

Hardware for Module-1

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Crate with electronics without cables



PS control

VGA control

PS bias

4 VGA

3 ADC

Crate with electronics near the TPC

DOWR GPS
Grandmaster

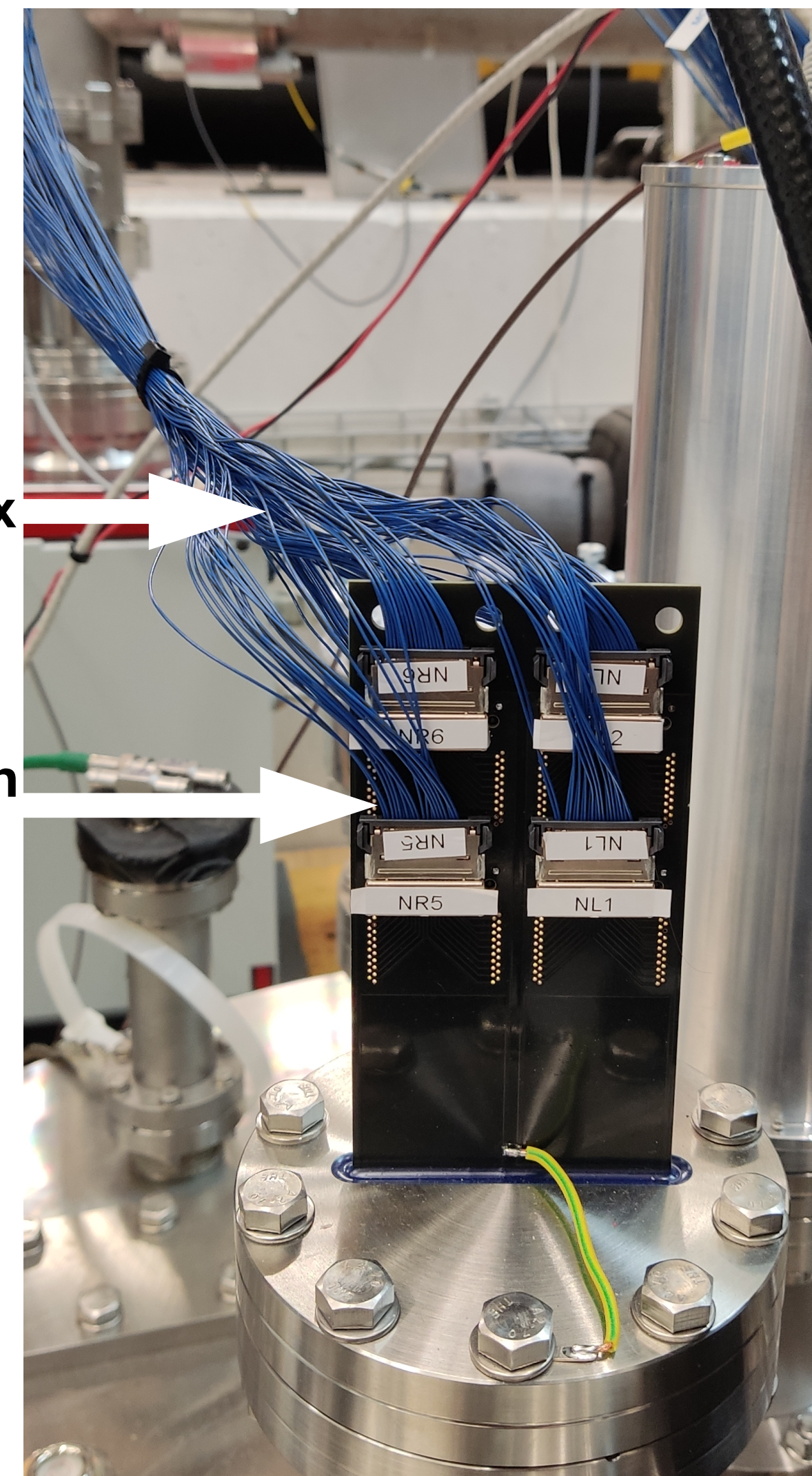
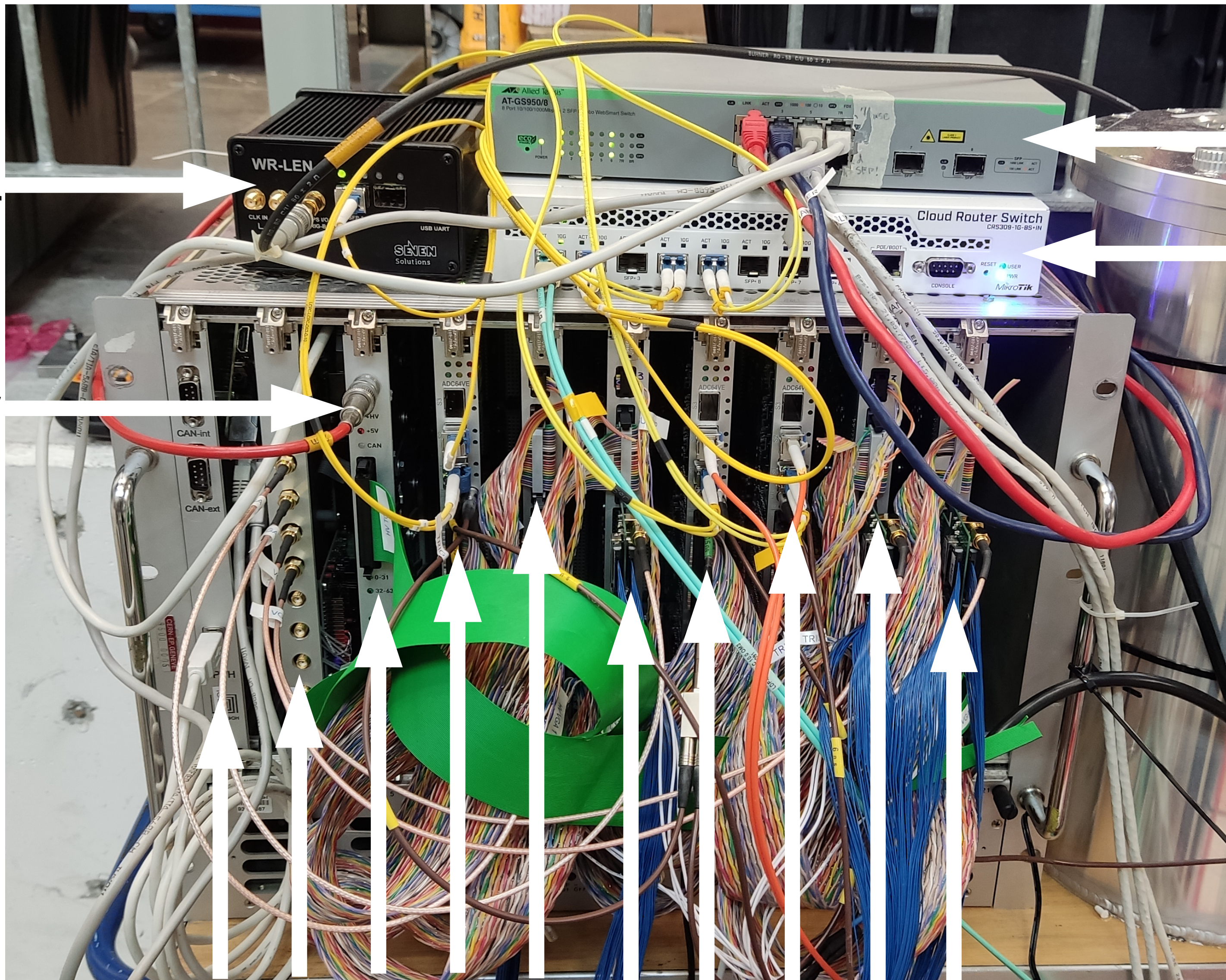
external HV

