» VPX «

» 3U & 6U Single Board Computers
» VPX Switch & PMC/XMC/FMC carriers
» Turnkey Systems

VPX products and solutions

6U Processor Board and Turnkey System

VX6060
Dual Intel® Core™ i7 Computing Node

» Four Cores with Hyperthreading (8 threads total)
  from 1.67 GHz to 2+ GHz
» Up to 8 GByte on 4 Channels DDR3-1066 ECC SDRAM
» Six Gigabit Ethernet Links with onboard Switch
» Rugged Conduction-Cooled Version under 100W Power

EZ2-VX6060
Turnkey Integrated Platform

» Dual Intel® Core™ i7 processor
» Pre-installed Linux or VxWorks

3U Intel Processor Board and Turnkey System

VX3020
High Performance 3U VPX Rugged PC

» 1.5 GHz Dual Core Intel® Core™2 Duo Processor
» PCIe (4x), SATA, Gigabit Ethernet on the VPX Backplane
» Rugged Conduction-Cooled Build

EZ3-VX3020
Turnkey Integrated Platform

» 1.5 GHz Intel® Core™2 Duo SBC
» Air-Cooled Laboratory Environment
» Pre-Installed Linux

3U PowerPC Processor Board and Turnkey System

VX3230
Ultra Low Power 3U VPX Single Board Computer

» 1 GHz Freescale MPC8544 PowerPC Processor
» PCIe (4x), SATA, Gigabit Ethernet on the VPX Backplane
» Air-Cooled and Rugged Conduction-Cooled Builds

EZ3-VX3230
Turnkey Integrated Platform

» 1 GHz Freescale MPC8544 PowerPC Processor
» Pre-Installed Linux or VxWorks

3U Carrier Boards

VX3800
3U VPX PMC/XMC Carrier

» Supports a single XMC or PMC mezzanine module
» Air-Cooled and Rugged Conduction-Cooled Builds

VX3830
3U VPX FMC Carrier

» Supports a single VITA 57 FMC mezzanine module
» Air-Cooled and Rugged Conduction-Cooled Builds

3U Ethernet Switch

VX3910
3U VITA 46.7 Fully Managed Switch

» 28x GbE according OpenVPX/VITA 65 and VITA 46.x,
   4 front panel 1 GbE RJ-45
» Air-Cooled and Rugged Conduction-Cooled Builds

Get more information on VPX

VPX technology:
www.kontron.com/VPX

VPX applications:
www.kontron.com/military

VPX solutions:
www.kontron.com/turnkey

kontron

» VPX products and solutions «

3U Intel Processor Boards

VX3030
3U VPX
Intel® Core™ i7-620LE
or i7-610E SBC

VX3035 (2nd Generation)
3U VPX
Intel® Core™ i7-2655LE SBC

» VPX (VITA 46), OpenVPX (VITA 65) and VPX REDI (VITA 48)

» Two Cores with Hyperthreading (4 threads total) from 1.67 GHz to 2+ GHz

» Up to 8 GByte on 2 Channels, DDR3 1066 MHz, ECC registered SDRAM

» Three Gigabit Ethernet and x4 PCIe to VPX Backplane

» Standard Air-Cooled and Rugged Conduction-Cooled Versions under 45W power

» Available also as turnkey Evaluation/ Development platforms EZ3-VX3030 and EZ3-VX3035
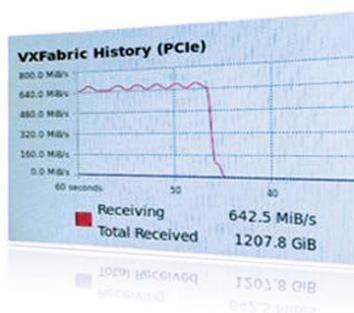
3U Switch

VX3905
3U PCI Express and Ethernet Hybrid switch

» Compliant with OpenVPX VITA65 profile SLT3-SWH-6F6U-14.4.1

» Up to 24 Ports/32 Lanes PCIe Switch

» 9 Port Giga Ethernet Switch

» Air-Cooled and Conduction-Cooled Builds

Software

VXFabric™

The advent of VPX opens a new era of rugged embedded Computing. Kontron's VXFabric™ solution, is a set of turnkey APIs for data flow applications to implement efficient interboards communication at ultra-high speed.

