

LMU München - Excellence Cluster Universe

PS & Services

Stefan Rummel

8th Belle II VXD Workshop

09.09.15-11.09.15

Trieste





- Operation experience of Preproduction PS
- Main production

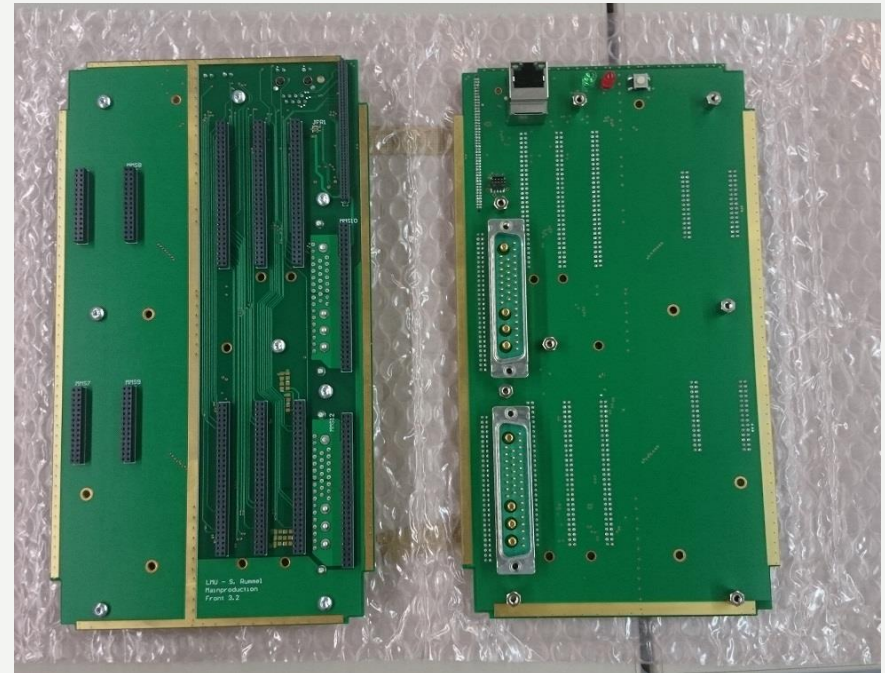
Services

- Status of Kapton development
- Status of Cables

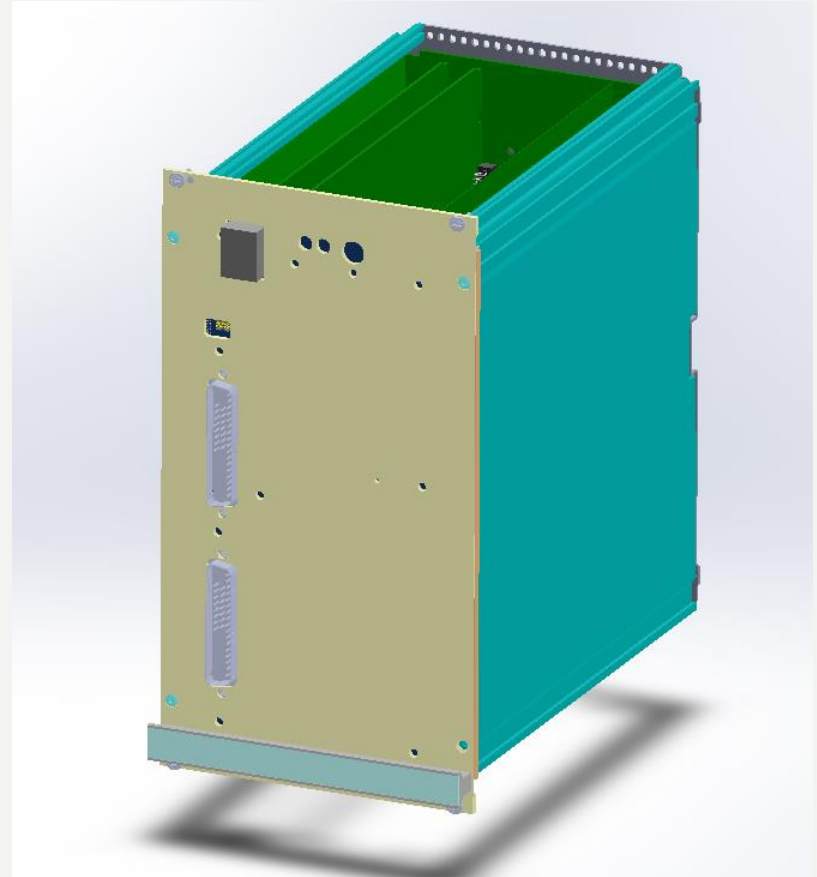


- 8 PS setups installed at our collaboration institutes
 - LMU PS's are the working horse for testing
 - Noise while irradiation at KIT differs for long and short cables
 - Noise measurements at HLL with long and short cables did not show a major difference in noise level
 - Most probably an external effect
 - Use grounding scheme according to recommendation from Fernando
- Operation of Preproduction PS's is quite smoothly giving us the confidence to continue with the main production

- Full batch of Front and Back boards is available
- Boards are fully assembled including spacers



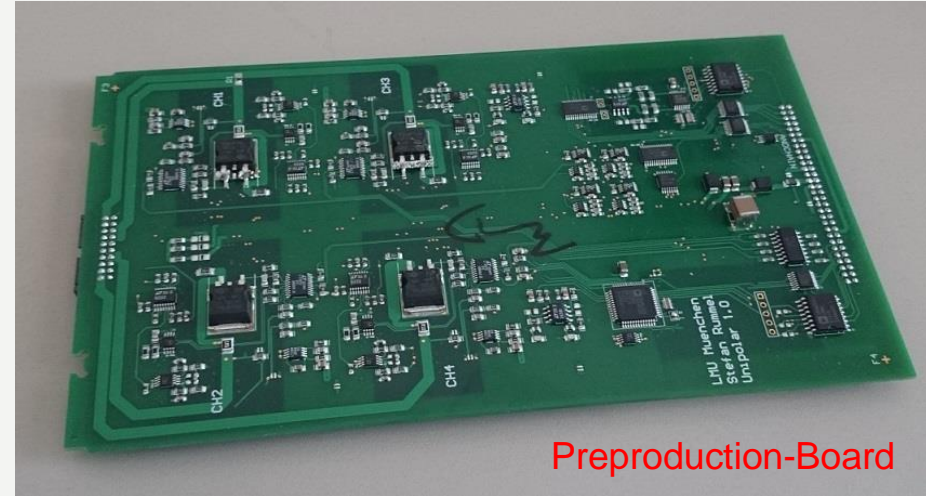
- Mechanics of Cassette has been optimized
- First batch of 20 has been ordered



Unipolar – Cards:

- PCB design has been finalized
- Relaxed via diameters
- Ratings of all components has been crosschecked
- Passives: High quality, thin film resistors, automotive qualified capacitors
- Base material High Tg FR 4
- Last clarification with EMS are ongoing

