

CP3005-SA



3U CompactPCI CPU Board with 8th/9th Gen Intel® Core™ and Xeon® for Industrial Control, Defense, Oil&Gas, Mining

- More performance-per-watt with up to 6 cores
- Long term programs: 10 years or more
- Expansions for I/O, storage, XMC, M.2 flash
- Rugged VITA47 EAC3, extended temperature

8th/9th Gen Intel® Core™ 3U CompactPCI CPU Board

- ▶ **Performance-per-watt**
Intel® Core™ i7/i5 and Intel® Xeon® version up to 6 cores
- ▶ **4K video experience**
Intel® UHD Graphics P630
Frequency 350 MHz base, > 1 GHz max.
DirectX® 12 and OpenGL 4.5
- ▶ **Flash capacities**
30 – 512 GByte M.2 SATA flash even good for mass storage
- ▶ **Memory bandwidth**
32/16/8 GByte dual-channel up to 2666 DDR4 speeds,
ECC option
- ▶ **Connectivity**
USB 3.0, SATA 6Gbit/s, PCI Express®,
3x Gbit Ethernet/WOL
- ▶ **Variety of Extensions**
Mezzanines for 2.5" HDD/SSD, XMC, second M.2 SATA module
Rear I/O, backward compatible
- ▶ **Robustness**
Temperature option -40 °C up to +70 °C
Designed for VITA47 EAC3
- ▶ **Security**
Hardware based encryption / TPM2.0
Digital rights management (option, WIBU Systems technology)

CP3005-SA is the perfect choice for high performance applications, with an improved performance-per-watt compared to predecessors. The single-slot master CPU cards are based on 8th/9th Gen Intel® Core™ processors, with two up to six cores: Intel® Xeon® is perfect for high performance applications, especially for server platforms, Core™ i5 and i3 for any kind of industrial applications. Combined with Intel® UHD Graphics 630, CP3005-SA provides a new level of graphics performance compared to previous platform designs.

CP3005-SA is built to be used in demanding and harsh environments. It is designed for VITA47 EAC3 and a temperature range of -40 °C up to +70 °C. The processor's TDP can be adjusted dynamically to a desired performance and power envelope. The maturity and future-openness of the CompactPCI form-factor is proven in all ECT markets. Typical applications can be found in:

- ▶ Defense
- ▶ Industrial Plant Control, Machine Control
- ▶ Energy, Oil&Gas, Mining
- ▶ Transportation

Revolutionary flash capacities and doubled memory

Up to 32 GByte SDRAM of 2666 DDR4 speeds serve applications with high memory demands. Error Checking and Correction (ECC) is supported.

Thanks to the formfactor M.2, revolutionary flash capacities of up to 512 GByte at 22x42 mm module size are market-available and enable use even for mass storage! Qualified M.2 SATA Flash modules are available as CP3005-SA accessories by Kontron.

