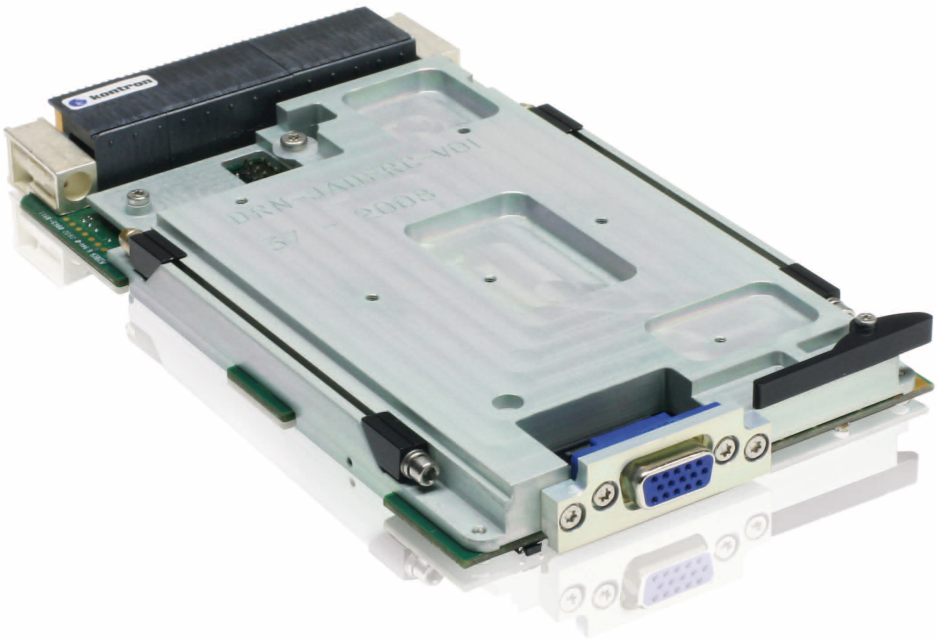
kontron

» VX3020 «



VPX OpenVPX™

High Performance 3U VPX Rugged PC

» VX3020 SBC implements VITA 46.0, 46.4, 46.7
» PCIe (4x), SATA, Gigabit Ethernet on the VPX Backplane
» 1.5 GHz Dual Core Intel® Core™2 Duo Processor
» Easy Bring Up: Turnkey 3U VPX Computer Offering

VX3020
High Performance 3U VPX Rugged PC

The design of cost effective, high performance embedded computers to meet the new challenges in transport, aerospace and defense applications needed a new standard to allow COTS interoperability. Poised to become the de facto standard for Rugged and COTS computing, VPX (VITA 46) is quickly becoming a must in all large government programs worldwide.

Kontron's VPX3 product family is the ideal solution for rapid bring up and deployments of 3U VPX embedded computers.

With the VX3020, Kontron is offering an Intel® multi-core rugged computer board with a complete set of I/O features allowing rapid design of embedded PCs in VPX form factor.

The VX3020 design is based on long life cycle chipsets from the Intel® Embedded Architecture in order to protect customers investments. Every step of the design has been driven by efficiency, safety and harsh environments compatibility.

Soldered CPU: Intel® Core™2 Duo LV
Running at 1.5 GHz, this CPU is the best choice for intensive data and signal processing. The Intel® Core™2 Duo is a dual-core processor which supports Intel® 64 architecture and full compatibility with IA-32 software. A large on-die 4 MB Level 2 cache with Advanced Transfer Cache Architecture and Supplemental Streaming SIMD Extensions 3 (SSSE3) make the Intel® Core™2 Duo an extremely efficient processor for Digital Signal Processing applications. The Intel® Core™2 Duo features a 667 MHz FSB.
Thanks to its exceptional thermal efficiency, the VX3020 has been qualified to operate the processor at a continuous maximum speed of 1.5 GHz at temperatures up to +75°C (wedgelock interface) and at a speed of 1,3GHz for temperatures up to +85°C.
Under such conditions, VX3020 guarantees constant computing performance for computer designed to match VITA 47 CC3 or CC4 standards.

Soldered DDR2 Memory with ECC for a Better Reliability
The VX3020 is available with 1 GB of DDR2-400 SDRAM. 2 GB is available on demand. The SDRAM is managed by the integrated Memory Controller Hub and I/O Controller Hub (IMCH and IICH) Intel® 3100. Error Correction and Control (ECC) feature is supported by the IIMCH.

