Special MPP-SMP2 Meeting

Outline:

- SPS systems
- LHC systems
- Final words

Lars K. Jensen

On behalf of BE-BI

SPS systems to SMP (DC BCT)

Courtesy R. Secondo

Long Name	Source(s)	Machine Protection User(s)
SPS Probe Beam Flag	SPS DC BCT 4 INTENSITY	LSS4 Extraction BIS LSS6 Extraction BIS
SPS Set-up Beam Flag	SPS DC BCT 3 INTENSITY SPS DC BCT 5 INTENSITY	LSS4 Extraction BIS LSS6 Extraction BIS Transfer Line BIS

Header Bit	Bit Name (1/0)
7	0/0
6	I10/I8
5	Redundant or Single source
4	0/0
3	Operational NOT Operational
2	BA bit 2
1	BA bit 1
0	BA bit 0

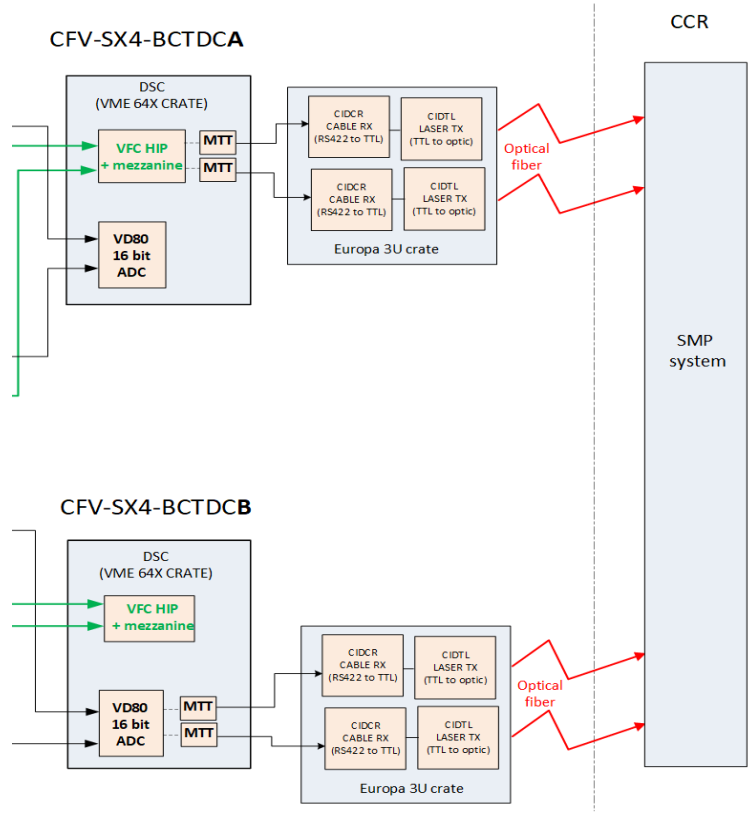
Device	BA	SMP header
SPS.BCTDC.31832	3	0x4B
SPS.BCTDC.41435	4	0x0C
SPS.BCTDC.51895	5	0x6D

- 3 VME front-ends (BA3, BA3, BA5)
- Dedicated FESA3 servers (software normalisation)
- BA4 BCT detector (low intensity) being consolidated (2022)
- Single SMP frame sent at arrival of “SX.SFLATTOP-CT” event
- MTT module used for transmission (single register) using dedicated network to the CCR

- Request to provide bunch-by-bunch (25 nsec) intensity values - all (924), maximum/average (1) ? (1Hz)
- BI would like to see energy transmitted over GMT (1Hz)

LHC systems to/from SMP

- DC BCT values at 10Hz (averaged over 1 sec)
  - 16 bit system for system A (B1/B2)
  - 24 bit system for system B (B1/B2)
  - MTT module per signal
- Beam presence flag (purely analogue)
  - BPM sum signal + electronics with CIBU interface
  - Documentation here: https://cds.cern.ch/record/1375172/files/CERN-BE-2011-026.pdf
- Request to provide Fast BCT (max bunch intensity) to be clarified
- LHC BLM system receives energy (thresholds)
  - CISV -> acquisition modules (backplane)
  - Replacement during LS3?



Courtesy P. Odier/T. Levens

Final words

- Reliability
  - Software involved for intensity calibration (DC BCTs)
    - No issues seen since moving to new acquisition electronics
  - BA3 and BA5 provided redundant data
  - BA5 close to BA4 S/N (BA4 consolidation)
- New requests
  - Need clarifications for what concerns SPS Fast BCT data
  - No other known requests for BE-BI signals
  - MTT/CISV replacement (VME platform) should be easy to handle
- Start-up after LS2
  - Changes to electronics and software means commissioning required
    - Can test most without beam
- Plans for LS3 (HL-LHC)
  - No known requests at this time