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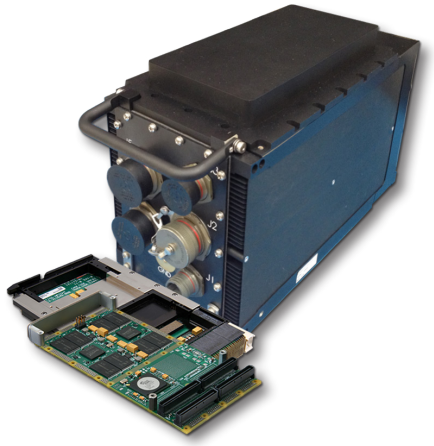
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MPMC-9351-0003

Multi-Platform Modular Computer 5-slot 3U VPX System

CURTISSWRIGHTDS.COM



Key Features

- Environmentally and electrically sealed
- Integral forced air cooling
- 5-slot 3U VPX 0.8” pitch (1 spare)
- I/O:
  - 2 x GbE ports
  - 2 x GPIO
  - 2 x USB 2.0
  - 1 x node, 3 ports IEEE 1394b-2002 (FireWire)
  - 3 x RS-422
  - 1 x PPS input
  - 2 x Camera interfaces: LVDS data + power
- 28 VDC input, compliant to MIL-STD-704E (300W @ 28 VDC)
- Power supply
- Fan

Applications

- Mission computing
- EO/IR

Overview

The Vision Processor Computer (VPC) is comprised of two 3U VPX3-1252 single board computers (SBCs), two FPE320 FPGA cards, one MPEG FireWire XMC card, one XMC-552 flash XMC card and one 3U power supply. The front panel CCA consists of interface connectors, two camera interface drivers, ESD protection circuitry, video inputs from up to two cameras, external storage interface for a solid state hard drive and video compression by MPEG4 engine and output via IEEE1394b-2002 FireWire.

The VPC Payload

Single Board Computer

The VPX3-1252 combines the performance and the advanced I/O capabilities of the Intel® Core™ 2 Duo SP9300 processor and Intel GS45 Chipset with an extensive I/O complement, providing a highly capable processing platform for a wide range of high-performance applications. Designed for space constrained applications, the VPX3-1252 represents the latest step in the evolution of rugged high-performance, highly integrated, small form factor SBCs.

Available in a full range of environmental build grades, the VPX3-1252 is specifically designed to meet the challenges of rugged deployed high density computing. The VPX3-1252 packs the greatest functionality into the smallest standard form factor, draws the lowest possible power while retaining maximum flexibility, and offers an impressive complement of I/O capability to satisfy the most demanding harsh environment application needs.

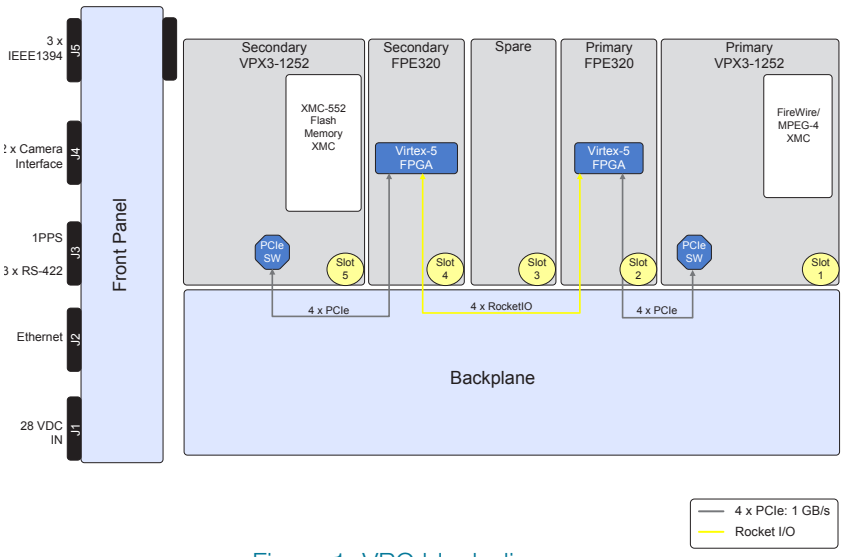


Figure 1: VPC block diagram

FPGA processor

The FPE320 is a 3U VPX FPGA processor board that incorporates the largest Xilinx® Virtex®-5 FPGAs available with a FPGA Mezzanine Card (FMC) site. Providing many resources in a small, rugged form factor, the FPE320 is the ideal FPGA platform for 3U systems that need to acquire analog and other high-speed I/O, or that need a large FPGA processor.

SATA Solid State Drive

The XMC-552 is an ideal storage solution for system upgrades, or new systems, where space is restricted and an XMC or PMC site is available. The XMC/PMC-552 is a rugged, high performance, reliable and power efficient NAND flash Solid State Drive (SSD) solution. The XMC/PMC-552 does not have any moving parts, providing significantly lower power consumption and an order of magnitude improvement in reliability in environments with vibration and contaminants, compared to traditional rotating Hard Disk Drives (HDDs). Also important is the clear performance advantage, due to the lower latency and higher data transfer rates. This translates to enormous benefits in regular operating conditions and more critically, in high-risk combat environments.

FireWire/MPEG video compression/RS-422 XMC

The system provides an IEEE 1394b compliant interface with one node containing three ports. The IEEE 1394b interface is provided on the J5 connector. Each port supports a minimum of 200 megabits per second effective throughput. Port speed/mode selections conform to Mode 5: IEEE 1394b-2002 Beta only, S200b and S100b operating speeds. Each node implements all registers and requirements providing bus manager capabilities as defined in IEEE 1394b-2002. The IEEE 1394 link-layer is Open Host Controller Interface (OHCI) compliant. In addition, the memory allocated to the node is 8 Mbytes.

