




PÉPITES DE LA SEMAINE

Semaine 28 (= 1^{er} juillet)





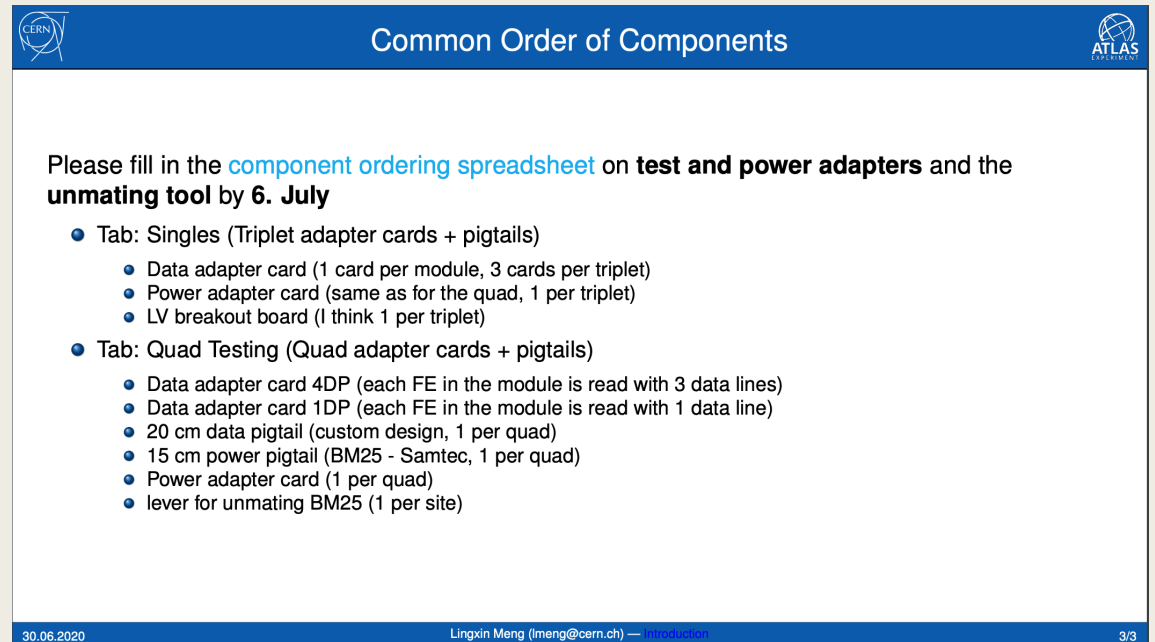
RD53A QUAD ADAPTER BOARDS & PIGTAILS

Testing meeting : mardi 30 juin – 17h

<https://indico.cern.ch/event/933762/>

- 1) LAPP: le contact est Renaud
- 2) Discussion Grenoble + confirmation explicite de Diego en OB meeting
- 3) Ai copié les 3 labos parisiens pour 1 équipement QUAD complet

N.B. : est-ce qu'il nous manque une carte YARR ?



Common Order of Components

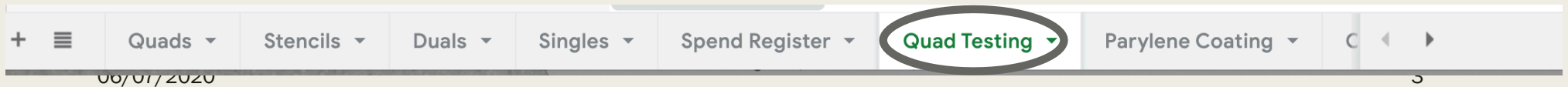
Please fill in the [component ordering spreadsheet](#) on **test and power adapters** and the **unmating tool** by **6. July**

- Tab: Singles (Triplet adapter cards + pigtails)
 - Data adapter card (1 card per module, 3 cards per triplet)
 - Power adapter card (same as for the quad, 1 per triplet)
 - LV breakout board (I think 1 per triplet)
- Tab: Quad Testing (Quad adapter cards + pigtails)
 - Data adapter card 4DP (each FE in the module is read with 3 data lines)
 - Data adapter card 1DP (each FE in the module is read with 1 data line)
 - 20 cm data pigtail (custom design, 1 per quad)
 - 15 cm power pigtail (BM25 - Samtec, 1 per quad)
 - Power adapter card (1 per quad)
 - lever for unmating BM25 (1 per site)