Download the whitepaper on:

http://emea.kontron.com/ VXFabricEMEA

3U Backplanes

Distributed Backplanes
3U 3-/4-/ or 5-Slot Distributed Technology

Centralized Backplanes
3U 8-Slot Centralized Technology

» Compliant to VITA 46.0 Baseline Application

» Supports VITA 46.4 PCI Express® / VITA 46.10 with RTM Connectors

» Operating Temp.: -40°C to +85°C

System Management

CMB
Chassis Monitoring Board

» System monitoring and control of critical signals: temperature, airflow/ fans and power supply

» Alarm through chassis front panel LEDS and GPIOs

» Serial line and TCP/IP interface

» Operating Temp.: -40°C to +85°C

» For use in VME, VPX and cPCI chassis

If it's embedded, it's Kontron.

VPX and OpenVPX

VPX (VITA 46) is a broadly defined technology utilizing the latest in a variety of switch fabric technologies in 3U and 6U format blades.

OpenVPX™ (VITA 65) is the architecture framework that defines system level VPX interoperability for multivendor, multi-module, integrated system environments.

The VPX standards are the right solution for applications deploying in harsh conditions. They are a perfect answer for high numbers of I/O requirements found in Vetronics and Avionics computers as well as very high speed interconnect requirements found in parallel signal processing systems.

VPX with Kontron

As a member of the OpenVPX™ Industry Working Group, Kontron has actively taken part to the OpenVPX (VITA 65) definition process. All current products offered by Kontron are already OpenVPX compliant.

With over 20 years experience in COTS products for rugged embedded applications and a broad embedded computer product portfolio, Kontron is well positioned to provide customers VPX best solutions.

APPLICATION

Unmanned Systems

VPX is delivering higher performance and lower SWaP solutions for unmanned systems. UAV range, altitude, and form factor requirements demand more performance per watt from embedded computing platforms, and Kontron's VPX offerings directly address these challenges with compelling solutions. With the role of UAVs constantly expanding, and their payloads becoming increasingly sophisticated, Kontron is able to leverage its extensive industry experience and technology leadership to deliver rugged VPX solutions.

APPLICATION

Airborne Radar

Airborne radar application constantly demand more performance with lower size, weight and power (SWaP). Airborne systems also require embedded hardware to meet extended temperature and shock environments. Kontron continually advances rugged PowerPC and Intel architecture single board computer technology to meet these demanding applications.
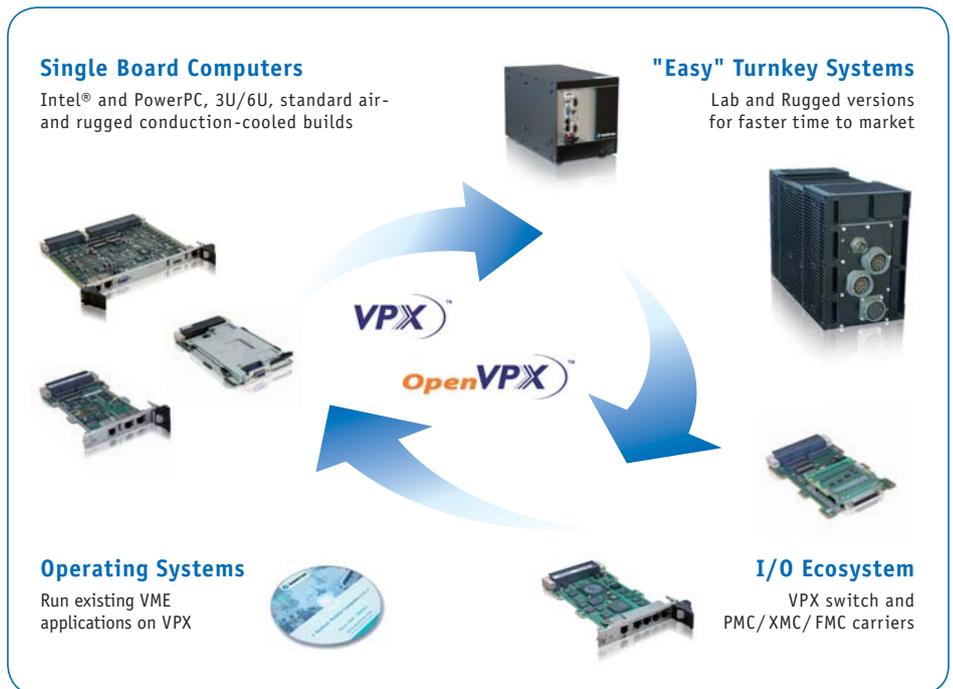
VPX Ecosystem