Each port is presented through a Quadrax connector.

Software

A full suite of development tools are available for the VPC. A certified VxWorks 6.9 Board Support Package (BSP) is provided for the VPX3-1252 to take full advantage of the powerful dual core Intel processor. Curtiss-Wright delivers DMA drivers useful for high speed PCI Express® (PCIe) transfers between the FPE320s and the VPX3-1252 SBCs, with very low CPU usage. Drivers are also provided for the internal XMC-552 flash memory card, FireWire interface, FPE320 video interface, serial ports, and the MPEG compression engine. The system acceptance test procedure software source code can be used as sample code for application development.

Fully comprehensive Built-in Test (BIT) is provided. There are three levels of BIT: Power on Built-in Test (PBIT), Continuous BIT (CBIT), and Initiated BIT (IBIT). All three levels combined allow the application software to detect 98% of all faults, isolate to a single component with a 90% accuracy, and have a 2% false alarm rate.

All software is provided with source code for easy customer integration.

Specifications

Physical

- Dimensions (H x W x D): 8.17 x 6.11 x 15” (207.5 x 155.2 x 381 mm)

Construction

- Chassis part material and assembly: 6061-T6 aluminum machined parts, bolted together and glued with conductive adhesive for EMI seal
- Gasket: Conductive rubber gasket for EMI protection
- Chassis finish
  - Anodize per MIL-A-8625
  - Type II
  - Class 2
  - Color: Black

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VPX3-1252

Single Board Computer (Qty. 2)

- Intel Core 2 Duo SP9300 processor
  - 2.26 GHz, 6 MB L2 cache, 1067 MHz FSB, SSE4 floating point libraries
- Memory
  - 4/8 GB DDR3 SDRAM, 8 GB NAND Flash, 512 KB of NVRAM
- Fabric ports
  - Two x4 lane PCIe fabric ports on the VPX P1 connector mapped as per VITA 46.2
- I/O
  - 2 x GbE
  - 2 x RS-232
  - 2 x RS-422/485
  - 3 x USB 2.0
  - 8 x DIO
  - 3 x SATA
- IPMI
  - XMC site with 8 lanes of PCI; IEEE 1386.1 compliant
- Operating system
  - Windows® XPe
  - VxWorks®
  - Linux®
- Built-in Test
  - PBIT
  - CBIT
  - IBIT



Figure 2: VPX3-1252

FPE320

Xilinx® Virtex®-5 FPGA 3U VPX processor with FMC site (Qty. 2)

- Supports Xilinx Virtex-5 SXT and LXT FPGAs
- FMC (VITA 57) mezzanine site for I/O
- DDR2 SDRAM and QDRII SRAM memory resources
- Four x4 high-speed serial interconnects to the backplane or PCIe, Aurora or SRIO
- Additional low-speed I/Os to the backplane
- FusionXF Development Kit for HDL development
- 3U VPX with .8” pitch
- Air- and conduction-cooled options
- Dense FPGA resource in small 3U form factor
- Maximum I/O flexibility to front panel and backplane
- Excellent infrastructure for HDL development and host interaction
- Versatility for deployed or commercial environments

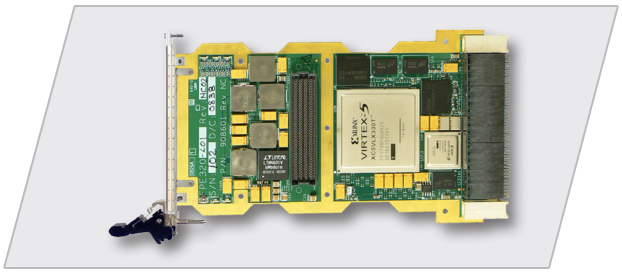


Figure 3: FPE320

XMC-552

Rugged SATA Solid State Drive XMC

- Storage characteristics
  - + Up to 256 GB total capacity
  - + NAND Flash (SLC and MLC available)
  - + ECC, wear leveling and bad block management
  - + Boot drive support
  - + SMART attributes supported
- Information assurance
  - + 128-bit AES encryption
  - + ATA security password
  - + ATA secure erase (crypto erase)
  - + Declassification (military erase)
  - + Write protection
- Driver support
  - + SATA
  - + RAID0
  - + Operating system support for VxWorks and Wind River Linux
- Interfaces
  - + XMC PCIe Gen1 x8 or
  - + PMC 64-bit 33/66 MHz PCI v2.3

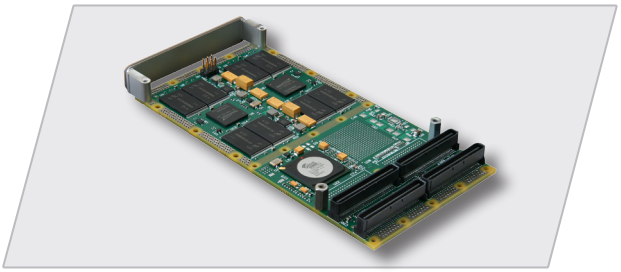


Figure 4: XMC-552

FireWire/MPEG Video Compression/RS-422 XMC

- 3-port IEEE1394b-2002 “FireWire” S200b interface
- MPEG4 video compression engine
- 3 x ports RS-422 serial

Ordering Information

Curtiss-Wright has a fully developed variant of the MPMC-9351-003 system that is currently deployed and available for ordering. Customer configurations are available. Please contact your local sales representative for additional information.

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