

DAQ Hardware

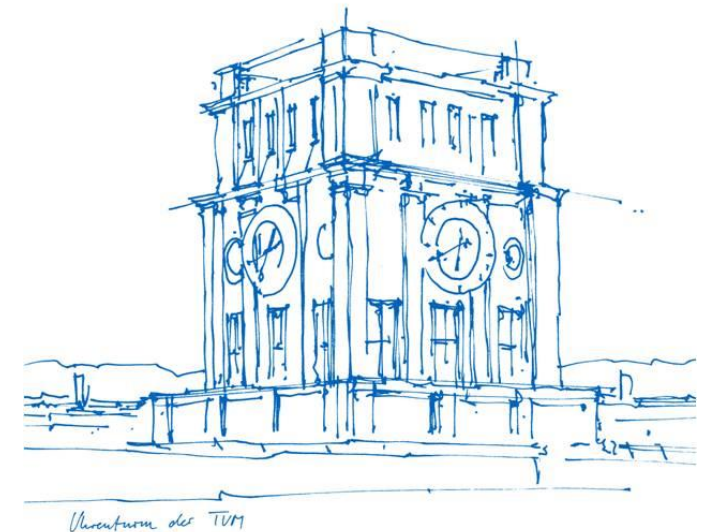
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DAQFEET Workshop, 8-th February 2021

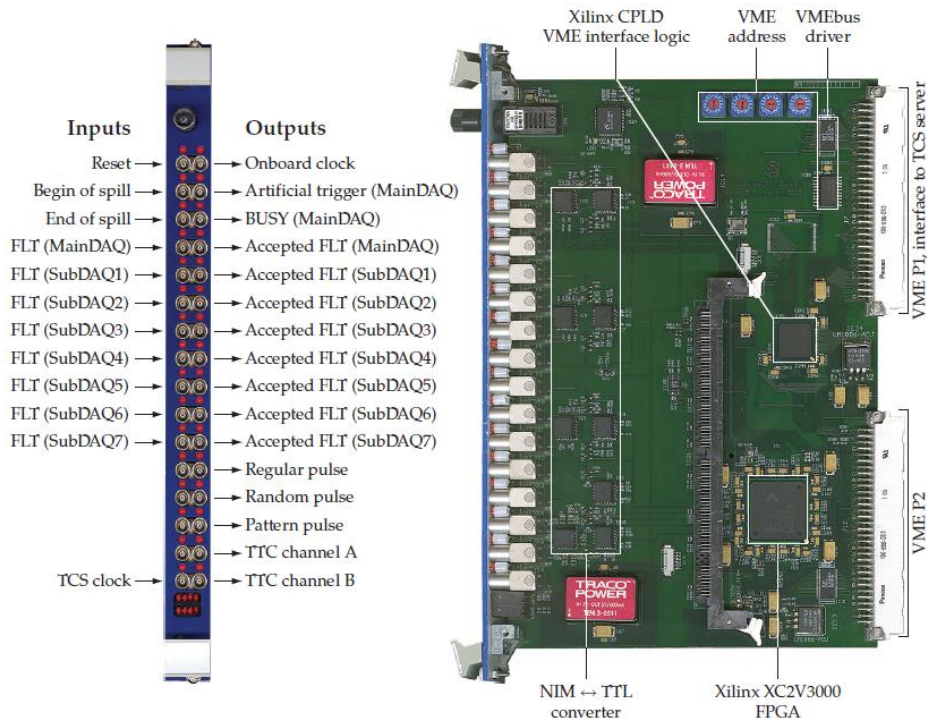


DAQ Modules

- TCS Controller
- Cross-switch
- Migration to ATCA standard
- Xilinx Ultra Scale SDH for upgrade and Trigger Processor

