

PPS XRP (“TOTEM”) Interlock Tests



MPP Meeting

8 March 2024

Mario Deile

Test Summary



Screenshots from MPP checklist:

<https://checklist.cern.ch/machine/13/node/1003699>

	All P5 Roman pots
MPP/TOTEM - 01 - Injection permit removal ⓘ	tested for each pot
MPP/TOTEM - 02 - User permit removal ⓘ	tested for each pot and both sets of inner limits (old and IPL)
MPP/TOTEM 03 - LVDT bypass	

DEILE 2024-03-07 14:37:46 ✓

DEILE 2024-03-07 14:40:17

```
https://logbook.cern.ch/elogbook-server#
/logbook?logbookId=1696&
dateFrom=2024-03-07T07%3A00%3A00&
dateTo=2024-03-08T07%3A00%3A00
```

DEILE 2024-02-26 10:50:12

Injection permit tests ok:

```
https://logbook.cern.ch/elogbook-server
/#/logbook?logbookId=1696&
dateFrom=2024-02-14T07%3A00%3A00&
dateTo=2024-02-15T07%3A00%3A00
```

and

```
https://logbook.cern.ch/elogbook-server
/#/logbook?logbookId=1696&
dateFrom=2024-02-16T07%3A00%3A00&
dateTo=2024-02-17T07%3A00%3A00
```

DEILE 2024-02-26 10:50:25 ✓

DEILE 2024-02-26 11:01:32

User permit tests ok.

IPL:

```
https://logbook.cern.ch/elogbook-server
/#/logbook?logbookId=1696&
dateFrom=2024-02-14T07%3A00%3A00&
dateTo=2024-02-15T07%3A00%3A00
```

(from 17:15)

Old limits:

```
https://logbook.cern.ch/elogbook-server
/#/logbook?logbookId=1696&
dateFrom=2024-02-15T07%3A00%3A00&
dateTo=2024-02-16T07%3A00%3A00
```

All limits for pot XRPV.A6R5.B1:

```
https://logbook.cern.ch/elogbook-server
/#/logbook?logbookId=1696&
dateFrom=2024-02-16T07%3A00%3A00&
dateTo=2024-02-17T07%3A00%3A00
```

DEILE 2024-02-26 11:01:49 ✓

DEILE 2024-03-07 14:44:09

Partial re-validation after detector package installations:

```
https://logbook.cern.ch/elogbook-server#
/logbook?logbookId=1696&
dateFrom=2024-02-29T07%3A00%3A00&
dateTo=2024-03-01T07%3A00%3A00
```

Beam mode and flags combinatorics test not done, as agreed (interlock logic card not touched).