→ Order will be placed in the next weeks

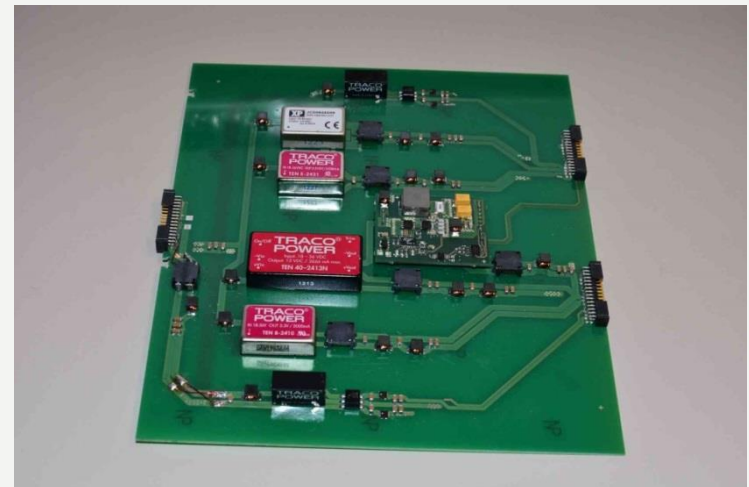
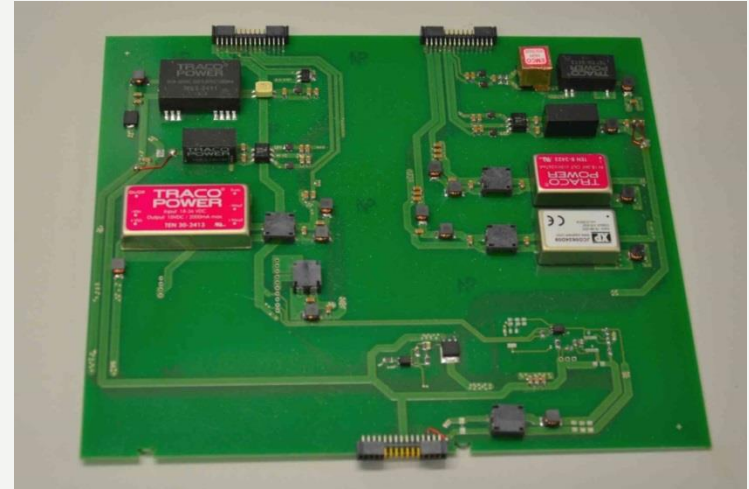


Preproduction-Board

Main production – DC/DC converter cards



- PCB design has been finalized
- Additional feature:
 - Voltage supervisor as additional safety measure
 - Failure at DC/DC converter level can be mitigated before it has impact on output voltages
- Design is in good shape, preparation of production ongoing



