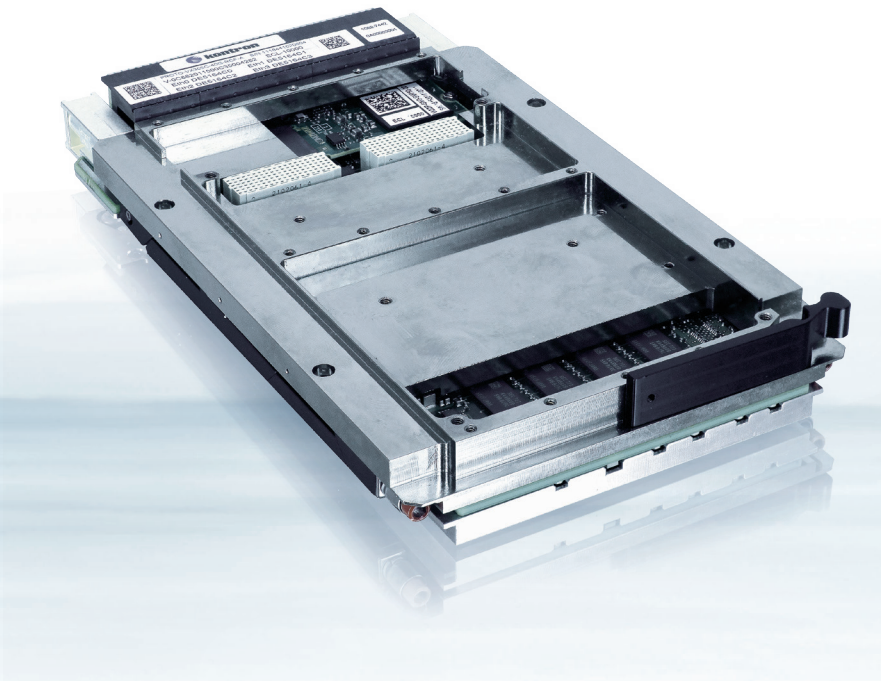# VX3060-S2
3U VPX Rugged Blade PC

▼

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 **kontron**
S&T Group

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, 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 VX3060 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 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 enveloppe and power budget and growing software requirements to host demanding applications within a minimum number of boards.

The SKUs selected for VX3060 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 is compatible with the following VITA65 OpenVPX Profiles:
▶ SLT3-PAY-2F2U-14.2.3
▶ SLT3-PAY-1F1F2U-14.2.4
▶ SLT3-PAY-1F1F2U1TU1T1U1T-14.2.16
▶ MOD3-PAY-1F1F2U1TU1T1U1T-16.2.15-2

COMPATIBILITY WITH PREVIOUS PRODUCTS
The VX3060 is designed to replace the aging 3rd Generation Core™ i7 based VX3040 family of products. The VX3060 allows plug and play replacement unit with **twice the integer performance (DMIPS)** for existing system architectures. Compatibility covers data plane and control plane, power enveloppe and feature set.
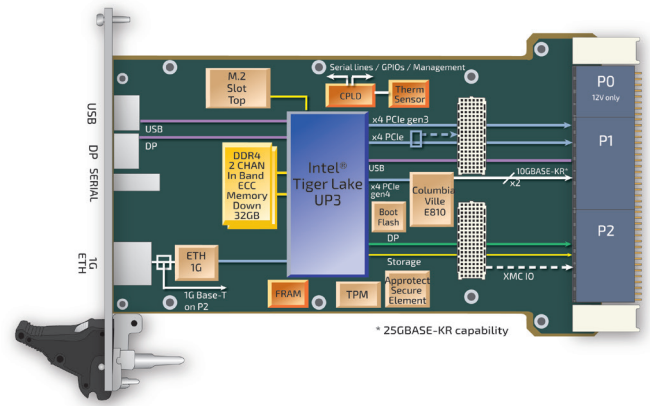
RELIABILITY AND ROBUSTNESS
The selected CPU SKU reliability is guaranteed for 10 years up to 100 % active usage profile.

VX3060 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 Rugged Conduction cooled version is a Plug-in unit according to VITA 48.2 Type 2, Secondary Side Retainer. It can operateup 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 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 ARCHITECTURE

The Kontron VX3060 architecture is designed as a reusable building bloc offering the best CWAP 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 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 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 SATA or PCIe gen3 SSD units. With PCIe, NVMe OS device drivers offer lower latency and better management of existing FLASH based storage.

Fiber Optics: VX3060 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 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 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 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 provides an interactive dashboard accessible with any browser (http://hostname/KEHM-Result.xml)

// VX3060 CBIT embedded dashboard

VX3060 FOR SAFETY CRITICAL APPLICATIONS

Multiple features make VX3060 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 encore video flows) and OpenVino™ which leverages both the CPU and the graphics engine execution units for inferencing.

▶ **ORDERING INFORMATION**

ARTICLE	PART NO.	DESCRIPTION
VX3060-RC4F-XG		3U Single Slot VPX SBC 2.8 GHz Intel® Quad Core 28 W TDP 16 GByte DDR4 Memory with ECC Dual PCIe x4 on P1 M.2 2242 SATA/PCIe on M.2 socket and P2 ETHERNET: 1 GBase-T + 2x10G/25G on P1 Dual head DP Graphics from Gfx 12 96EU GPU USB: front USB 3, rear USB 3 + dual USB 2 Rugged Conduction-Cooled -40 °C to +85 °C* *Turbo OFF

▶ **GLOBAL HEADQUARTERS**

Kontron Europe GmbH

Gutenbergstraße 2
85737 Ismaning, Germany
Tel.: + 49 821 4086-0
Fax: + 49 821 4086-111
info@kontron.com

www.kontron.com