

MWPCs path to stability

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History of the question

- During the 2016 and 2017 the stability of the MWPC chambers readout was degrading.
- The main cause for the problem was identified in the Hotlink connectors on the FE side.
- The main direction to resolve the problem was to make an upgrade of the FEs in a way to exclude the weak connection.

This was pursued as a complete project with a new FE development by Turin and Munich

- ❖ Unfortunately the situation in 2017 degraded on few chambers to an unacceptable level. And it was decided to try to find an temporary solution for the concerned chambers already for the 2018 running.

A modification to the FE connector is now evaluated in Turin.

The two projects for 2018

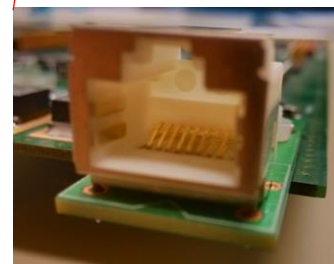
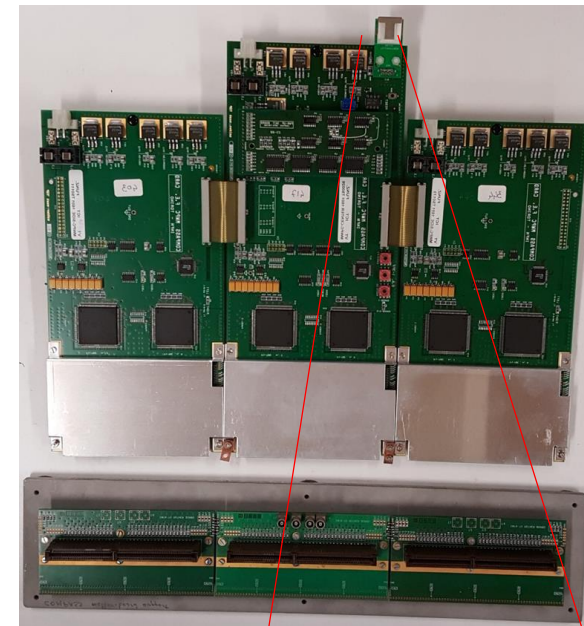
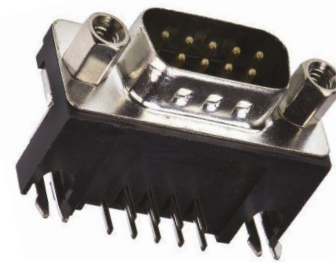
Long term upgrade validation

- FPGA based TDC
- Single card configuration
- Optical readout(IPbus + UDP)
- Separate digital and analog parts



Urgent R/O stability fix

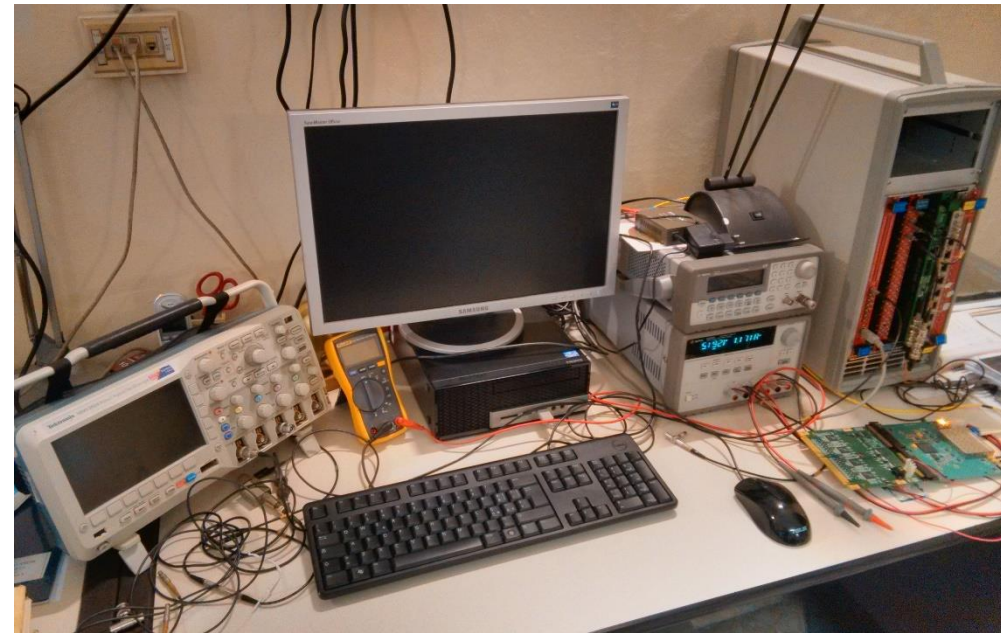
- Get rid of the connector



Long term upgrade validation

- The initial planning was foreseeing the test of single card during the last days of the 2017 data taking. Due to a configuration problem only the DAQ implementation part was tested with success. The card had a low efficiency due to wrong THR settings.
- Laboratory test of the problem was performed and the error in the THR programming fixed.
- Presently the test for the high trigger rate and consecutive double pulse noise was delayed to the beginning of March due to manpower issues.