TCS Controller

COMPASS original
Xilinx Virtex FPGA



For lab setups
Xilinx Spartan 6



TCS Controller

Based on IFTDC
Xilinx Artix 7 FPGA

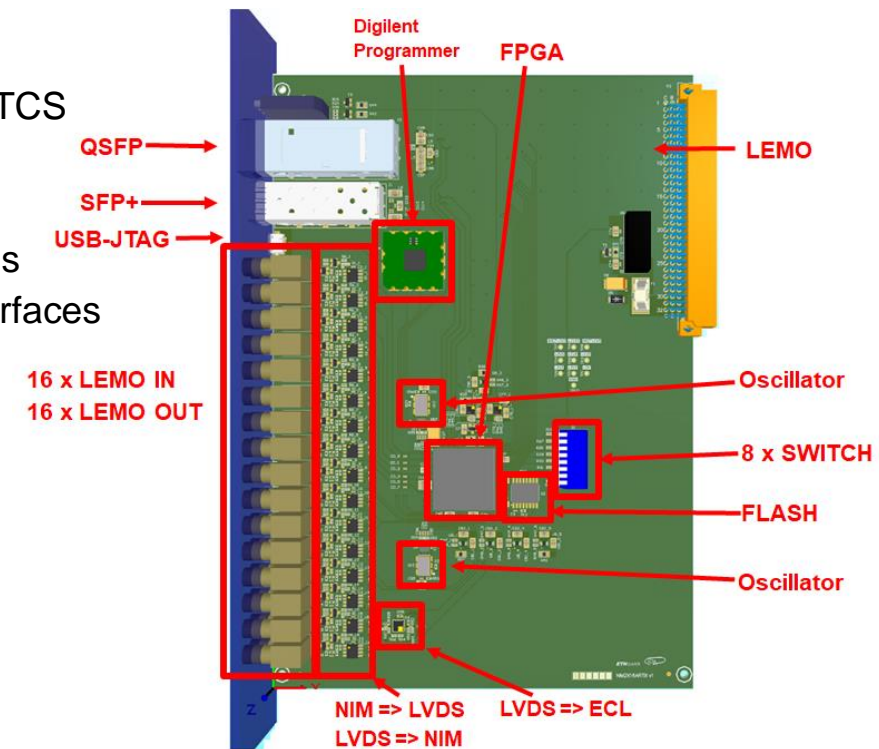
Problem :

- Input/Outputs designed for pulsed signals



Xilinx Artix 7 FPGA
Fully compatible with COMPASS
TCS
2 modules delivered in January

- 16 NIM Inputs/Outputs
- SFP+ fanout standard TCS encoded commands
- QSFP
 - Ethernet for IPBus
 - 3 high speed interfaces

