iVPX7220 Series

## 6U VITA 46 VPX & VITA 65 OpenVPX Processor Board

Fully rugged 6U SBC for extreme environments

- 2nd generation Intel® Core™ i7 2.20 GHz (dual-core or quad-core) integrated processor
- Up to 16GB ECC-protected DDR3-1333, soldered down
- Intel® QM67 platform controller hub (PCH)
- 256Kbytes F-RAM
- PCI Express Fat Pipe fabric
- 1000BASE-T or 1000BASE-BX control plane
- SATA, USB and serial interfaces
- Integrated 2D/3D graphics with DVI/DisplayPort and VGA output
- Two PMC/XMC sites
- Optional rear transition module
- SATA HD and mounting kit available
- Extended temperature -40 °C to +85 °C and rugged variants
- Air and conduction cooled
- VITA 48 REDI two-level maintenance (2LM)

One of first in a new line of VPX products from Emerson Network Power, the iVPX7220 features the dual-core 2nd generation Intel® Core™ i7 2.20 GHz processor (designed for quad-core processor) with integrated graphics and memory controller and the mobile Intel® QM67 PCH with leading edge I/O functionality. This high compute density platform offers both high speed fabric connectivity with PCI Express and Gigabit Ethernet control plane connectivity with data transfer rates up to 5Gbps. On-board memory includes 4GB DDR3-1333 memory (designed for 16GB), embedded USB flash, and 256KB non-volatile Ferroelectric Random Access Memory (F-RAM). Additional connectivity includes up to nine USB 2.0 ports, five serial ports, five SATA ports, 10 GPIO, three DisplayPorts, VGA and dual XMC sites for maximum flexibility. An optional 2.5" SATA SSD is also available.

The iVPX7220 is a fully rugged single-board computer (SBC) for extreme environments with extended shock, vibration, temperatures and conduction cooling. It is designed for a range of industrial, communication and military/aerospace applications.

The iVPX7220 software support includes Solid and Stable BIOS with password protection and a wide range of operating systems including Wind River VxWorks, Linux, Microsoft® Windows® XPe, Red Hat Fedora, Green Hills INTEGRITY, and LynuxWorks LynxOS.
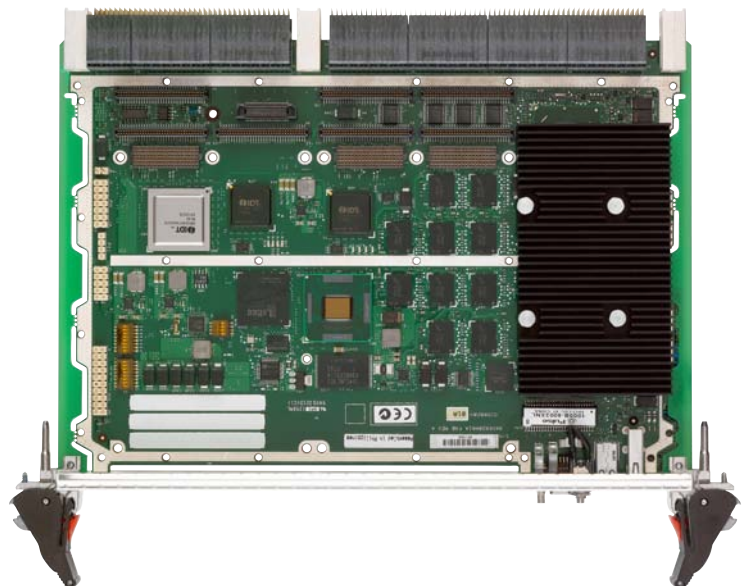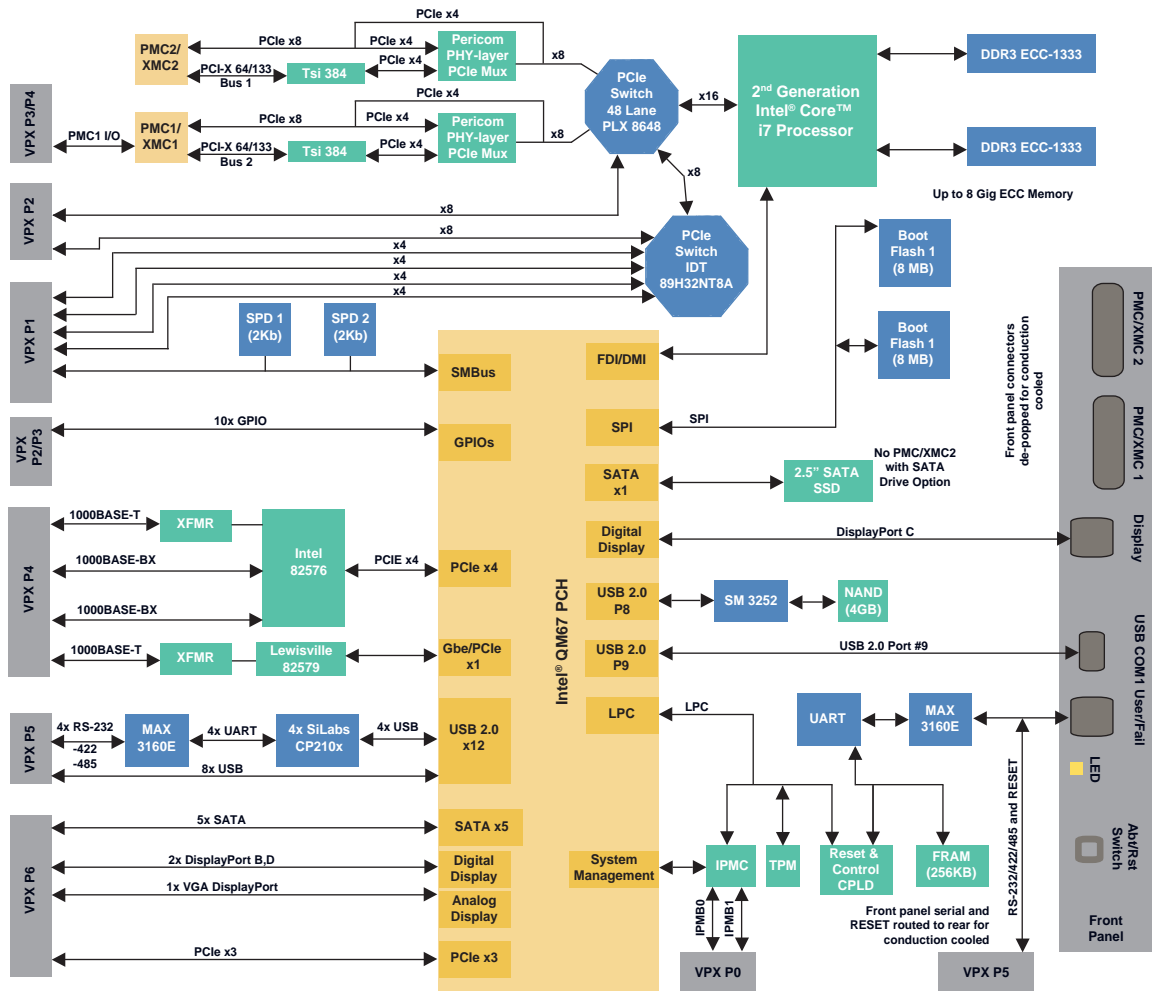

