Beamgates: Hardware Layout (original)
Beamgates : Hardware Layout (future)

GHM Beam Area
GLM Beam Area
HRS 2:nd Magnet Section

GHM Main + User
GLM Main + User
GPS Main + User

GPS Central Beam Line
GPS Magnet Section
HRS 1:st Magnet Section

GPS Front End
HRS Front End
New Control Room

NCR Button (Open) / Close
OCR Button
User signal
Tapestation
Override
Beamgate Status

Hall & Old Control Room

NCR Button
OCR Button (Open) / Close
User signal (Open) / (Close)
Tapestation (Open) / (Close)
Override (Open) / Close
Beamgate Status

User signal is high (= open) if disconnected

Software

Beam-enable (Open) / Close
Timing Select User Tapestation None
Laser timing Enable / disable
Beamgate Status

...repeated x4 for HRS, GPS, GLM, GHM
Software
Beam-enable
Select

Hardware
NCR Button
OCR Button
User signal
Tapestation
Laser timing
Proton timing
Emergency
Beamgate Status

Interlocks
Vacuum OK
Etc

Key: High = Beam-on
High = Beam-off

Connect these supplies to alarm system
Construction

Control panel OCR
Control panel NCR (inc. proton requests)
Logic cards
Controls system I/O
Application
Cabling
HV switches
Power supplies
Power monitoring
Bipolar beamgates for GPS x3 (?)
Open Questions

Can software controls be trusted with beam on/off?
- Reliability is needed anyway: work needs to be done here

How to handle power supply failure
- via controls alarm system?

How to handle switch failure
- specialised hardware readback + software alarm?