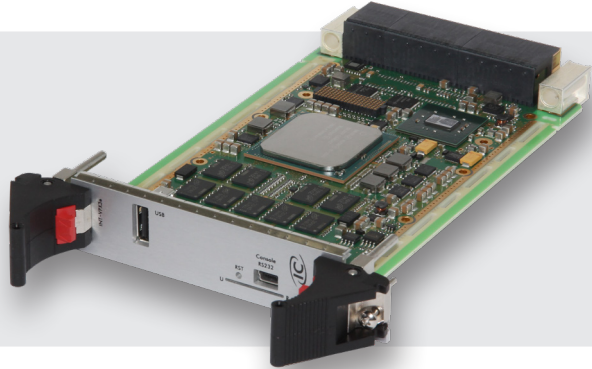


IC-INT-VPX3e

3U VPX Intel Xeon D Single Board Computer

- 3U VPX
- Intel® Xeon® processor D-1500
- DDR4 with ECC (up to 32 GB)
- Xilinx® Kintex®-7 FPGA
- XMC slot



Overview

The **IC-INT-VPX3e** is a powerful OpenVPX 3U SBC based on the Broadwell-DE processor – 14nm High Performance Chip of Intel's Low Power Spectrum.

Combined with IC's ComEth4582a 10 Gigabit Ethernet router or hybrid ComEth4410a switch (PCIe & Ethernet) and other IC's Processor/FPGAs boards with IC's software / Firmware libraries, the **IC-INT-VPX3e** is the key building block of the next High Performance Embedded Computing systems (HPEC).

The **IC-INT-VPX3e** like any IC Intel® board, is delivered with IC's own UEFI. This capability to master Boot firmware allows Interface Concept to implement specific functions or services for secured and accurate power-up sequences.

Description

The **IC-INT-VPX3e** is a 3U VPX gateway which can act as a System or non-System Controller module in a VPX platform.

The **IC-INT-VPX3e** provides:

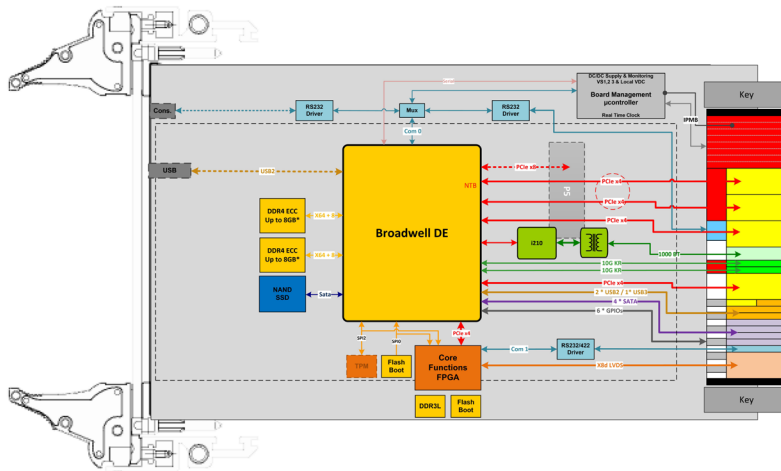
- 3 * PCIe Gen3 x4 ports for Data Plane on P1A, P1B and P1C, one supporting Non-transparent Bridging (NTB) to allow Processor to Processor Communications.
- 1 * PCIe Gen2 x4 port which can be split in 4 * x1 ports (with PCIe 100MHz reference clock)
- 2 * 10GBASE-KR Ethernet ports
- 1 * 1000Base-T Ethernet port

The **IC-INT-VPX3e** takes advantage of the media capabilities of the Intel SoC to provide a set of serial interfaces (USB and SATA ports) and GPIOs. The board features one SATA Solid State Disk for storage.

The **IC-INT-VPX3e** implements a FPGA interfaced with the SoC (PCIe x4) to add Core Functions, for which IC provides a variety of IPs (additional communications interfaces, GPIOs, video...) and performs the integration of specified customer services.

As an option, an XMC slot is also available to support Legacy mezzanines (PCIe x8) or custom designs (2 * PCIe x4 / consult us).

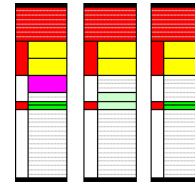
Block Diagram



Example of **OpenVPX** (VITA 65) supported slot profiles.