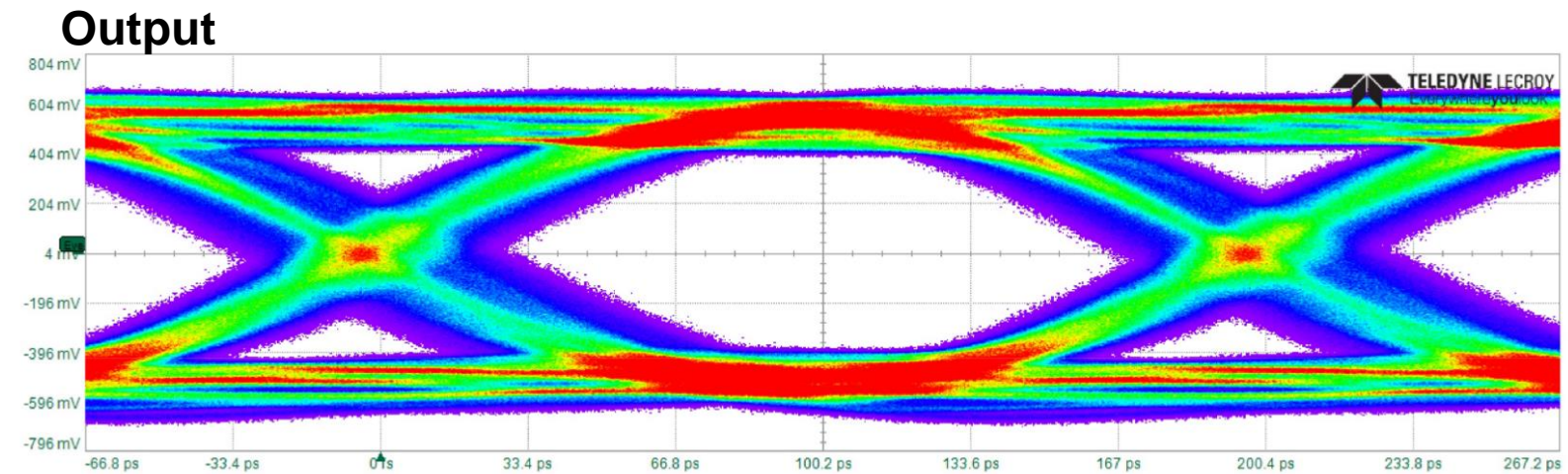
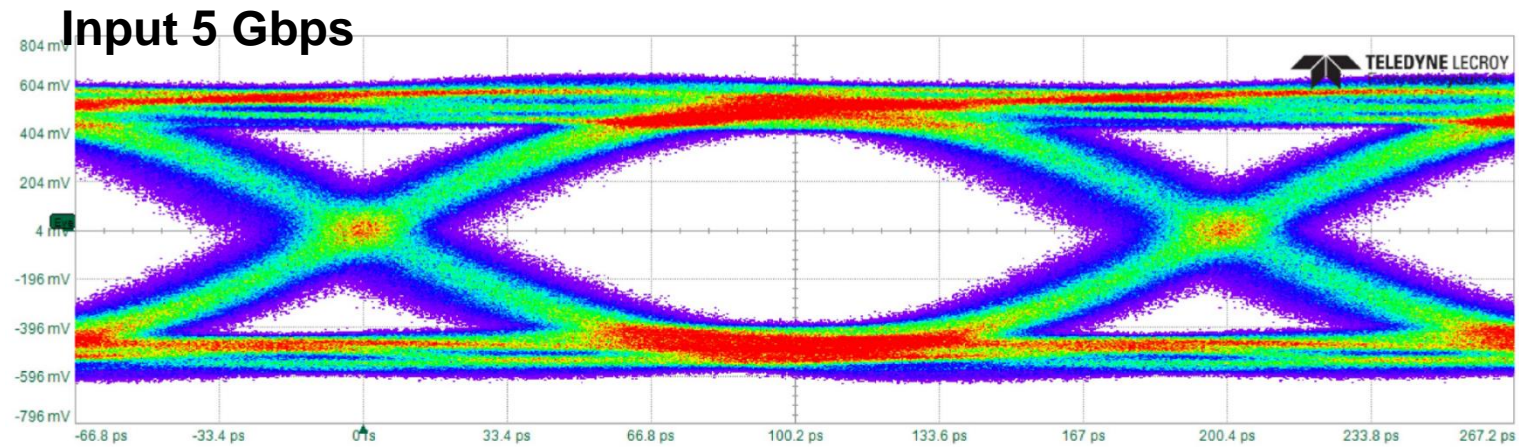


Cross-Point Switch 144 x 144

- Interfaces :
 - 12 x 12 channels CXP transceivers
 - Ethernet for IPBus
 - JTAG
- Switching and control
 - Vitesse VSC3144-02
 - fully configurable
 - Asynchronous 6.5 Gbps
 - Xilinx Artix-7 FPGA
- 5 switches fully tested
 - Fan units exchanged to improve cooling
 - Open Eye diagram test
 - 1 switch for COMPASS
 - 2 switches for COMPASS++/AMBER



Cross-Switch Performance



Migration to ATCA

ATCA Carrier Card :

- 4 DHmx/DHsw modules
- 4 Optical interface AMC cards
- 16 links between A ↔ B connectors

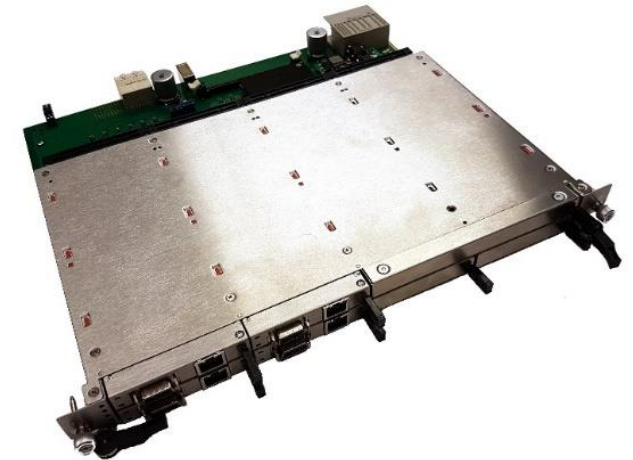
Rear interfaces

- 8 x Ethernet for IPBus
- USB for JTAG
- SFP+ for TCS interface + 1:8 fanout

Optical Interface AMC card

- 8 + 4 FireFly Transceivers

Plan : submit for production in end of February



THANK YOU