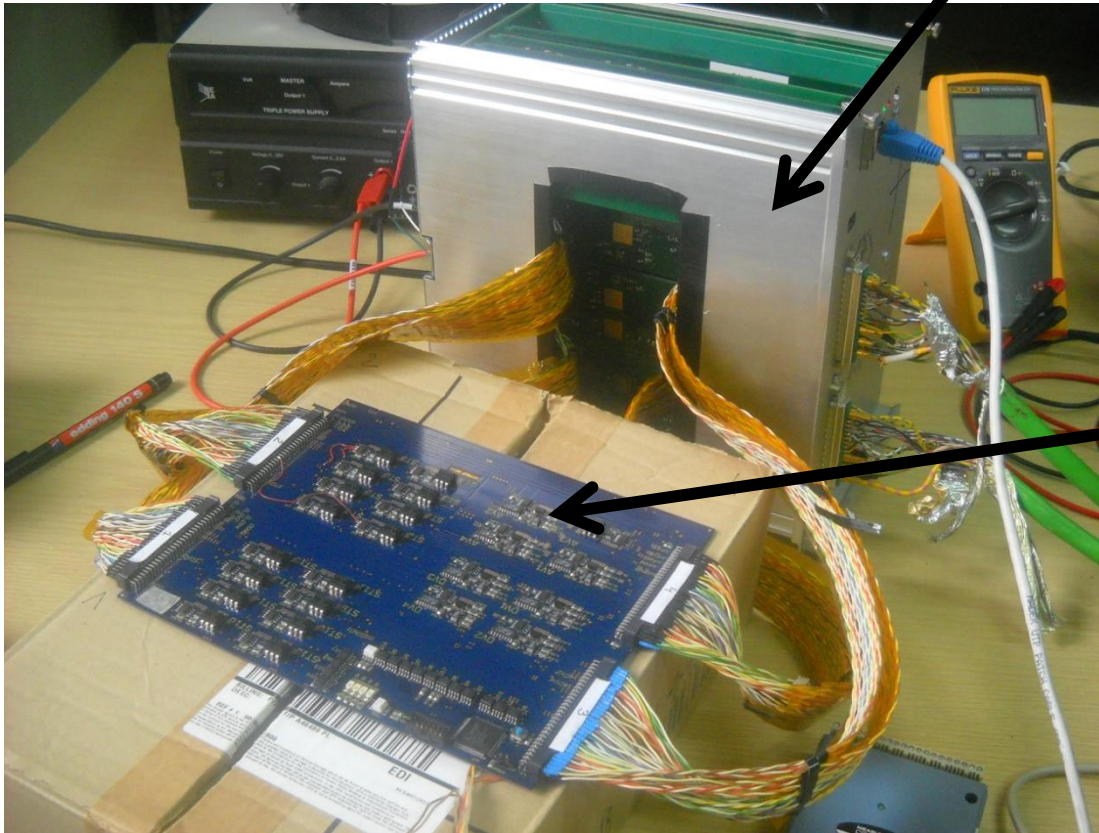


OVP - Over Voltage Protection status



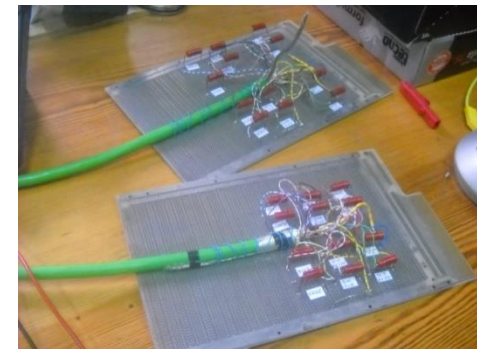
PXD Power Supply module

Display



Parameter	Value	Unit	Limit	Status
DHP_ID	1.2V			OK
SW_DVDD	1.80V		1.80V	OK
DCS_DVDD	1.81V		1.80V	OK
DHP_CORE	1.2V			OK
DCS_CORE	1.80V		1.80V	OK
Source	10V			OK
DCS_AVDD	1.81V		1.80V	OK
AVDD	1.80V		1.80V	OK
CC01	100V		100V	OK
CC02	100V		100V	OK
VORE	100V		100V	OK
CC03	100V		100V	OK
HV	100V		100V	OK
Guard	100V		100V	OK
SW	100V		100V	OK
GATE_ON1	100V		100V	OK
GATE_ON2	100V		100V	OK
GATE_OFF	100V		100V	OK
GATE_ON3	100V		100V	OK
GATE_ON4	100V		100V	OK
CLEAR_ON	100V		100V	OK
