

IC-INT-VPX6b

Dual Intel® Core™ i7 Gen3 (Ivy Bridge) SBC

With greater power, flexibility, functions and efficiency, the **IC-INT-VPX6b** is a concentrate of IC's experience in high computing solutions for VPX systems.

Its two Intel® Core™ i7 Gen3 processors offer unmatched technology and performance. The die shrink to 22nm and additional features make the Ivy Bridge a "tick-plus" platform which allows the IC-INT-VPX6b to provide better performances with less power. Moreover, it implements better graphics thanks to the Intel HD graphic 4000.

Beyond the computing power of these two processors, with one FPGA Kintex-7, two inter-domain PCI Express switches and a GigaEthernet switch, the IC-INT-VPX6b provides all the functionality of an on-board system.

The **IC-INT-VPX6b** is delivered with the IC Boot Loader which allows optimized power-up sequences. Our Fabric Management Software (**Multiware**) provides efficient data transfers and events management between PCIe domains over non transparent bridges (NTB).

Description

Intel® Core™ i7 computing nodes (A & B) are populated with Dual Core or Quad Core Ivy Bridge processors associated with QM77 chipsets.

The **IC-INT-VPX6b** provides versatile PCIe backplane configurations thanks to two PCIe switches, each attached to both CPUs via x8 links; The first switch provides 16 lanes (**2 x8** or **1 x8 / 2 x4** or **4 x4**) on P1, while the second provides 8 lanes (**1 x8 / 2 x4**) on P2, 4 lanes to the FPGA (**1 x4**) and 4 lanes to the XMC slot. Each chipset is also directly connected to P2 via a PCIe **x4** link.

The XMC site (PCIe **x4** link) provides 20 differential I/O pairs routed from Pn6 to P6 in accordance with X12d+X8d pattern of VITA 46.9.

The **IC-INT-VPX6b** implements an ultra low latency GE switch attached to each CPU and offering five GigE ports. One rear GigaEthernet port is connected directly to each processor (please contact us for other available options).

The **IC-INT-VPX6b** also takes advantage of the media capabilities of the Intel chipsets to provide two HDMI interfaces, GPIOs, two USB and one SATA port per processor. For storage, the board features soldered SATA NAND SSD.

Finally, the **IC-INT-VPX6b** implements an FPGA interfaced with one PCIe switch (**x4**), dedicated to customer applications. The selected Kintex-7 FPGA deliver high signal processing performance, low power consumption and the serial bandwidth claimed by the most demanding embedded applications.

The FPGA is connected directly to the P3/P4 connectors (SERDES/GPIOs) and an optional FMC site, fully compliant with the FPGA Mezzanine Card standard (VITA 57.1). Coupled with optional IPs, the FPGA allows to expand the communication capabilities of the board. For example, it is possible to implement up to four * **10 Gigabit Ethernet ports** (XAUI or 10GBase-KR).

The FMC and the board can also use to Pn6 connector to route additional differential pairs (100 Ohms) from the FMC module directly to the VPX backplane (P6).

The **IC-INT-VPX6b** is compliant at a minimum with the following **OpenVPX** profiles (VITA 65): SLT6-PAY-4F2T, SLT6-PAY-8F, SLT6-PAY-2F2U2T.



Main features

Processor Unit (per processor)

- ▶ Intel® Core™ i7 3555LE or 3612QE
 - Core speed = 2.5GHz or 2.1GHz
 - Cache = 4MB or 6MB
 - Thermal design power = 25W or 35W
- ▶ DDR3-1333 with ECC
- ▶ boot flash memory
- ▶ on board SATA SSD

Communication subsystem (per processor)

- ▶ 2 * PCIe x8 (1 per PCIe switch)
- ▶ 2 * USB 2.0 ports (1 front / 2 rear)
- ▶ 1 * Console port (rear)
- ▶ 1 * rear SATA interfaces
- ▶ 2 * HDMI interfaces (1 front / 1 rear)
- ▶ GPIOs (Rear)
- ▶ 1 * GigE port (attached to the switch)
- ▶ 1 * 1000Base-BX or 10/100/1000BaseT port (factory setting / rear)

Ethernet Switch

- ▶ 5 * GigE ports (rear: 2 * 1000Base-T / 2 * 1000Base-BX, front: 1 * 1000Base-T)

Extension (node A)

- ▶ 1 * XMC slot (PCIe x4 on Pn5)
- ▶ 20 differential pairs (from Pn6 to P6 - X12d+X8d)

FPGA

- ▶ 1 * Kintex-7 (XC7 KX70 / KX160 *on demand*)
optional FMC site (exclusive with the XMC site):
 - ▶ 80 LVDS (from FPGA)
 - ▶ GTX x4 (from FPGA)
 - ▶ 16 differential pairs (to P5, option)

Miscellaneous

- ▶ Status LEDs
- ▶ PIC μ-controller for System Management (per VITA 46.11)
- ▶ Power supply monitoring / Temperature sensor...
- ▶ Engineering kit for debug : JTAG/COP...
- ▶ 6U Rear Transition Module

The **IC-INT-VPX6b** is a 6U x 4HP (1") VPX board compliant with 6U module definitions of the VITA 46.0 standard (0.80 or 0.85" : please consult us).

It is available in air-cooled and conduction cooled (without front I/O) versions compliant with VITA 47 classes.