Network
Switches

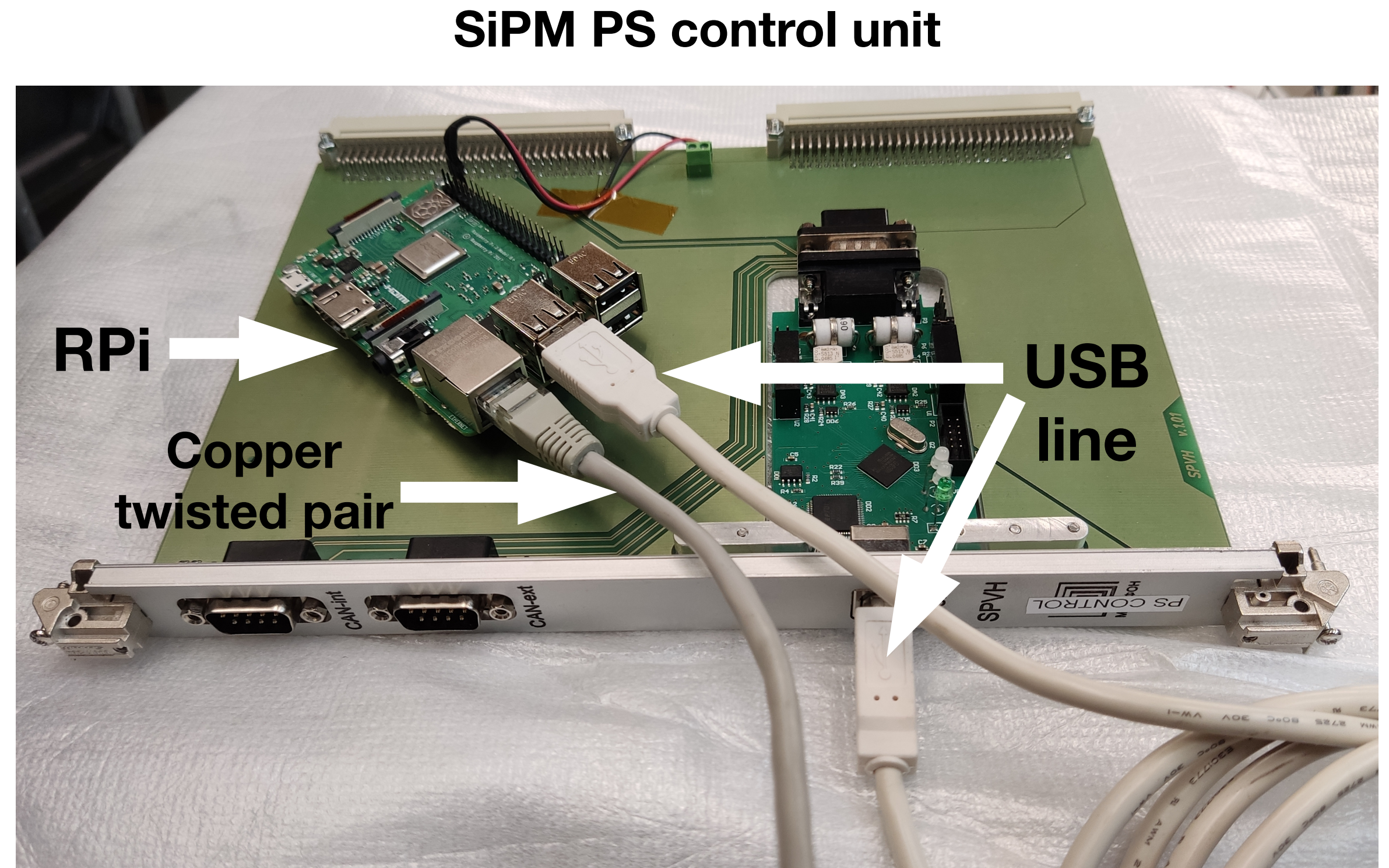
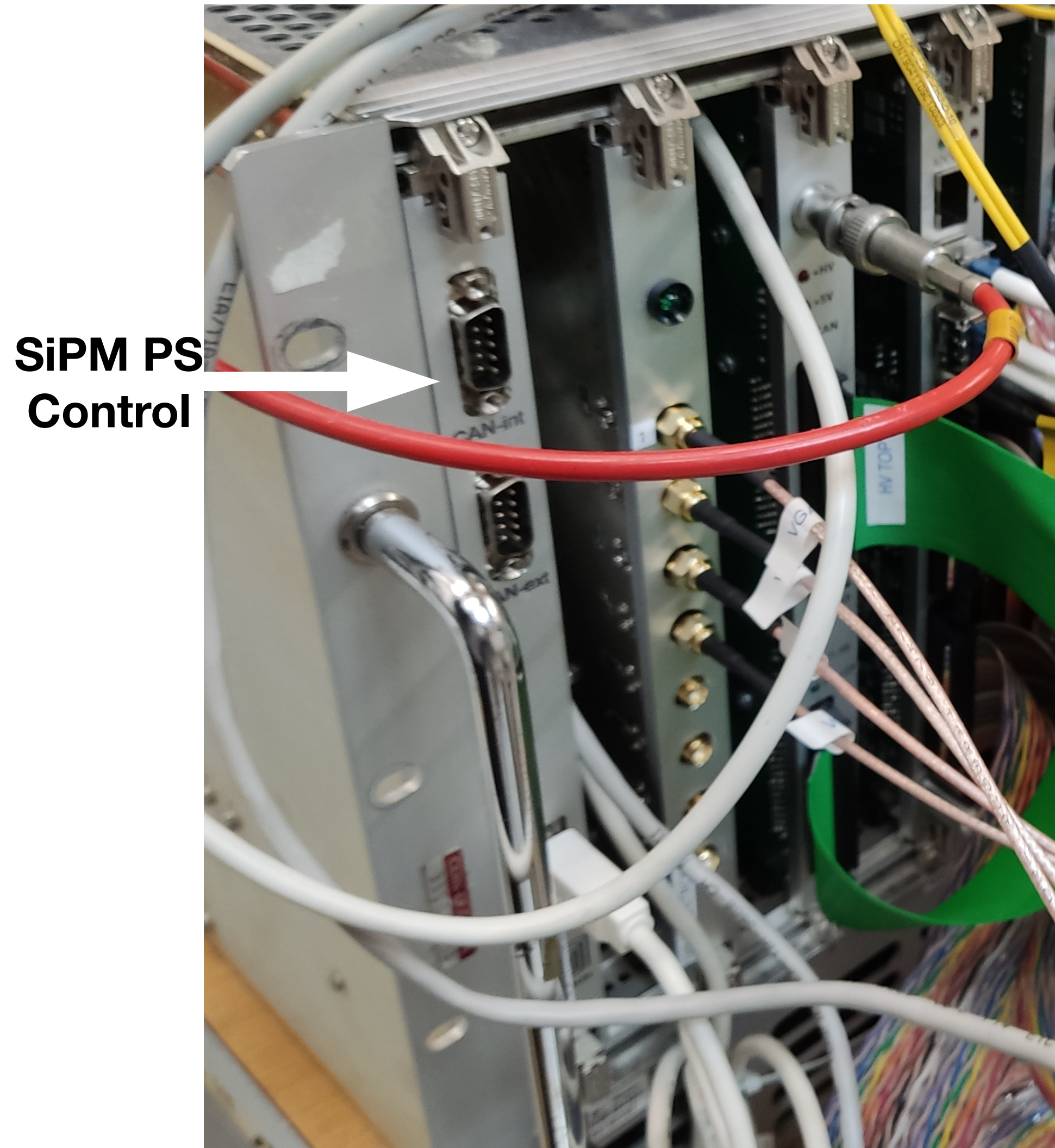
Microcoax
cables