SV_Sign	100V		100V	OK
CLEAR_OFF	100V		100V	OK

OVP board prototype



Resistive loads

From May 2015 test setup is running in Krakow



OVP - over voltage protection status



- Tests show that there is no difference in voltage settings with „bypass module” and OVP board
- In June decision was taken to produce 50 OVP boards
- OVP boards are now assembled in factory
- In the end of September 50 OVP boards will be ready for hardware tests
- Next is foreseen full system integration with PS system ~ 2016



- Bipolar regulator cards
- Microcontroller card

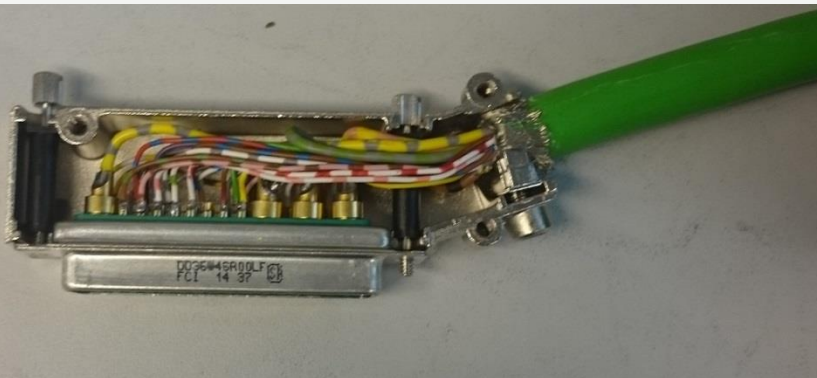
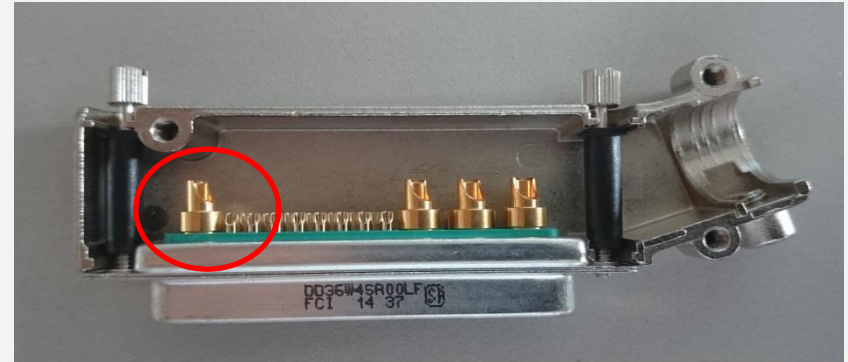
Services

