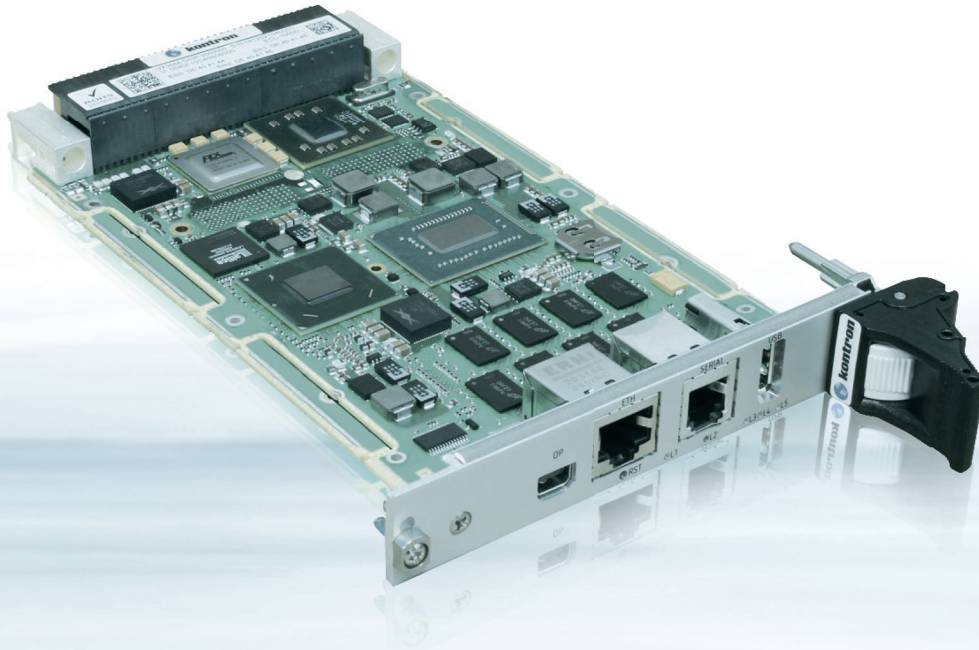


VX3044



3U VPX Intel® Core™ i7 BASED SINGLE BOARD COMPUTER

- ▶ Intel® Core™ i7 - 3612QE - Quad-Core™
- ▶ dual ethernet 10G or 1G
- ▶ PCI Express Gen 3.0, with Kontron VXFabric™
- ▶ up to 16 GByte SDRAM with ECC and 32 GByte soldered SATA NAND Flash
- ▶ extended life cycle, air-cooled and conduction-cooled versions

PRODUCT OVERVIEW

VX3044 is the Kontron 3U VPX rugged Single Board Computer equipped with multiple Ethernet 10G. This SBC implements a new architecture poised to address specific applications and offer the ultimate performance for the Military, Aerospace and Transportation markets.

Based on Intel®'s high performance computing architecture, and supported by Kontron Long Term Supply (LTS) services, VX3044 offers the best feature set.

TARGET APPLICATIONS

High Performance Embedded Computing (HPEC)

Used in clusters, VX3044 provides the highest computing density in 3U VPX form factor. Backed up by a powerful I/O backbone (gen3 PCIe and Ethernet 10G), switch boards for PCIe (VX3905) and ETHERNET (VX3910) plus turnkey pre-installed OS. VX3044 solutions complete the quickest route from the lab to the field for HPEC applications.

STANDARDS

- ▶ 3U VPX VITA 46, OpenVPX VITA 65, VPX REDI VITA 48
- ▶ Single CPU: compatible with all existing legacy application x86 codes

SWAP-C

- ▶ Four Execution Threads: compact 4-way SMP solution for parallel computing tasks at low power, low size
- ▶ Turbo Boost: overlocked operation of a single-threaded workload in the same power envelope
- ▶ Integrated Graphics Controller with three simultaneous DisplayPorts: for all HMI applications

SAFETY CRITICAL

- ▶ Two channels of DDR3 soldered memory with ECC: performance and security
- ▶ 1 Mbit of permanent Ferroelectric Random Access Memory (F-RAM) allowing permanent retention of application key operational data
- ▶ 8 MByte of System Flash with Recovery BIOS Image and permanent storage of BIOS parameters

CONNECTIVITY

- ▶ 8 lanes of gen3 PCIe to the backplane: I/O extensions at peak bandwidth.
- ▶ Designed for PCIe Gen3 8 GB/s
- ▶ 4 SATA ports to the backplane: for secure RAID storage applications

VERSATILITY

VX3044 boards is available in Standard Air- (SA) and Rugged Conductioncooled (RC) versions and is compatible with 1" (5HP) slot pitch.