Feedthrough
PCB

SiPM PS Ctrl
VGA Ctrl
SiPM PS
ADC1
VGA1
VGA2
ADC3 Sum
ADC2
VGA3
VGA4

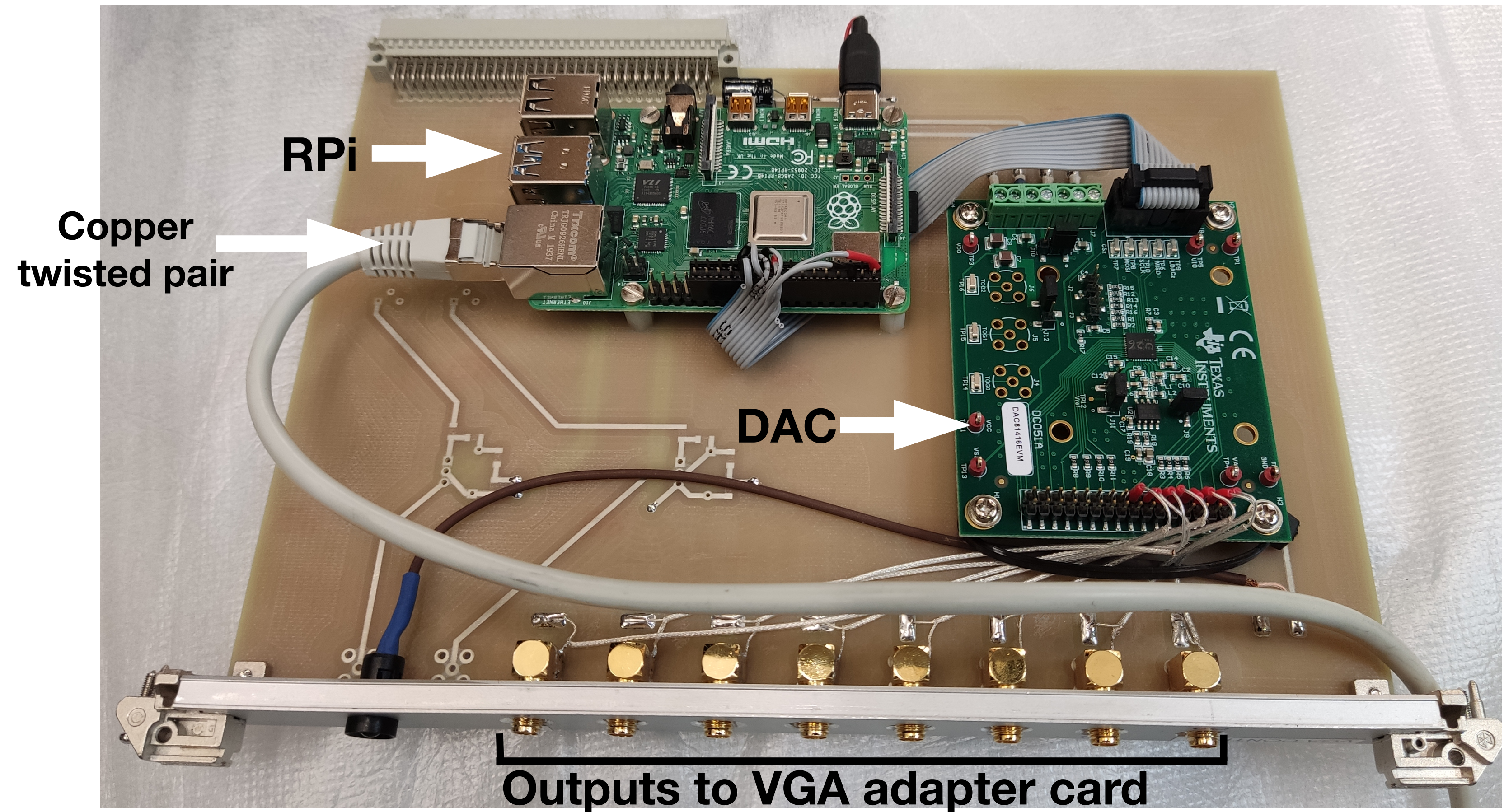
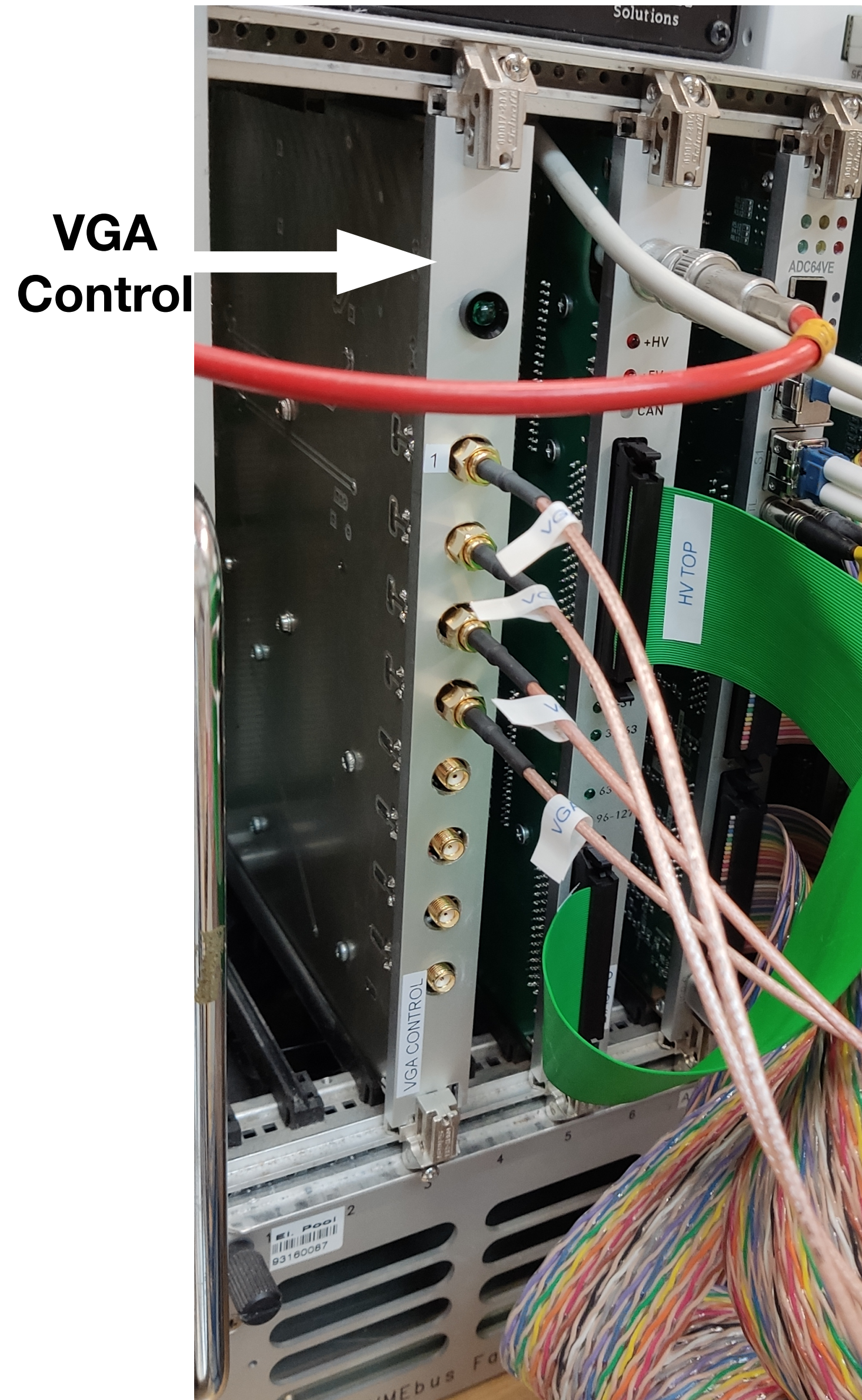