The **IC-INT-VPX3e** is compliant with :

- SLT3-PAY-2F1F2U
- SLT3-PAY-2F2T
- SLT3-PAY-2F2U



Main features

Processing Unit

- 1 * Intel® Xeon® D-1500 processor
- 2 * banks of DDR4 with ECC (up to 8GB/ Bank)
- Boot flash memory
- External independent RTC with supercap backup
- Thermal/voltage monitoring sensors
- 1 * SATA NAND SSD (up to 16GB)

Communication subsystem

- 4 * PCIe x4 ports (three on P1A/P1B/P1C one on P2A)
- 2 * 10GBASE-KR Ethernet ports
- 1 * 1000BASE-T Ethernet port
- 1 * RS232 console port (front or rear)
- 1 * rear USB 3.0 ports
- 3 * rear USB 2.0 ports (1 * front exclusive with XMC / 2 * rear)
- 4 * rear SATA interfaces
- 6 * GPIOs

Extension

- Xilinx Kintex®-7 FPGA
 - 1 RS232/RS422/RS485 serial port (rear)
 - GPIOs (X8d - on P2)
- 1 * XMC slot PCIe x8 -or 2 * x4 (option, with restriction - consult us)

Miscellaneous

- Status LEDs
- PIC μ-controller for System Management (VITA 46.11)

Accessories

Engineering kit for debug : JTAG/COP, console...

3U Rear Transition Module

The **IC-INT-VPX3e** is a 3U VPX board compliant with VITA 46.0 standard.

It is available in air-cooled and conduction cooled versions (-40°C / up to +85°C, according to TDP configuration).

Interface features

Front connectors (air cooled versions)

- mini USB console port
- USB2 connector (option)

P1 connector

- 2 * PCIe x4 ports (NT/RC, mergeable as 1 * NT x8)
- 1 * PCIe x4 port
- 2 * 10GBASE-KR Ethernet ports
- 1 * 1000Base-T Ethernet port
- 1 * Console port

P2 connector

- 1 * USB3 port
- 3 * USB2 ports
- 4 * SATA ports
- 1 * PCIe x4 port (splittable into 4 * x1 ports) with PCIe reference clock
- 6 * GPIOs
- 1 * console port
- 1 * RS232/RS422/RS485 serial port
- 8 * differential pairs from FPGA

Boot Loader

Interface Concept gateways based on Intel CPUs use the new UEFI firmware technology.

This Boot Loader, developed and tested by IC R&D team, implements all the initializations and optimized PBITs while ensuring the shortest boot time before launching the UEFI shell or loading the Operating System from storage devices (CD, DVD, HDD, USB...) or network.

When the final application is running, Runtime services remain in memory allowing thus the user to access UEFI variables for monitoring (e.g. PBIT results) or setup operations.

On request, IC can even customize this firmware to keep only what is strictly necessary for customer's applications.

OS Support

Interface Concept provides its own IC SDK Linux® distributions. For other distributions, VxWorks® and Windows, please consult us.

Multiware

In order to empower customers to concentrate their efforts on their most critical tasks, Interface Concept has developed a Fabric Management Software implementing optimized services between PCIe domains over non transparent bridges NTB) such as: DMA transfers, Ethernet emulation over PCIe, management of shared memory, messages and semaphores, etc. (Please consult us for details)

Grades

Criterion	Coating	Operation Temperature	Rec. Airflow	Oper. HR% no cond.	Storage Temperature	Sinusoidal Vibration	Random Vibration	Shock 1/2 Sin. 11ms
Standard	Optional	0 to 55°C	1 .. 2 m/s	5 to 90%	-45 to 85°C	2G [20..2000]Hz	0.002g2 /Hz [10..2000]Hz	20G
Extended	Yes	-20 to 65°C	2 .. 3 m/s	5 to 95%	-45 to 85°C	2G [20..2000]Hz	0.002g2 /Hz [10..2000]Hz	20G
Rugged	Yes	-40 to 75°C or 85° C (*)	2 .. 5 m/s	5 to 95%	-45 to 100°C	5G [20..2000]Hz	0.05g2 /Hz [10..2000]Hz	40G
Conduction-Cooled 71°C	Yes	-40 to 71°C at the thermal interface (*)	-	5 to 95%	-45 to 100°C	5G [20..2000]Hz	0.05g2 /Hz [10..2000]Hz	40G
Conduction-Cooled 85°C	Yes	-40 to 85° C at the thermal interface (*)	-	5 to 95%	-45 to 100°C	5G [20..2000]Hz	0.1g2 /Hz [10..2000]Hz	40G

(*) : Temperature grades are subject to availability according to IC products. Please consult us.

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All information contained herein is subject to change without notice.