COMPATIBILITY: CERTIFIED SOLUTION

VX3044 boards is compatible with all Kontron VPX building blocks (Payload boards, carriers, switches, backplanes, OS and drivers) and offer backward compatibility with the previous product generations (VX303x SBCs).

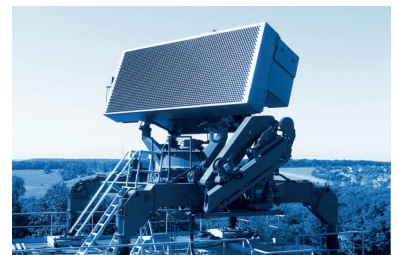
Write the code once, run on all the product line. VX3044 is proposed with Kontron VXFabric™ technology which implements TCP/IP protocol over the PCI Express infrastructure.

With 8x PCIe 3.0, running at 8 GB/s (theoretical), applications developed previously with VXFabric on VX3030 or VX3035 will enjoy a TCP/IP on PCIe bandwidth exciding 4 GB/s (measured) without any code change.

LONG TERM SUPPLY (LTS)

The VX3044 SBC is part of the Kontron Extended Life Cycle product family, which offers a 15-year life cycle organization on top of Intel® embedded product line silicon life cycle. Available in Kontron 3U VPX development systems, along with 3U VPX carriers and 3U VPX Ethernet plus PCIe switches, the VX3044 is the ideal candidates for long term programs in search of compact high performance parallel computing solutions.

