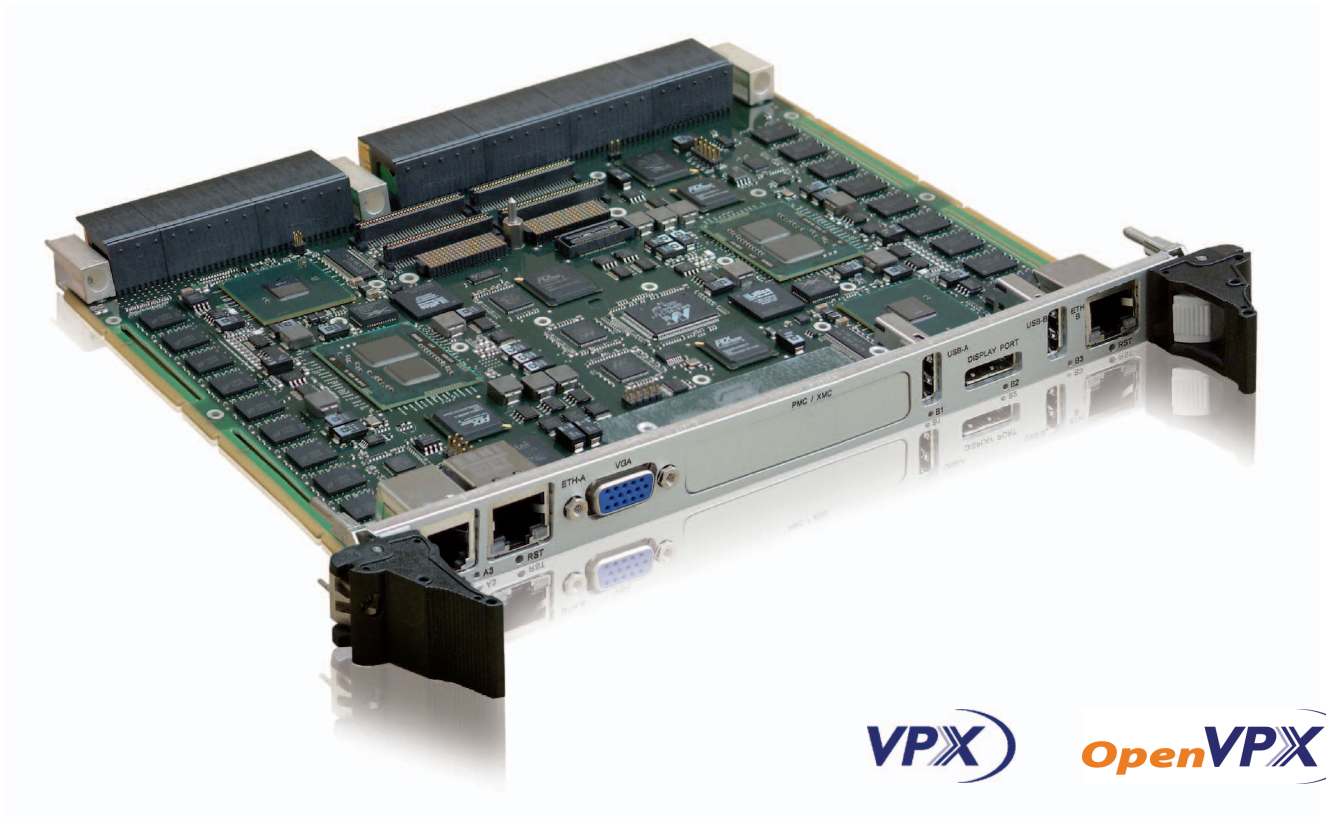
kontron

» VX6060 «



6U VPX Dual Intel® Core™ i7 Single Board Computer

» New Microarchitecture - Octal Execution Thread VPX Blade

» Support for up to 8 GB on 4 Channels, DDR3 1066 MHz, ECC registered SDRAM

» Six Gigabit Ethernet Links with onboard Switch

» VPX Backplane and onboard x4 PCIe Interconnect

» VITA46 and OpenVPX 6U VPX Air-Cooled and Conduction-Cooled Versions

Product Overview

VX6060 is the computing tool the MAG HPEC users were waiting for to walk away from 10 years of PowerPC Altivec™ dominance. Combined with the power of 6U VPX backplane technology, a new range of rugged embedded computers are appearing, which allows outstanding applications to emerge.

