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MTCA.4-based clock and timing distribution for PETRA IV

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At DESY, the technical design phase to upgrade the PETRA III storage ring towards the 4th-generation synchrotron light source PETRA IV is ongoing. This foresees a complete renewal of the machine including its existing timing and synchronisation system.

The new timing and synchronisation system needs to deliver precise clocking, which will be implemented by an application-specific hardware design. Further on, it has to provide trigger signals and beam-synchronous information to the subsystems located across the facility. The main hardware for the timing system will be based on the MTCA.4 standard. This platform has been successfully implemented here at DESY / EuXFEL. Because of new specific requirements for PETRA IV, the successor hardware has to be adapted and upgraded to a new design.

This paper describes the system design and the facility-wide distribution of precise clocks, trigger signals and timing system-related meta-information. We illustrate how the new MTCA.4-based AMC card (DAMC-X3TIMER) meets the requirements for PETRA IV. Insights into ongoing lab tests on components qualification and the status of the development will be presented.

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Footnotes

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Yes

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