Implement VPX now

Kontron offers VPX customers:

» An integrated offering to guarantee immediate implementation

» Both VPX and OpenVPX pinout

» Solutions to bring existing application software over to the new VPX standard

Single Board Computers
Intel® and PowerPC, 3U/6U, standard air- and rugged conduction-cooled builds

"Easy" Turnkey Systems
Lab and Rugged versions for faster time to market

VPX™

OpenVPX™

Operating Systems
Run existing VME applications on VPX

I/O Ecosystem
VPX switch and PMC/XMC/FMC carriers

VPX Turnkey Systems
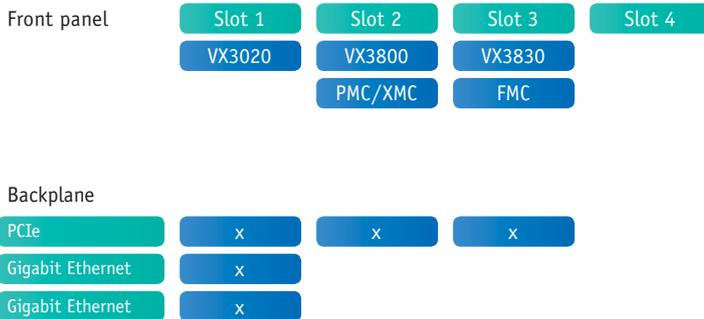
The quickest route to VPX technology

Key Features:

» "1 System, 1 PC, 1 Hour": Kontron Turnkey Systems are the ideal way for fast and efficient evaluation phase of new products

» Delivered with the necessary peripheral equipment and preloaded software and ready to use in seconds by just adding standard office peripheral equipment (screen, keyboard, mouse, and network)

» Based on a PowerPC or Intel SBCs running Linux or VxWorks. Thanks to their modular design based on standards, these Turnkey Systems are compatible with many extensions.
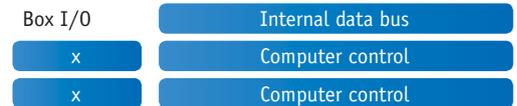
1 System – 1 PC – 1 Hour

SBC   **RTM**   **Installed OS**

VPX Computer profiles

With the VPX standard, innovative solutions can be designed for embedded computing. However, it can be difficult to leave a whole culture of parallel bus behind. Let's consider some computer templates based on VPX and point to point communication on the backplane.
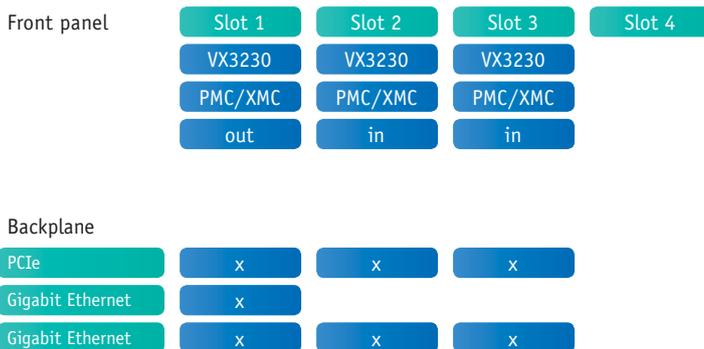
Extensible Embedded Computer

