LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

LMU München - Excellence Cluster Universe

PS & Services

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30.05.17

Overview

PS system:

- Main Production
- Mechanics

Services:

- Patch Panel
- Dock boxes
- Kaptons
- Power cables

Main production Status

Full batch for 70 PS's available for the following parts:

- Front- Back PCBs
- Unipolar regulator cards
- Standard Bipolar regulators
- StepDown Converter
- MCU cards
- DCDC converter cards
- HV cards with precision monitoring
- Bipolar cards with precision monitoring
- OVP cards for PXD – discovered recently some minor issue – fix can solve this
- Hardware available, regulator cards undergo individual functionality test

Main production – Assembly process

- Individual parts are assembled to a “PCB Stack” (~5min)
- Unit is powered and firmware is uploaded
- Sanity check of uncalibrated unit (~5min)
  - Behavior of cards (status bits, monitoring…)
  - Current consumption…
- Calibration of channels (~2 h)
  - Monitoring system: voltage at load, at regulator, current
  - Hardware current limit and status bits

  → Automated process
  - Check quality of calibration data
  - Generate calibration constants and upload them
  - Check calibration for offsets
- Calibration effort supported by our group
- Check functionality of interlock system (connection, cooling) (5min)
- Burn in test with resistive load

PS - Mechanics

- DESY volunteered to support the mechanical integration of the PS-system
- Up to now we assumed to use wide 112TE wide crates
  - 10 crates with 4 units
- Proposal to go for standard width by DESY
  - 14 crates with 3 units

  → Use of standard components racks and cabinets

  → Convenient for other groups using multiple PS units
- Existing crates can be adapted
- Started discussion with Tscharlie regarding height of the cabinet

Kapton

- Kaupke now baseline for Kapton production
- 2 x 40 + 2 x 30 Kaptons ordered in December
- Received final delivery last week

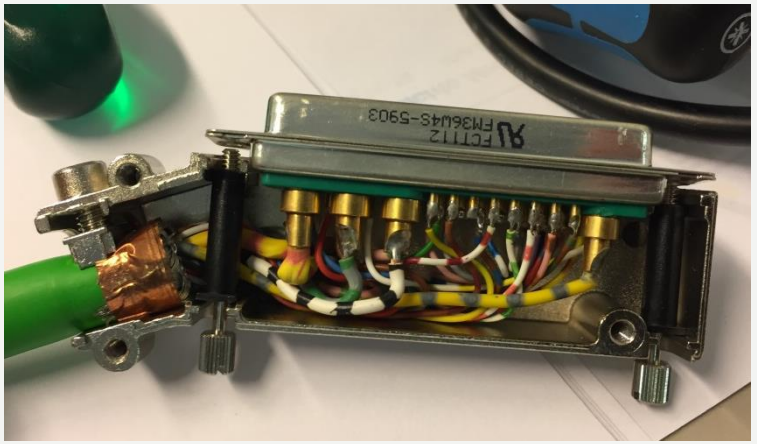
Lieferstatus der Belle II - Kaptons

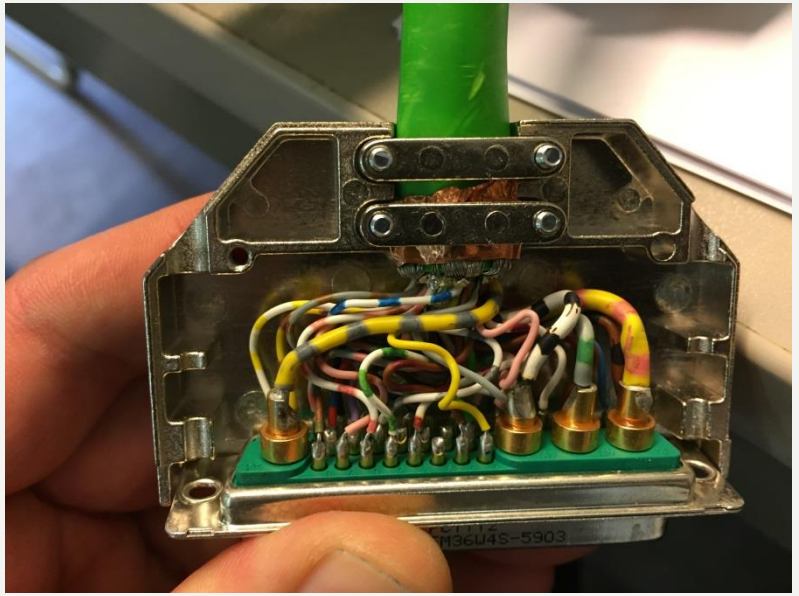
Kapton-Typ:	Bestellt:	1.Teillieferung: (März `17)	2.Teillieferung: (Mai `17)	"+" = Überlieferung	Diff: (Lieferung)
L2bwd	40	18	23	+	-1
L2fwd	40	36	4	-	0
L1fwd	30	25	9	+	-4
L1bwd	30	11	22	+	-3

