

## IPMI Support for FMC modules in MTCA.4 Systems

*Thursday, 3 December 2020 16:45 (15 minutes)*

The FPGA Mezzanine Cards (FMCs) are commonly used in various industrial and scientific projects. FMCs are also often used as an modular extension of Advanced Mezzanine Cards (AMCs) in MicroTCA.4 systems. However, there is no standardized way of identifying FMC module by the FMC Carrier in such systems. It is especially problematic as the FMCs requires a dedicated IO voltage (Vadj) that must be compliant with the power supply of the carrier module FPGA device. Incorrect IO voltage may cause damage to the module or carrier.

Therefore, an extension of AMC and MicroTCA specifications is required. It could include a support for Field Replaceable Unit (FRU) present on the FMC module. In addition, FMC carrier could continuously check voltages and currents of the FMC module. Proper diagnostics can improve reliability of the module and whole system. FRU and sensors of the FMC module could be displayed in MCH terminal in a similar manner as it is currently done for Rear Transition Modules (RTMs).

Available on the market FMCs are often complex and can consume a significant amount of power, that need to be dissipated in form of heat. Therefore, components on the modules can easily reach high temperatures. MicroTCA.4 systems use temperature sensors available on AMC and RTM cards to actively control fan speed in the chassis. In similar way, the FMC temperature sensor could allow to monitor health of the module and take required measures in order to sustain operation of the FMC. Currently, VITA 57 standard does not specify a temperature sensor nor the I2C address for it. Therefore, the IPMI standards for MicroTCA, AMC and VITA 57 ought to be extended in the future.

In the presented work we developed and tested a prototype of MMC suitable for FMC carrier modules. It showed that IPMI specification could be extended to support FMC modules.

### Summary

**Primary authors:** NOWAK VEL NOWAKOWSKI, Patryk (Lodz University of Technology); Prof. MAKOWSKI, Dariusz (Lodz University of Technology)

**Presenter:** Prof. MAKOWSKI, Dariusz (Lodz University of Technology)

**Session Classification:** Session 9

**Track Classification:** Future of standard and interoperability