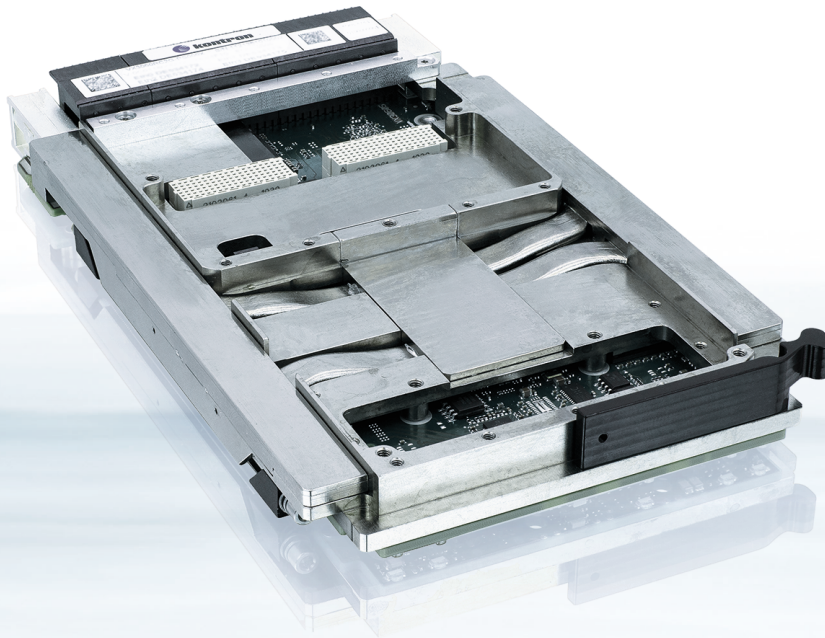


VX3060-S2

3U VPX Rugged Blade PC



11th Gen Intel® Core™ processor for AI*, CVGIP*, DSP* workloads

- ▶ 12-28 W Quad Core™ processor, Enhanced AI, AVX-512, 32 GByte w ECC
- ▶ 8k Multi-Head display from Gen12 / 96 EUs high End GPU
- ▶ Versatile I/O: USB, M.2 socket, XMC option
- ▶ 1G/10G Ethernet Multi-port with 25G capability
- ▶ 15-year availability, PBIT, CBIT, SEC-Line support

*CVGIP: Computer Vision, Graphics, and Image Processing, AI: Artificial Intelligence, DSP: Digital Signal Processing

POSSIBILITIES START HERE



VX3060-S2

The ultimate single board PC

The new 10nm gen Intel® System On Chip (SOC) SKUs pack an unmatched feature set in a low power envelope enabling a solid foundation for almost all rugged computing use cases. Introduced with 15 years of availability, it is a serious candidate for long term deployments.

With the VX3060-S2, Kontron takes this outstanding silicon architecture to the next level, in the form of a rugged single 3U VPX board PC, boasting numerous innovations and extensions designed to fulfill the most demanding mission profiles.

Deploying with the VX3060-S2 that was developed in alignment with the SOSA™ Technical Standard is a sure way to deploy a vast choice of applications and serve demanding programs with a single computer blade for years to come, optimizing development efforts and long term logistics.

THE 11TH GEN INTEL® CORE™ PROCESSOR PLATFORM

Dawning the previous Intel 10th generation silicon, the 10nm Intel® SOC of the VX3060-S2 offers superb performance in a reasonable power budget. Designed with capabilities such as PCIe gen4, it is also a perfect fit for blade computing with constrained mechanical envelope and power budget and growing software requirements to host demanding applications within a minimum number of boards.

The SKUs selected for VX3060-S2 are quad core units, with specialized instructions for **Artificial Intelligence (VNNI)** and **Doubled Signal Processing performance (AVX512)**. **Computer vision** and **media processing** also enjoy twice the performance of the previous generation thanks to the Gen12 Gfx graphics engine. The featured 96 execution units benefit from a direct on-chip access to main memory, delivering outstanding performance per EU compared with traditional discrete graphics silicon with many more EUs.

