

VPX Rapid Development Platform

Development Environment for 3U VPX Systems



- 19" 4U rackmount enclosure
- 5-slot high-speed backplane (OpenVPX profile -3)
- Up to 5 BittWare FPGA-based 3U VPX boards
- Intel® Core™ 2 Duo processor Single Board Computer with 4 GB of memory and 2x GigE ports (optional)
- Hard drive with 1 TB data storage (optional)
- DVD R/W drive (optional)

The VPX standard is ideal for high-bandwidth, high-performance applications in demanding markets such as defense and aerospace, communications, and instrumentation. BittWare's VPX Rapid Development Platform (VRDP) combines the benefits of OpenVPX with the processing power of up to five Altera Stratix® Family FPGAs in an integrated system solution. The development platform is a completely stand-alone setup for designing and testing OpenVPX systems. It offers up to five OpenVPX slots, opening up a wide array of system configurations. The system arrives tested and configured, enabling designers to speed up the development process. And with the addition of BittWare's ATLANTiS FrameWork, which enables reconfigurable data routing, this development system allows users to fully design and debug in a flexible environment.

3U VPX Backplane

The standard platform includes a VITA 46/65 compliant 5-slot 3U VPX backplane, featuring a twisted ring routing topology, with each slot having two fat pipes for slot-to-slot connectivity. This leaves plenty of signals available for rear panel I/O, allowing the system to be adapted to various requirements. Additional backplane profiles are also available. Contact BittWare for details.

Rackmount Chassis

The VRDP includes a 19" rackmount enclosure. The 4U high chassis accommodates five 3U x 160 mm boards and includes a 350 W ATX power supply. It provides integrated cooling with two 12 VDC fans and bottom-to-top airflow, and includes an advanced EMI shielding package.

BittWare FPGA 3U VPX Boards

The development platform is available with up to five BittWare FPGA 3U OpenVPX boards; options include the S4-3U-VPX (S43X) or GT-3U-VPX (GT3X). The S43X features a large Altera Stratix IV GX FPGA, and the GT3X features the Stratix II GX FPGA and four Analog Devices ADSP-TS201 TigerSHARC DSPs. The VPX boards support BittWare's ATLANTiS FrameWork (AFW) for control of I/O, routing, and processing. Each board also features BittWare's FINE for control plane interface and processing, extensive on-board memory, and I/O interfaces including SerDes, 10/100 Ethernet, JTAG, and RS-232.

A variety of A/D and D/A FMC I/O modules are available for the S43X to expand the system's I/O capabilities. Rear transition modules are also available for the S43X and GT3X to provide convenient rear panel access to GigE, SerDes, and LVDS I/O signals.



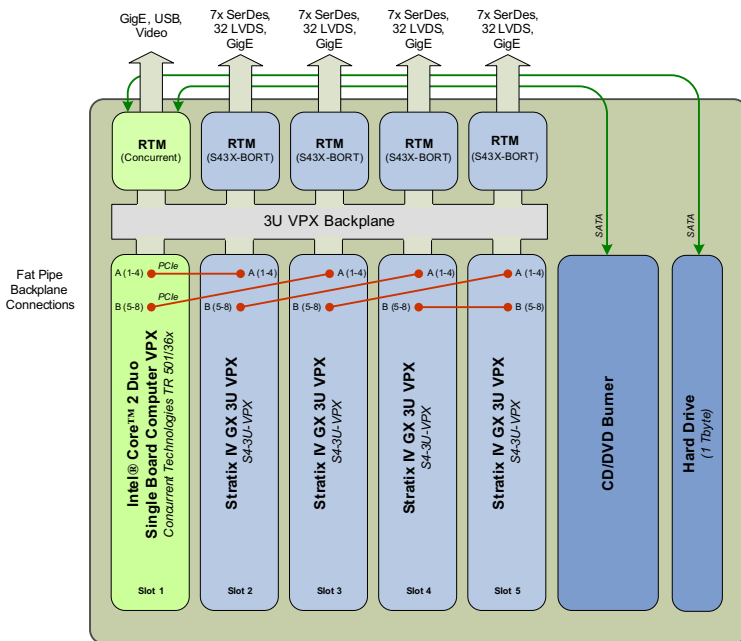
VPX Rapid Development Platform

Additional Hardware Options

The VPX Rapid Development Platform is available with an optional Single Board Computer 3U VPX module (Concurrent Technologies TR 501/36x) offering a 1.86 GHz Intel Core 2 Duo processor, up to 4 GByte DRAM, an XMC module interface with rear I/O, and two GigE ports, which connect to a rear transition module (also from Concurrent Technologies). In addition to GigE, the RTM provides two SATA connectors, a USB connector, and video.

