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PIP-II Resonance Control System

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PIP-II Resonance Control System
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Abstract

The PIP-II Resonance Control System has the goal of providing the electronics to mechanically tune four superconducting cavities as directed by two RF control stations or via LAN manual commands (python LEEP scripts). This solution leverages the LCLS-II Resonance Control chassis design, but with an Intel based FPGA carrier and is largely compatible with LCLS-II screens. This resonance control system will have a 2 Hz/step resolution with up to 256 micro steps per full step. This system also employs piezo driver control with intended resolution better than 1 Hz and a control bandwidth of ˜ 500 Hz. The piezo driver boards have ADCs sampling key piezo signals and the DAC output. Cavity detuning information is received over a QSFP fiber interface from the RF station(s). The waveforms of these sampled signals are displayed on EPICS screens for live troubleshooting and diagnostics.

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