

# VX3052

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**VPX** Open**VPX**

## 3U VPX DUAL CORE INTEL D-1508 2.2 GHz BOARD COMPUTER Designed for Real-Time Applications and Secure & Safety Systems

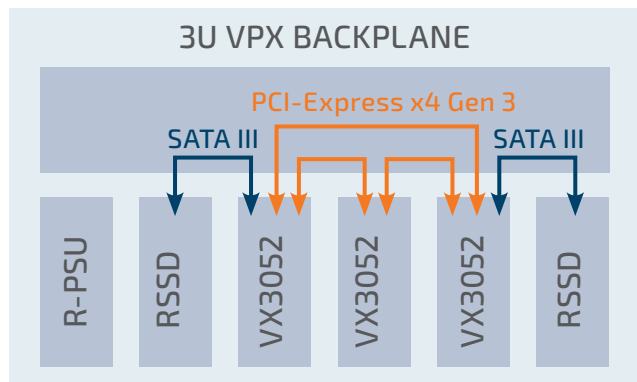
- ▶ Two Core Xeon® Processor D, 8 GB DDR4 with ECC
- ▶ Dual 10 Gigabit Ethernet, x8 PCI Express Gen3 Bandwidth
- ▶ 2D Graphics option
- ▶ Extended Life Cycle and 10-year Silicon Reliability

# VX3052 DUAL CORE INTEL® XEON® VPX SINGLE BOARD COMPUTER

Featuring the Intel® Xeon® D processor family, the VX3052 complements the Kontron 3U VPX ecosystem with a 2-core Single Board Computer. The highly integrated 2-core architecture with Dual 10 Gigabit Ethernet, high bandwidth PCI Express 3.0, high speed DDR4 memory, and versatile mezzanine options, is consequently SWaP-C optimized and simply the best choice for high performance embedded computing platforms.

## USE OF VX3052 IN SECURE SYSTEMS

The VPX standard has opened the door to systems featuring direct point to point connections between slots cards with high speed data links such as Gen 3 PCI-Express and SATA III. Such a configuration is particularly suitable for secure communication applications.



## USE OF VX3052 IN SAFETY SYSTEMS

The concept of Safety Integrity Levels (SILs) has been developed within different systems of standards (IEC 61508, EN 50129 / EN 50128 and DEF-STAN 00-56).

In the functional safety standards, four SILs are defined, with SIL 4 the most dependable and SIL 1 the least. A SIL is determined based on a number of quantitative factors in combination with qualitative factors such as development process and safety life cycle management.

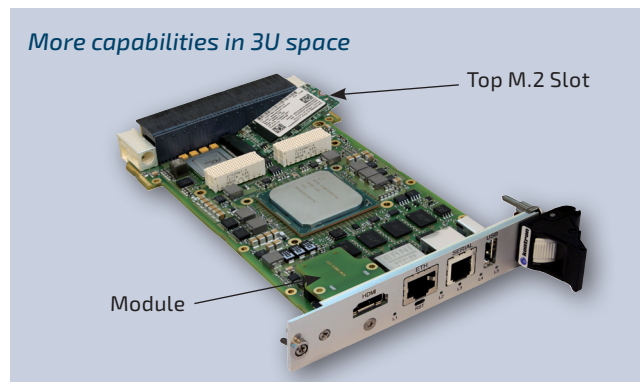
The combination of components or sub-systems of a lower SIL can give a higher SIL to the system. The use of Kontron VPX SBCs as component sub-systems allow the SIL system to be released in both Air Cooled and Convection cooled packaging to meet all the environmental requirements of the safety application.

## LONG TERM PROGRAMS: HIGH RELIABILITY, LOW TCO

Kontron is providing outstanding elements to increase reliability and to lower Total-Cost-of-Ownership (TCO) for VX3052. Kontron provides a Long Term Supply program service (LTS) for over 15 years. Intel Communications silicon reliability is 10 years. A comprehensive Health Management is optionally available to support easy field maintenance. All this makes the VX3052 the ideal candidate for long term programs.

## VERSATILE OPTIONS: XMC, STORAGE, GRAPHICS, M.2, I/O

The M.2 interface can be used for storage or for integration of customized personality modules. A XMC slot and 2-D graphics are additional options. Front-I/O module options are selectable for DVI/HDMI or Ethernet or other interfaces.



