

Endcap KLM crates power supply problems

Timofey Uglov
KLM meeting 23 Oct 2017



- Forward Endcap crates housing 14 cards suffer from the lack of 5V power
- Backward crates (12 card each) have no such problem
- It is found that there is enough power for 13 cards



A list of additional crate problems:

- No safety margins even for backward crates (have $<10\%$ power margins)
- No capability for online power recycling of the crate
- Hard-to-access position on the top of the endcap doors
- Crate overpopulation (it's hard to work with heavy DAQ cards due to the lack of space) leads to card's connectors and coils damaging

Replacement of the power supplies for the VME crates.

Requires the purchase of 2(urgent, forward endcap) and another two (backward) power supplies, compatible with current crates.

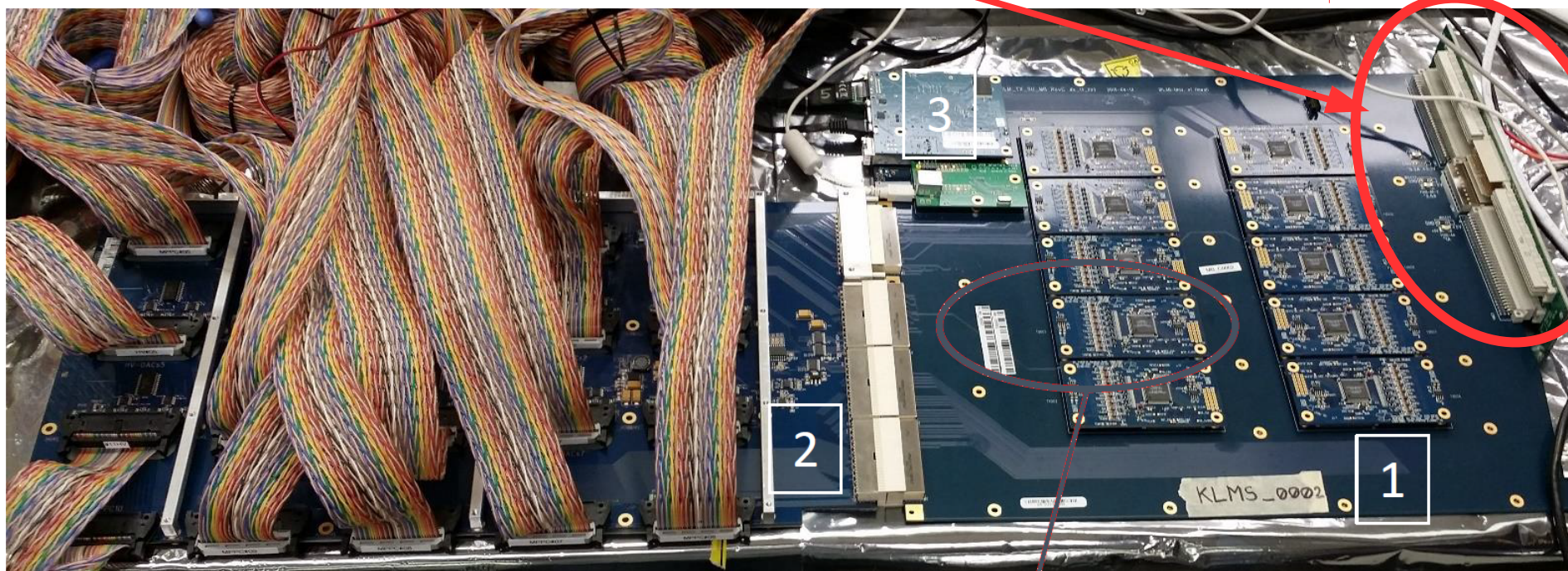
Pro:

- Completely solve the problem with power insufficiency (if new PS will be at least 1.5 times more powerful, than used today)

Contra:

- Expensive
- Requires total dismount of all cards from all crates (damage to DAQ boards is very probable)
- Does not solve remote access problem
- Cannot be accomplished this fall

- Move 2 cards from each forward crate to the 4-slot mini-crates
- Requires the purchase of 2 4-slot mini-crates
- 4-7 slot backplanes are available at Hawaii University
- External PS and no mechanical frame (yet)



Pro:

- Solve current problem with power insufficiency
- Cheaper than other options
- Fast solution

Contra:

- Duplicates number of FW crates
- Do nothing with safety margins (still $<10\%$)
- Does not solve remote access problem
- Requires mechanical support/frame construction
- Need some place at the top of the endcap doors (under the current crates?)
- Requires external stable PS for the new mini-crates

Duplicate number of used crates and populate only the half of the slots in each

- Pro:
- Completely solve current problem with power insufficiency
- Solve the crate overpopulation problem (lack of space between cards for cables)

Contra:

- Duplicates number of all crates
- Need two times more space at the top of the endcap doors
- The most expensive solution
- Cannot be done this fall

Solution IV: do nothing

Temporary solution: run with 13 layers in the FW

Pro:

- Requires neither resources nor manpower

Contra:

- Does not solve any long-term problem
- Decrease (not drastically, though) FW EKLM performance

The following strategy is proposed:

- Install mini-crates this until Belle II start (as temporary solution)
- Make a decision whether it is needed to change PS / duplicate crates after 2-3 months of running, and which option is preferred
 - Replace PS / install crates during the summer shutdown.
- Run with 13 FW layers as a fallback.