OpenVPX™

VPX REDI

EMERSON™
Network Power

iVPX7220 Block Diagram

Specifications

PROCESSOR

- Dual-core 2nd generation Intel® Core™ i7-2655LE, 2.20 GHz, 4MB L2 cache, 25 W
- Designed for quad-core 2nd generation Intel® Core™ i7-2715QE, 6MB L2 cashe, 45 W
- Dual DDR3-800/1066/1333 memory controller
- Two (2) PCI Express (PCIe) root controllers with 16 lanes Gen2 PCIe (max. 5.0 GT/s)
- x4 DMI interface to platform controller hub (PCH)

CHIPSET

- Intel® QM67 PCH
- Eight (8) PCI Express root controllers and 8 lanes Gen2 PCIe (max. 5.0 GT/s)
- Six (6) SATA controllers
- 14 USB 2.0 host controllers
- Three (3) digital displays (DP/eDP/HDMI/DVI/sDVO)
- One (1) analog display (CRT/VGA)
- SPI interface (2 CS#)
- LPC interface
- SMBus
- Programmable interrupt controller, watchdog timer, real-time clock
- Gigabit Ethernet controller 10/100/1000BASE-T

MEMORY

- 4GB dual-channel DDR3-1333 memory with ECC soldered down
- Support for 16GB memory

USER FLASH/NVRAM MEMORY

- 4GB eUSB flash module
- 256KB F-RAM (NVRAM)

BOOT FLASH MEMORY

- Dual UEFI in dual 8MB SPI flash devices
- Support for crisis recovery

BACKPLANE I/O

- PMC/XMC 1 with rear I/O
- PMC/XMC 2 (no rear I/O)
- Two (2) 10/100/1000BASE-T Ethernet
- Two (2) 1000BASE-BX Ethernet
- Four (4) UART
- RTM I^2C/Presence/Power
- Console Serial Port and Reset
- Two (2) DisplayPort video (PCH ports C and D)
- One (1) VGA display
- Eight (8) USB 2.0
- 10 GPIO
- Five (5) SATA
- PCI Express x4, data fabric
- IPMB

FRONT PANEL I/O (AIR COOLED ONLY)

- RS-232 serial console port
- Reset button
- Mini DisplayPort video (PCH port B)
- One (1) USB 2.0 (PCH port 9)
- Two (2) PMC/XMC sites front panel I/O or
- One (1) PMC/XMC site with internally-mounted SATA SSD/HDD

ETHERNET CONTROLLERS

- x1 PCIe to 1x10/100/1000BASE-T to OVPX backplane through 82579 Ethernet controller
- x4 PCIe to 1x10/100/1000BASE-BX (one10/100/1000BASE-BX/TX switchable) to OVPX backplane through 85280 Ethernet controller
- Two (2) PCI/XMC sites

