



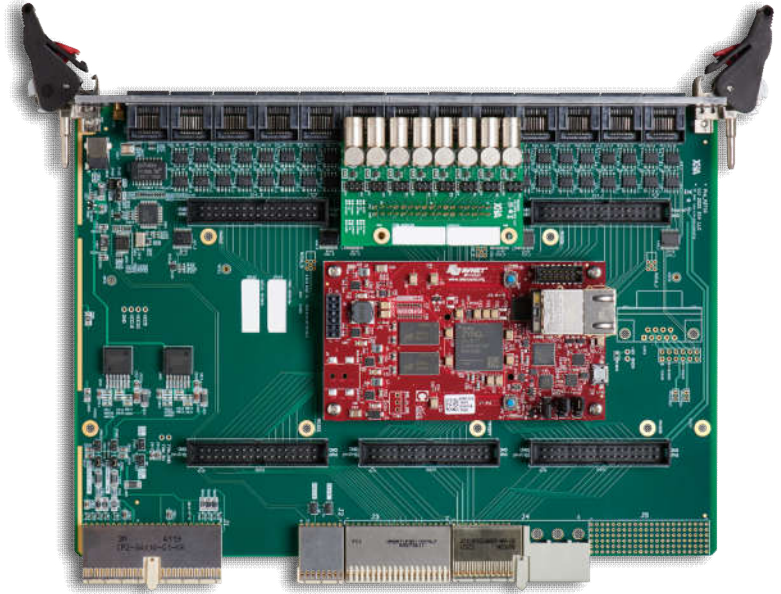
Instruments That Advance The Art

MZ-TrigIO

Clock and Trigger Distribution For Pixie-16 Systems

FEATURES

- 48 front panel LVDS input/output connections
- 48+ Pixie-16 backplane trigger connections
- Zynq processor with embedded Linux, acting as a standalone PC with built-in SD card drive, 1 GB RAM, USB host, Ethernet, webserver
- 10/100M Ethernet, compatible with IEEE 1588 PTP and SyncE
- Sub-nanosecond Timing Resolution
- Desktop, rack mount, OEM
- Custom connections with I/O daughtercards
- Fully open source software and firmware with demo Vivado project



MZ-TrigIO with optional MEZZ01 daughtercard

OVERVIEW

The Pixie-16 MZ-TrigIO is a Zynq (FPGA+ARM) module combined with an input/output carrier board. The carrier board is primarily a 6U breakout board for the Pixie-16 custom PXI chassis backplane. It connects ~48 lines from the backplane to the Zynq FPGA. Another 48 lines from the Zynq FPGA connect to front panel I/O via bidirectional LVDS buffers and RJ-45 connectors for CAT-5 cables. The backplane and front panel connections are also connected to 0.1" headers to allow direct access via cables or custom signal I/O via daughtercards.

The Zynq ARM Linux OS (Ubuntu 18) can be accessed via USB/UART on its native connectors but mainly via a PTP compatible 10/100M Ethernet port on the front panel. Simple Linux programs (C/C++) control the FPGA logic and make monitoring data available on a webpage hosted by the Zynq/Linux. A PTP synchronized clock can become the Pixie-16 chassis master clock, and triggers can be issued at user specified date and time, synchronized over the network via PTP to tens of nanosecond precision (sub-ns with syncE).

Besides being operated in the Pixie-16 PXI chassis, the Pixie-16 MZ-TrigIO can also be operated as a standalone desktop unit.

APPLICATIONS

- Trigger distribution for Pixie-16 systems
- Monitoring Pixie-16 operation via webserver
- General purpose coincidence and multiplicity logic (user programmable)
- LVDS-to-CMOS converter
- PTP controlled timing of trigger and control signals