» Twice the Computing Power: Two CPUs, Four Cores, Eight Threads

Embedding two dual core high performance embedded processors, VX6060 is the right answer for rugged embedded computing where the power envelope and dissipation constraints at extreme temperature still prohibit the use of quad core silicon for another number of years.

» Features:

» Two Intel® Core™ i7 with integrated DDR3 Memory Controller

» Four Cores with Hyperthreading (8 threads total) from 1.67 GHz to 2+ GHz

» Support for up to 8 GB on 4 Channels, DDR3 1066 MHz, ECC registered SDRAM

» Modular USB FLASH 16 GB+ Mezzanine

» Six Gigabit Ethernet Links with onboard Switch

» VPX Backplane and onboard x4 PCIe Interconnect

» One XMC Site with x8 PCIe Interface

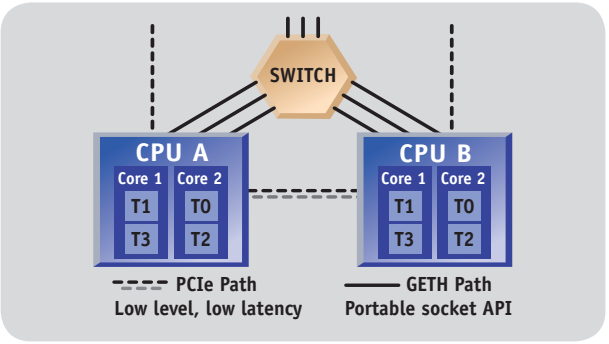
» Rugged Conduction-Cooled Version under 100W Power

» VITA46 and OpenVPX 6U VPX Air-Cooled and Conduction-Cooled Versions

» Implementation

Implemented as two independent computing nodes, attached to a powerful Ethernet and PCIe infrastructure, VX6060 is the ideal building bloc for intensive parallel computing loads.

Any number of VX6060 can be used together in full mesh or switched OpenVPX environments.



» Target Applications

6U VPX: high performance embedded computing and multi-processor systems for:

» Radar, sonar

» Imaging systems

» Airborne fighter and UAV radar

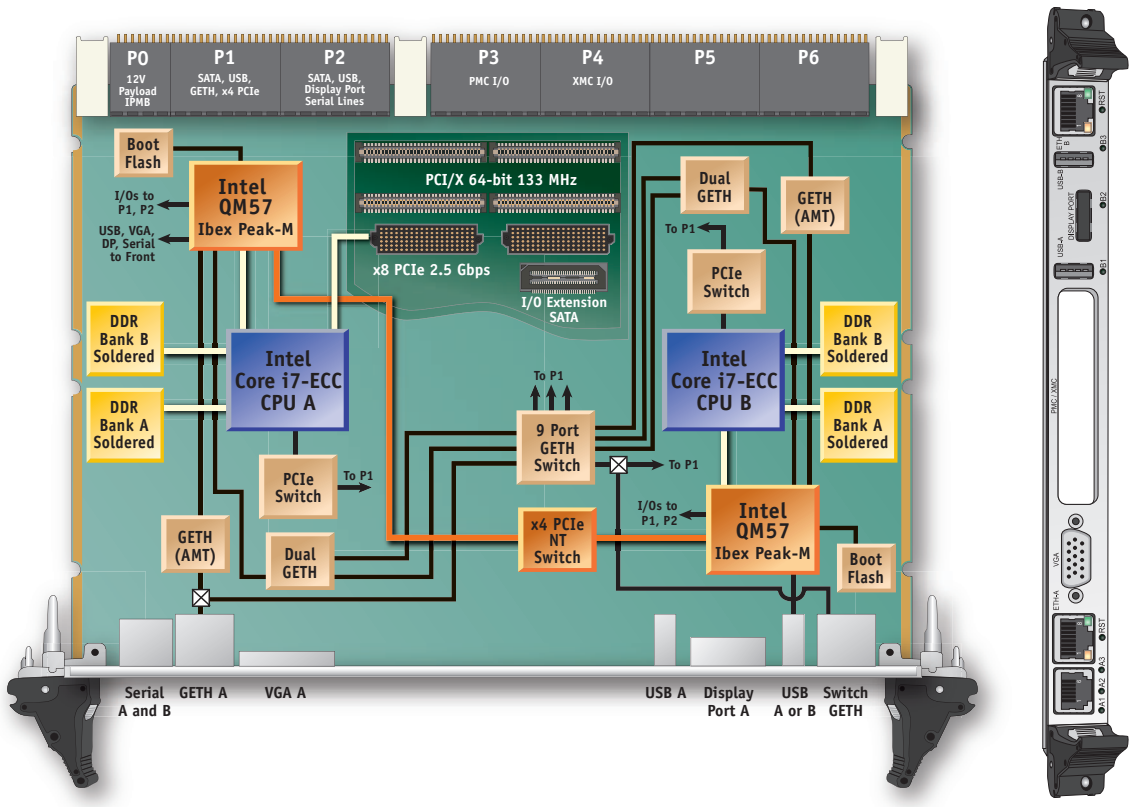
Standalone:

