

Plans for the SiPMs of ProtoDUNE-VD

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Procurement

500 HPK SiPMs purchased by INFN and sent to UCSB: they are being soldered in the flexi. Available for tests on Nov 15

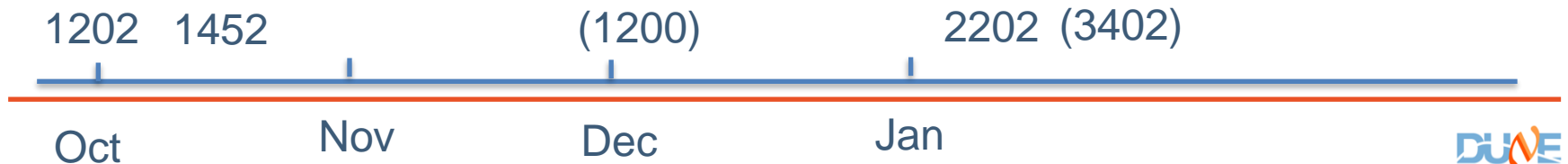
[Note: unlike last meeting, the SiPMs will be installed in the final flexi: no more need to patch the cables]

702 HPK SiPMs purchased by Spain. Available in CIEMAT.

250 FBK SiPMs purchased by FNAL/CERN. They will be sent to CERN on Monday Oct 10

750 FBK SiPMs purchased by INFN. Expected delivery date Jan 20, 2023. On the critical path!

Possibility to purchase up to 1200 additional HPK SiPMs to be delivered in 6 weeks. Decision and fund coverage still to be taken



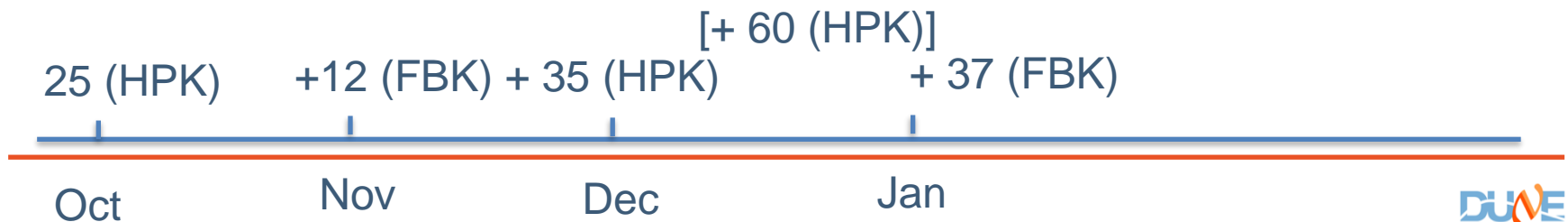
Flexi boards and population

500 HPK SiPMs in 25 flexi boards Boards purchased by UCSB (Cirexx)

140 HPK-like and 60 FBK-like flexi boards being produced by Cirexx (US). They will be sent to Italy in the next few days. Flexi procurement is **not** in the critical path

Population of the flexi in SCEN (Italy)

- Order being placed (paid by Univ. of Milano-Bicocca – grant of A. Minotti)
- Production time for 952 SiPMs: 5 days
- Production slot being negotiated. Most likely date Nov 4
- Production time for 750 SiPMs (FBK) 3-4 days in late Jan
- Important: if we decide to purchase 1200 additional HPK SiPMs we have the flexi but we need to book a slot at SCEN in Dec



SiPM tests

Critical item because the test procedure has never been validated.

Proposal from the photosensor WG:

- Test them in group of 20 SiPMs (no time to develop smarter configurations for ProtoDUNE-VD but work ongoing for Module-1)
- 3 thermal cycles, I-V in reverse, DCR in LN, illuminate each SiPM with a LED to check if it is in operation
- Rationale: DCR checks for shorts, LED checks for disconnected SiPMs
- Time: about 1 board/h (7 boards per day in parallel)

Laboratories: CIEMAT, Granada, UCSB + others, if needed (e.g. Milano Bicocca, Valencia)

Nov 7: start date for tests in Europe- End date (47 boards) **Nov 21**

Nov 15: start date for tests in US/UCSB – End date (25 boards) **Nov 18**

Feb 1: start date for test of 37 FBK boards : end date (37 boards) **Feb 6**
[additional 60 HPK boards not included, yet]