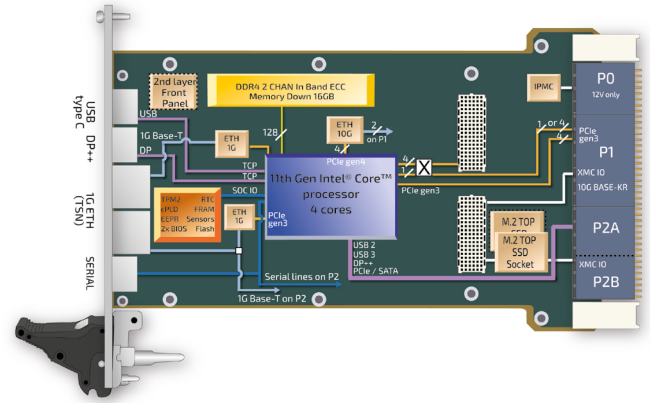
COMPATIBILITY WITH OPEN VPX SYSTEMS

The VX3060-S2 is compatible with the following VITA65 OpenVPX Profiles:

- ▶ MOD3-PAY-1F1F2U1TU1T1U1T-16.2.15-2 | SLT3-PAY-1F1F2U1TU1T1U1T-14.2.16
- ▶ MOD3-PAY-2F2U-16.2.3-11 | SLT3-PAY-2F2U-14.2.3
- ▶ SLT3-PAY-1F1F2U-14.2.4

A non SOSA version of this board named VX3060 also exists and is compatible with the following VITA65 OpenVPX profiles :

- ▶ MOD3-PAY-2F2U-16.2.3-11 / SLT3-PAY-2F2U-14.2.3
- ▶ SLT3-PAY-1F1F2U-14.2.4



RELIABILITY AND ROBUSTNESS

The selected CPU SKU reliability is guaranteed for 10 years up to 100 % active usage profile.

VX3060-S2 Rugged Air cooled variant is designed to meet VITA 47 class EAC6 V2 and can operate in extended temperature environments up to of -40 °C/+70 °C.

VX3060-S2 Rugged Conduction cooled version is a Plug-in unit according to VITA 48.2 Type 2, Secondary Side Retainer. It can operate up to 85 °C card edge temperature according to VITA 47 depending on the processing load and mezzanine power.

Built-In test capabilities enable effective local and remote maintenance:

- ▶ PBIT is OS independent. It is designed as a new EFI BIOS command.
- ▶ A CBIT engine is part of the Kontron Linux™ BSP.

See the **software** section for details.

CYBER SECURITY, SECURE DEPLOYMENTS

VX3060-S2 design is compatible with the Kontron **SEC-Line** offering and featuring two secure elements: TPM and AppProtect. TPM supports, measured boot and hardware protection of crypto keys. For secured application deployments, the **AppProtect** technology protects application code both in transit and at rest, and restricts program execution solely to boards hosting a valid license in the 2nd secure element.

▶ VX3060-S2 ARCHITECTURE

The Kontron VX3060-S2 architecture is designed as a reusable building bloc offering the best SWAP-C ratio for a rugged computer. Designing it to fit first the 3U VPX standard computer blade use case, numerous capability options also make this computer the ideal candidate to build powerful and versatile rugged box PCs.

TCC: The VX3060-S2 architecture has support for Time Coordinated Computing use cases with new **Time Aware GPIO** feature. The latter can be used to implement **nanoseconds synchronization between multiple CPUs**.

Network performance: Leveraging a server class multi MAC silicon and adequate connectors, a profile can reach up to 50Gb/s of data plane bandwidth in the form of two 25Gb/s KR ports on P1 (50GBase-KR2).

NVMe Storage: top M.2 socket is available to connect legacy SATAIII or 1x PCIe gen3 SSD units. With PCIe, NVMe OS device drivers offer lower latency and better management of existing FLASH based storage.

Fiber Optics: VX3060-S2 includes provisions to offer fiber optics connectivity for high performance networking, a key asset for internal box computers as well as 2nd layer routing with maximum signal quality.

XMC mezzanine: Linked to a x4 or x1 PCIe gen 3 port of the SOC. X8d+X12d VITA 46.9 XMC I/O routing with 20 differential pairs plus 4 single ended pins on the rear P2 complete this option.