Front panel	Slot 1	Slot 2	Slot 3	Slot 4
	VX3020	VX3800	VX3830	
		PMC/XMC	FMC	

Backplane			
PCIe	x	x	x
Gigabit Ethernet	x		
Gigabit Ethernet	x		

In this example, a single SBC can drive as many I/O features as needed. Communicating between the SBC and intelligent I/O controllers is done on the PCIe backplane. With Kontron 3U VPX SBCs, the use of an advanced PCIe switch allows up to four direct connections to PCIe agents on the backplane. Even when limited to gen 1 PCIe communication, up to 250 MB/s peak bandwidth is available for each peripheral slot. And point to point communication means this bandwidth is PER SLOT, not shared.
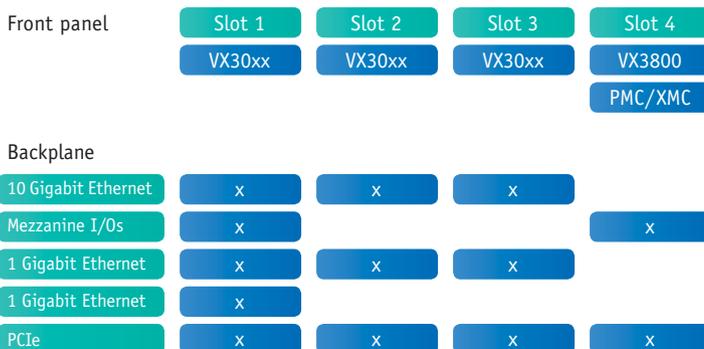
Box I/O	Internal data bus
x	Computer control
x	Computer control

Safety Critical Computing

Front panel	Slot 1	Slot 2	Slot 3	Slot 4
	VX3230	VX3230	VX3230	
	PMC/XMC	PMC/XMC	PMC/XMC	
	out	in	in	

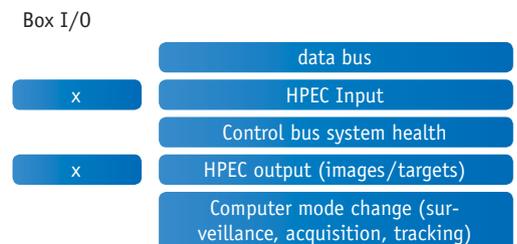| Backplane			
PCIe	x	x	x
Gigabit Ethernet	x		
Gigabit Ethernet	x	x	x

In this example, multiple VPX SBC, possibly using different processor architecture, execute the same process control application. While Gigabit Ethernet communication is the most common way of monitoring the application, a shared memory scheme, implemented on top of the low latency PCIe backplane can be implemented to reproduce the legacy computing environment normally found in past VME architectures. I/O mezzanines (PMC or XMC) can be implemented at each SBC for single point of failure avoidance.

Box I/O	Internal data bus
x	Computer control in/out
x	Specific I/O in/out

High Performance Embedded Computing

Front panel	Slot 1	Slot 2	Slot 3	Slot 4
	VX30xx	VX30xx	VX30xx	VX3800
				PMC/XMC

Backplane				
10 Gigabit Ethernet	x	x	x	
Mezzanine I/Os	x			x
1 Gigabit Ethernet	x	x	x	
1 Gigabit Ethernet	x			
PCIe	x	x	x	x

In this example, each SBC receives and processes the sensor data. Low latency communication on the backplane can be used for instant radar mode change or other synchronous signaling while Gigabit Ethernet interface can either be used to route the final data flow and application control.

Box I/O	
	data bus
x	HPEC Input
	Control bus system health
x	HPEC output (images/targets)
	Computer mode change (surveillance, acquisition, tracking)

Software

Kontron understands how a solid software base can positively impact time to market. This is why we place a premium on providing the most comprehensive offering in software.

IDE and SDE
Software development efficiency is at the heart of cost savings in this industry. Kontron software is compatible with popular development environments such as Wind River Workbench® and LynuxWorks™ Luminosity Tools designed for our products are compatible with the Eclipse® framework.

Real-Time OS
Kontron is continuously refining the critical interface between computer boards and the OS. Uninterrupted partnerships with the industries'- most acclaimed vendors allow us to offer a "one stop shop" approach to support. Our BSPs include dynamic reconfiguration and can run on any product of the same family. We support VxWorks, LynxOS, and Integrity.

