

TIC-DC2-VPX3a

Module Profile: MOD-PAY-3F2U-16.2.12-2

Starting with our Core 2 Duo 3U VPX single board computer, the TIC-DC2-VPX3a, Elma's Target Application System Guide identifies the building blocks necessary to design a VPX system targeted for use in compute intensive applications including radar and image processing as well as others requiring high bandwidth signal processing and data distribution.



Intel Core™2 Duo Single Board Computer

Elma's VPX Target Application System Guides:

- Identify the optimal starting board and its applicable slot profiles
- Recommend supporting boards based on their profiles and function
- Determine the backplane topology for data flow and application
- Identify a backplane profile based on standard backplane profiles
- Identify OpenVPX chassis profile for development or deployment

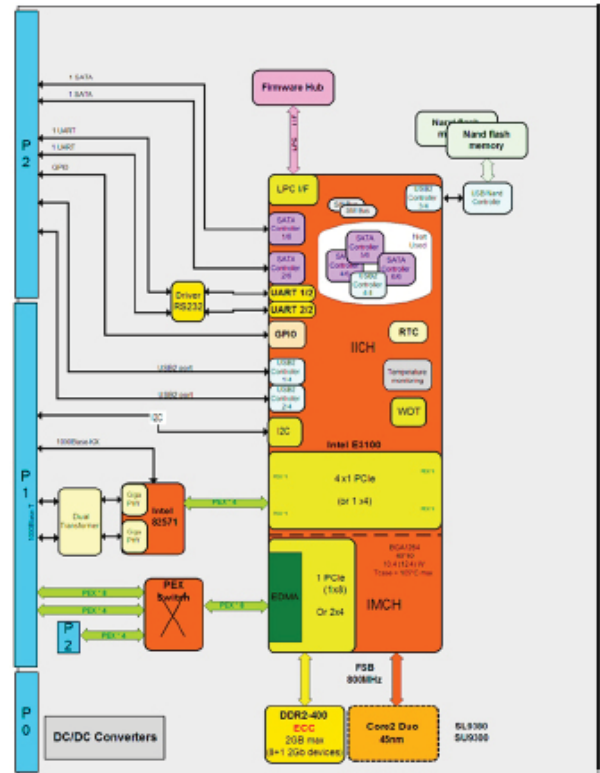
Model Number: TIC-DC2-VPX3a

Processor Unit:

- Intel® Core™2 Duo processor SL9380 (or SU9300)
- Thermal design power = 17W (10W)
- DDRII 400 (up to 2 GBytes) & up to 4GB of soldered NAND flash

Communication subsystem:

- 8 lanes available as one PCIe x8 or two PCIe x4 links
- 2 Gigabit Ethernet ports - two 1000BT or two 1000KX interfaces on P1
- 2 each RS232 UART, USB2 ports, and SATA ports
- 8 GPIOs



Block Diagram of the TIC-DC2-VPX3a
(a full size drawing can be found on the board datasheet)

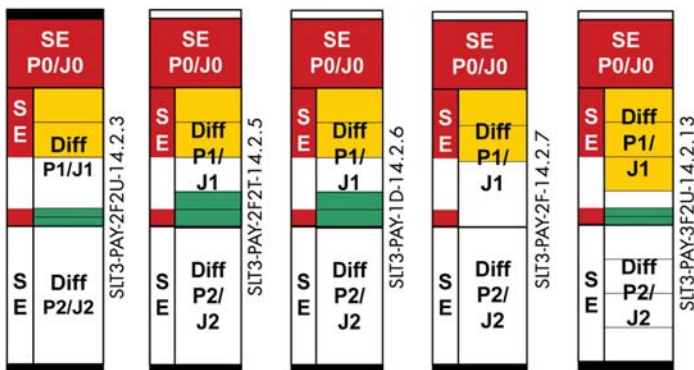
The following Slot Profiles are compliant with the TIC-DC2-VPX3a Single Board Computer:

Module Profiles:

- MOD3-PAY-2F2U-16.2.3-3
- MOD3-PAY-2F2T-16.2.5-2
- MOD3-PAY-1D-16.2.6-1
- MOD3-PAY-2F-16.2.7-1
- MOD3-PAY-3F2U-16.2.12-2

Slot Profiles:

- SIT3-PAY-2F2U-14.2.3
- SIT3-PAY-2F2T-14.2.5
- SIT3-PAY-1D-14.2.6
- SIT3-PAY-2F-14.2.7
- SIT3-PAY-3F2U-14.2.13



Reference:

- UTP - Ultra Thin Pipe
- TP - Thin Pipe
- FP - Fat Pipe
- DFP - Double Fat Pipe
- QFP - Quad Fat Pipe
- OFF - Octal Fat Pipe

Optional Rear I/O Transition Module:

Model Number: TIC-DC2-RTM

- Two 1000Base-T Ethernet
- Two Internal SATA Ports
- 8 - GPIO
- Two Front Panel USB
- On FP RS-232



Companion Boards - OpenVPX Slot Profiles

The supporting boards shown below allow an entire VPX system to be configured and targeted at the needs of compute intensive, high bandwidth signal processing applications. Based on their individual OpenVPX Module Profiles, their function and capabilities, and the application requirements, the following boards are recommended in support of the TIC-DC2-VPX3a Single Board Computer.