SiPM PS control unit



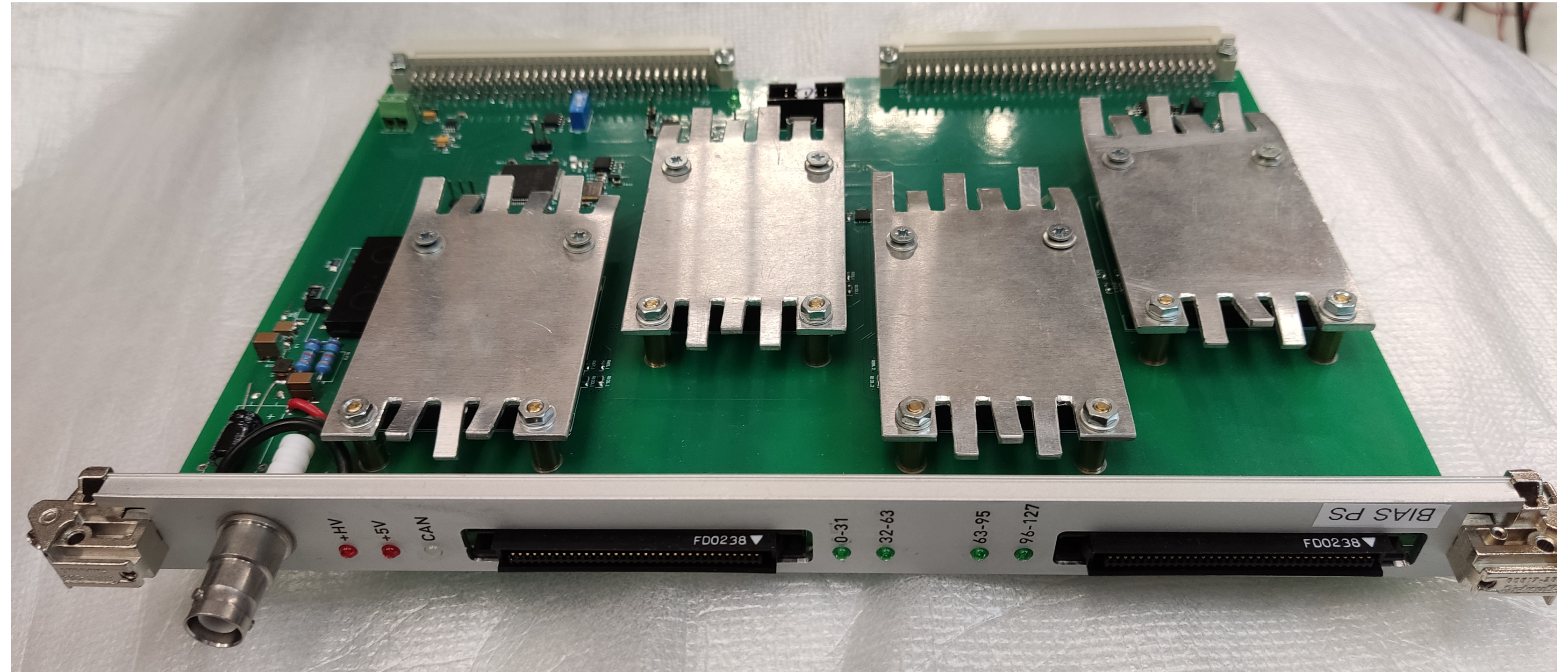
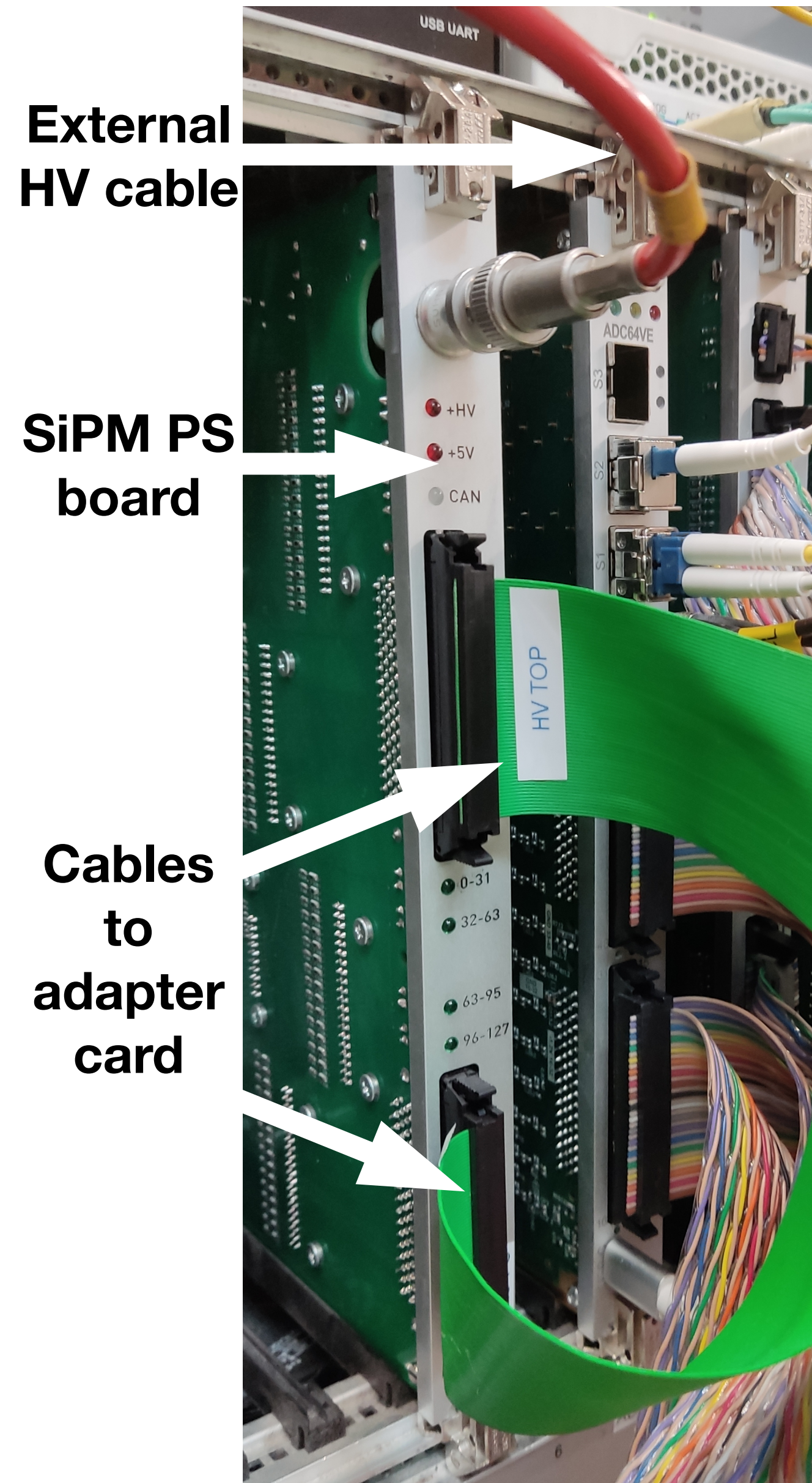
- RPi with built-in software for remote control. Connected to network by copper
- RPi connects to control unit by means of USB cable

