

Development of 499.8 MHz RF Control System for HEPS Booster Ring

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High Energy Photon Source (HEPS) is a 6 GeV fourth-generation synchrotron light source currently under construction in Beijing, China. Three sets of 499.8 MHz RF systems have been installed in the HEPS booster and commissioned, while six sets of RF systems will be installed eventually. The RF system needs to ramp the RF voltage from 2 MV to 8 MV to realize the beam energy ramp from 0.5 GeV to 6 GeV. The RF control system has been developed and successfully commissioned in the HEPS booster. The system mainly includes digital Low-level RF system, RF interlock system, data acquisition system and an EPICS database. Both the low-level system and the interlock system used Xilinx's zynq-7000 series FPGA which comes with a versatile Processing System (PS) integrated with a highly flexible and high-performance Programmable Logic (PL) section. In this paper, we describe the architecture of the RF control system under development, the implemented functions, and the commissioning results.

Keyword

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