

Engineering Challenges in Scaling MicroTCA for High-Power Double Full-Size AMC Configurations

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Several companies engaged in the development and construction of quantum computers have adopted MicroTCA as the platform for their control systems, taking advantage of the proven architecture and ecosystem established within the MTCA.4 community. A significant number of these implementations utilize the Double Full-Size AMC form factor to provide increased front panel area and to enable the use of larger heat sinks for adequate thermal management.

The integration of up to twelve Double Full-Size AMCs, two MCHs, and a minimum of two Power Modules within a single MTCA crate introduces substantial mechanical, electrical, and thermal design challenges for crate manufacturers. This presentation discusses the current system-level constraints and outlines possible solutions, including new crate designs optimized for Double Full-Size AMC configurations.

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