Model / Description	Compatible Module Profiles	Compatible Slot Profiles	Slot Profile Samples
 <p>T4410a 3U VPX fabric switch with PCIe & GbE ports for data and control plane communication <ul style="list-style-type: none"> • Six PCIe x4 ports and One PCIe x8 • Eight Gigabit Ethernet ports </p>	MOD3-SWH-6F8U-16.4.10-1,2 MOD3-SWH-6F6U-16.4.1-2,3	SLT3-SWH-6F8U1T-14.4.10 SLT3-SWH-6F6U-14-4.1	
 <p>TIC-PPC-VPX3a 3U VPX MPC8640(D) e600 PowerPC based Single Board Computer</p>	MOD3-PAY-1D-16.2.6-n MOD3-PAY-2F-16.2.7-n MOD3-PAY-1F4U-16.2.8-n MOD3-PAY-8U-16.2.9-n	SLT3-PAY-1F2U-14.2.12 SLT3-PAY-2F2T-14.2.5 SLT3-PAY-1D-14.2.6 SLT3-PAY-2F-14.2.7	
 <p>TIC-XMC-VPX3a 3U VPX Carrier Card with one XMC site for multiple configuration options</p>	Multiple, depending on the XMC configuration	Multiple, depending on the XMC configuration	
 <p>VPX-5311 3U VPX storage module supports one rotating or solid state SATA drive</p>	MOD3-STO-2U-16.5.1-1,2	SLT3-STO-2U-14.5.1	
 <p>TIC-FEP-VPX3b 3U VPX Front End Processor (FEP) board with Xilinx Virtex®-6 FPGA and 1 FMC site <ul style="list-style-type: none"> • Accepts any VITA 57 FMCs (FPGA Mezzanine Cards) </p>	MOD3-PAY-1F2U-16.2.11-2 MOD3-PAY-1F2F2U-16.2.2-4 MOD3-PER-1F-16.3.2-2	SLT3-PAY-1F2U-14.2.12 SLT3-PAY-1F2F2U-14.2.2 SLT3-PER-1F-14.3.2	

Below are samples of available FPGA Mezzanine Cards (FMCs). Please contact us for more information on the complete range of FMCs available.

200Msps to 2.5Gsps ADC



QUAD 40Msps to 550Msps ADC



QUAD 20Msps to 400Msps ADC

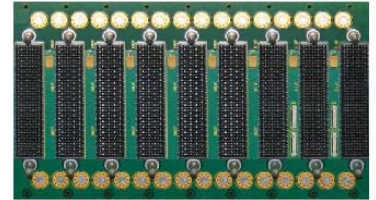


Identifying a Development Backplane

Many standard OpenVPX backplanes are useful in this next stage of system development. The following standard OpenVPX backplane profiles have been identified as applicable to the architecture described. Seldom will standard profiles meet every requirement; rather they serve as a developmental spring board to the final backplane profile design for the Target Application System.

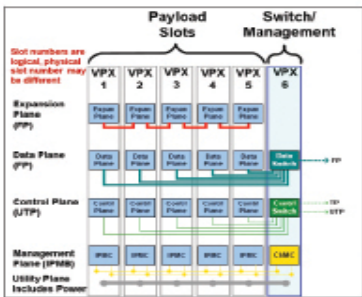
Available standard VITA 65 OpenVPX Development Backplane Profiles:

- BKP3-DIS03-15.2.9-N Distributed Switch; 1 Payload + 2 Peripheral Slots
- BKP3-DIS06-15.2.10-n Distributed Switch; 1 Payload + 5 Peripheral Slots
- BKP3-CEN06-15.2.2-n Central Switch; 1 Switch + 5 Payload or Peripheral Slots
- BKP3-DIS06-15.2.12-n Hierarchical Switch; 6 Payload or Peripheral Slots

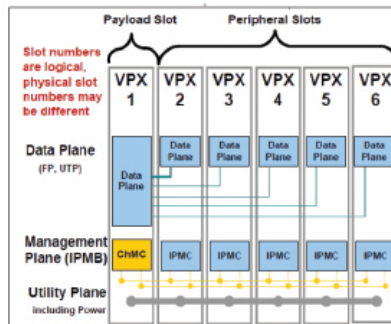


Topological Diagram of Standard OpenVPX Backplane Profiles:

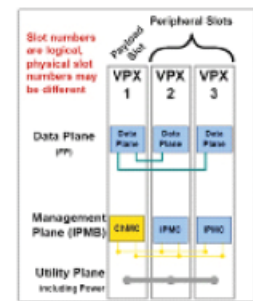
BKP3-CEN-15.2.2-n
1 Switch + 5 Payload or Peripheral



