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# Preliminary Design of a General Electronics Platform for Accelerator Facilities

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Many accelerators require considerable electronic systems for early tests and verification. In Shenzhen Superconducting Soft X-ray Free Electron Laser (S3FEL), for example, we classify electronic systems into accelerator and beamline categories. The accelerator category includes laser systems, microwave systems, beam measurement systems, magnetic power supply systems, etc., while the beamline category includes optical and diagnostic systems, experimental station systems, etc. The requirements of these systems include analog or RF signal conditioning, waveform digitization, microwave control, motor control, etc. To meet the early tests and verification of various systems, save development expenses, and improve the reusability of hardware, firmware, and software systems, we have considered the needs of each system and preliminarily designed a general electronics platform based on MTCA.4. The Advanced Mezzanine Card (AMC) will place an FPGA Mezzanine Card (FMC) that supports 500 MSPS to 2 GSPS ADC/DAC. We will design two FMC cards on the Rear Transition Module (RTM), which can be used for analog signal conditioning and waveform digitization by 10 MSPS to 250 MSPS ADC/DAC or motor control. The commercial MCH, CPU, power module, and MTCA crate are deployed. This platform can also be applied to other accelerator facilities.

## Minioral

Yes

## IEEE Member

No

## Are you a student?

No

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