6U VPX Channelizer Platform

6U VPX Platform for Time-Critical Commercial & Military Applications

- 19” 2U rackmount enclosure
- 1-slot backplane
- BittWare Stratix V FPGA-based 6U VPX board
- 4-channel, up to 5 GSPS, 8-bit ADC
- 6U VPX rear transition module for access to VPX I/O
- BittWorks II Development Tools

BittWare’s 6U VPX Channelizer Platform is a complete development and testing system targeted for a wide variety of applications, including satellite communications, radar, and electronic warfare. The single-slot OpenVPX system includes a BittWare Stratix V FPGA-based 6U VPX board along with a rear transition module for convenient I/O access. High bandwidth A/D converters provide support for Ultra Wideband (UWB) communication. Hardware-in-the-loop support for Simulink provides an additional layer of flexibility, allowing rapid control prototyping and other real-time testing.

BittWare FPGA 6U VPX Boards
The channelizer platform includes BittWare’s S5-6U-VPX (S56X), which features two Altera Stratix V GX FPGAs. The board’s two VITA-57 FMC interfaces support additional I/O and processing cards. The S56X also features an ARM Cortex-A8 control processor for control plane interface and processing, extensive on-board memory, and I/O interfaces including GigE, SerDes, LVDS, JTAG, and RS-232.

An S56X rear transition module is included to provide convenient rear panel I/O access, including 8 QSFP connectors for high-speed serial access, along with SFP, PCIe, GigE, SATA, JTAG, and LVDS. A debug breakout board also provides front-panel access via USB, JTAG, RS-232, and Ethernet.

High-Speed A/D FMC
The system includes a VITA-57 FMC for high bandwidth data transfer to and from the FPGAs on the S56X board. An ADC FMC provides 1, 2, or 4 8-bit A/D channels up to 5 GSPS, directly to one of the S56X FPGAs.

2U VPX Rackmount/Desktop Chassis
The system includes a 19” rackmount enclosure with a VITA 46/65 compliant single-slot VPX backplane, featuring high-speed multi-gig connectors J0-J6. The 2U high chassis accommodates one 6U x 160 mm board and includes a 250W Power-One power supply. It provides integrated cooling with two 12 VDC fans and side-to-side airflow, and includes an advanced EMI shielding package.

Software Support
BittWare offers complete software support for the S56X with its BittWorks II software tools. The BittWorks II Toolkit is a collection of libraries and applications for BittWare’s Stratix V FPGA-based boards. Designed to make developing and debugging the applications for BittWare’s boards easy and efficient, the Toolkit provides the glue between the host application and the hardware. The Toolkit supports 32-bit, and 64-bit Windows and Linux platforms.

Electronic Warfare Jammer Channelizer
Electronic Warfare Jammers need to analyze wide bandwidths with low SNRs in order to detect critical, time sensitive threats. One way to achieve this is to channelize the wide bandwidth to separate out signals of interest from noise and interferers through a filter bank and FFT. To streamline this effort, Altera has developed a highly parameterizable and efficient Super Sample Rate FFT IP, which allows designers to select the number of phases and size of FFT to output an efficient implementation for GHz sample rate ADCs. To demonstrate this capability, Altera has teamed with BittWare to channelize a 2.5GHz ADC into various channels which is then displayed in Matlab via Altera’s System in the Loop feature.

Your Solution... Built on BittWare
6U VPX Channelizer Platform

Specifications

Chassis
- 19" 2U rackmount
- Flush front card cage supports one 6U x 160 mm board, horizontal-mounted
- Integral cooling with side-to-side airflow and two 12 VDC fans
- 250W Power-One plug-in power supply
- Advanced EMI shielding package

Single-Slot VPX Backplane
- Single-slot VITA 46.1 backplane
- High-speed Multi-gig connectors J0-J6
- Built-in ESD ground protection

BittWare S5-6U-VPX
- 6U single-slot VPX
- 2 Altera Stratix V GX FPGAs
- 48 multi-gigabit transceivers
- Additional I/O: LVDS, GigE, 10/100 Ethernet, RS-232, JTAG
- 2 VITA-57 FMC sites

Breakout Board Options for S56X
- ACC-S56X-BORT: Rear transition module with 8 QSFP, 2 SFP, 2 RJ-45, JTAG, PCIe x1, SATA, and Ref Clk input
- BWBO: Debug I/O breakout board with USB, JTAG, RS-232, and Ethernet access

VITA 57 FMC for S56X
- ADC: 1, 2, or 4 channels 8-bit, up to 5 GSPS*

Development Tools
- BittWorks II Toolkit - host, command, and debug tools for BittWare hardware
- FPGA DevKit - FPGA board support IP and integration
- Altera Quartus II tools for Stratix V FPGAs

* Default ADC specs. Contact BittWare for other options.

Electronic Warfare Jammer Channelizer Block Diagram

Configuration Options

Base Kit
- 2U rackmount or desktop enclosure with 1-slot 6U VPX backplane
- 250 Power-One power supply
- BittWare Toolkit development software

Board Options
- BittWare S56X with ADC VITA 57 FMC
- BittWare rear transition module (ACC-S56X-BORT)
- BittWare debug breakout board (BWBO)

Software Options
- Altera Quartus II development tools
- BittWare FPGA DevKit

Ordering Options
Contact BittWare