Variable Gain Amplifier (VGA) control



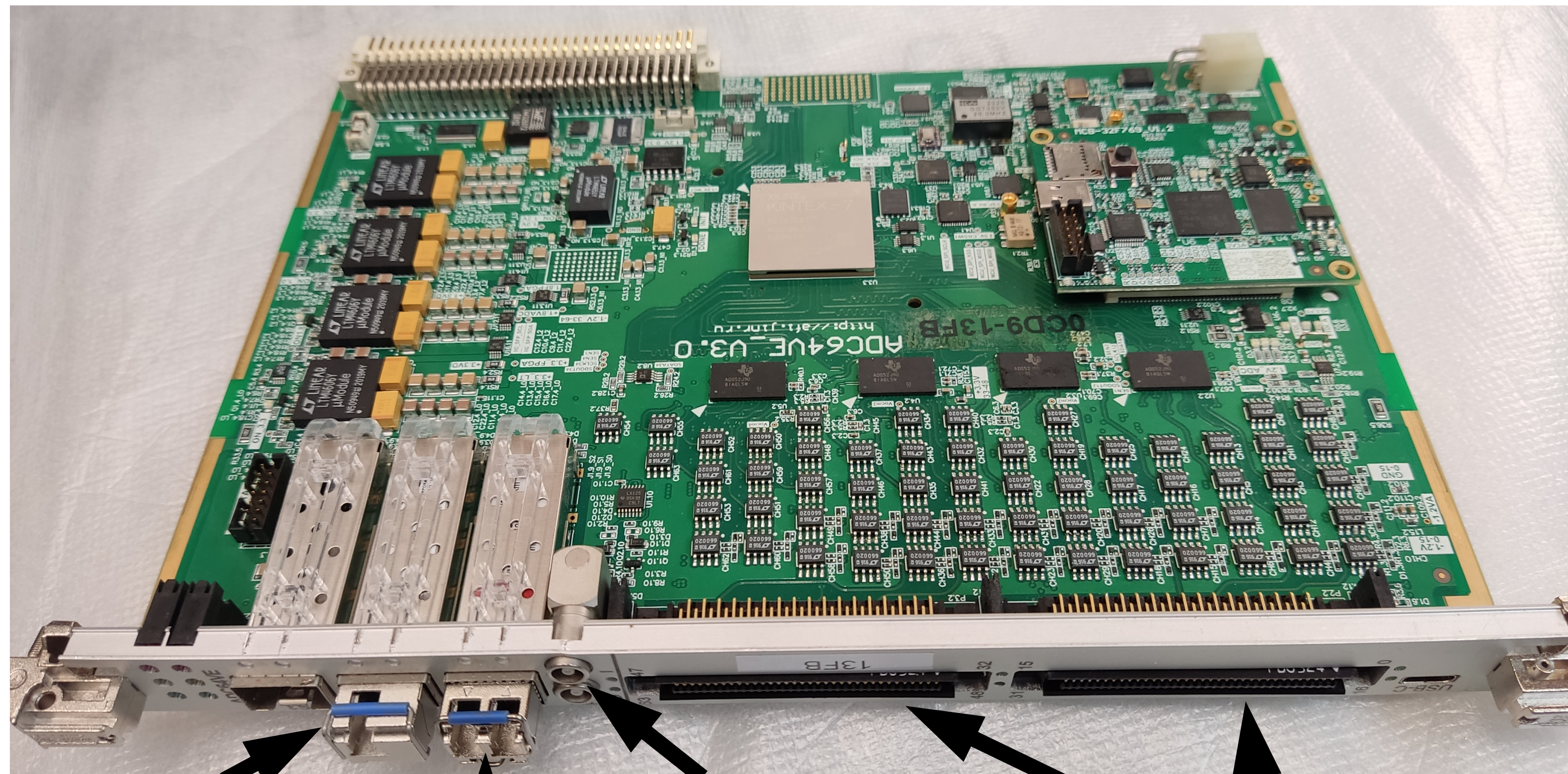
- RPi with built-in software for remote control. Connected to the network by copper
- VGA control is performed by the voltage level from -0.6 to 0.6 V from DAC
- DAC controlled by RPi via SPI

SiPM PS



- DAC (AD5535) based power supply up to 200V/ 550 μ A/ch
- Controlled by the SiPM PS control through VME backplane using CAN-open
- Requires external HV

