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Jefferson Lab's multi-purpose modular FPGA based controller board improves on project design cycle

Embedded control design often requires extensive engineering time. Development boards, while useful, provide minimal peripherals for complex projects. A modular Field Programmable Gate Array (FPGA) controller printed circuit board (PCB) was designed which reduces concept to implementation time dramatically. A low cost flash embedded FPGA was chosen for this board which helped reduce components and complexity. A detailed specification and design choices for the controller board will be presented. Initially this controller was designed for a linear DC-DC power converter for trim magnet system. It was further realized that with available ADC and DAC channels, many I/O ports and available MODBUS, serial communication protocol that this board can be used for other applications. Such as, Jefferson Lab's low noise supply (LNS) (100 parts per million (ppm) 20A DC power supply) and a controller for three 15kW power supplies each with motorized polarity switches. These applications make this controller an "all-in-one" design for low cost quick turnaround projects.

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No

Would you like to submit this poster in student poster session on Sunday (August 10th)

No

Footnotes

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Yes

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