30.06.2020 Lingxin Meng (lmeng@cern.ch) 3/3

Requests spread sheet → Deadline 6 juillet

<https://docs.google.com/spreadsheets/d/1MqLbbcRgTGeY9Q2LPRWwK9YI-r-75IraKJGnC4jUZ6w/edit#gid=1445606114>



RD53A Quad - Power Pigtail found

- Power Pigtail: BM25 -> Samtec FTM
- BM25 on module side, 8x8 mm with stiffener
- 18 pin Samtec FTM connector: <https://www.samtec.com/products/ftm> (2x9)
- 15 cm length
- Width of the power pigtail 12 mm (expand close to the Samtec connector)

Voluntee Needed

4

AD

Aleksandra Dimitrievska

16:40	→ 17:00	RD53A Adapter Cards
		Speaker: Lakmin Wickremasinghe (Osaka University (JP))
		20200703-Common...
17:00	→ 17:10	RD53A Quad Power Pigtail
		Speaker: Ms Chloe Stanton (The University of Edinburgh (GB))
		RD53A Power Pigtai... RD53A Power Pigtai...



CARRIERS, COOLING & HANDLING TOOLS

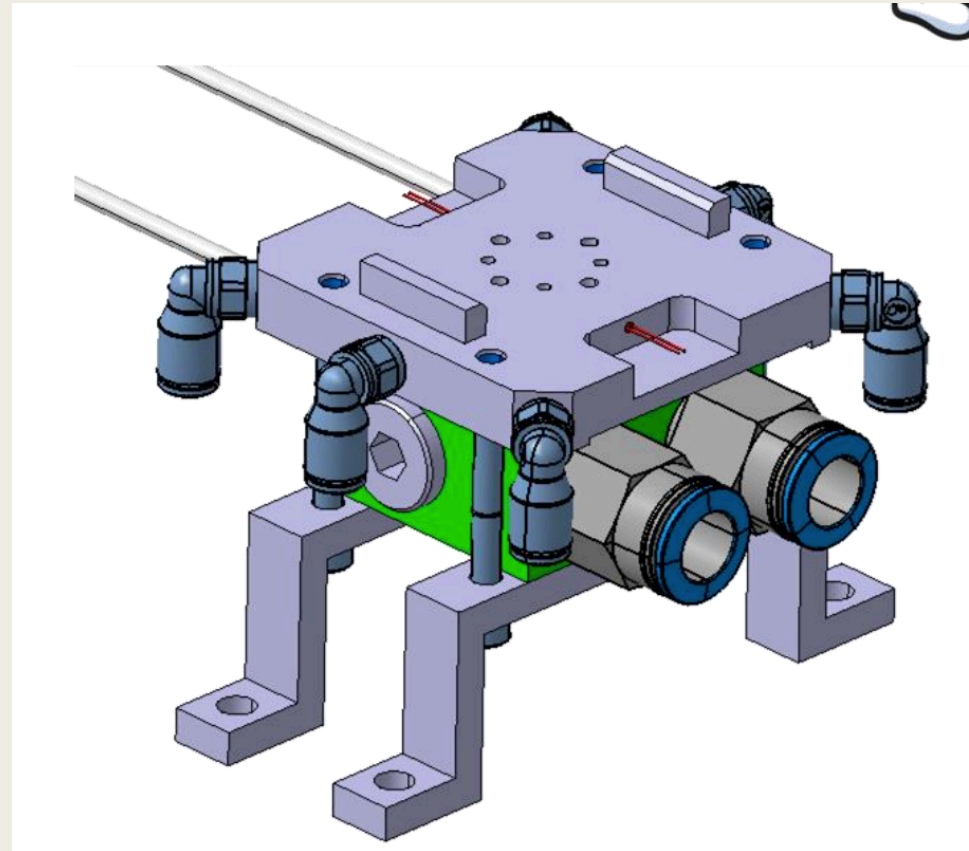
OB cell loading meeting: jeudi 2 juillet – <https://indico.cern.ch/event/934998/>

11:00 → 11:10 **Introduction**
Speaker: Diego Alvarez Feito (CERN)
OB_CellLoading_Intr... OB_CellLoading_Intr...