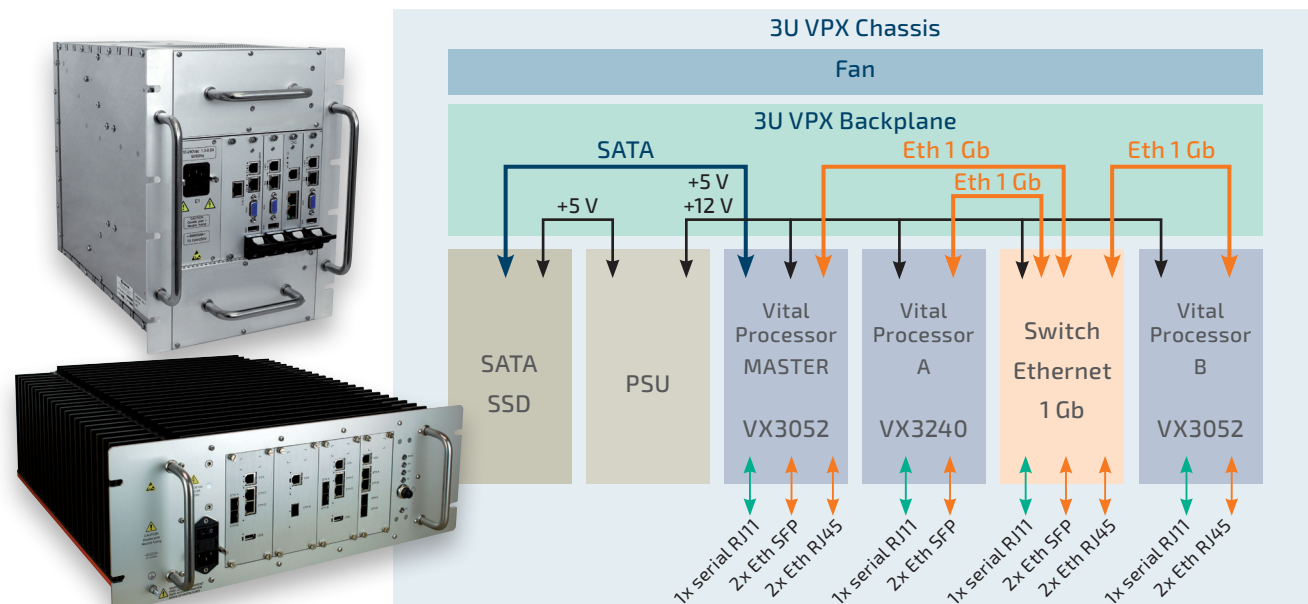
## CENTRALIZED HEALTH MANAGEMENT

A shelf manager is optionally available for centralized health management. Moreover, sequenced system power-up and Temperature/Power/Performance management are available. The Power-On Built-in Test (PBIT) option is a comprehensive package for board and system diagnosis.

## KONTRON VPX ECO SYSTEM AND VALIDATED SOLUTION

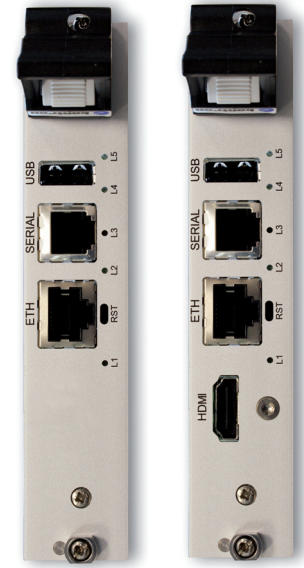
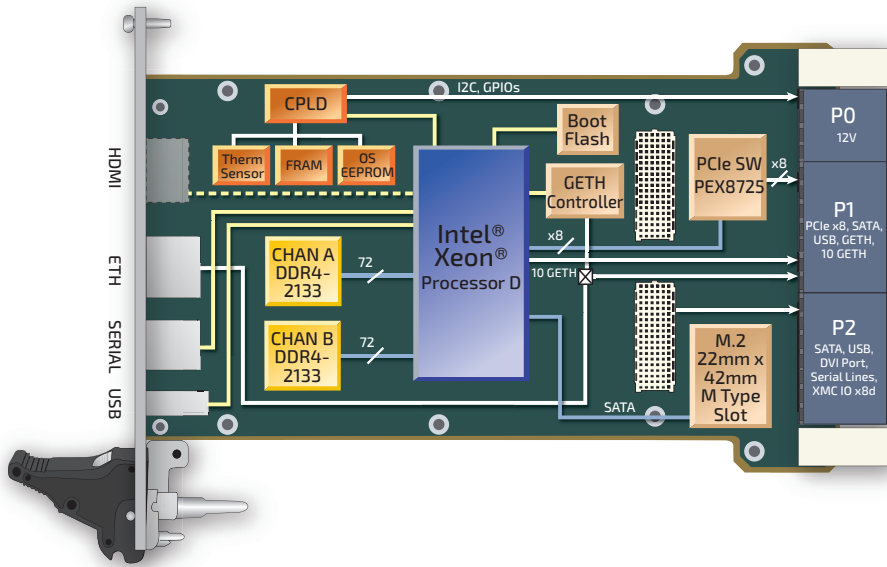
VX3052 boards are compatible with all Kontron 3U VPX and 6U VPX building blocks (payload boards, carriers, switches, backplanes, OS, and drivers) and offer backward compatibility with the previous product generations.

