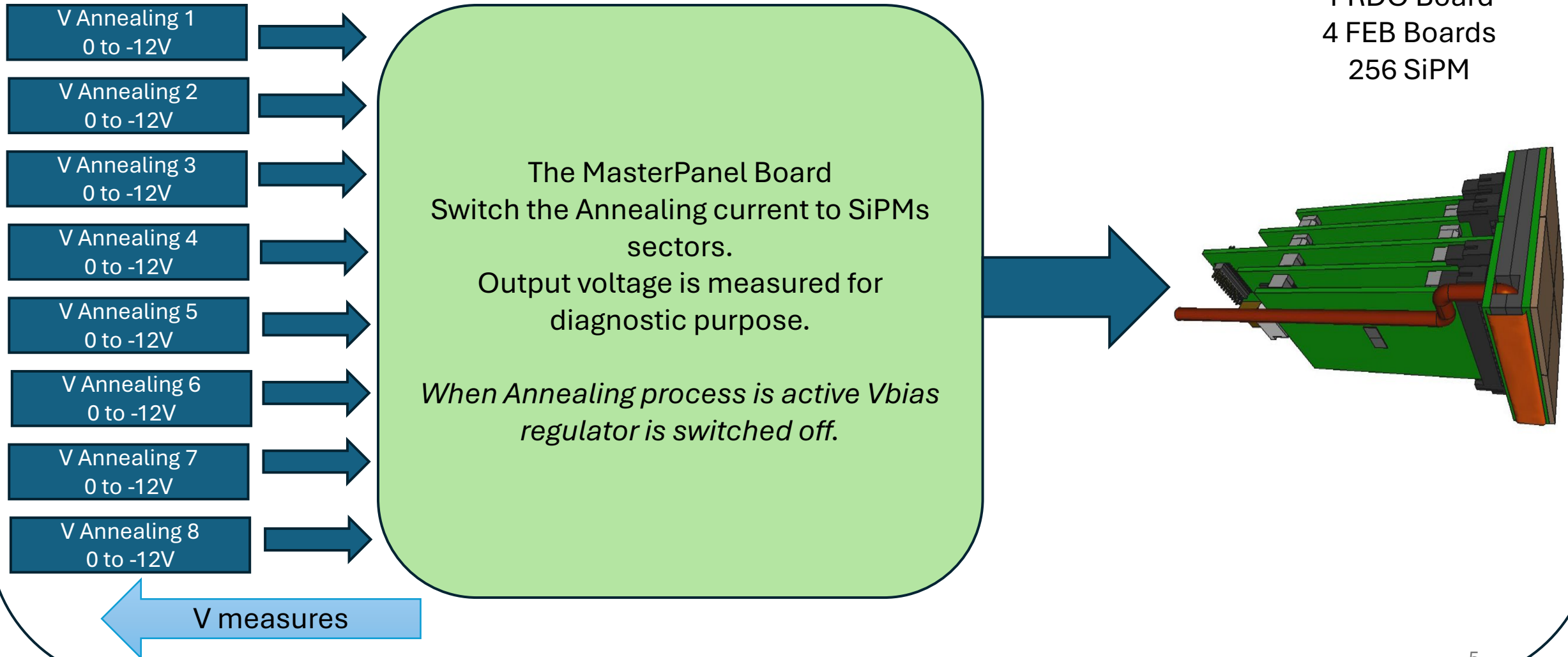
## Master Panel Block Diagram

### 2: SiPM Voltage Bias supply distribution



## Master Panel Block Diagram

### 3: SiPM Voltage Annealing supply distribution



## Master Panel Block Diagram

### 4: Monitoring functions

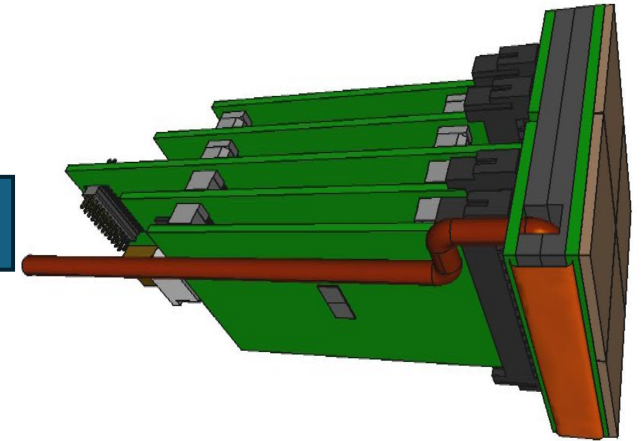
PDU  
(Photo Detector Unit)

1 RDO Board  
4 FEB Boards  
256 SiPM

The Master Panel Board  
Reads 4 NTC (temperature sensor) for  
PDU.