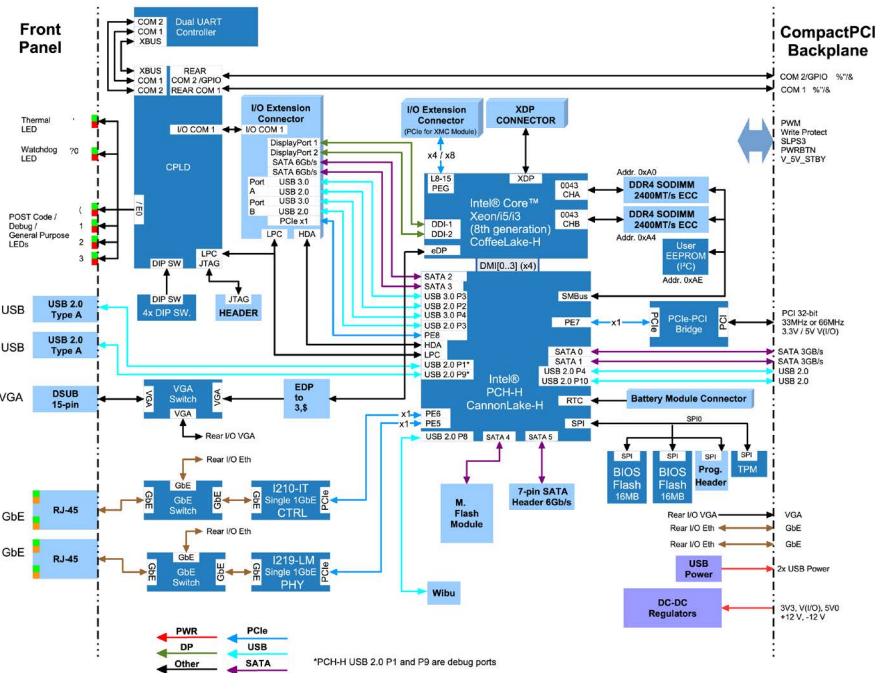
Variety of Interfaces and Options

The CP3005-SA comes with a comprehensive I/O feature set supporting up to three graphic ports VGA and 2x DVI, several USB 2.0 and 3.0, Gigabit Ethernet with Wake-over-LAN (WOL) option. Backwards compatibility is also granted - the optional Rear I/O interface is compatible with previous CPU board series, so that Kontron's available Rear Transition Modules can be re-used. Expansion options are provided to carry a XMC module, or a 2.5" HDD or SSD, and another M.2 SATA SSD module of 80mm size. PCI passive mode to run in peripheral slots, opens the door for Multi-CPU systems.

Security

CP3005-SA is equipped with a Trusted Platform Module (TPM 2.0) for enhanced hardware and software based data and system security, such as secure boot and trusted boot. TPM access is disabled by default. CP3005-SA is ready to be used for Digital Rights Management based on Wibu-Systems CodeMeter®. On request, a respective CP3005 assembly option provides the security chip soldered on the PCB.

10 years lifetime of CP3005-SA or even more, and Kontron's commitment to a rich CompactPCI portfolio, make CP3005-SA a safe investment with low total-cost-of-ownership.