Linux OS
Kontron provides Linux BSPs. They can be used with any Linux vendor distribution (Sysgo, Wind River, LynuxWorks, TimeSys, etc.). For PowerPC, our BSPs are developed and tested against Fedora Core. For Intel embedded servers, Kontron has partnered with Red Hat on Enterprise Linux. With this partnership, Kontron provides a Linux solution with guaranteed lifetime, server-critical quality and unmatched compatibility with PC software.
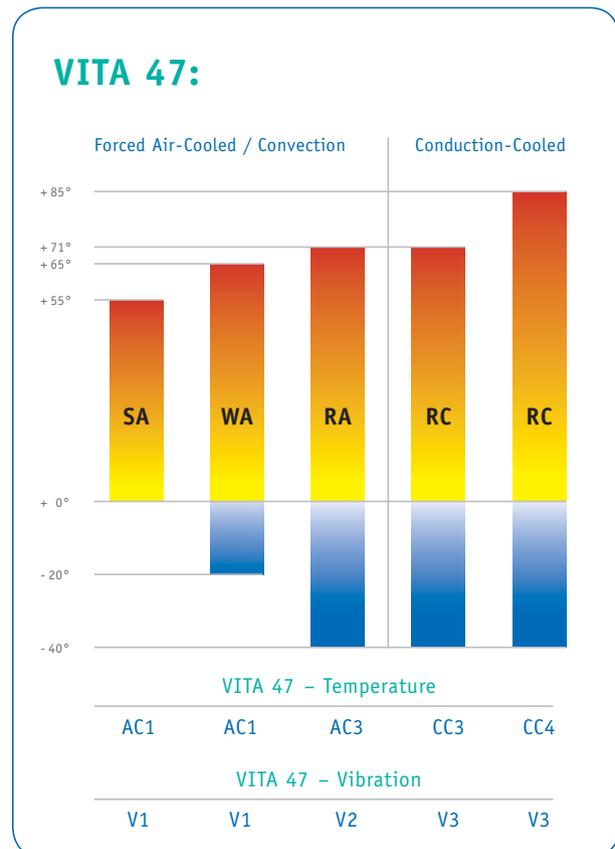
Middleware
Kontron integrated platforms offer an extensive middleware approach for both the data plane and the control plane (SNMP, IPMI, http).

Software Integration
Kontron offers an integrated approach to delivery and support covering entire LRU sets. The functional LRU is delivered and maintained as a single unit, with the baseboard, operating system, mezzanine cards, and drivers. This integrated approach can also cover third party products.

Harsh Environment

To fulfill the demanding environmental requirements of the defense and other mission-critical markets, Kontron boards are manufactured in four classes: SA, WA and RA (Air-Cooled), and RC (Conduction-Cooled). All classes are 100% software compatible.

VITA 47:

	Forced Air-Cooled / Convection			Conduction-Cooled	
	SA	WA	RA	RC	RC
VITA 47 – Temperature	AC1	AC1	AC3	CC3	CC4
VITA 47 – Vibration	V1	V1	V2	V3	V3

Temperature axis: +85°, +71°, +65°, +55°, +0°, -20°, -40°

Support Services

Kontron offers standard Support Services such as hotline, repairs, on-site technical assistance, training, long-term support (over 15 years), Pre-planned Program Technology Insertion (P3I), and dedicated support (e.g., frozen configurations). Our team of experienced engineers offers customers one-stop shopping for custom and system-level solutions.

Our Partners:

WIND RIVER   SYSGO   LYNUXWORKS   redhat.

About Kontron

Kontron, the global leader of embedded computing technology, designs and manufactures standards-based and custom embedded and communications solutions for OEMs, systems integrators, and application providers in a variety of markets. Kontron engineering and manufacturing facilities, located throughout Europe, Americas, and Asia-Pacific, work together with streamlined global sales and support services to help customers reduce their time-to-market and gain a competitive advantage. Kontron's diverse product portfolio includes: boards and mezzanines, Computer-on-Modules, HMIs and displays, systems, and custom capabilities.

Kontron is a Premier member of the Intel® Embedded Alliance.

For half-a-decade now, Kontron has been named a VDC *Platinum Embedded Board Vendor*. Based entirely on user feedback, industry professionals evaluate vendors on over 45 non-product related criteria. Kontron is only one of two companies to receive the Platinum award 5-years running.

Kontron is listed on the German TecDAX stock exchange under the symbol "KBC".

For more information, please visit: **www.kontron.com**

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