Sera utilisé pour tester les cellules →
intérêt direct pour nous.

Design en cours, suivi par Diego avec
feedback Marseille

L'eau (tubes bleu) sert pour le pelletier
mais est trop près du sensor ?



The price only includes the metallic part, not the vacuum pump.

Each institute will have several, Diego is willing to check if group order would save money. Drop him a line if interested.

The screenshot shows a Zoom meeting interface. On the left, a list of 11 participants is visible, including Adeline, Alexander, Bernd, Claire Adam-Bourdarios, Dai Kobayashi, Diego Alvarez (highlighted), Eric Vigeolas, Fabienne Ledroit, Junji Tojo, Patrick Stassi, and Sebastien M. The main window displays a presentation slide titled "Module Handling Tool". The slide content includes:

- Pixel community working on a handling tool for the modules
 - UK: Liam working on dedicated version of tool used for EC module loading
 - CERN: Tool developed for flex/module handling (collaboration with SIPEL)
 - Cost ~200CHF
 - CERN DAI: <https://edh.cern.ch/Document/SupplyChain/DAI/8258855>

The slide also features an image of a person using a tool on a circuit board, the names "P. Riedler" and "A. Sharma", and logos for CERN and UNIVERSITÉ DE GENÈVE. The bottom of the Zoom window shows the speaker's name "Diego Alvarez" and a circular icon with "DA".

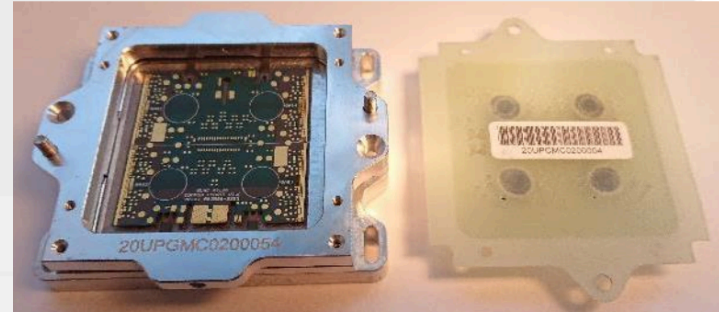
Module carriers

Modules are placed in module carriers after production for safe shipping, handling, and testing.

For quad module production:

- 250 carriers were delivered to CERN in November
- Most have been distributed to institutes based on sign-up sheet. 74 remains at CERN.
- Institutes missing carriers can get them now (at ITk week).

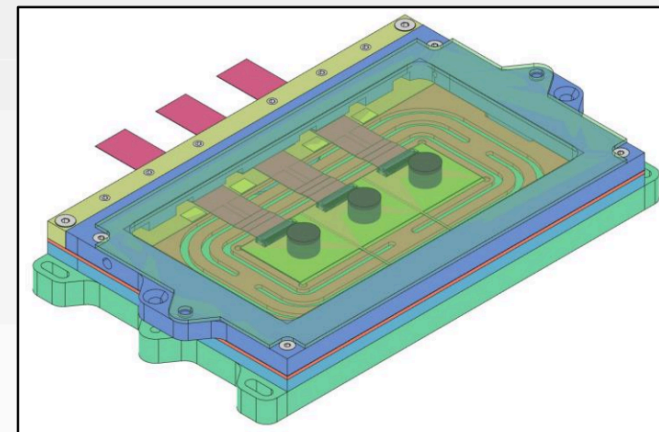
<https://twiki.cern.ch/twiki/bin/view/Atlas/ItkPixModuleCarrier>



Quad module carrier

For triplet module production:

