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LCLS Magnet Power Supply Upgrade

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The Linac Coherent Light Source is a free electron laser (FEL) facility operating at the SLAC National Accelerator Laboratory (SLAC). The controls for low current powered magnets use a multi-channel power supply controller system (MCOR) to meet the requirements for LCLS. It has a modular architecture that consists of a rack mounted crate, with 16 removable power modules and 1 crate controller. A bulk power supply provides the main DC power for one or more crates. The I/O signals are read by the control system from VME, with an MVME 6100 Power PC CPU, 16-bit, 16-channel ADC and DAC IPAC modules, and a PMC-Event Receiver (EVR) to provide timing for fast feedback over a dedicated network. The MCOR system provides long term stability of 1000ppm over diurnal range of +/-15 degrees C, and can operate up to 120Hz, to meet fast feedback requirements. The upgrade to this system is a SLAC designed slot-0 controller with 2 Gigabit Ethernet ports, USB and serial port, 4 8-channel ADC, 4 8-channel DAC, Digital input and output channels, removable COMx CPU, Xilinx FPGA, timing supporting multi-mode or single mode, and interrupts. A prototype installation has been operating in LCLS Linac for 6 months and will be used for LCLS-II. This paper presents the controls upgrade motivation and commissioning results.

Summary

This talk will presents the magnet controls upgrade motivation and commissioning results.

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