Power Cable

- New vendor has been identified
- Throughout quality control using:
  - Visual inspection
  - Electric testing
  - Documentation
- Better internal organization of production process:

„Die erforderlichen Parameter, z. B. Abmantel- und Abisolierlängen werden in unseren Arbeitspapieren hinterlegt. Bei der Erst- bzw. Musterfertigung werden diese Parameter an die Rohmaterialien, z. B. Sub-D-Leisten, Hauben, angepasst und festgeschrieben.“





- Cable length set to 14m
- Crosschecked assignment, resistance in our lab including bending while continuously testing
  → No issues up to now
- 50% of the cables delivered

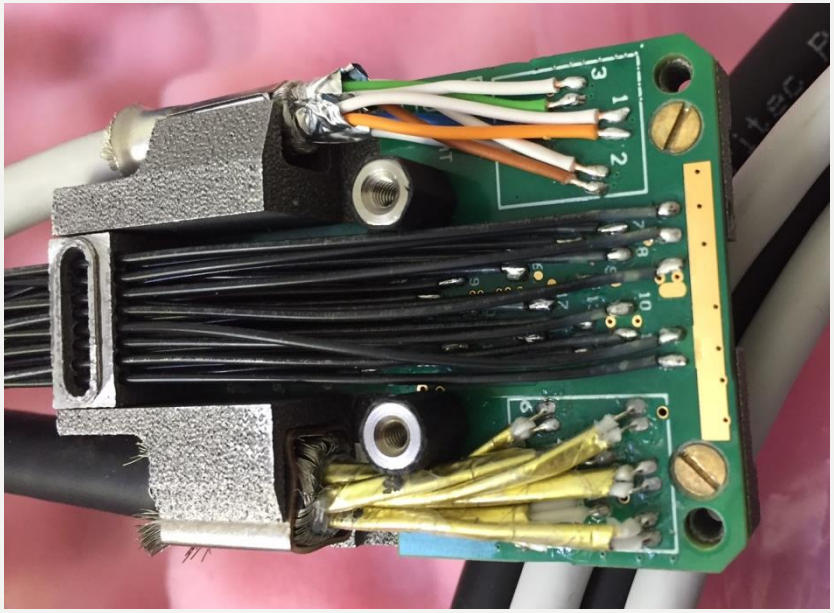
PP

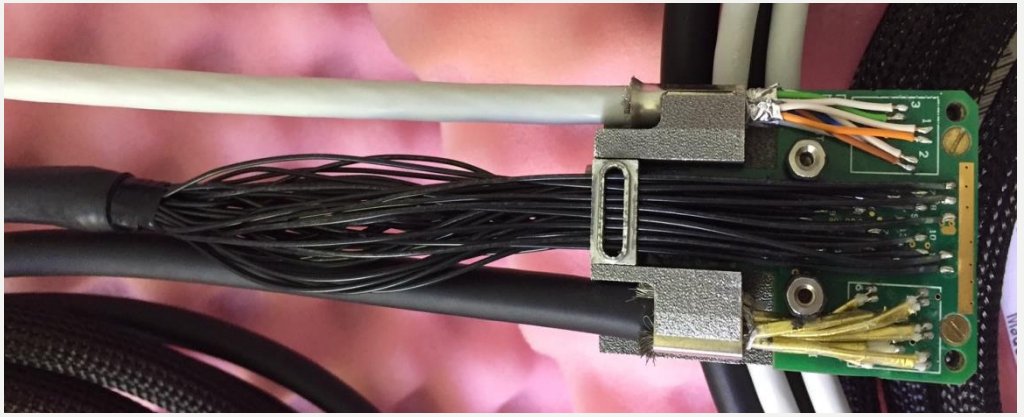
Several prototypes exist:

- With SMD solder pads for Infiniband cable
  - → Issue: peeling of pad
- Through hole connections for Infiniband cable
  - → Significant better mechanical strength
- Both solutions don't have a separate strain relive

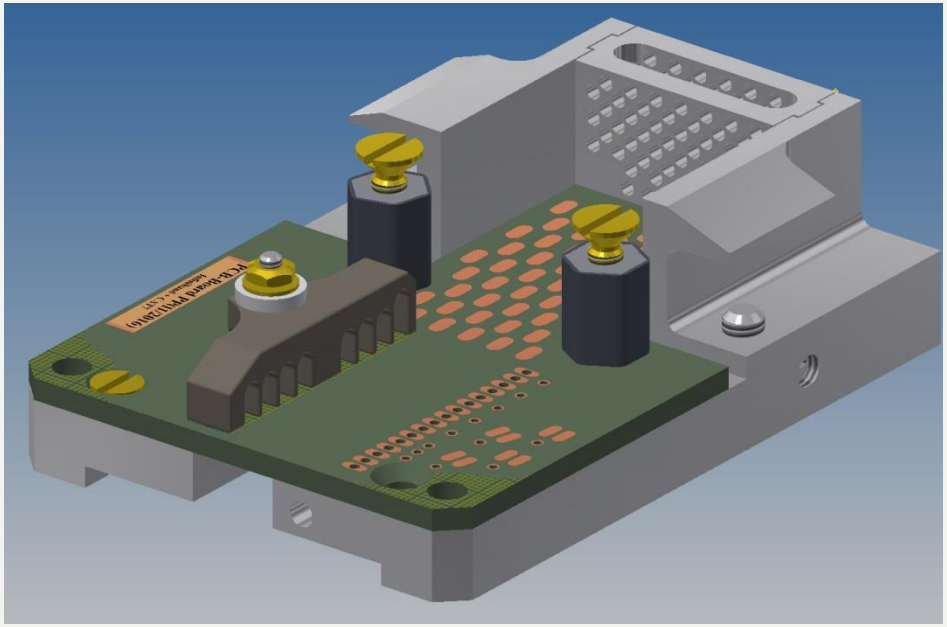
→ New mechanical design form MPI using a fan to individually fasten the pairs