Technical Information

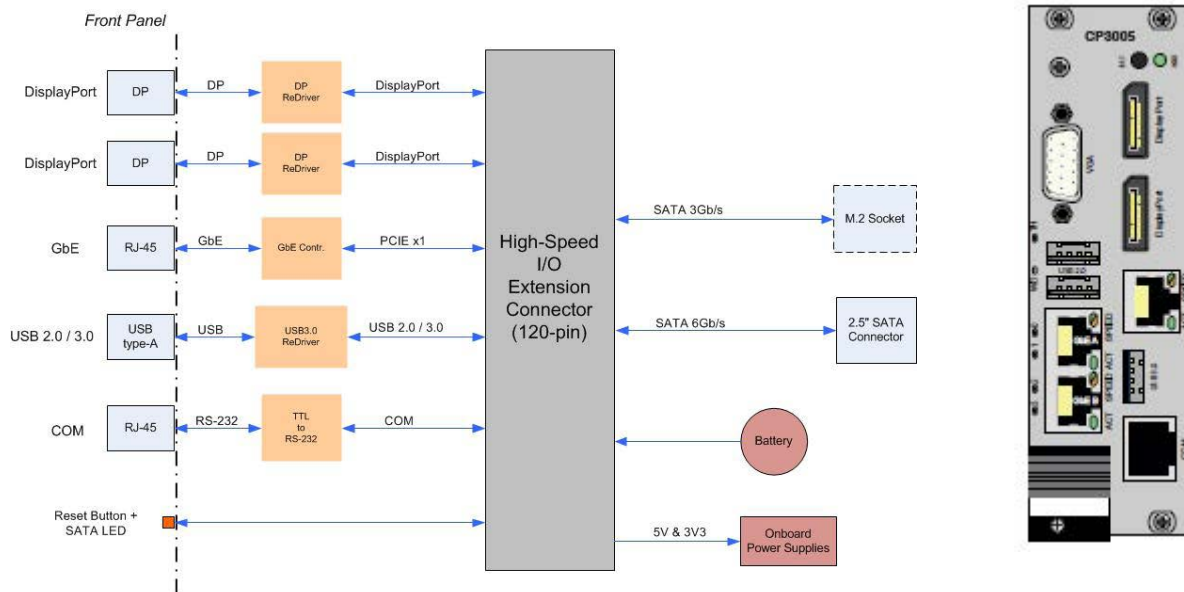
<p>PROCESSOR</p>		<p>8th Gen Intel® processor (14nm technology):</p> <ul style="list-style-type: none"> - Intel® Xeon® E-2176M, 6-Core, 2.7 GHz (base), 4.4 GHz (max), with ECC, 12 MByte Cache - Intel® Core™ i5-8400H, 4-Core, 2.5 GHz (base), 4.2 GHz (max), no ECC, 8 MByte Cache - Others may be following <p>9th Gen Intel® processor (14nm technology):</p> <ul style="list-style-type: none"> - Intel® Xeon® E-2276ML, 6-Core, 2.0 GHz, with ECC, 12 MB Cache, 25 W TDP - Intel® Core™ i3-9100HL, 4-Core, 1.6 GHz (base), 2.9 GHz (max), with ECC, 6 MB Cache, 25 W TDP <p>All boards are passive cooled with a heatsink in 4HP height Forced air cooling at specific flow rate is required depending on the processor version</p>
<p>MEMORY</p>	<p>SYSTEM MEMORY</p> <p>BOOT FLASH (UEFI)</p> <p>SATA FLASH</p> <p>HDD</p>	<p>Up to 32 GByte dual channel DDR4 SDRAM at 2400 MT/s, via two SODIMM sockets, ECC support by Intel® Xeon® only</p> <p>Two redundant 16 MByte SPI boot flashes with fail-over functionality</p> <p>M.2 socket for 2242 M.2 SATA modules, enabling 32 GByte up to 512 GByte flash capacity, available for 4HP and 8HP variants of CP3005-SA.</p> <p>M.2 socket for 2280 M.2 SATA modules, enabling 32 GB up to 1 TB flash capacity, on 8HP extensions</p> <p>Onboard 2.5" SATA SSD/HDD installation on 8HP variants via CP3005-HDD extension</p>
<p>ONBOARD CONTROLLER</p>	<p>PLATFORM CONTROLLER HUB</p> <p>GRAPHICS</p> <p>GIGABIT ETHERNET</p> <p>UART</p> <p>WATCHDOG</p> <p>RTC</p> <p>TRUSTED PLATFORM MODULE (TPM)</p> <p>WIBU</p>	<p>Mobile Intel® QM370 Platform Controller Hub (Core branded CPU's)</p> <p>Mobile Intel® CM246 Platform Controller Hub (Xeon branded CPU's)</p> <p>Both featuring:</p> <ul style="list-style-type: none"> - PCI Express® max. 20 resp. 24 lanes with x1, x2, x4 configurations - USB host interface with 14 ports USB 3.1/2.0 - SATA 6.0 Gb/s max. 4 ports with RAID 0/1/5/10 support <p>Intel® UHD Graphics P630 integrated</p> <ul style="list-style-type: none"> - up to 3x independent graphics outputs - Supports DirectX® 12 and OpenGL 4.5 <p>Maximum resolutions</p> <ul style="list-style-type: none"> - VGA with a CRT monitor: tbd - VGA with a LCD monitor: tbd - DisplayPort: 4096 x 2304 pixels @ 60 Hz <p>Intel® i210 and i219LM Ethernet controller: Up to three 1000BASE-T interfaces, two front/rear switchable with WOL (Wake-on-LAN), third available via 8HP extension CP3005-HDD</p> <p>dual UART, EXAR XR16L2750</p> <p>FPGA-based, timeout ranging from 125ms to 4096s programmable in 16 steps, IRQ, reset, dual-stage configuration</p> <p>Integrated in PCH, with 256 Byte CMOS RAM</p> <p>Infineon SLB9670 TPM 2.0 controller</p> <p>WIBU CodeMeter for Kontron APPROTECT (assembly option on request)</p>