VX3060-S2 SOFTWARE

Kontron provides a rich Linux™ BSP to fully exercise the capabilities of V3060. Instant evaluation and benchmarking is made possible thanks to a Fedora Live USB image. The image includes all the BSP source code to support the VX3060-S2 in any Linux distribution with the following features:

System Management: The CPLD does the central housekeeping of the computer blade: power supplies control and monitoring, SOC out-of-band i2c signals, RESET, LEDs, GPIO etc). System management resources such as inter blade control and monitoring registers routed via VPX SMB buses can also be managed via kernel driver and the *cpldtool* command. VITA46.11 IPMI is supported.

PBIT: maximal coverage with no programming. VX3060-S2 PBIT "Expert mode" Learn/Compare approach records all board settings and connections status for all peripherals into a reference in one step. At each power on PBIT can measure again and signal any difference suppressing the need to dive into complex application code investigations. The PBIT occurs before the boot sequence, it is thus independant of the OS used.

CBIT: a turnkey Linux™ service provides a continuous flow of health data (XML format). Local and remote monitoring agents access a synthetic vision of the computers health status, with detailed information for each measurement point: status, margins

and stat. Fully extensible, the CBIT data format is compatible with all modern high level APM solutions.

The CBIT service in each VX3060-S2 provides an interactive dashboard accessible with any browser (<http://hostname/KEHM-Result.xml>)

The screenshot shows a web-based dashboard for monitoring sensor data. At the top, there are navigation options: 'Top Level', 'By Domain (with actions)', 'By Severity (with rules)', and 'By Group (click on sensor name for details)'. Below this is a table with columns for 'Sensor Group', 'Group State', and 'Go to Details'. The table lists various sensor groups such as 'Vital Product Data', 'SW revisions', 'system information', 'operating temp', 'operating voltage and current', 'Performance', 'Devices', 'Other Info', 'System security', and 'Logical Rule for Safety'. Each group has a corresponding state (WARNING or SUCCESS) and a link to go to details. Below this table is a more detailed view for 'Vital Product Data', showing a table with columns for 'Sensor Name', 'Sensor Reading', 'Sensor State', 'Nb Readings', 'Nb Alarms', and 'Nb Warnings'. The table lists various sensors like 'Board Manufacturer', 'Board Name', 'Board Type', 'Board Manufacturing Date', 'Board Serial Number', and 'EC Level'.

// VX3060-S2 CBIT embedded dashboard

VX3060-S2 FOR SAFETY CRITICAL APPLICATIONS

Multiple features make VX3060-S2 the ideal choice for Safety Critical applications:

- ▶ power and temperature monitoring
- ▶ ferro magnetics RAM for permanent log
- ▶ multiple network and I/O ports on the front as well as the backplane side provide flexibility for connector choice
- ▶ integrated memory ECC
- ▶ Time Coordinated Computing: nanoseconds precision synchronization for multi board configurations

INTEL® SOFTWARE

Intel designs solution-specifics libraries and toolkit to leverage the silicon dedicated instructions and co-processing engines. These are available for both Windows and Linux.

Intel® Media SDK: Leverage fixed point HW accelerator, all codecs support with HEVC 10bit.

AI & Computer vision: Intel® OpenVino™ includes media SDK for hardware assist media decode and leverages use of VNNI an internal accelerator for neural network processing based on the AVX512 vector unit.

For machine learning use cases, the optimal resource usage of platforms with 11th Gen Intel® Core™ processor is achieved by the use of both the Media SDK (for decode encode video flows) and OpenVino™ which leverages both the CPU and the graphics engine execution units for inferencing.