ADC



SFP
to WR

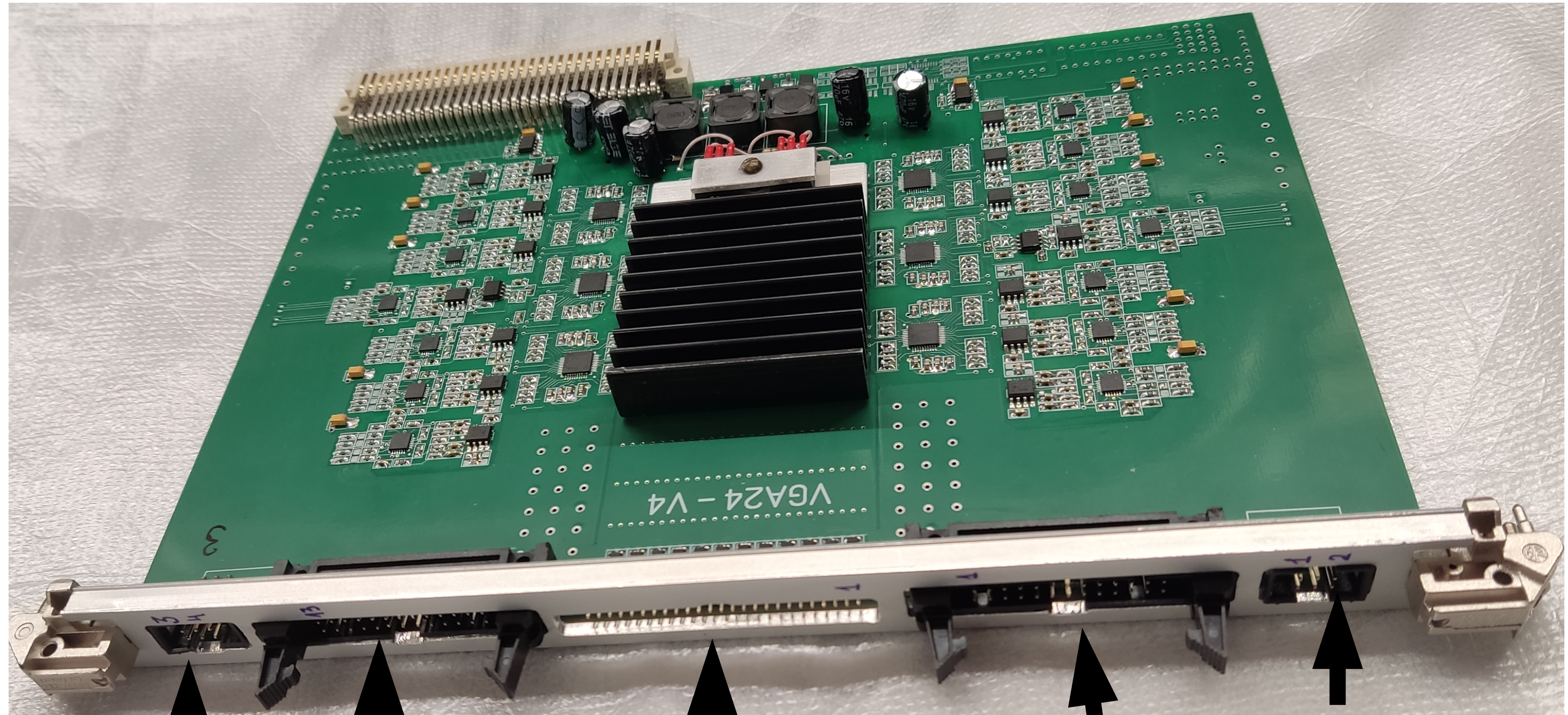
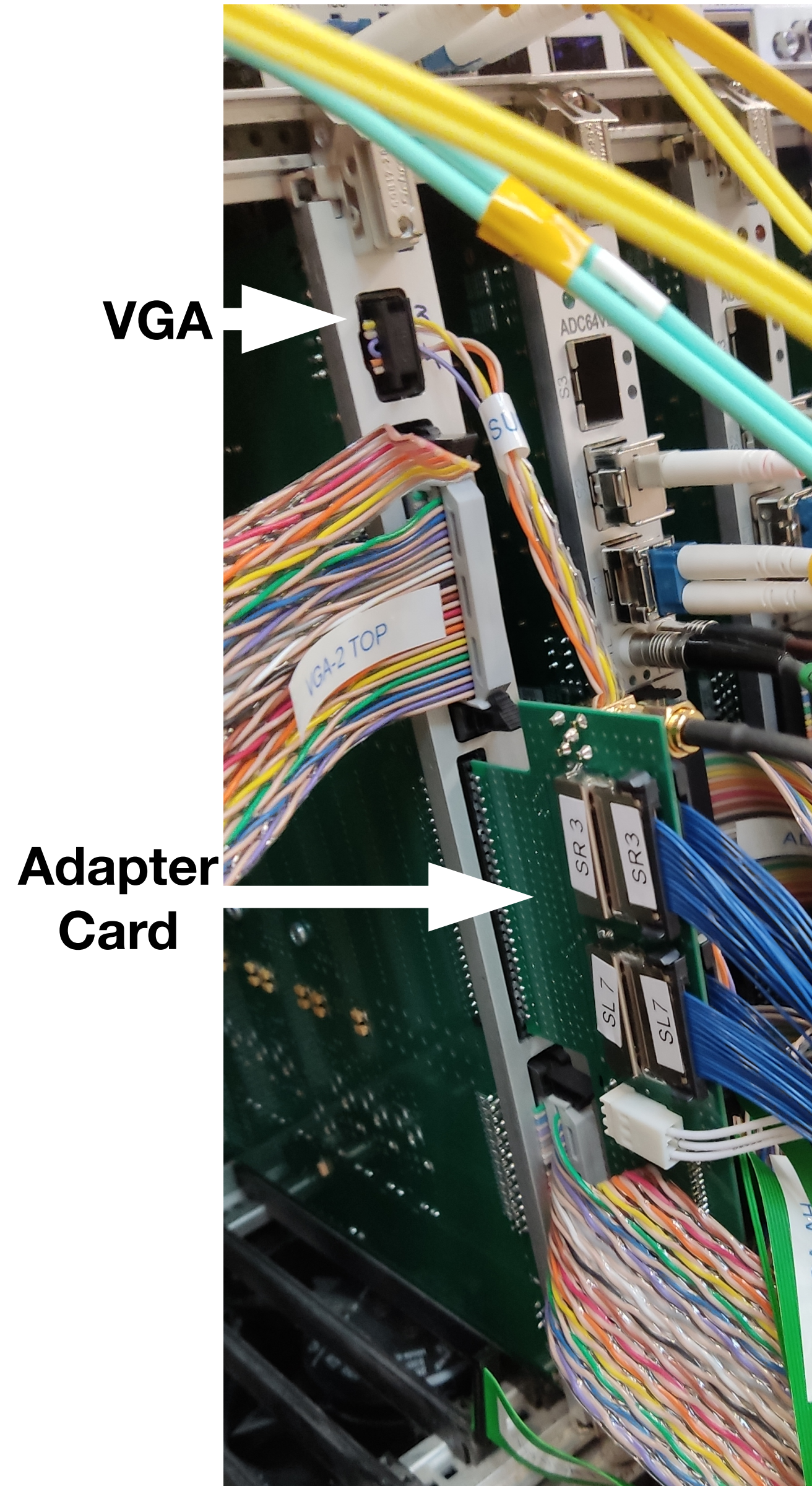
SFP to Network