FRONT INTERFACES 4HP	VGA USB ETHERNET LED'S	1x VGA-CRT 15-pin D-Sub connector 2x USB 2.0 ports, 4-pin standard USB connectors 2x RJ-45 with integrated LEDs (ACT, SPEED) 6x LEDs: 4x POST Code or General Purpose, WD, TH
ONBOARD INTERFACES	SATA CABLE CONNECTOR SATA EXTENSION CONNECTOR HIGH-SPEED EXTENSION CONNECTORS	1x onboard standard 7-pin SATA connector with locking mechanism, SATA 6Gb/s M.2 connector holding one SATA port for a M.2 SATA 2242 Flash module 2x high-speed connectors (used for expansion mezzanines of 8HP boards), holding: - PCI Express® - One SATA 3Gb/s - One SATA 6Gb/s - 2x USB 2.0/3.0 - 2x DisplayPort - COM1 (TTL) - HDA - LPC
REAR I/O VIA J2		- 2x SATA 3Gb/s ports - 2x Gigabit Ethernet ports without LED signals - 2x USB 2.0 ports - 1x VGA analog port - 2x COM port RS-232 (LVTTTL signal level) - 5x GPIOs and 3x GPOs (LVTTTL signal level) - Reset and Power Management signals - Option to write protect non-volatile RAMs via a special pin
COMPACTPCI BUS INTERFACE		PICMG 2.0 Rev. 3.0 compatible, 32-bit/33MHz (66MHz on request), rear I/O version via J2 Universal 5V and 3.3V PCI signalling voltage supported, 7 Req/Gnt & clock lines Operating in system slot as system master and in peripheral slot in PCI passive mode
SUPERVISORY FUNCTIONS		Watchdog, software configurable, 125ms to 4096s in 16 steps, generates IRQ or hardware reset or dual-stage configuration
SOFTWARE SUPPORT		- AMI uEFI, setup console redirection to serial port (VT100 mode) with CMOS setup access, EFI Shell support, board configuration via Shell, diskless, keyboardless, videoless operation - LAN boot support - Board identification number accessible via EEPROM - Support for Windows® 10 IoT Enterprise LTSC 2016 (64 bit), Windows® Server 2016, Linux, VxWorks® 7.x (Other OSs may also be used with the CP3005. Please contact Kontron)
COMPLIANCY	COMPACTPCI SAFETY EMC/EMI	PICMG 2.0 Rev. 3.0 (core specification) PICMG 2.1 Rev. 2.0 (hot swap specification) EN 62368-1 Designed to meet or exceed: IEC 62368-1, UL 60950-1, CSA 22.2 No 60950 EN 55032, EN 61000-6-3 EN 55024, EN 61000-6-2
GENERAL	DIMENSIONS WEIGHT MTBF	3U 4HP/8HP CompactPCI, 100 x 160 mm CP3005-SA 4HP: 320 g 170.000 hrs (4HP), 144.000 hrs (8HP) acc. to MIL-HDBK-217 FN2, Ground Benign, controlled at 30 °C
POWER CONSUMPTION		CP3005-SA with Xeon® E-2176M: typ. W tbd CP3005-SA with Core™ i5-8400H: typ.W tbd
ENVIRONMENTAL	OPERATING TEMPERATURE STORAGE TEMPERATURE CLIMATIC HUMIDITY	0 °C to +60 °C, standard -40 ° to +70 °C, extended temp. -40 °C to +85 °C (without additional components) 93 % RH at 40 °C, non-condensing (acc. to IEC 60068-2-78)