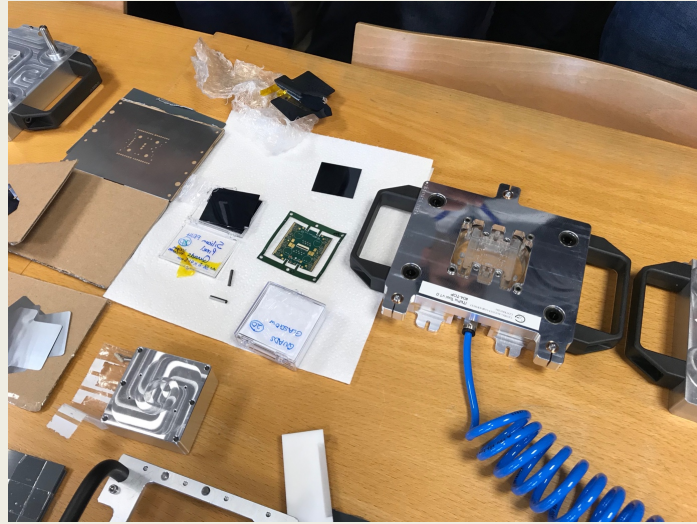
- Carrier design has been finalized.
- <https://indico.cern.ch/event/882118/>
- Production to happen in February, earliest delivery to CERN 15th of March.
- Delivery date has been pushed back due to the Wuhan coronavirus.
- Sign up for triplet carriers on “Singles” page of [RD53A part request sheet](#).



Triplet module carrier

Module carriers are a common order and are produced in industry.

Contact person: Magne Lauritzen



06/07/2020

INTERLOCK

Testing meeting : mardi
30 juin - 17h

<https://indico.cern.ch/event/933762/>

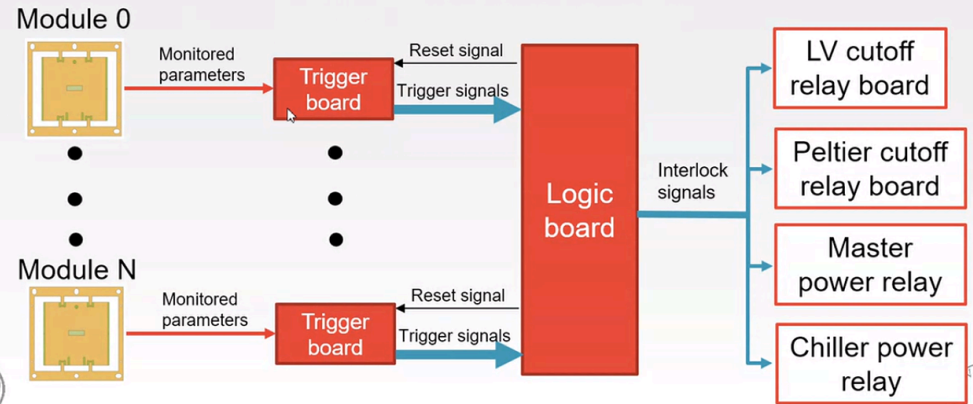
34 ITK_Pixel_module_testing

Speaking: Magne Eik Lauritzen

UNIVERSITY OF BERGEN

Implementation overview

- Each module is monitored by a “Trigger Board”.
- If a parameter exceeds its limit, a trigger is sent to the logic board.
- Interlock signals go from Logic Board to equipment that perform different actions.



UNIVERSITY OF BERGEN

Monitored parameters and their limits

For each parameter, the trigger board compares its value against a limit. Limits are set with voltage dividers and are usually fixed.

Parameter	Limits	Tolerance	Notes
Module voltage	2.0V	± 6mV	RD53A absolute limit
Module current	TBD	± (12mA + 1%)	
Module temperature	-60°C, +65°C	± 1.1°C, ±1.5°C	5°C beyond testing range
Relative Humidity	22%	Dominated by humidity sensor (SHT85: ±2%)	Assumes $T_{\text{enclosure}} - T_{\text{module}} < 15^{\circ}\text{C}$
Dry air flow	Set by user	Dominated by flow sensor	