Additional options for the VRDP system include a 1 TB hard drive and a DVD read/write drive. Both drives connect to the Concurrent RTM via the SATA connectors.

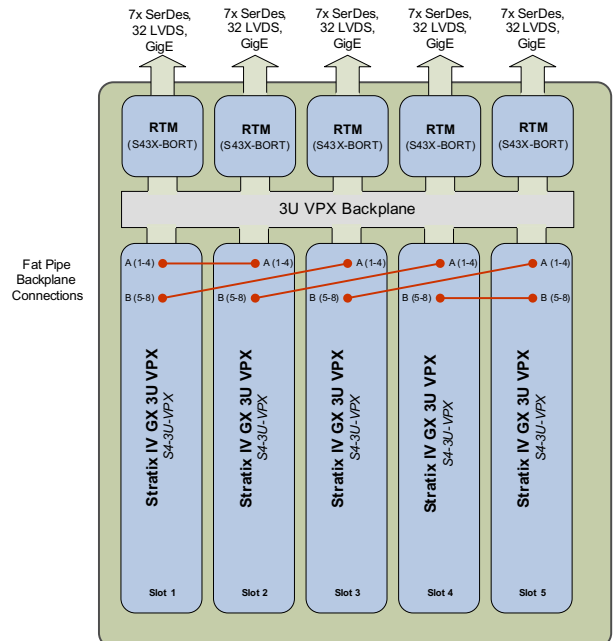
Figure 1: Example System Configuration 1



Software Support

BittWare offers a complete suite of software development tools to make developing and debugging applications easy and efficient. The tools include device drivers, host interface libraries, a wide variety of diagnostic utilities and configuration tools, and debug tools. Altera's Quartus II provides development tools for the Stratix Family FPGAs.

Figure 2: Example System Configuration 2



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Specifications

Chassis

- 19" 4U rack mount
- Flush front card cage supports 3U x 160 mm boards, vertical-mounted
- Five 3U VPX slots
- Integral cooling with bottom-to-top airflow and two 12 VDC fans
- 350W ATX power supply supports +5V@35A, +3.3V@28A, +12V@18A, and -12V@1A outputs
- Advanced EMI shielding package

5-Slot 3U VPX Backplane

- 5-slot VITA 46.1 backplane
- High-speed MultiGig connector
- Twisted Ring routing topology
- Built-in ESD ground protection for each slot

Single Board Computer (Optional)

- Concurrent Technologies 3U VPX (VITA 46.0) N-series single board computer
- 1.86 Intel® Core™ 2 Duo processor
- 4 GB of memory
- Configurable PCI Express fabric interface
- 2 Gigabit Ethernet Ports to the RTM
- RTM provides 2 RJ45 connectors, 2 SATA connectors, 1 USB connector, and video

BittWare S4-3U-VPX

- 3U single-slot VPX
- Reconfigurable Altera Stratix IV GX FPGA implementing BittWare ATLANTiS FrameWork
- Fully connected to VPX: GigE, 15 SerDes, 32 LVDS
- Additional I/O: 10/100 Ethernet, RS-232, JTAG
- Vita 57 FMC site
- Rear transition module available (ACC-S43X-BORT)

VITA 57 FMC Options for S43X

- **3FAD:** 1 or 2 channels 8-bit, up to 2.5 GSPS ADC
- **3FAE:** 1 or 2 channels 10-bit, up to 2.5 GSPS ADC
- **3FAN:** 8 channels 12-bit, 65 MSPS ADC
- **3FAP:** 4 channels 14-bit, 250 MSPS ADC
- **3FDJ:** 1 or 2 channels 16-bit, up to 1 GSPS DAC
- **3FTV:** 2 channels 14-bit, 250 MSPS ADC and 2 channels 16-bit, 250 MSPS DAC