Multiple Storage Interfaces
The VX3020 features three SATA-150 ports to interface with a large number of devices. In addition, the VX3020 support an USB 2.0 Low-Profile Flash Disk module. Three USB 2.0 ports are available, one on the board for Flash Disk modules and two on the rear via VPX P1 connector.
To easily download files from external devices during development, the RTM module offers on the rear panel a standard USB port.

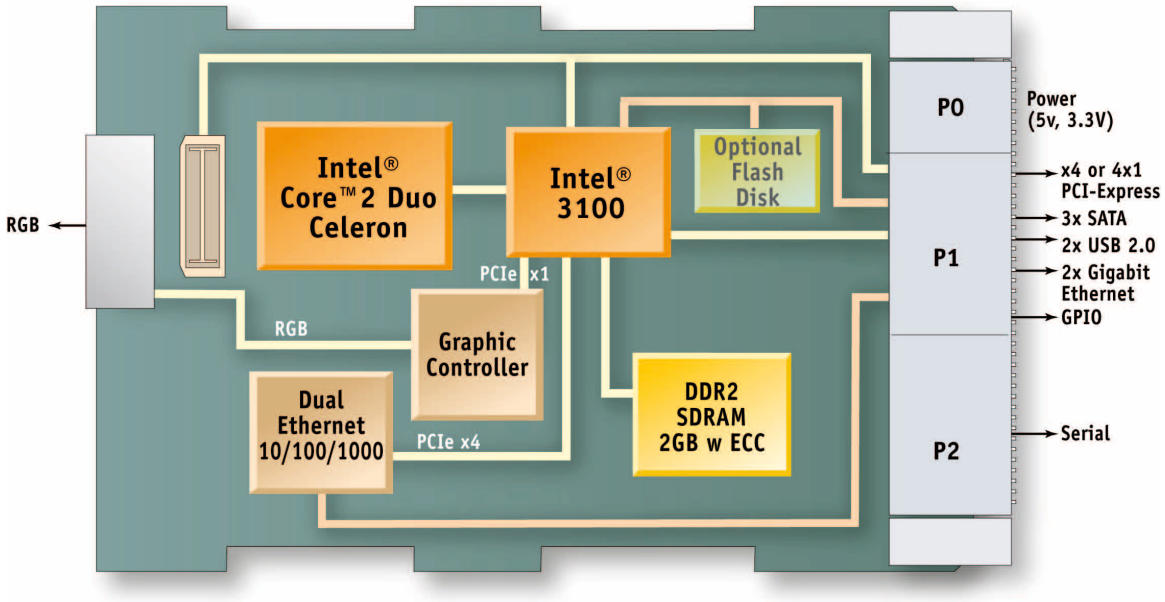
VITA 46.7: Dual Gigabit Ethernet Ports
The Dual Gigabit Ethernet controller is directly interfaced to the IIMCH using a PCI-Express x4 link in order to provide an optimum throughput. The two ports are routed to the rear VPX P1 connector (VITA 46.7). Compliance to this standard allows standard 3U VPX Ethernet switches to be used.
The Rear Transition Module (RTM) for VX3020 implements rear Gigabit Ethernet on two RJ-45 connectors.

VITA 46.4: PCI-Express x4 or 4x1 Interfaces
The VX3020 meets the VITA 46.4, Rev 6.00 standard. When multiple high-throughput, PCIe compliant interfacing is required, the VX3020 PCI-Express x4 port can be configured as four x1 links to the VPX P1 connector.
Using VX3020 with a full mesh 3U VPX backplane, as implemented in Kontron systems, allows one SBC to drive four PCIe VPX I/O boards. And for higher bandwidth I/O such as 10 GBETH a x4 PCIe channel can also be implemented.

Management Functions
The integrated IMCH watchdog timer and RTC implemented on the VX3020 meet embedded application requirements. In addition, the I2C port of the IMCH is connected to the SMB0 of the VPX P1 connector (VITA 46.11) to allow for external devices monitoring.
Designed to meet the Requirements of Harsh Environments
The VX3020 core has been designed so as that to meet a wide range of operating temperatures. It has successfully passed VITA 47 CC4 compliance tests, up to –40°C to +85°C.
To design systems with guaranteed operation of the VX3020 Intel® Core™2 Duo LV processor at maximum processor speed (1.5 GHz), the system must comply with VITA 47 CC3 operating temperature range up to +75°C.

3U VPX SBC with 10-Year Life Cycle
Investing in a new project is always a challenge and risky. This is even more the case when new standards are considered. The VX3020 has been designed with a selection of long life cycle components.
And beyond the commercial availability of these components, Kontron offers services to guarantee its customers procurement of products over 10 years. Securing the longest lifetime for a given application is easier when the development investments have been made using a Kontron VX3020.

