

C36

Designing a beamline equipment protection system using a programmable logic controller

James M. Minich

Experimental Facilities Division, Argonne National Laboratory, 9700 S. Cass Avenue, Argonne, IL 60439, U.S.A.

As part of the Synchrotron Radiation Instrumentation Collaborative Access Team, a new beamline equipment protection system was designed, implemented and installed. The beamline equipment protection system is designed to assure the safe operation of bending magnet and insertion device beamline components, such as white-beam slits, user filters, shutters and stops, mirrors and monochromators. Goals of the equipment protection system were to improve equipment safety performance, reduce nuisance trips and incorporate additional system functions with minimal cost. To meet the requirements of such a system, a programmable controller, Block I/O, and specific interfaces were engineered.

Aspects of the design requirements, functionality, and constraints are presented, as well as specifics on programmable ladder logic design, hardware selection, testing, and interfacing requirements.

Work supported by the U. S. Department of Energy BES-Materials Science under contract W-31-109-ENG-38.