- Mid March validation in laboratory conditions
- TB presentation
- Possible installation in the beginning of April



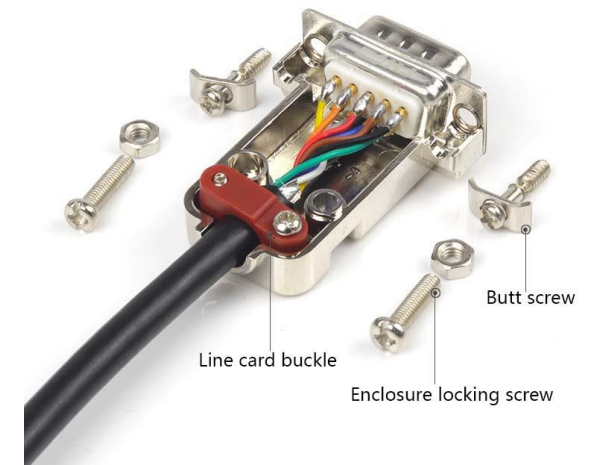
Urgent R/O stability fix

- The main problem of the connection was traced to the RJ45 connector that apparently has contact degradation.
- We came to the idea to try to substitute the RJ45 altogether with a com port connector that is a time proven solution.
- This modification would require the exchange of both the FE and the Hotlink cable connector.
- Presently a prototype is ready to be tested to validate the idea.



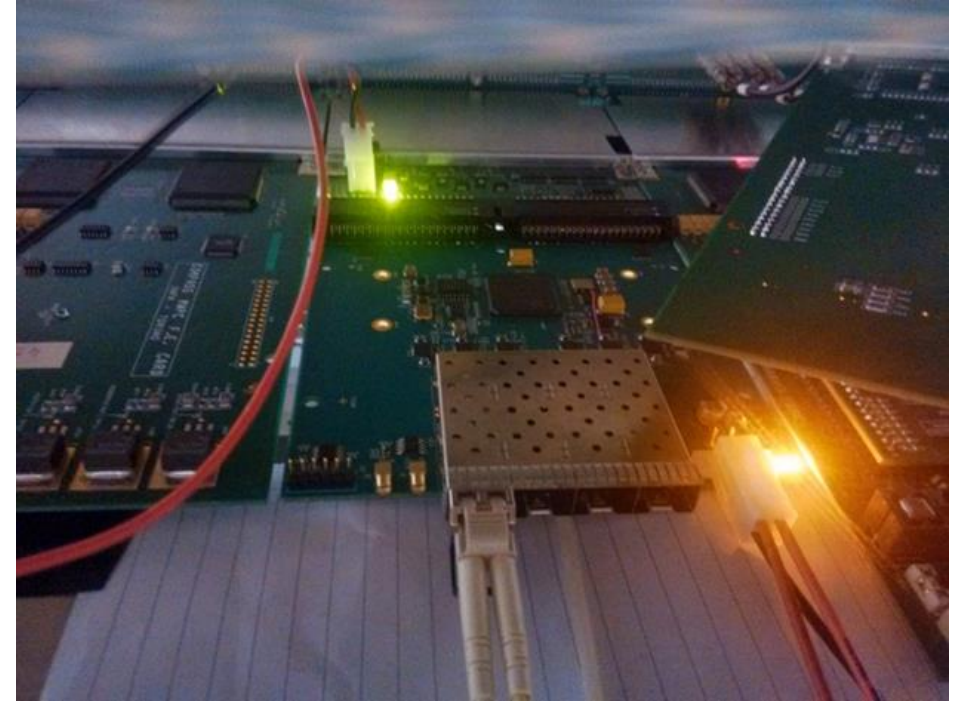
If the prototype does not show any problem we would prepare the substitution of 36 FE cards & cables to be able to equip the 3 most problematic chambers (PA03-05) that were responsible for the majority of the MWPCs problems in 2016-2018.

DB9/RS232



Conclusions

The long term MWPC FE upgrade prototype is progressing towards the validation for the installation in the experiment.



We are working on a simple modification of the FEs to be able to provide normal data tacking in 2018 .