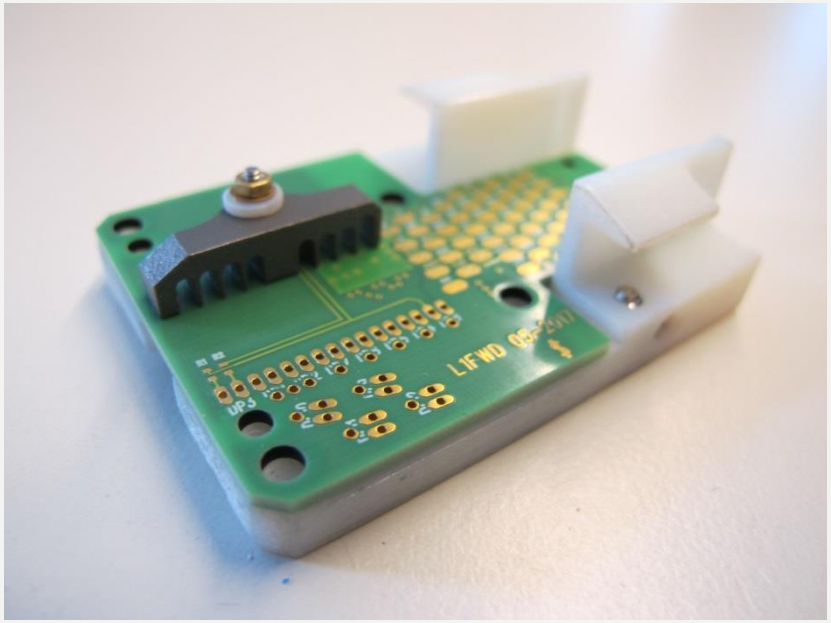
- Study of signal integrity started
- Cable diameter of Infiniband AWG 24 vs. 28 to be decided





PP





→ First PCB available, design of remaining types ongoing

Dock Box

- Two functionalities:
  - Power breakout board with common mode filtering
  - Optical transmitter

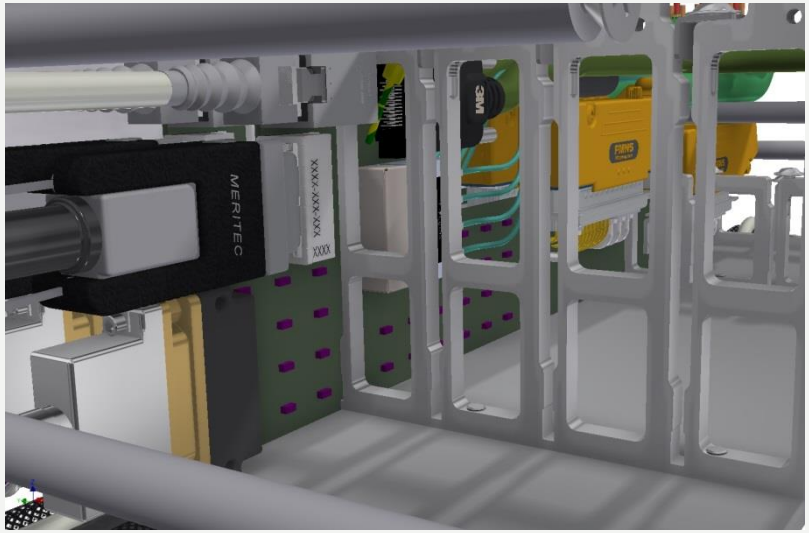
Dock Box

- Current Dockbox design showed a bug in the connector footprint of the RJ45 power and transmitter nevertheless usable
  - 8 available (4 with DP, 4 with CLC)
  - Small adapter card available to fix RJ45

- Moreover grounding received a set of changes:
  - Transmitter and DHE referenced to module DGND instead of PP-DGND
  - Drain wires can be AC coupled or left open

- Due to a change of the mechanics: TML's can be connected directly without vias on top

→ Next prototype is in production



Summary

- Main production is progressing, batch of 20 available within June
- Kaptons available
- Final prototypes for Dockbox in production
- Several PP prototypes available, first variant with strain relive in production

Backup