BKP3-DIS06-15.2.10-n
1 Payload + 5 Peripheral



BKP3-DIS03-15.2.9-n
1 Pay + 2 Peripheral Slots

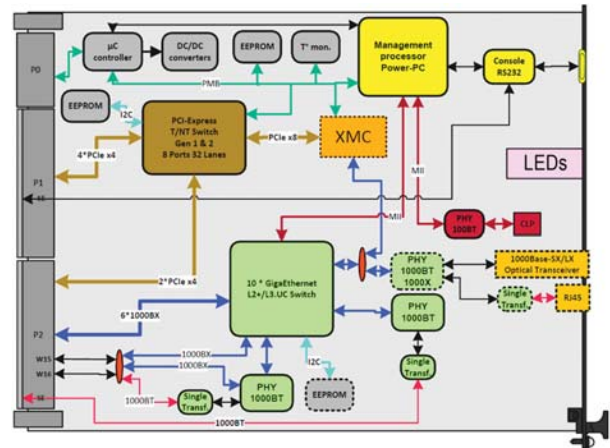
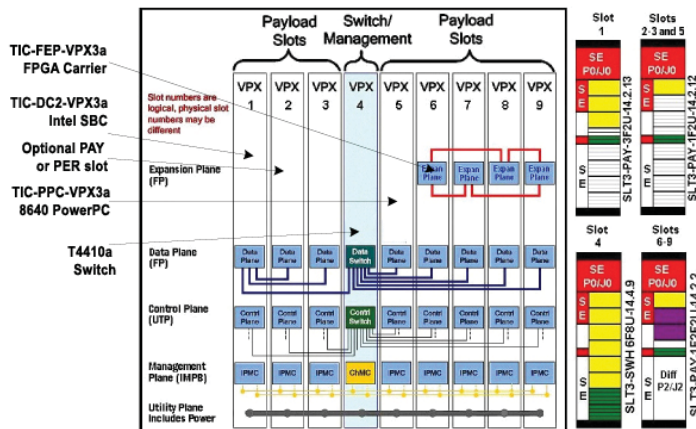


Topological Diagram of Target Application Backplane Profile BKP3-CEN09-15.2.17-n:

If the end application requires tailoring then a Target Application Profile (TAP) must be developed for the backplane. The backplane shown below is the TAP developed to address the application described. It is based on elements of the standard OpenVPX backplanes listed above and incorporates the slot profiles associated with the identified boards.

Dual cluster, central switched 9-slot backplane with a 4-slot expansion plane mesh for front end computing, and a 6-slot star architecture with 2 leaf nodes for front end computing. Both clusters share the PCIe / Gigabit switch slot

Block diagram of the T4410 Ethernet/PCIe switch for this TAP System



Whether it's initial board selection, backplane profile design or integrating the final system, Elma has the knowledge, experience and products to manage VPX system design and provide fully integrated complete chassis level solutions. This system configuration can be adapted for use in various chassis configurations including desktop tower, E-Frame or rack-mount designs.



Description	Environment
E-Frame & Tower Development Platforms - Provides easy access to both sides of the board - Available for 3U and 6U boards - Complete access to rear of the backplane for I/O implementation	Lab, desktop use
19" Rackmount Platforms - 19" rackmount chassis in a wide selection of configurations - Vertical or horizontal board layouts	Standard environmental conditions, such as IT Rooms
Rugged Conduction or Convection Cooled Boxes (ATR) - Available in standard sizes per ATR convection (1/4, 1/2, 3/4, 1) - Accommodates 3U and 6U VPX cards - Supports AC and DC power configurations - Configurable I/O panel for external circular connector	MIL STDs Environments (shock, vibration, heat/cold, etc.): avionics, vetronics, shipboard

OpenVPX Target Application System Order Information

Your application may require variations from the system described. Consult Elma regarding other configuration options. To get started, order from the following chassis and board options or move to a solution.

Integrated Chassis Model Number: SEFV3PXCNICXNVN

Description: Nine slot E-frame development chassis with BKP3-CEN09-15.2.17-n backplane, TIC-DC2-VPX3a SBC, T4410 Ethernet/PCIe Switch, TIC-FEP-VPX3b including Virtex-6 with SX315T FPGA and PowerPC SBC hosting Virtex FPGA. Includes Linux 2.6.35 Kernel CentOS chassis software development kit.

Chassis Model Number: 39E09BWX98Y2VCHX

84HP wide E-Frame development chassis with a 9-slot, 3U OpenVPX backplane designed to Profile BKP3-CEN09-15.2.17-n

Convection Cooled SBC Model Number: TIC-DC2-VPX3a 883-101-740

Conduction Cooled SBC Model Number: TIC-DC2-VPX3a 883-101-795

Engineering Kit Order Number: 883-001-ENG

Software Development Kit Order Number: TICLinux_SDK