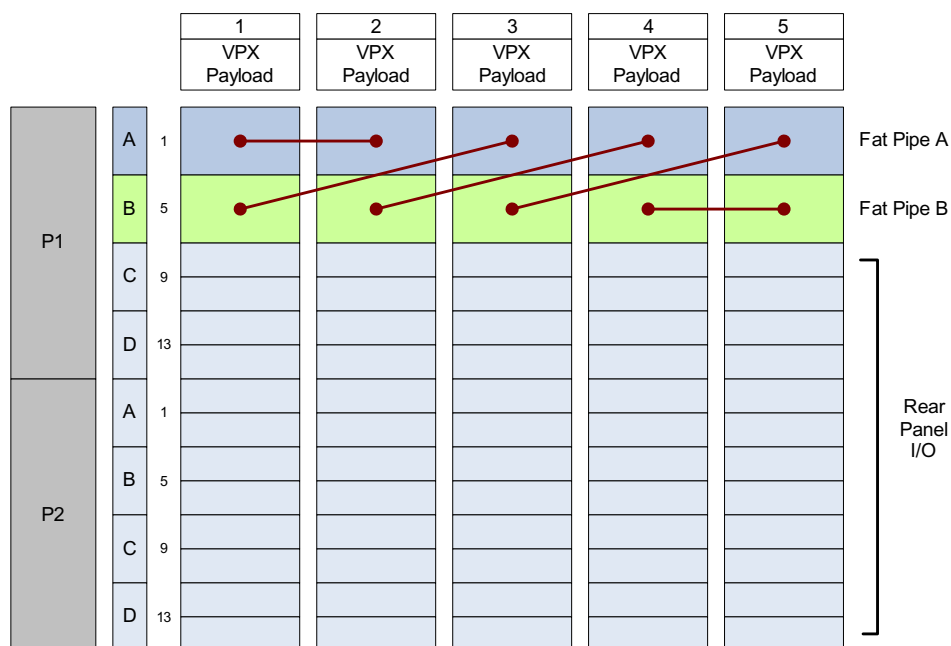
BittWare GT-3U-VPX

- 3U single-slot VPX
- Reconfigurable Altera Stratix II GX FPGA implementing BittWare ATLANTiS FrameWork
- Four Analog Devices ADSP-TS201S TigerSHARC DSPs
- Fully connected to VPX: GigE, 15 SerDes, 32 LVDS
- Additional I/O: 10/100 Ethernet, RS-232, SerDes
- Rear transition module available (ACC-GT3X-BORT)

Development Tools

- BittWorks Toolkit - host, command, and debug tools for BittWare hardware
- BWIO - software library for controlling I/O on BittWare boards
- ATLANTiS FrameWork - FPGA framework for Altera Stratix II GX and IV GX FPGAs
- Altera Quartus II tools for Stratix II GX and IV GX FPGAs

Figure 3: 3U VPX Backplane Block Diagram (Standard Option)



Configuration Options

Base Kit	Board Options	Software Options
<ul style="list-style-type: none"> 4U rackmount enclosure with 5-slot 3U VPX backplane 350W ATX chassis power supply BitWare Toolkit development software 1TB hard drive (optional) DVD read/write drive (optional) 	<ul style="list-style-type: none"> BitWare S43X with optional VITA 57 FMCs: 3FAD, 3FAE, 3FAN, 3FAP, 3FDJ, 3FTV BitWare GT3X BitWare rear transition modules (ACC-S43X-BORT, ACC-GT3X-BORT) Concurrent Technologies 3U VPX Single Board Computer Concurrent Technologies rear transition module 	<ul style="list-style-type: none"> Altera Quartus II development tools ATLANTiS FrameWork

Ordering Options

VRDP-AA-BB-CCC-DE			
AA	Chassis E1 = 19" rackmount enclosure*	BB	Backplane 01 = 5-slot 3U VPX twisted ring*
		CCC	Power Supply A35 = 350W AC power supply*
D	CD/DVD Drive 0 = Not installed 1 = SATA DVD R/W	E	Hard Drive 0 = Not installed 1 = 1 Terabyte SATA

* Default

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