5/26/2020

ITK pixel module testing meeting, Magne Lauritzen

PAGE 2



01/01/2020

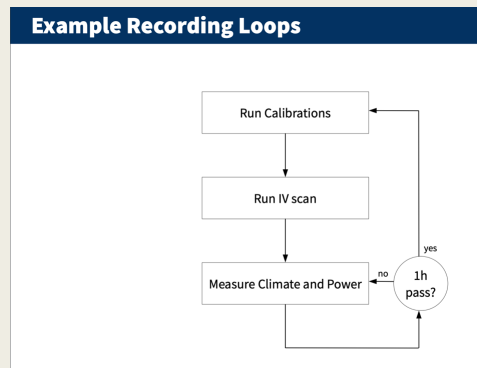
LAB REMOTE

<https://twiki.cern.ch/twiki/bin/viewauth/Atlas/ITkPixelLabDCS>

Lab equipment : lundi 18 mai – 17h

<https://indico.cern.ch/event/920138/>

- LabRemote proposal for data recording into DB
- Interface for Visual Inspection (non electrical) tests

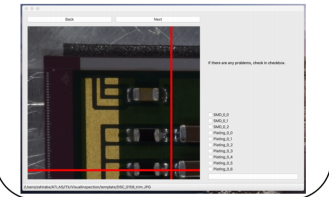


Data Flow

Expected data flow of non-electrical test (e.g. Visual inspection)

1. Create results using GUI for VI
2. Write the results in local DB through VI GUI
3. Check the results in Local DB viewer
4. Upload the results to ITk PD

VI GUI (developing for QC)



2

Lab equipment : lundi 22 juin – 17h

- Japan is planning to run the QC chain on the modules (incl. Quads) by mid / late July
- QC scripts (=policy) to be stored independantly of the labRemote code (=tool) sw



VISUAL INSPECTION





RAPPELS - BONUS



Modules plenary : jeudi 25 juin – 17h

<https://indico.cern.ch/event/925352/>

CERN received and tested the first quad from Glasgow !

- Long & detailed slides by L.Meng
- Discussion on the need for cooling: the module heats up to ~45 degrees by itself, so cooled it with a pelletier at -10 deg to be on the safe side

Testing of A Digital RD53A Quad

Lingxin Meng

Thanks to Aleksandra, Timon and Dima for discussions

Module Meeting

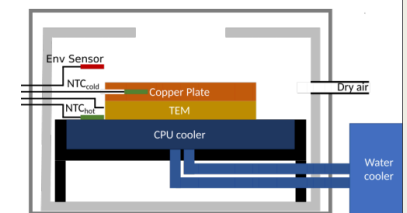
CERN, 25.06.2020



Setup Overview



- Received digital quad #3 from Glasgow
- Will try to register to the prodDB after sorting out module ID
- Have parts for common cooling unit, but not yet fully built and commissioned
- Modify existing FEI4 setup to adapt to RD53A modules
 - FEI4 setup described [here](#) and presented [here](#)
 - CPU water cooler ([alphacool XPX Eisblock](#))
 - Peltier (LairdTech CP10) powered from a computer PSU
 - PID through Arduino Uno
 - Firmware and readout script on [git](#)
 - Made a perspex sheet to fit different FEI4 and RD53A test PCBs
 - Use module carrier, fix baseplate
 - Low voltage power supply
 - TTI PL303QMD-P: 6 A output in parallel mode (didn't deliver)
 - Agilent E3631A: 5 A output @ 0–6 V
 - SW: YARR [v1.2](#)
 - FW: latest from last week, XpressK7 325, 4×4 lanes, 160 Mbps



25.06.2020

Lingxin Meng (lmeng@cern.ch) — RD53A Digital Quad Testing

1/25

06/07/2020

16

RAPPEL : tooling for RD53A module build & test

We have roughly the same needs as for the final production: We will use the RD53A module production to evaluate the tools and get valuable experience.

Assembly:

- Gluing stencils
- Assembly jigs
- Data cables
- Powering
- Module carriers

Testing:

- Cooling
- DAQ/DCS system
- Interlock system
- Power boards
- Data boards

Common:

- Photographic documentation
- Shipping box

This talk will try to list all items, their status, and who is responsible for it.