

System Architecture and Hardware Development for the LLRF System for EU-XFEL using MTCA.4

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The Low-Level RF (LLRF) control system for EU-XFEL in each RF station requires simultaneous data acquisition of up to 100 fast ADC channels at sampling rates of around 100 MHz and real time signal processing within a few hundred nanoseconds. At the same time the standardization of all systems are common objectives for DESY for cost reduction, performance optimization and machine reliability. A new MTCA.4 specification is an extension of the telco MTCA basic specifications. MTCA.4 defines analog IOs, Rear Transition Modules, high speed serial communication, precision clock and trigger distribution, and full management based on IPMI. A architecture of the LLRF system based on MTCA.4 allows for modular designs with highly integrated backplane interfaces and custom RF signal distribution. Presentation will cover boards development at DESY and presents the LLRF system architecture.

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