» Dual processor module in 6U form factor.

» Rugged multi display console

» Mainstream SBC

VX6060 BLOCK DIAGRAM AND FRONT PANEL



Technical Information

Form Factor	6U VPX forced-air or conduction-cooled
CPU and PCH (Per Node)	
Processor	Intel® Core™ i7 processor with integrated memory and graphics controller supporting ECC 32 KB L1, 256 KB L2 per core, 4 MB L3 shared between cores. LV 2.0 GHz (25W) 0.8" conduction-cooled board, 1" air-cooled board. SV 2.53 GHz (35W) forced air and conduction-cooled (characterization data provided for one slot operation)
PCIe	2.5 GT/s gen 1 PCIe. One 8x PCIe to the XMC slot, one 4x PCIe to the backplane x4 pipes through PEX8609 Non Transparent bridge.
DMI interface	2.5 GT/s to Platform Controller Hub
Platform Controller Hub	Intel Platform Controller Hub PCH QM57 (Ibex Peak-M) Two x4 PCI Express ports, six SATA ports, 14 USB 2.0 ports, several graphics interfaces, RTC, interrupt controller and timers
Memory (Per Node)	
System Memory	Two DDR3 memory channels, 64-bit soldered ECC, running at 1067 MHz Initially 2 GB on each channel (8 GB for the whole board)
NAND Flash	USB FLASH module socket (modules up to 8 GB currently)
Flash (BIOS)	Two sites up to 32 Mb SPI Flash
EEPROM	1x serial 256 Kbit EEPROM dedicated to system data and 1x serial 256 Kbit EEPROM dedicated to application data
F-RAM	1x 512 KB of permanent F-RAM storage. Dedicated to Application.
Onboard Controllers (Per Node)	
3 Gigabit Ethernet	Two SERDES Links from i82580 (Barton Hills) Geth MAC/PHY. Connected to two lane PCIe of PCH. One front/rear 1000BASE-T from i82577 (Hanksville).
UART	2 simplified Serial Ports (Rx/Tx) on front and rear P2. EIA-232/EIA-422/EIA-485 mode available.
MMC	CPLD control unit with Node status/reset/start/stop features. Remote access from VPX SMB
Watchdog	Software configurable dual-stage Watchdog timer with programmable timeout from 125 ms to 256s, generates IRQ or reset or cascaded IRQ/reset
Onboard Interconnection	
Gigabit Ethernet	Marvell MVL88E6185 10 ports Gigabit Ethernet Serdes switch. Fully switched interconnection of CPU A and CPU B (3 Gethernet ports each) with 4 VPX Backplane ports (see below for details)
PCIe	Dedicated 4x non transparent PCIe link with DMA between onboard CPUs for ultra high speed onboard data exchange
Backplane Interfaces	
4 Gigabit Ethernet	Four Gigabit Ethernet Links connected to the onboard 10 port switch. Three Serdes 1000BASE-BX and one 1000BASE-T
4 Serial ATA	Four SATA ports (one from each node on P1, plus two from CPU A on P2) allowing Raid storage support
2 PCI Express	Two x4 or eight x1 PCI Express interfaces on VPX P1 (x4 Pipes Region) (Optional common PCIe reference clock feature)
4 Serial Ports	Four simplified serial lines or other build options (two Rx/Tx ports on each node is default)
2 DisplayPort	Two embedded DisplayPort on VPX P2 (One for each node in the User Defined Region)
Audio	Intel® HD audio on VPX P2
Front Panel Interfaces	
2 Gigabit Ethernet	Two 1000BASE-T on RJ-45 connector
Graphics	One DisplayPort on standard 20-pin DisplayPort connector, one VGA
USB	Two USB 2.0 port on 5-pin, type A USB connectors
Serial Port	EIA-232 UART interface for CPU A or CPU B on RJ11 connector
LEDs	Six control and status bicolor (red/green) LEDs
Onboard Interfaces	
Debug Interface	XDP port for processor emulation probe connection
Peripheral Extension	A Sata HDD carrier can be mounted instead of the PMC/XMC mezzanine)