Unique Features
» Soldered components for higher shock vibration handling.
» PCI-Express connectivity on backplane
» Three SATA-150 interfaces
» 10-year long life cycle
» Rugged Conduction-cooled card with optional front VGA port or VGA tool
» Air Cooled development system



Technical Information

System Processor	Intel® Core™2 Duo LV (L7400) 1.5 GHz, 4 MB L2 cache, SSE3, 667 MHz FSB, 17W Passive cooling for all builds within 4HP height
Integrated Chipset	Intel® 3100 integrated MCH (Memory Controller Hub) and ICH (I/O Controller Hub) **FSB port to processor:** 533/667 MHz **Watchdog Timer:** 2-stage, system reset and nmi Programmable Timer **RTC:** Integrated in chipset **GPIOs:** 2 available on rear P1
Memory and Storage Memory	**System Memory:** 1 GB of DDR2-400 with ECC / 2 GB available on request **System Flash:** 16 Mbit FWH Flash Memory **User Flash:** Socket for USB Flash Disk, Low Profile, 2.54 pitch connector, 4, 8 and 16 GB sizes are available
Networking I/O Connectors	**Gigabit Ethernet:** Dual Ports configurable either on front RJ-45 or rear J2. PCI-e x4 interface to host
Graphics	64-bit 2D graphics engine on PCI-e x1 Analog VGA interface on front. Associated 32 MB of DDR2 SDRAM Integrated 24-bit true-color RAMDAC with 230 MHz pixel clock VGA graphics connector option available for Conduction Cooled build (for use in extended operating temperature from -20°C)
Interfaces (Conduction Cooled Computer)	
Conduction Cooled board (front)	Optional VGA-CRT 15-pin D-Sub connector
Conduction Cooled board (VPX P1)	**VITA 46.4:** PCI-Express x4 Port, configurable into 4 * x1 PCIe ports **VITA 46.7:** Two Gigabit Ethernet Ports **VITA 46.11:** I2C Management bus Three SATA-150 Ports Two COM ports Two GPIOs Two USB 2.0 ports
Interfaces (Air Cooled Computer)	
System Front:	VGA-CRT 15-pin D-Sub connector Control: Reset button, LEDs
System Rear (through RTM):	Ethernet (x2): RJ-45 with LEDs USB: 4-pin Type-A connector Serial: COM1 on RJ-11
In System (on RTM):	3 SATA connectors Serial: COM2 on RJ-11 2 GPIO
Power Consumption	Intel® Core™2 Duo 1.5 GHz under WindowsXP : 29W (idle) / 36W (100% CPU)Weight: 400g / 8HP
Weight	Approx 400g

Environmental Specifications

	RC Rugged Conduction-Cooled
Conformal Coating	Standard
Temperature	**VITA 47 – Class CC4** (CC3 full speed for Intel® Core™2 Duo)
Cooling Method	Conduction
Operating	-40° to +85°C (CC4) or +70°C (CC3)
Storage	-45° to +85°C
Vibration Sine (Operating)	22/2,000 Hz: 2g
Random	**VITA 47 – Class V3**
Shock (Operating)	40G/11ms Half Sine
Altitude (Operating)	-1,640 to 15,000 ft
Relative Humidity	95% without condensation

Ordering Information

Article	Order Code	Description
		3U VPX Rugged Single Board Computer
VX3020	VX3020-RC52-00000	Intel® Core™2 Duo (L7400) 1.5 GHz, 4 MB L2, 1 GB SDRAM SBC
VX3020	VX3020-RC52-G0000	Intel® Core™2 Duo (L7400) 1.5 GHz, 4 MB L2, 1 GB SDRAM SBC, front VGA connector
VX3020	VX3020-RC54-00000	Intel® Core™2 Duo (L7400) 1.5 GHz, 4 MB L2, 2 GB SDRAM SBC
VX3020	VX3020-RC54-G0000	Intel® Core™2 Duo (L7400) 1.5 GHz, 4 MB L2, 2 GB SDRAM SBC, front VGA connector
		Associated Products
RTM	PB-VX3-000	3U VPX Rear Transition Module
USB Flash Disk	FDM-USB-4GB-IV	4 GB USB Flash Disk Module
VGA Tool	ADAP-VGA	Tooling board with VGA connector for IEEE -RC boards
		Turnkey Development System
EZ3-VX3020	EZ3-VX3020-000-L	3U VPX Air-Cooled Development System » Table Top 200W 3U VPX Rack » VX3020 SBC » Rear Transition Module » 4 GB USB FLASH Disk » Fedora Core Linux™ installed » 4 free 3U VPX slots for SBC or I/O cards » Lab Environment

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