CP3005-SA Expansion Capabilities

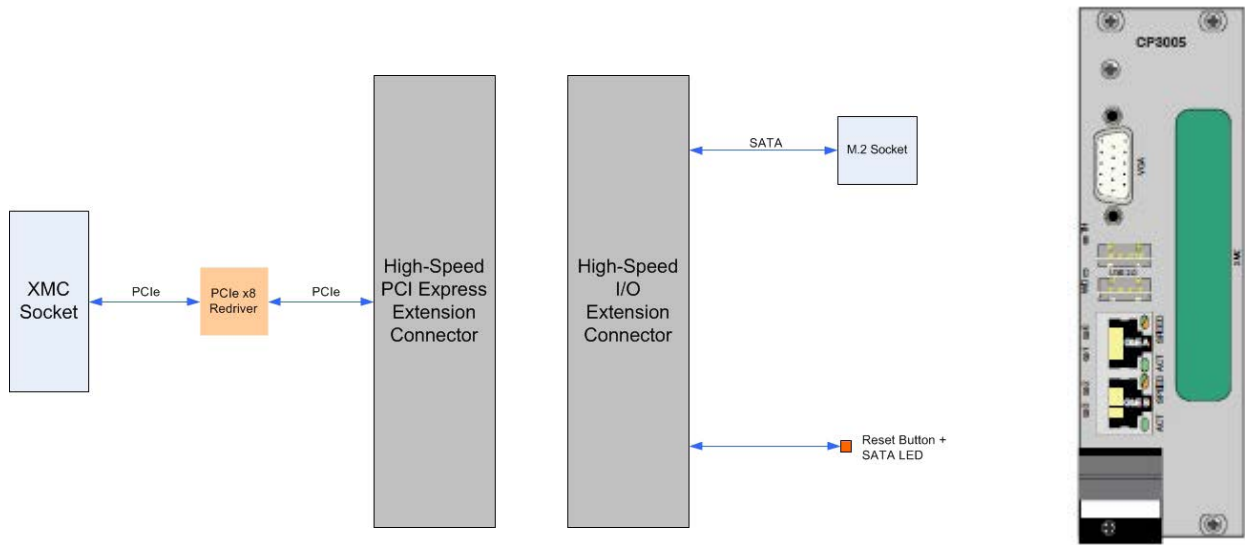
Two expansion mezzanines, the CP3005-HDD module and the CP3005-XMC module, are available as part of respective 8HP size CP3005-SA variants. The CP3005-XMC module provides one x8 (or less) PCI Express 2.0-compliant interface with up to 5 GT/s for one XMC module. In addition, the CP3005-XMC module is capable of accommodating a M.2 SATA Solid State Drive of 22 x 80 mm size, enabling 32 Gigabyte up to 1 TByte flash capacity.

If more interfaces to the front are needed, the CP3005-HDD is the right choice. This module provides one USB 3.0 port, one Gigabit Ethernet interface, two DisplayPorts, and one COM interface on the front panel. In addition, the CP3005-HDD module provides support for a 2.5" SATA HDD or SSD and a M.2 SATA Solid State Drive of 22 x 80 mm size.



Technical Information

FRONT INTERFACES 8HP	DISPLAY PORT ETHERNET USB SERIAL PORT CONTROL	Support of Multi Stream Transport for 3 independent DP outputs 2x 20-pin DisplayPort connectors, DVI/HDMI capable through passive cable adapter 1x RJ-45 with integrated LEDs (ACT, SPEED) 1x USB 3.0 port, 9-pin type-A connector 1x 16C550-compatible serial port, RS232 signalling, RJ-45 Reset button and HDD activity LED
ONBOARD INTERFACES	SATA M.2 SATA	1x SATA connector for connecting a SATA 2.5" HDD/SSD (SATA 6Gb/s), 1x M.2 Socket for optional SATA Solid State Drive 22 x 80 mm
GENERAL	WEIGHT MTBF POWER CONSUMPTION	CP3005-SA 8HP: 460 g 1,120,458 h acc. to MIL-HDBK-217 FN2, Ground Benign, controlled at 30 °C typ. 0.5 W, without peripheral devices connected
ENVIRONMENTAL	OPERATING TEMPERATURE STORAGE TEMPERATURE CLIMATIC HUMIDITY	0 °C to +60 °C, standard -40 °C to +85 °C, extended temperature -40 °C to +85 °C (without additional components) 93 % RH at 40 °C, non-condensing (acc. to IEC 60068-2-78)



