

UPGRADING BEAM LINE INTERLOCK AND CONTROL SYSTEMS AT THE BSRF

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At present, there are four beam ports and nine beam lines at the BSRF. The old beam line interlock and control systems have been used for over 10 years [1], so upgrading the old controllers, which are used for beam line vacuum interlock and radiation safety interlock systems, are necessary. Since 1995, the old beam line interlock and control systems have been gradually upgraded. The upgrading goals of the beam line interlock and control systems include improved equipment safety performance, reducing faults, reliable hardware, additional system functions and a new re-designed centralized monitoring system for all the beam lines at a reasonable cost. The old controllers have been replaced with new PLC-based controllers. There are two new PLC-based controllers for each beam line, one controller is responsible for the vacuum protection system, which includes vacuum equipment interlock and controls, and the other controller is for radiation safety interlock system at the same beam line. Each new controller includes a Mitsubishi (made in Japan) PLC as a main device. Each set of PLC comprises a CPU module, ADC module, digital I/O modules, and a RS485 communication link. All the RS485 interfaces for all controllers are serially connected to a centralized monitoring computer. In addition, the operating panel is installed in the front of each controller for local operation.

[1] XIONG Shen-Shou et al, "The vacuum control and protection system for BEPC synchrotron radiation beam lines", Nucl. Instr. and Meth. A282(1989)418-421.