TRIG Input +
BUSY Output

Input from VGA

- 62.5 MHz ADC, 14-bit, White Rabbit-synchronization

VGA



SUM output 2ch

Output to ADC group of 12 ch

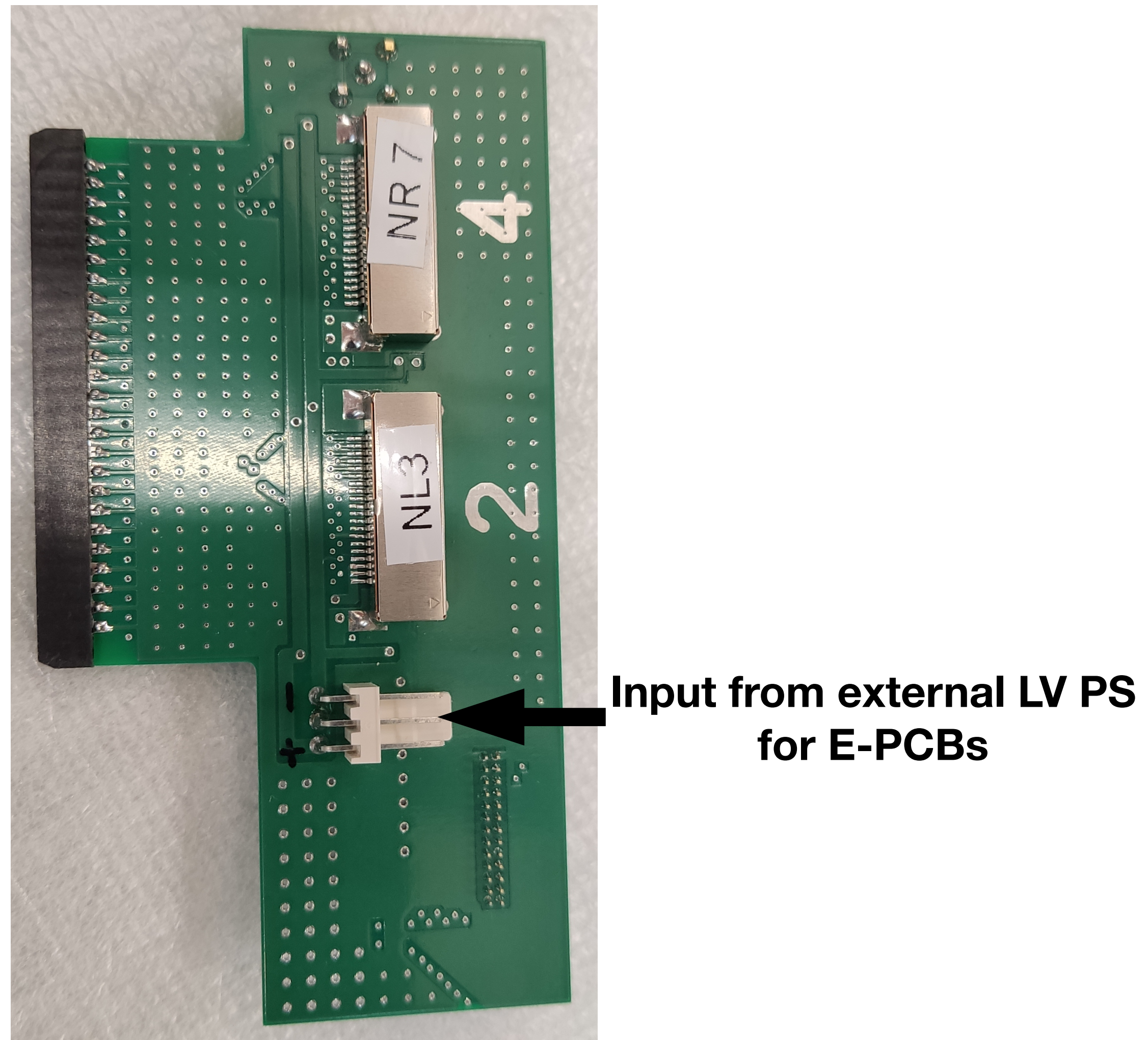
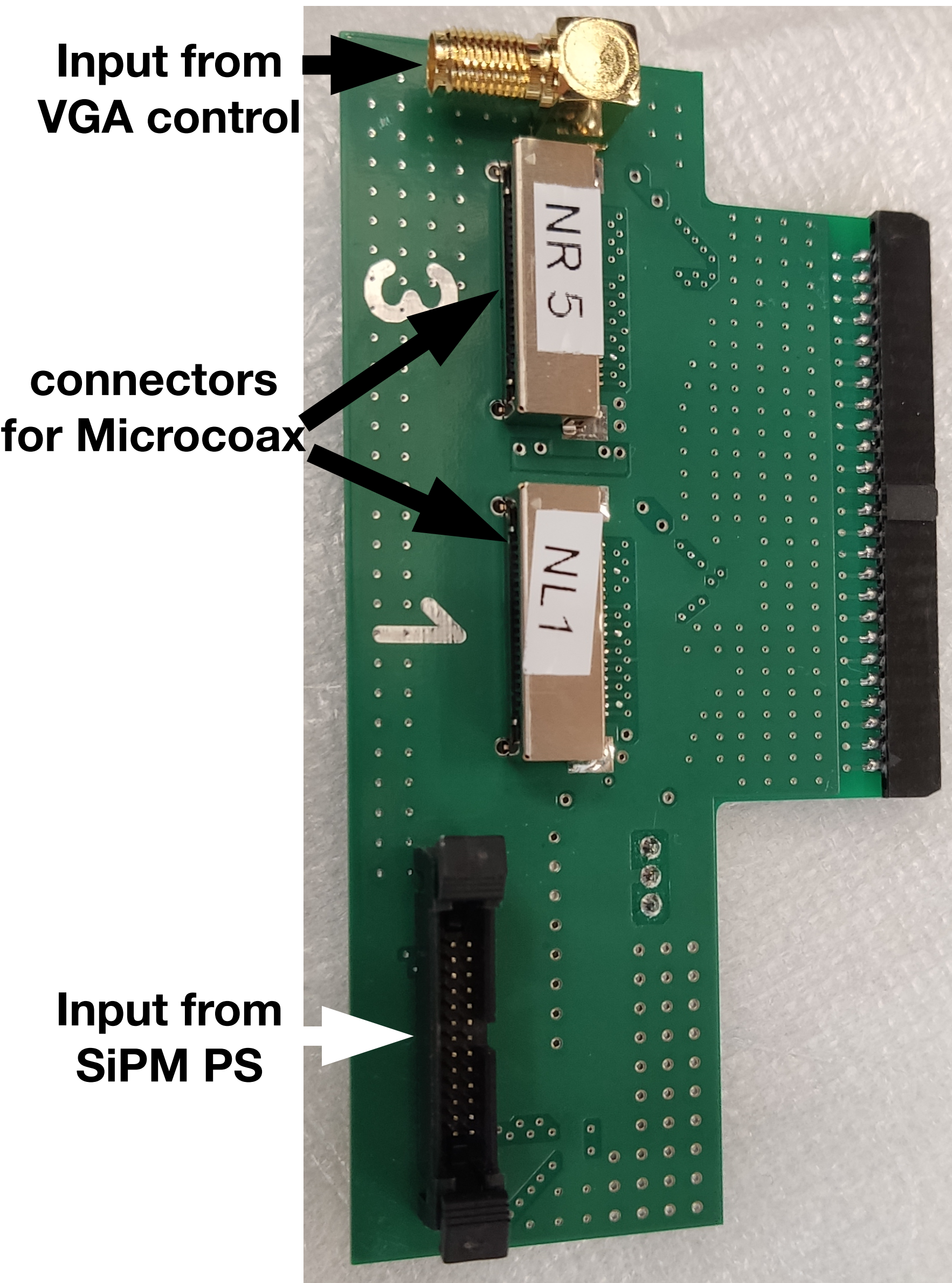
connector for Adapter Card

Output to ADC group of 12 ch

SUM output 2ch

- 24 ch VGA, adjustable gain 0-24 dB + 4 ch of Sum from group of 6 ch

Adapter Card



- Connects to VGA, distributes signal and power lines
- For MOD-1 we used external LV PS to power E-PCBs
- For 2x2, the plan is to use additional board which takes LV from the crate and then distribute it between adapter cards by the cables