*Temperature measure is necessary as  
feedback for cooling system and  
annealing process.*

Temperature measures





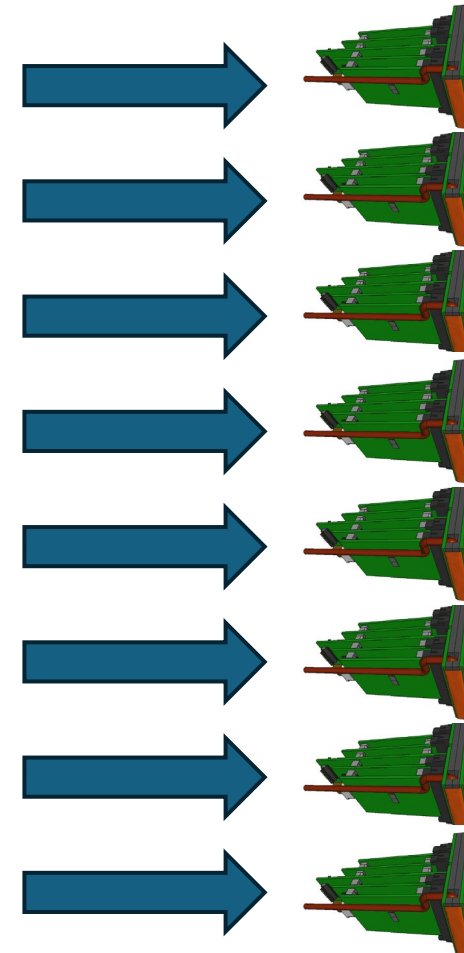
## Master Panel Block Diagram

EACH MASTER PANEL IS CONNECT TO 8 PDU

PDU  
(Photo Detector Unit)

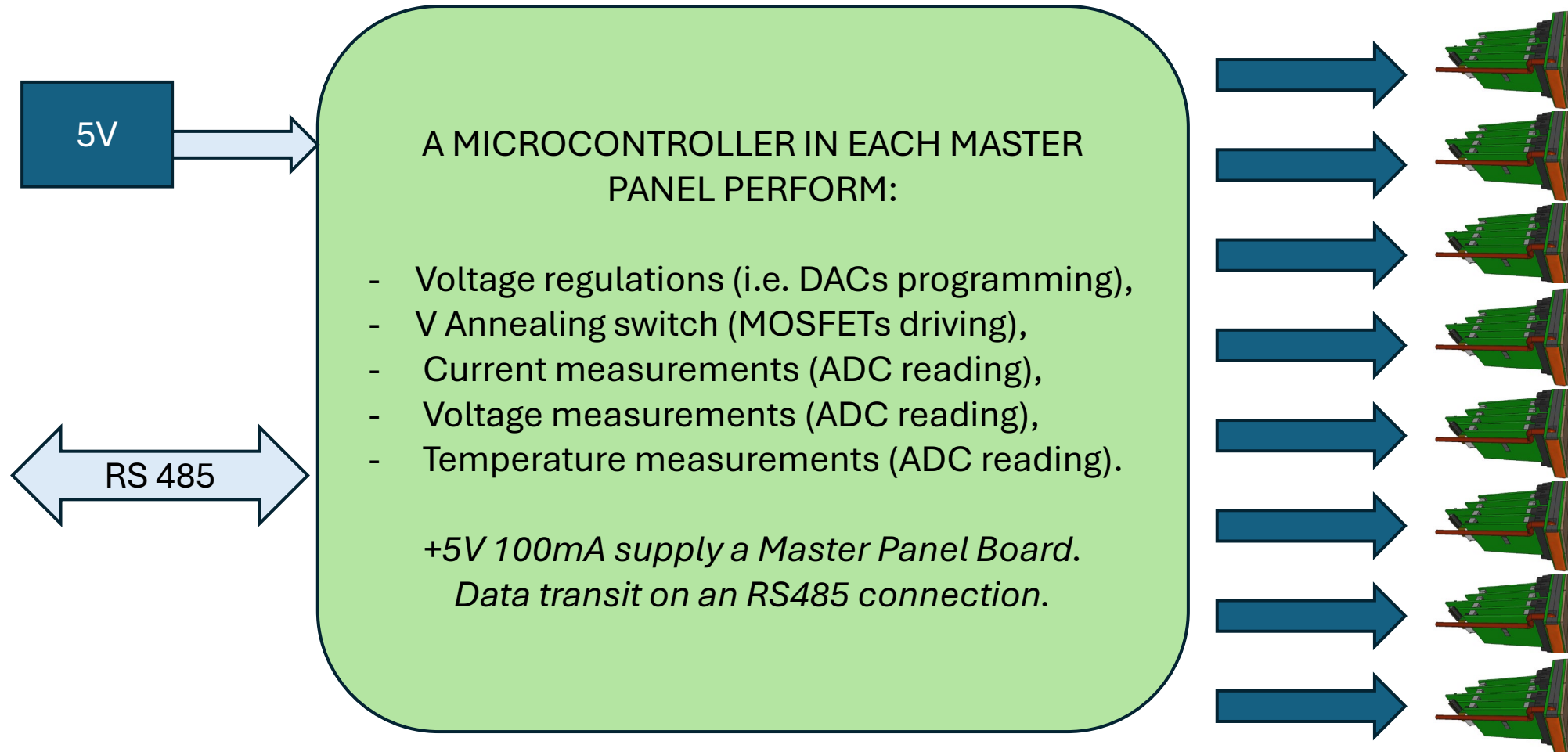
A Master Panel Board perform:

- 8 Vbias voltage regulations,
- 8 Vbias Current Measurements,
- 8PDU x 8 Sector V Annealing switch,
- 8PDU x 8 Vbias/Annealing Measurements,
- 8PDU x 4 temperature sensor measurements.



## Master Panel Block Diagram

## PDU (Photo Detector Unit)





# CONCLUSION

- **THE NEXT STEPS ARE:**

- Tests single blocks (i.e. voltage regulator, MOSFET switch, ADC, ecc) to validate the project,
- Define the communications protocol,
- Chose the power supply connectors and cables,
- Design, in collaboration with mechanical engineers, the PCB.

