

Update on the WG5.1 activities

Synchronisation of activities and developments related to VMM3a/SRS

Lucian Scharenberg *on behalf of RD51's WG5.1*
CERN, University of Bonn

RD51 Collaboration Meeting
14 June 2021

Activities since the last RD51 Mini Week

- Users received their hardware and start to test hardware and software
- Discussion on user support, FAQ and how to operate the system
 - In case of issues with anything, checkout the FAQ sheet or our Discord server
<https://gitlab.cern.ch/rd51-slow-control/faq-sheet>
<https://discord.gg/jsT9HgD>
- Discussion on testing and definition of quality classes for VMM hybrids
 - see today's presentation from Finn
- Discussion on high-rate and buffers/FIFO's
 - see my presentation from today
- Introduction of PMX (**P**ower **M**ultiple**X**er for SRS frontends)
 - currently tested in the GDD lab
 - see attached slides
- You can find the meetings here: <https://indico.cern.ch/category/11660/>
- To access the Indico pages and stay updated, please subscribe to <https://e-groups.cern.ch/e-groups/Egroup.do?egroupName=rd51-wg51>

2021 power-concept for on-detector hybrids

PMX Power Multiplexer for SRS frontends

Rev 14062021

<https://drive.google.com/drive/folders/1GEVJBFIpzfiMvr-fYmyE4NxZPLEMfcDo?usp=sharing>

PMX features

- Low-power operation for hybrids
- On-detector power cable fanout for 8 hybrids
- Single long power cable from DVMM to PBX
- Short jumper cables from PBX to hybrids
- RF-filters to minimize EMC pickup noise
- Overvoltage protection
- Solid-state autofuses
- Rotary selector for P1 and P2 supply voltage monitoring*
- 3-digit display of supply Voltage and GND return current
- PCB version for on-detector use
- Boxed version for near detector/ tabletop use
- Grounding cable with impedance monitoring via current display

*wait 2 sec for each new rotary switch position

PMX powering of a 2k detector

Power cable

- DVMM Banana connectors
- PMX 5-pos Phoenix connector
- 3 wire cable + default GND cable

Real estate PMX

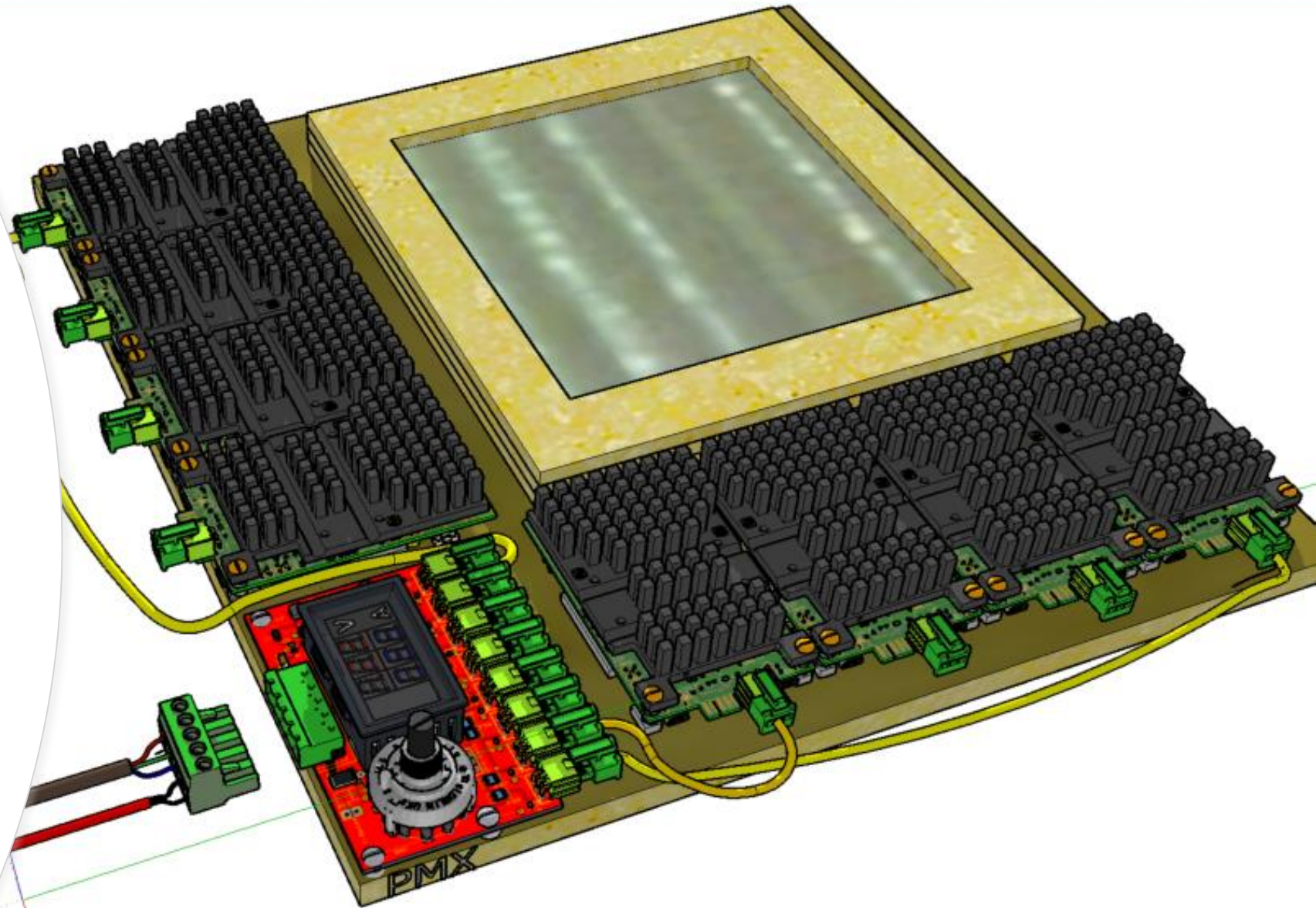
- PCB version 92 x 54 mm
- 10mm spacer feet footprint 85x31 (4 holes 3.5 dia)
- Boxed version 63 x 113 x 31 ALU box