▶ ORDERING INFORMATION

ARTICLE	PART NO.	DESCRIPTION
VX3060-S2-RC34G-21EN00V1Q	1068-7550	3U Single slot SHP (1") VPX SBC -Conduction-Cooled 'RC3' (-40 °C to +70 °C) conformal coating Intel® Core™ i7-1185GRE Processor (TDP Software Configuration from 12 W to 28 W, 4 core @ 2.8 GHz) with 96 EU Intel® Iris® Xe Graphics 32 GByte soldered SDRAM with In-Band ECC XMC Mezzanine on x4 PCIe (VITA61, up to Gen3), FP1 x1 and FP2 x4 PCIe routed to P1, no front connectors VITA 48 2LM covers P1 = PCIe (see XMC option), 2x 10GbKR. P2 = 1x 1000BASE-T, 1x DP++, 1x SATA, 2x USB2.0, 1x USB3.x, XMCIOs, according to MOD3-PAY-1F1F2U1TU1T1U1T-16.2.15-2 module profile No Front I/O connectors PCIe/SATA on TOP 2242 up to D5 and M Key M.2 slot, no M.2 bottom slot Power sourced from system VPX VBAT VITA 46.11 (IPMC) Support TPM 2.0 Secure element PBIT RT & Preloaded Eval Linux on M.2 256 GByte SSD
VX3060-S2-SA4G-00EF01V1Q	1069-5703	3U Single slot SHP (1") VPX SBC -Air-Cooled 'SA' (0 °C to 55 °C) Intel® Core™ i7-1185GRE Processor (TDP Software Configuration from 12 W to 28 W, 4 core @ 2.8 GHz) with 96 EU Intel® Iris® Xe Graphics 32 GByte soldered SDRAM with In-Band ECC No XMC mezzanine slot, FP1 x4 and FP2 x4 PCIe routed to P1 no VITA 48 2LM covers - P1 = PCIe (see XMC option), 2x 10GbKR. P2 = 1x 1000BASE-T, 1x DP++, 1x SATA, 2x USB2.0, 1x USB3.x, XMCIOs, according to MOD3-PAY-1F1F2U1TU1T1U1T-16.2.15-2 module profile 2x 1000BASE-T, 1x mDP++, 1x USB-C, Serial PCIe/SATA on TOP 2242 up to D5 and M Key M.2 slot, no M.2 bottom slot Power sourced from battery VITA 46.11 (IPMC) Support TPM 2.0 Secure element PBIT RT & Preloaded Eval Linux on M.2 256GB SSD
VX3060-S2-RC34G-10EN00V1Q	1068-9233	3U Single slot SHP (1") VPX SBC -Conduction-Cooled 'RC3' (-40 °C to +70 °C) conformal coating Intel® Core™ i7-1185GRE Processor (TDP Software Configuration from 12 W to 28 W, 4 core @ 2.8 GHz) with 96 EU Intel® Iris® Xe Graphics 32 GByte soldered SDRAM with In-Band ECC XMC Mezzanine on x1 PCIe (VITA61, up to Gen3), FP1 x4 and FP2 x4 PCIe routed to P1, no front connectors no VITA 48 2LM covers P1 = PCIe (see XMC option), 2x 10GbKR. P2 = 1x 1000BASE-T, 1x DP++, 1x SATA, 2x USB2.0, 1x USB3.x, XMCIOs, according to MOD3-PAY-1F1F2U1TU1T1U1T-16.2.15-2 module profile No Front I/O connectors PCIe/SATA on TOP 2242 up to D5 and M Key M.2 slot, no M.2 bottom slot Power sourced from system VPX VBAT VITA 46.11 (IPMC) Support TPM 2.0 Secure element PBIT RT & Preloaded Eval Linux on M.2 256GB SSD
VX3060-S2-SA4G-10EN01V1Q	1069-5955	3U Single slot SHP (1") VPX SBC -Air-Cooled 'SA' (0 °C to 55 °C) Intel® Core™ i7-1185GRE Processor (TDP Software Configuration from 12 W to 28 W, 4 core @ 2.8 GHz) with 96 EU Intel® Iris® Xe Graphics 32 GByte soldered SDRAM with In-Band ECC XMC Mezzanine on x1 PCIe (VITA61, up to Gen3), FP1 x4 and FP2 x4 PCIe routed to P1, no front connectors no VITA 48 2LM covers - P1 = PCIe (see XMC option), 2x 10GbKR. P2 = 1x 1000BASE-T, 1x DP++, 1x SATA, 2x USB2.0, 1x USB3.x, XMCIOs, according to MOD3-PAY-1F1F2U1TU1T1U1T-16.2.15-2 module profile No Front I/O connectors PCIe/SATA on TOP 2242 up to D5 and M Key M.2 slot, no M.2 bottom slot Power sourced from battery VITA 46.11 (IPMC) Support TPM 2.0 Secure element PBIT RT & Preloaded Eval Linux on M.2 256GB SSD

▶ GLOBAL HEADQUARTERS

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