EXAMPLE OF TARGET APPLICATIONS



► TECHNICAL INFORMATION

| | | |
|---|---|---|
| PROCESSOR | | Third Generation Intel® Core™ i7 processor (22-nanometer silicon technology): - Intel® Core™ i7-3612QE Processor (6M cache, 4 execution cores, 8 threads) - Quad Core, 35W-2.1 GHz - Integrated Graphics Core, Intel® HD graphics 4000 |
| ONBOARD CONTROLLER | <p>PLATFORM CONTROLLER HUB</p> <p>GRAPHICS</p> <p>GIGABIT ETHERNET</p> <p>WATCHDOG SYSTEM CPLD</p> <p>RTC SIO</p> | <p>Mobile Intel® QM77 Express Chipset:</p> <ul style="list-style-type: none"> - Up to 6 Gb/s integrated Serial ATA host controllers - USB 2.0 & 3.0 host interface <p>Integrated Graphics Core, Intel® HD graphics 4000</p> <p>Up to 3 simultaneous graphics heads:</p> <ul style="list-style-type: none"> - One mini DisplayPort on front panel - Two DisplayPorts available on VPX backplane. <p>- One i82599 10/1 Gigabit Controller connecting two SerDes links (10GBASE-KR or 1000BASE-BX) on VPX backplane</p> <ul style="list-style-type: none"> - 10GBASE-KR links can be used for backplane board interconnect and/or for SFP+rear cage according SFI specification (redriver recommended) - One i82579 PHY connected on front panel or VPX backplane (user selection) for 1000BASE-T operation <p>PLD-based, timeout ranging from 2 μs to 510s, IRQ, Reset, dual-stage</p> <p>One CPLD Board controller for power sequencing, reset handling, monitoring, failure detection, VPX I2C communication.</p> <p>Provides configuration/status registers on LPC interface</p> <p>Separated low power RTC with optional onboard battery</p> <p>SIO1028 provides two serial lines</p> |
| MEMORY | <p>SYSTEM MEMORY</p> <p>FLASH (UEFI BIOS) EEPROM</p> <p>NAND FLASH OPTION</p> | <p>Up to 16 GByte dual channel DDR3 SDRAM running at 1600 MHz, with ECC, soldered</p> <p>8 MByte FLASH, with recovery image and uEFI BIOS settings</p> <p>One serial 256 Kbit EEPROM dedicated to system data</p> <p>One serial 256 Kbit EEPROM dedicated to application data</p> <p>Up to 32 GByte SATA Nand Flash storage</p> |
| FRONT INTERFACES 4HP (0,8") OR 5HP (1") | <p>GRAPHICS</p> <p>USB</p> <p>GIGABIT ETHERNET</p> <p>SERIAL</p> <p>LEDS</p> <p>RESET</p> | <p>1x mini DisplayPort connector</p> <p>1x USB 2.0 ports, 4-pin standard USB connectors</p> <p>1x RJ-45 connectors: Ethernet 1000BASE-T</p> <p>Note: This port is configurable from the BIOS to be routed to the VPX P1 connector instead of the front connector</p> <p>1x RJ-12 connector: EIA-232/EIA-485 UART interface for CPU</p> <p>5 LEDs reporting the board CPU health status and activity</p> <p>Reset push button</p> |
| ONBOARD INTERFACES | <p>CPU DEBUG INTERFACE</p> <p>XMC SLOT</p> | <p>XDP port for CPU extended debug port connection (only available on a debug connector and need additional test board for XDP access)</p> <p>One 8x PCIe to the XMC slot,</p> <p>x8d VITA 46.9 XMC I/O routing, plus 4 single ended pins</p> <p>With thermal limitation on SA Version, Contact us for more details</p> |
| VPX INTERFACE | <p>SLOT PROFILES</p> <p>REAR I/O VIA P0/P1/P2</p> <p>SUPERVISORY FUNCTIONS</p> <p>POWER SUPPLIES</p> | <p>SLT3-PAY-2F2U-14.2.3</p> <p>SLT3-PAY-1F1F2U-14.2.4</p> <p>SLT3-PAY-1F1U-14.2.10</p> <p>The VX3044 supports:</p> <ul style="list-style-type: none"> - 1 x8 gen3 PCIe, non transparent capability, on P1 - 1x1 additional PCIe interface, gen2, on P2 - 2 SATA 3 links on P1 - 2 additional SATA 2 links on P2 - 2 USB 2.0 and 1 USB 3.0 links on P1 - 2 additional USB 2.0 links on P2 - 2 SerDes 10GBASE-KR, SFP+/SFI or 1000BASE-BX on P1 - 1 1000BASE-T on P1, optional 2nd 1000BASE-T on P2 - 3 User GPIOs on P1, including OpenVPX GDISCRETE1, and MASKABLE RESET and 3 additional GPIOs on P0 - 2 DisplayPort on P2 - Non Maskable RESET, - NVMRO, SMB 0 and SMB 1 interfaces for Status, Start , Reset. Compatible with Kontron CMB (Monitoring Board), temperature and voltage sensors on the board - PCIe optional use of common reference clock feature <p>On P0: VS1=12V, VS3=5V, 3.3V_AUX optional, +12V_AUX and VS2 (3.3V) not connected</p> |

MEASURED PERFORMANCE

MEASURED BANDWIDTH VX3042 & VX3044

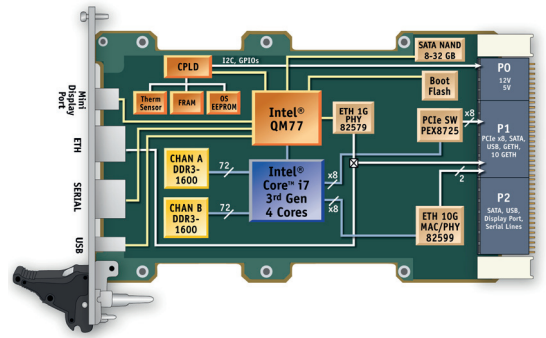
| | |
|----------------|---|
| 5.6 GBYTES/SEC | PCIe on VPX backplane (DMA raw mode) |
| 3.9 GBYTES/SEC | TCP/IP on PCIe on VPX backplane (VXFabric™) |
| 1.1 GBYTES/SEC | 10 GETH link on VPX backplane (9.2 Gb/s) |