Jumper cables to hybrids

- 80 and 40 cm short jumper cables
- 3 wires 0.5mm P1, GND, P2

Volt/Ampere display plugin

- 10 position rotary selector P2,P1 voltages
- Default GND return cable- current monitoring (10 A)

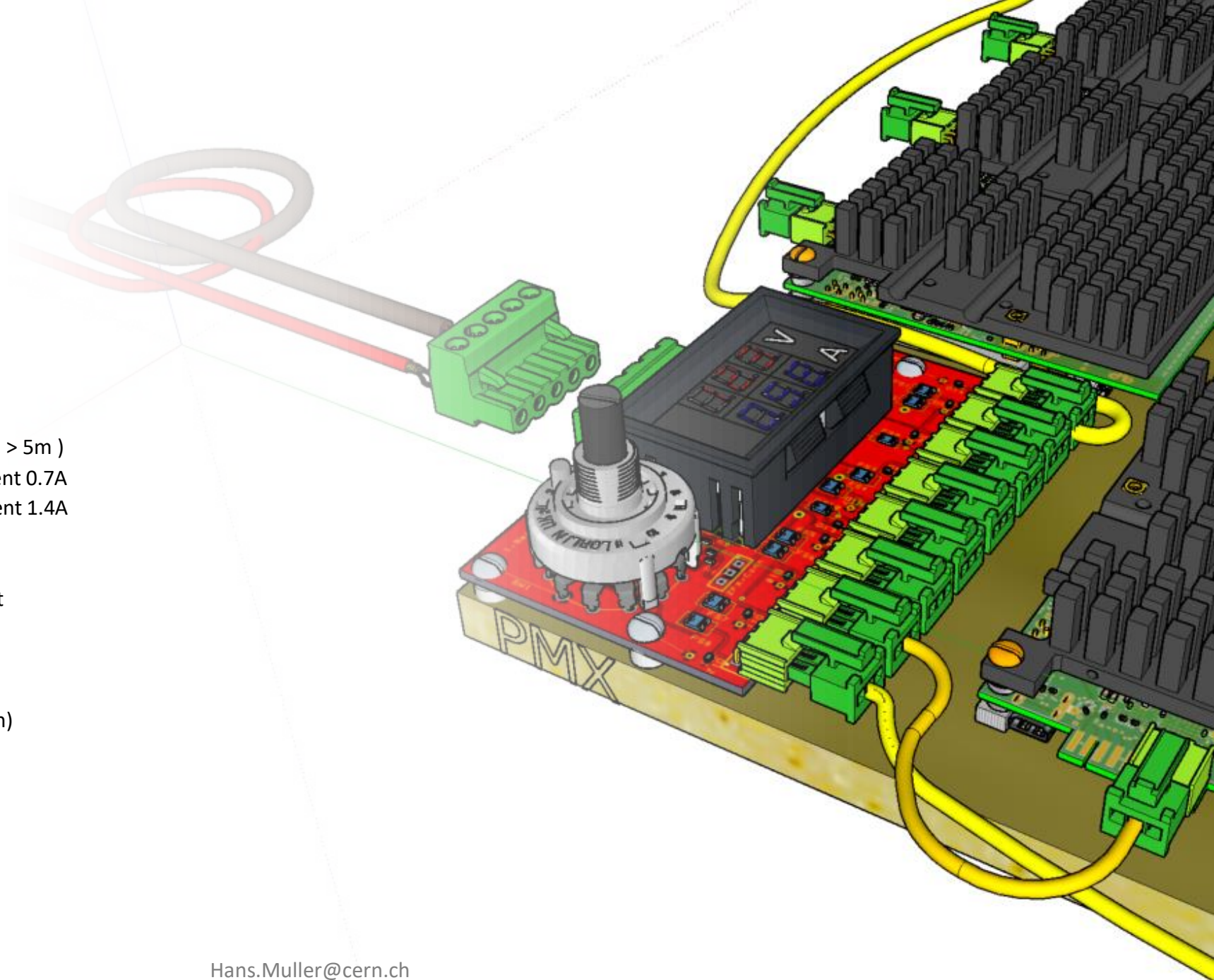


Power cable

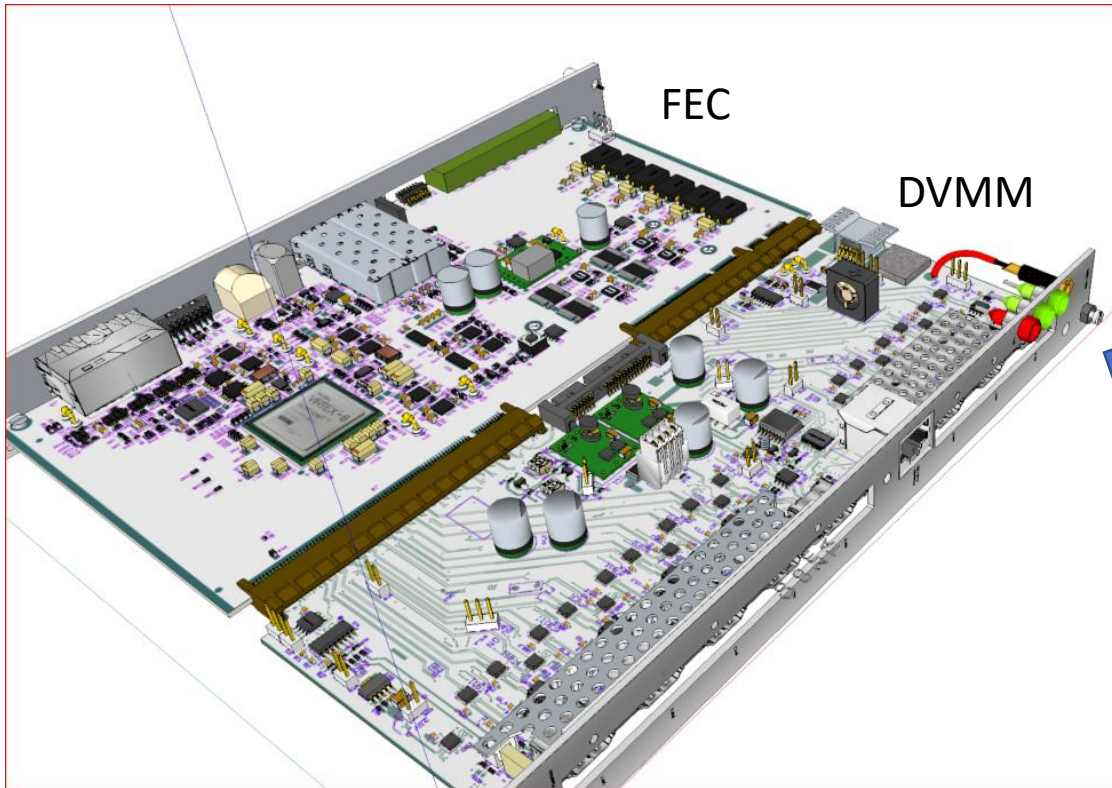
- Power cable 3 x 1mm² (< 5m length) or 3 x 1.5mm² (> 5m)
4 x hybrids P2a current 1 x 6.5A , P1 current 0.7A
8 x hybrids P2b current 2 x 6.5A , P1 current 1.4A
- GND return cable 4 mm² (5mΩ/m)
8 x hybrids = 13 A max GND return current
- Banana plugs DVMM side
GND: 4mm Banana (14A)
P2a and P2b: 2 x 2mm Banana (6.5 A each)
P1: 2mm Banana (1.4 A)

Power connector PMX side:

Phoenix 5-way power connector 12A/pin



Power cable to DVMM



Power /Gnd cable up 10m from DVMM to PMX
(additional GND return cable strongly recommended)