- 15 L2Bwd Kapton available
- Signal integrity has been successfully investigated including bending
- L1Bwd design is finished
- Design of Forward types ongoing
- Waiting for input from pilot run for the final procurement of the Kaptons



- Prototype is successfully used in most test setups using the LMU-PS
- Investigation within the grounding project showed promising results
- Prototype with final connectors has been produced

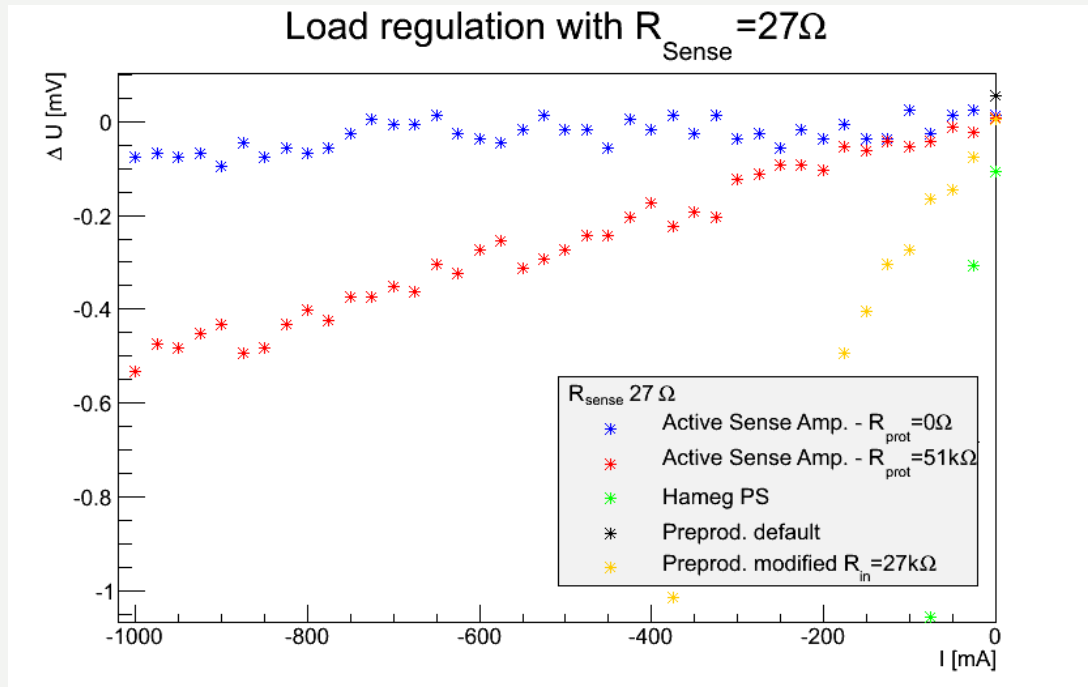
→ Ready to start procurement of power cables





- Preproduction PS's became the workhorse of the testing effort
- Main production is progressing
 - Step Down converter available
 - Front- and Back Board available
 - OVP is in production
 - Unipolar Regulator cards close to mass production
- Design of L1Fwd, L2Fwd Kaptons ongoing
- Power cables are ready for procurement

Backup



- Preproduction in modified configuration significantly improves output DC impedance to 2.5mW significantly better than commercial unit
- Baseline for main production: Active sense amplifier with 51k protection resistor

- Full batch has been produced
- Random samples have been tested without any issues
- Peak to peak noise has been reduced from 20mV to 3mV
- Test board for QA available