OPENVPX PROFILES

- Payload module profile
  - MOD6-PAY-4F1Q2U2T-12.2.1-3 and 12.2.1-4
- Payload slot profile
  - SLT6-PAY-4F2T-10.2.2
  - SLT6-PAY-4F1Q2U2T-10.2.1

OPTIONAL TRANSITION MODULES

- Ethernet, Serial, I^2C, GPIO

OTHER FEATURES

- Watchdog unit
- Trusted Platform Module (TPM)
- Intel® vPro™ Technology capable (supports Intel® TXT, VT, AMT, and TPM)
- VITA 46.11 System Management IPMI V1.5 compliant
- Multiple 32-bit timers
- Temperature sensors
- Status and user LEDs
- Reset switch
- Locking ejector handles
- Power-up ramping and in-rush current protection

BIOS

- UEFI BIOS

POWER REQUIREMENTS

- Maximum for 2.20 GHz (iVPX7220), 4GB memory variant
  - 5.0 V TBD W (Estimated)

MTBF

- Calculated per Telcordia SR-332, Issue 1 and based on a ground fixed, controlled environment assuming an inlet air temperature of between 0 °C and 50 °C. 200,000 hours

ELECTROMAGNETIC COMPATIBILITY (EMC)

- Intended for use in systems meeting the following regulations:
  - US: FCC Part 15, Subpart B, Class A (non-residential)
  - Canada: ICES-003, Class A (non-residential)
- Emerson board products are tested in a representative system to the following standards:
  - CE Mark per European EMC Directive 89/336/EEC with Amendments; Emissions: EN55022 Class B; Immunity: EN55024

DOCUMENTATION

- Installation Guide and Technical Reference Manual
- Hardware Release Notes
- Linux Installation and Programmer's Guides

Environmental Requirements				
Ruggedization Level[3]	ENP1	ENP2	ENP3	ENP4
Cooling Method	Forced Air	Forced Air	Conduction	Conduction
Operating Temperature	0 °C to +55 °C	-40 °C to +71 °C	-40 °C to +71 °C	-40 °C to +85 °C
Storage Temperature	-40°C to +85 °C	-50 °C to +100 °C	-50 °C to +100 °C	-50 °C to +125 °C
Vibration Sine (10 min/Axis)	2G, 5 to 2000 HZ	5G, 15 to 2000 HZ	10G, 15 to 2000 HZ	10G, 15 to 2000 HZ
Vibration Random (1 Hr/Axis)	$0.01g^2$/Hz, 15 to 2000 Hz	$0.04g^2$/Hz, 15 to 2000 Hz (8GRMS)[1]	$0.1g^2$/Hz, 15 to 2000 Hz (12GRMS)[2]	$0.1g^2$/Hz, 15 to 2000 Hz (12GRMS)[2]
Shock	20g/11ms	30g/11ms	40g/11ms	40g/11ms
Humidity	to 95% RH	to 100% RH	to 100% RH	to 100% RH

Note 1: Flat 15-1000 Hz, -6db/octave 1000-2000 Hz [MIL-STD 810F Figure 514.5C-17]

Note 2: +3db/octave 15-300 Hz, Flat .1g2 300-1000 Hz, -6db/octave 1000-2000 Hz [MIL-STD 810F Figure 514.5C-8]

Note 3: Component and/or assembly screening shall be employed to satisfy feature/functional requirement (where feasible) when components are not available that meet ruggedization level requirements.

Ordering Information

Part Number	Description
iVPX7220-22420	Intel® Core™ i7 2.20 GHz, 4GB DDR3 ENP2 .8" pitch
iVPX7220-22422	Intel Core i7 2.20 GHz, 4GB DDR3 ENP2 1" pitch
iVPX7220-22441	Intel Core i7 2.20 GHz, 4GB DDR3 ENP4 .85" pitch
iVPX7220-22441L	Intel Core i7 2.20 GHz, 4GB DDR3 ENP4 .85" pitch 2LM
iVPX7220-RTM	7220 rear transition module
iVPX7220-MNTKIT	HD mounting kit
VPX-SSDMNTKIT	HD mounting kit with 80GB SATA HD

Please contact your sales representative for additional processor and memory variants.

SOLUTION SERVICES

Emerson Network Power provides a portfolio of solution services optimized to meet your needs throughout the product lifecycle. Design services help speed time-to-market. Deployment services include global 24x7 technical support. Renewal services enable product longevity and technology refresh.

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Business-Critical Continuity™.

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- Connectivity
- DC Power
- **Embedded Computing**

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- Infrastructure Management & Monitoring
- Outside Plant
- Power Switching & Controls

- Precision Cooling
- Racks & Integrated Cabinets
- Services
- Surge Protection

Emerson Network Power

Offices: Tempe, AZ U.S.A. 1 800 759 1107 or +1 602 438 5720
Paris, France +33 1 60 92 31 20 • Munich, Germany +44 1509 236490 • Tel Aviv, Israel +972 9 9560361
Hong Kong +852 2176 3540 • Shanghai, China +86 21 3395 0289 • Tokyo, Japan +81 3 5403 2730 • Seoul, Korea +82 2 3483 1500

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