Reduce your time to market by starting with an already complete and validated platform, by use of StarVX turnkey systems with off the shelf elements.



<b>PROCESSOR</b>		Intel® Xeon® D-1500 Dual Core™, tuned to 25 W, 2.2 GHz (4 execution cores, 8 threads, 3 MB) DDR4 dual channel memory with ECC, 2133 Mb/s over 144 bits, up to 16 Gbytes Integrated dual 10G Ethernet controller PCIe gen3 x8 ports to VPX and XMC, up to 8 GT/s
<b>ONBOARD CONTROLLER</b>	Integrated Platform Controller Hub	PCI Express* Base Specification, Revision 2.0 support for up to eight ports with transfers up to 5 GT/s Integrated Serial ATA host controllers with independent DMA operation on up to six ports xHCI USB controller provides support for up to 8 USB ports, of which four can be configured as SuperSpeed USB 3.0 ports Two Integrated serial lines
	Gigabit Ethernet	One I210 Ethernet controller connected on front panel or VPX backplane (user selection) for 1000BASE-T operation 2 <sup>nd</sup> I210 Ethernet controller connected on VPX backplane for 1000BASE-T operation, and optionally to the front panel (user selection) if the I/O profile option for "2 <sup>nd</sup> RJ-45 Ethernet 1000BASE-T to the front option" is selected.
	Watchdog	PLD-based, timeout ranging from 2 μs to 510s, IRQ, Reset, dual-stage
	System CPLD	One CPLD Board controller for power sequencing, reset handling, monitoring, failure detection, VPX I2C communication. Provides configuration/status registers on LPC interface
	RTC	Separated low power RTC with optional onboard battery
<b>MEMORY</b>	System Memory	Up to 16 GB dual channel DDR4 SDRAM running at 2133 MT/s, with ECC, soldered
	Flash (uEFI BIOS)	2x16 MB FLASH, with recovery image and uEFI BIOS settings
	EEPROM	One serial 256 Kbit EEPROM dedicated to system data One serial 256 Kbit EEPROM dedicated to application data
	M.2 SSD option	M.2 SSD module option: Type M, 22 mm x 42 mm
<b>FRONT INTERFACES SHP (1")</b>	USB	1x USB 2.0 port
	Gigabit Ethernet	1x RJ-45 connector: 10/100/1000BASE-T Ethernet Note: This port is configurable from the BIOS to be routed to the VPX rear connector instead
	HDMI (option)	HDMI connector as option. This includes a HDMI front-I/O module and a M.2 mezzanine for 2D graphics. Remark: HDMI front I/O and XMC support are exclusive.
	Serial	1x RJ-11 connector: Two EIA-232 interfaces or one EIA-485 interface from CPU, without hardware flow control
	LEDs	5 LEDs reporting the board CPU health status and activity
	Reset	Reset push button
<b>ONBOARD INTERFACES</b>	Spare PCIe Link	Spare x1 PCIe link with clock
	M.2 module interface	Top M.2 slot for a 2D graphic module or a SSD module, compatible with a 12mm stacking height XMC slot. M.2 type M standard ping mapping for SSD module or 2D graphic module option Supported module: Type M, 22 mm x 42 mm.
	XMC Slot option	One x8 PCIe 2 provision for XMC slot option. X8d+X4s VITA 46.9 XMC I/O routing, 8 differential pairs plus 4 single ended pins For XMC slot option, please contact us because of thermal aspects.
<b>VPX INTERFACE</b>	Slot Profiles	SLT3-PAY-2F2U-14.2.3 SLT3-PAY-1F1F2U-14.2.4 SLT3-PAY-1F1U-14.2.10
	Rear I/O via P0/P1/P2	<ul style="list-style-type: none"> <li>▶ x8 PCIe 3.0, non transparent capability, on P1. Configurable as 1 x8, 2 x4, or 4 x2.</li> <li>▶ 2 SATA 6 Gb/s links on P1, 2 additional SATA 6 Gb/s links on P2</li> <li>▶ 2 USB 2.0 and 1 USB 3.0 port on P1, 1 additional USB 2.0 link on P2</li> <li>▶ 2 serial lines (Rx, Tx only) on P2, for RS-232 or RS-422/485 by using dynamic configuration</li> <li>▶ 2 10GBASE-KR or 1000BASE-KX on P1</li> <li>▶ 1 1000BASE-T on P1, 2<sup>nd</sup> 1000BASE-T on P2 (both front/rear switchable, onboard magnetics)</li> <li>▶ GPIOs on P1: GPIO1, GPIO2/Maskable reset, OpenVPX GDISCRETE1, VBAT, SYSCON. 2x multiplexed GPIO3/4 or SFI I2C on P0</li> <li>▶ DVI port on P2 as option. This includes a M.2 mezzanine for 2D graphics.</li> </ul>
	Supervisory Functions	<ul style="list-style-type: none"> <li>▶ Non Maskable RESET</li> <li>▶ NVMRO, Master SMBus and Master/Slave SMBus interfaces for system management. Compatible with Kontron CMB (Monitoring Board), temperature and voltage sensors on the board</li> <li>▶ PCIe optional use of common reference clock feature</li> </ul>
	Power Supplies	On P0: VS1=12V and 3.3V_AUX; VS2 not used; VS3=5V not used; -12V_AUX for XMC slot option
<b>OS SUPPORT</b>		Linux Fedora 21, ask for: Windows, VxWorks