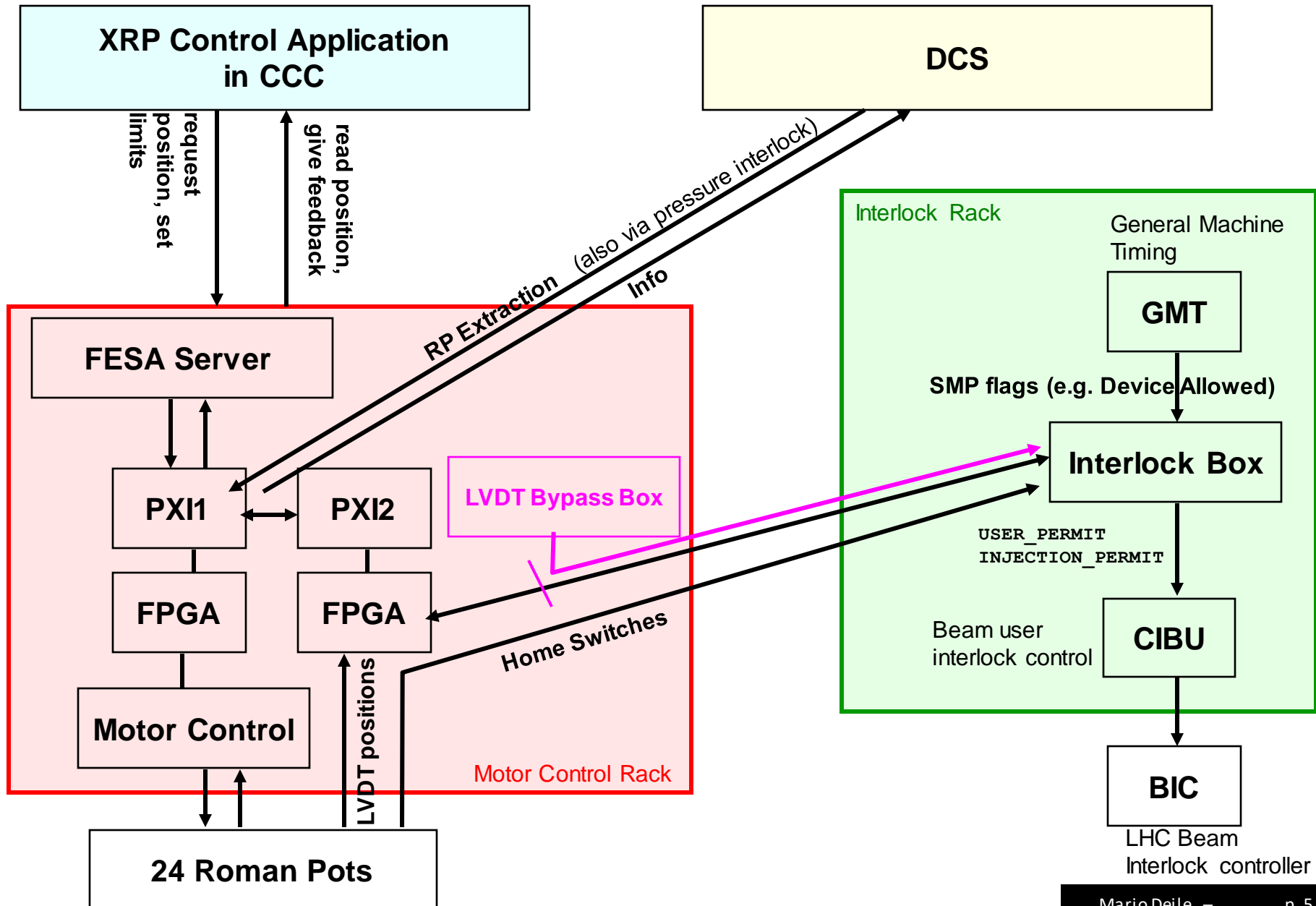


- Due to major LVDT drifts observed in 2023:
New calibration curves (motor/resolver vs. LVDT) implemented for 2024
- Recent problem (solved):
From 5 to 6 March the communication between the PXIs (motor control <-> LVDT) was down → all positions and limits displayed as “0” in DCS and CCC even though both PXIs were running, and the actual limits applied were correct.
Solution by S. Ravat late on 6 March:
Communication between the PXIs requires exchange of certificates, which expire every few years.
Installation of renewed certificates reestablished the normal status.

XRP system now ready for beam.

Reference Material

Movement System Architecture (strongly simplified)

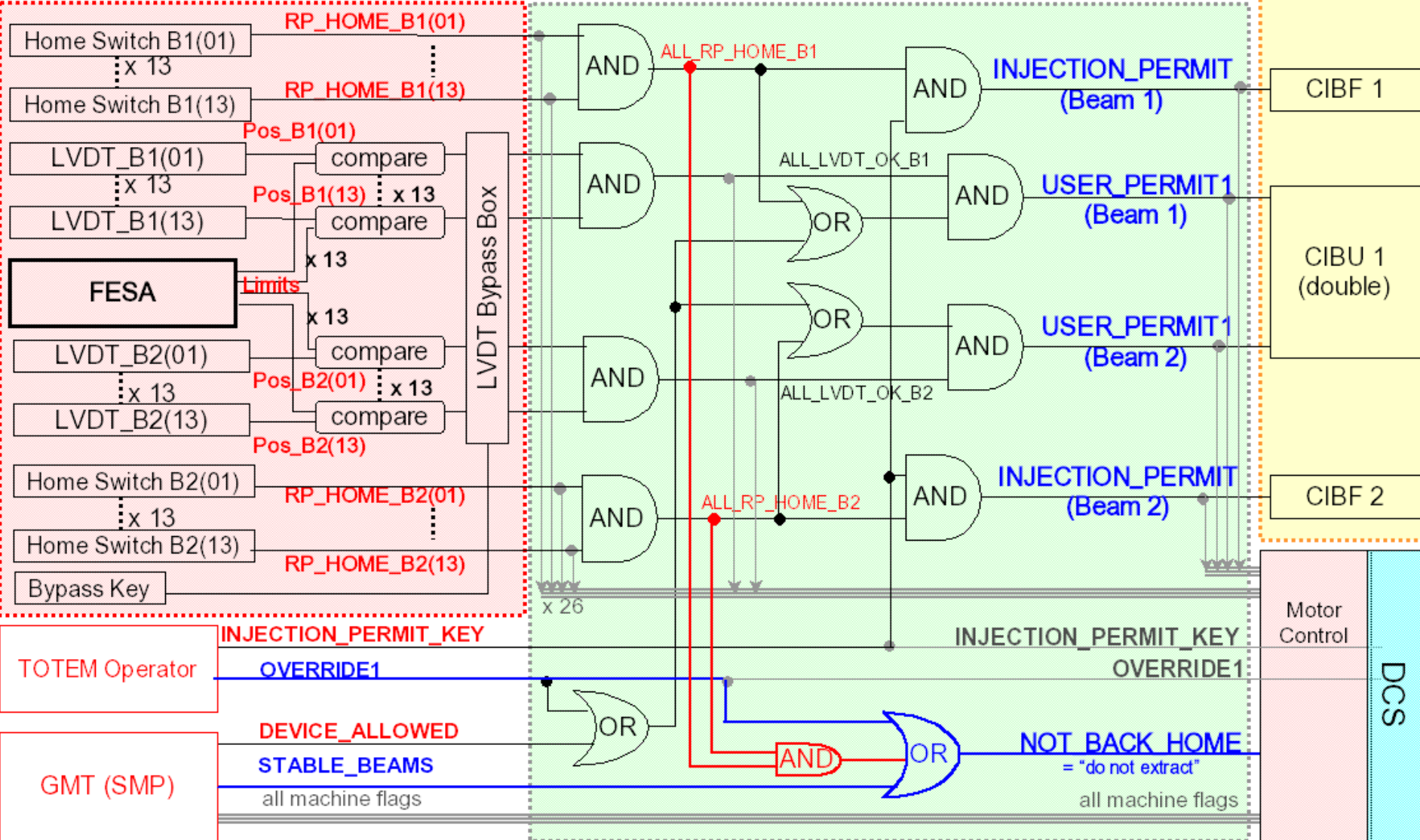


TOTEM-BIS Interlock Logic Since 2015

IN MOTOR CONTROL RACK

TOTEM INTERLOCK BOX

CMS S1E08



Interlock Logic 2015

(Zoom on the motor control)



zoom