Technical Information

FRONT INTERFACES 8HP	XMC CONTROL	XMC front panel bezel cutout Reset button and SATA LED
ONBOARD INTERFACES	XMC	1x onboard XMC connector (P15),
	M.2 SATA	1x x8 PCI Express 2.0-compliant interface with up to 5 GT/s 1x M.2 Socket for optional SATA Solid State Drive 22 x 80 mm
GENERAL	WEIGHT	CP3005-SA 8HP: 430 g
	MTBF	2,017,352 h acc. to MIL-HDBK-217 FN2, Ground Benign, controlled at 30 °C
	POWER CONSUMPTION	Depends on XMC module, typ. 0 W without XMC
ENVIRONMENTAL	OPERATING TEMPERATURE	0 °C to +60 °C, standard
	STORAGE TEMPERATURE	-40 °C to +85 °C, extended temperature
	CLIMATIC HUMIDITY	-40 °C to +85 °C (without additional components) 93 % RH at 40 °C, non-condensing (acc. to IEC 60068-2-78)

ARTICLE	DESCRIPTION
INITIAL CONFIGURATIONS	
CP3005-SA-2.5Q-8-4F-T	CP3005-SA, 2.5 GHz Quad Core™ i5, 8 GByte, 4HP, Front IO only, TPM
CP3005-SA-2.5Q-8-4F-T-E1X	CP3005-SA, 2.5 GHz Quad Core™ i5, 8 GByte, 4HP, Front IO only, TPM, extended temperature -40 °C/+70 °C
CP3005-SA-2.5Q-8-8F-T	CP3005-SA, 2.5 GHz Quad Core™ i5, 8 GByte, 8HP, Front IO only, CP3005-HDD Mezzanine, TPM
CP3005-SA-2.5Q-8-8R-T	CP3005-SA, 2.5 GHz Quad Core™ i5, 8 GByte, 8HP, with Rear IO, TPM
CP3005-SA-2.7S-32-4R-T	CP3005-SA, 2.7 GHz Six Core™ Xeon® E, 32 GByte, 4HP, with Rear IO, TPM
CP3005-SA-2.7S-32-8XR-T	CP3005-SA, 2.7 GHz Six Core™ Xeon® E, 32 GByte, with Rear IO, 8HP with XMC carrier, TPM
CP3005-SA-2.0S-16-4R-T-E1X	CP3005-SA, 2.0 GHz Six Core™ Xeon® E, 16 GByte, 4HP, with Rear IO, TPM, extended temperature -40 °C/+70 °C
CP3005-SA-1.6Q-8-4F-T-E1X	CP3005-SA, 1.6 GHz Quad Core™ i3, 8 GByte, 4HP, Front IO only, TPM, temperature range -40 °C/+70 °C
MORE CONFIGURATIONS COMING	Please contact your local sales representative for other configuration options: CPU variant, RAM size, rear I/O support, HDD I/O mezzanine option, XMC mezzanine option, extended temperature option, conformal coating option)
FLASH STORAGE	
	(as separate items, not mounted on the CPU card)
CP-SSD-M2-2242-XXXGB-E2	M.2 SATA Flash module 22 x 42 mm, various sizes available, extended temperature -40 °C to +85 °C (for CPU)
CP-SSD-M2-2280-XXXGB-E2	M.2 SATA Flash module 22 x 80 mm, various sizes available, extended temperature -40 °C to +85 °C (for extension module 8HP)
REAR TRANSITION MODULES	
CP-RI03-04	4HP rear I/O module (2x Ethernet, 2x USB, VGA, 2x SATA connectors)
CP-RI03-08	8HP rear I/O module (additional to 4HP COM1/2)
CP-RI03-04S	4HP rear I/O module (2x Ethernet, COM, VGA, 2x SATA connectors)
SOFTWARE	
VXW-BSP-CP3005-SA-V7.X	VxWorks 7.x Board Support Package
LINUX BSP	Via download from the website
WINDOWS PACKAGES	Via download from the website

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