## ▶ VX3052 BLOCK DIAGRAM AND FRONT PANEL



## ▶ ENVIRONMENTAL SPECIFICATION

	SA - Standard Commercial (1" single height passive module heat sink, forced air)	RC - Rugged Conduction-Cooled (Depending on processor frequency) Planned, please ask
CONFORMAL COATING	Optional	Standard
AIRFLOW	20 cfm typ. for 35 W TDP	NA
TEMPERATURE	VITA 47-Class AC1 designed to meet <sup>(*)</sup>	VITA 47-Class CC3, CC4 option designed to meet <sup>(*)</sup>
COOLING METHOD	Convection	Conduction
OPERATING	0° to +55°C	-40° to +71°C, +85°C option
STORAGE	-45° to +85°C	-45° to +100°C
VIBRATION SINE (OPERATING)	20-500 Hz - 2g	20-2,000 Hz - 5g
RANDOM	VITA 47-Class V1	VITA 47-Class V3
SHOCK (OPERATING)	20g/11 ms Half Sine	40g/11 ms Half Sine
ALTITUDE (OPERATING)	-1,500 to 60,000 ft	-1,500 to 60,000 ft
RELATIVE HUMIDITY	90% without condensation	95% without condensation

<sup>(\*)</sup> designed to meet: product is ready to pass the required qualification or certification.

## ▶ ORDERING INFORMATION

ARTICLE	ORDER CODE	DESCRIPTION
VX3052	VX3052SA280150000	3U single slot 5 HP (1") VPX CPU Blade with 2-core Intel® Pentium® D1508 processor, 2.2 GHz, 3 MB, TDP 25 W, 8 GB DDR4 with ECC, fully switched PCIe3 x8, 2x 10 GbE, 2x GbE, 3x USB2, 1x USB3, 4x SATA, 2x serial, GPIO, Air Cooled 'SA' (0°C to +55°C)
VX3052	VX3052SA280151000	3U single slot 5 HP (1") VPX CPU Blade with 2-core Intel® Pentium® D1508 processor, 2.2 GHz, 3 MB, TDP 25 W, 8 GB DDR4 with ECC; fully switched PCIe3 x8; HDMI Graphics, 2x 10 GbE, 2x GbE, 3x USB2, 1x USB3, 4x SATA, 2x serial, GPIO, Air Cooled 'SA' (0°C to +55°C)

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