Technical Information

Misc	
Power Supply	12V & 5V payload power, 3.3V auxiliary management power 100W* with 4 GB of memory, no RTM & no XMC. Max of 145W * The power consumption varies depending on your product configuration (Clock settings, XMC, RTM & extra memory)
Software	
BIOS	AMI uEFI BIOS
Management	Redundant I2C operated remote status/control. Powerful feature compatible with any existing health management infrastructure. Compatible with Kontron Rack Controller (available separately)
Linux	Generic Linux 2.6.x BSP to be used with various Linux distributions. Verified for Fedora 12 and Wind River Linux (PNE 3.x)
Windows	Windows XP, Windows7
RTOS	VxWorks 6

Environmental Specifications

	SA - Standard Commercial (1" single height passive module heat sink, forced air)	RA - Rugged Air-Cooled (Optional)	RC - Rugged Conduction-Cooled (Depending on processor frequency)
Conformal Coating	Optional	Standard	Standard
Airflow	3 m/s	TBD	NA
Temperature	VITA 47-Class AC1	VITA 47-Class AC3	VITA 47-Class CC4
Cooling Method	Convection	Convection	Conduction
Operating	0° to +55°C	-40° to +75°C	-40° to +85°C
Storage	-45° to +85°C	-45° to +100°C	-45° to +100°C
Vibration Sine (Operating)	20-500 Hz - 2g	5-2,000 Hz - 3g	20-2,000 Hz - 5g
Random	VITA 47-Class V1	VITA 47-Class V2	VITA 47-Class V3
Shock (Operating)	20g/11 ms Half Sine	40g/20 ms Half Sine	40g/20 ms Half Sine
Altitude (Operating)	-1,640 to 15,000 ft	-1,000 to 33,000 ft	-1,640 to 50,000 ft
Relative Humidity	90% without condensation	95% without condensation	95% without condensation

Ordering Information

Article	Part.-No.	Description
SA - Standard Commercial		
VX6060	VX6060-SA24-00000	VX6060 Air-Cooled Commercial Build, 2 GHz Intel® Core™ i7, 4 GB DDR3-SDRAM
RC - Rugged Conduction-Cooled		
VX6060	VX6060-RC24-00000	VX6060 Rugged Conduction-Cooled Build, 2 GHz Intel® Core™ i7, 4 GB DDR3-SDRAM
Associated Products:		
EZ2-VX6060	EZ2-VX6060-00-L	Laboratory 6U VPX Air-Cooled Development System, Software: Linux Fedora

CORPORATE OFFICES

Europe, Middle East & Africa

Oskar-von-Miller-Str. 1
85386 Eching/Munich
Germany

Tel.: +49 (0)8165/ 77 777
Fax: +49 (0)8165/ 77 219

info@kontron.com

North America

14118 Stowe Drive
Poway, CA 92064-7147
USA

Tel.: +1 888 294 4558
Fax: +1 858 677 0898

info@us.kontron.com

Asia Pacific

17 Building,Block #1,ABP.
188 Southern West 4th Ring Road
Beijing 100070, P.R.China

Tel.: + 86 10 63751188
Fax: + 86 10 83682438

info@kontron.cn

Intel Embedded Alliance Premier