MEMORY BANDWIDTH - VX3044

| | |
|-------------------|-----------------|
| READ | 17.2 GBytes/sec |
| DDR3L SO-DIMM 2GB | 15.1 GBytes/sec |

AVERAGE POWER CONSUMPTION

| | |
|------------|---|
| VX3044-SA | 44 W |
| CONDITIONS | CPU load = 75 %, CPU Temp = 70° C - Turbo Off |



ENVIRONMENTAL SPECIFICATION

| | SA - STANDARD COMMERCIAL (1" single height passive module heat sink, forced air) | RA - RUGGED AIR-COOLED (Optional) | RC - RUGGED CONDUCTION-COOLED (Depending on processor frequency) |
|----------------------------|---|--------------------------------------|---|
| CONFORMAL COATING | Optional | Standard | Standard |
| AIRFLOW | 26 cfm | Tbd. | na |
| TEMPERATURE | VITA 47-Class AC1 | VITA 47-Class AC3 | VITA 47-Class CC3, CC4 option |
| COOLING METHOD | Convection | Convection | Conduction |
| OPERATING | 0° to +55° C | -40° to +71° C | -40° to +71° C, +85° C option |
| STORAGE | -45° to +85° C | -45° to +100° C | -45° to +100° C |
| VIBRATION SINE (OPERATING) | 20-500 Hz - 2 g | 5-2,000 Hz - 3 g | 20-2,000 Hz - 5 g |
| RANDOM | VITA 47-Class V1 | VITA 47-Class V2 | VITA 47-Class V3 |
| SHOCK (OPERATING) | 20g/11 ms Half Sine | 40g/11 ms Half Sine | 40g/11 ms Half Sine |
| ALTITUDE (OPERATING) | -1,500 to 60,000 ft | -1,500 to 60,000 ft | -1,500 to 60,000 ft |
| RELATIVE HUMIDITY | 90 % without condensation | 95 % without condensation | 95 % without condensation |

ORDERING INFORMATION

| ARTICLE | PART NO. | DESCRIPTION |
|---------|---|--|
| VX3044 | VX3044-SA48-2010300 Fast Track Order Code, build to stock version | 3U Single slot 5 HP (1") VPX SBC, 2.1 GHz Intel® Quad Core i7-3612QE SV Processor; 8 GByte DDR3-SDRAM, 32 GByte Sata Flash (MLC) on board, FRAM; I/O: 2x 10 GbE, 3x USB (1x USB3), 4x SATA, PCIe x8 gen3; Air-Cooled VITA 47 Class AC1 (0° C to +55° C). |
| VX3044 | VX3044-RC48-300D100 Fast Track Order Code, build to stock version | 3U Single slot VPX SBC / 2.1 GHz Intel® Quad Core i7-3612QE SV Processor with on-board XMC slot; 8 GByte DDR3-SDRAM, 16 GByte Sata Flash (SLC), FRAM; I/O: 2x 10 GbE, 3x USB (1x USB3), 4x SATA, PCIe x8 gen3; Front DisplayPort, 5 HP (1") if XMC installed, 4 HP (0.8") otherwise. Rugged Conduction-Cooled: VITA 47 Compliant, Class CC3 (-40° C to +71° C); Class CC4 (-40° C to +85° C) available upon request; specific conditions may apply; please contact us. |
| VX3044 | VX3044-RC48-300N000 | 3U Single slot 4 HP (0.8") VPX SBC / 2.1 GHz Intel® Quad Core i7-3612QE SV Processor; 8 GByte DDR3-SDRAM, 16 GByte Sata Flash (SLC), FRAM; I/O: 2x 10 GbE, 3x USB (1x USB3), 4x SATA, PCIe x8 gen3; Rugged Conduction-Cooled: VITA 47 Compliant, Class CC3 (-40° C to +71° C); Class CC4 (-40° C to +85° C) available upon request; specific conditions may apply, please contact us. |

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