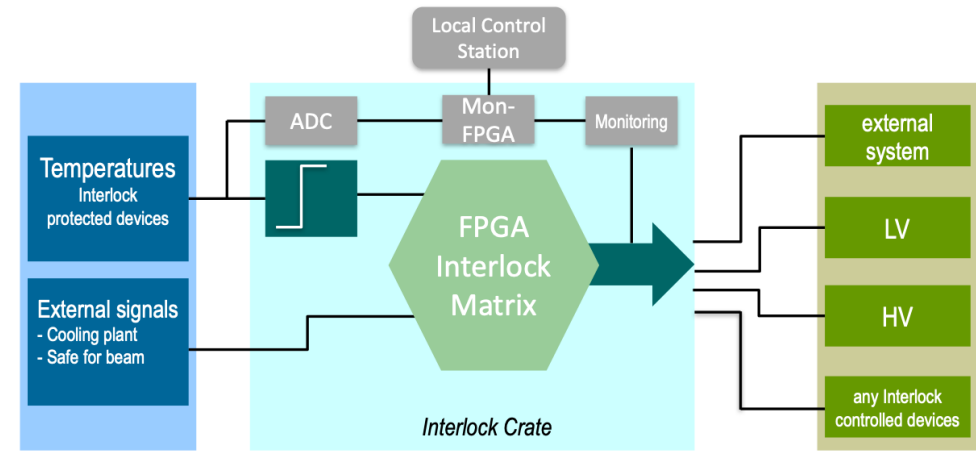
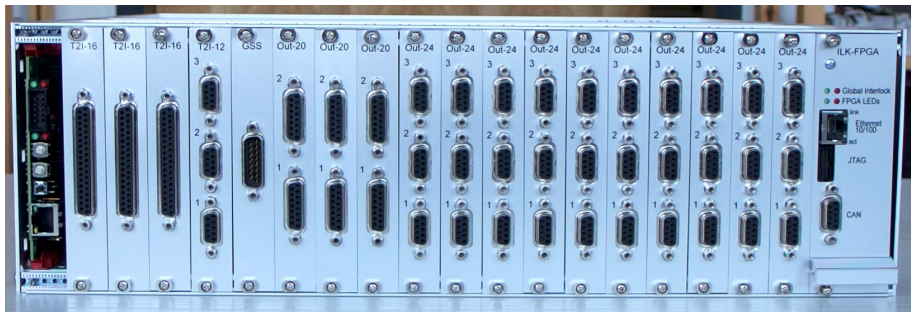


The ITk interlock hardware protection system from concept to realization

- Heat-ups can cause irreparable damages to silicon detectors. This must be avoided by all means, specially as the ITk detector elements - once installed - are not accessible over years.
- The ITk Interlock system protects the detector elements against upcoming risks. It acts between devices to be protected and units which can be a risk to the devices. FPGAs house the interlock matrix decision tables.
- To keep the number of detector elements, which are out of service, low, a high segmentation is required. As ca. 13000 channels must be handled, a custom made solution was chosen.



concept of the ITk Interlock System



the Local Interlock Safety System crate

- To fulfill the requirements of the ITk strip and pixel detector, a modular design was chosen. Besides the Interlock and the Monitoring FPGAs, three types of IO-modules were designed. The users can equip their interlock crate according to their needs. Up to 576 interlock signals can be handled by one interlock crate.
- The pre-production is actually ongoing and first crates are delivered to the sub-detectors.