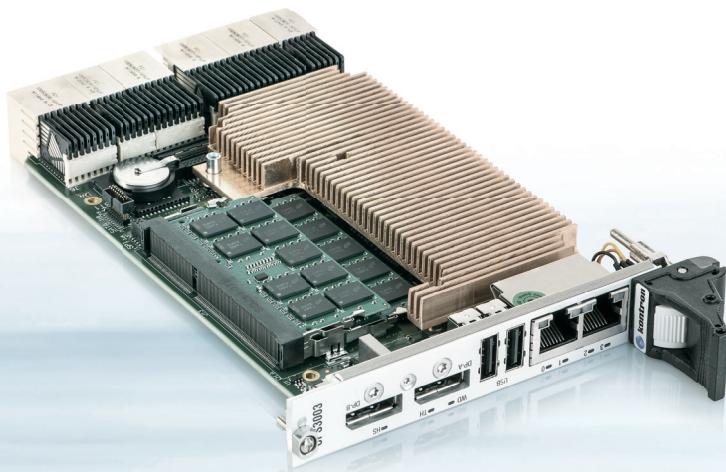


CPS3003-SA



3rd Gen. Intel® Core™ i7 3U CPCI-S.0 CPU BOARD

- ▶ high-performance cpu
- ▶ high-end graphics
- ▶ high-speed connectivity

POSSIBILITIES START HERE

 **kontron**

CPS3003-SA

3rd Gen. Intel® Core™ i7 3U CPCI-S.0 CPU BOARD

CompactPCI® Serial, adopted by the PICMG® consortium in 2011, describes a new base standard. The CompactPCI® Serial standard introduces a completely new connector that enables a higher signal density and supports even higher transmission frequencies of up to 12 Gb/s. While being compliant to the proven CompactPCI® mechanics (according IEC 1101), CompactPCI® Serial supports modern point-to-point connections such as PCI Express®, SATA, Ethernet and USB on the backplane.

Powerful CPU and Platform Controller Hub

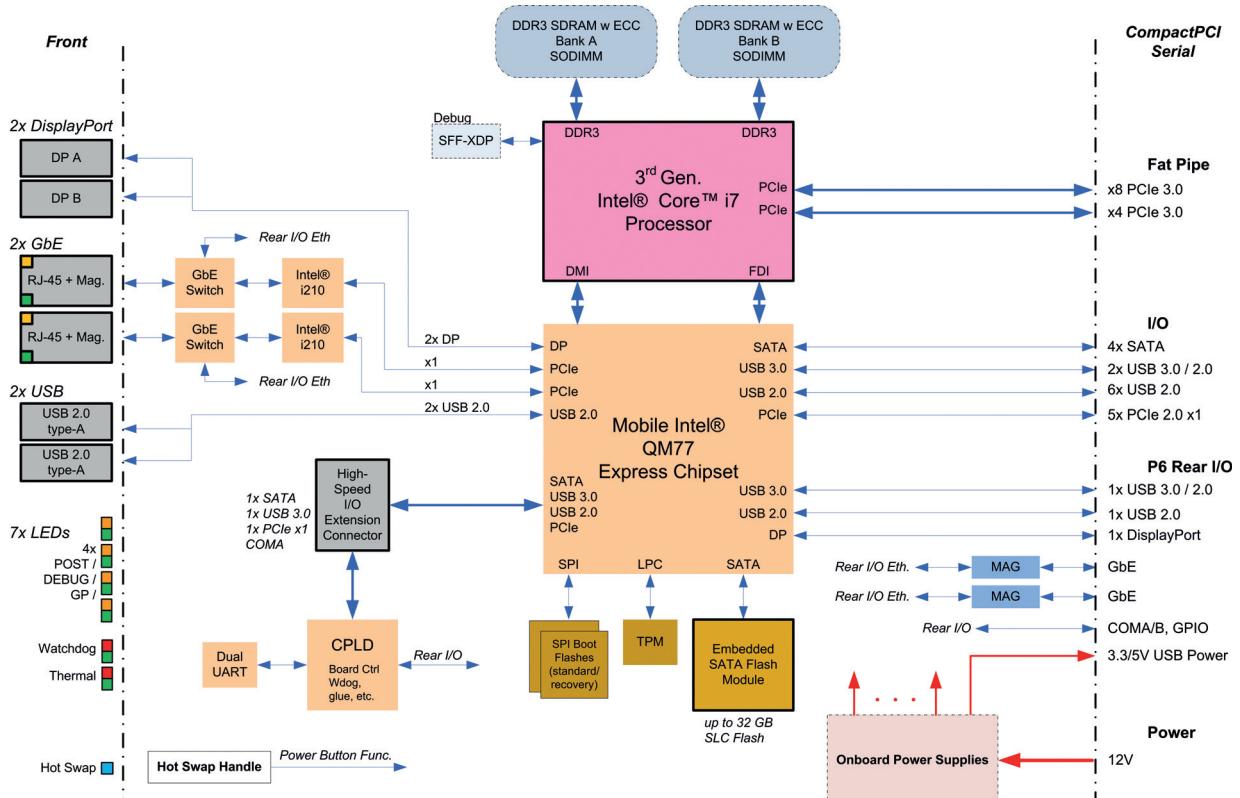
The CPS3003-SA is a highly integrated 3U CPCI-S.0 CPU board based on Intel®'s 3rd Generation Core™ i7 in combination with the mobile Intel® QM77 Express Chipset. The CPU board comes with a multi-core CPU package scalable from the dual-core ULV 1.7 GHz Core™ i7-3517UE up to the quad-core 2.1 GHz i7-3612QE processor. The powerful PCH Intel® QM77 provides a variety of interfaces either routed to front, onboard or the CompactPCI® Serial connectors. Memory-demanding applications can make use of up to 16GB, 1600MHz DDR3 SDRAM with Error Checking and Correction (ECC). As another security feature, the CPS3003-SA provides a Trusted Platform Module (TPM) which offers hardware-based encryption mechanisms to create, seal or store keys, passwords and other important data. For graphics intensive applications, the CPS3003-SA offers an excellent graphics performance with integrated DirectX®11, OpenGL 3.1 and OpenCL 1.1 support as well as three independent graphics outputs.

Variety of Interfaces and Options

The CPS3003-SA comes with a comprehensive I/O feature set supporting the latest high-speed interfaces such as USB 3.0, SATA 6Gb/s or PCI Express® 3.0. Communication interfaces available on the front panel are two DisplayPort, two USB 2.0 and two Gigabit Ethernet ports. Serial interfaces available on the CompactPCI® Serial connectors P1 to P5 are eight USB ports, four SATA interfaces and 17x PCI Express® links. Additional interfaces available on the P6 CompactPCI® Serial rear I/O connector are two Gigabit Ethernet interfaces, two USB ports, one DisplayPort and two serial ports. By adding one of the four extension modules – Smart Extension Module, SATA Flash Module, CPS3003-EXTIO or CPS3003-BRIDGE – the CPS3003-SA's I/O and storage capabilities will be further extended.

Long-Term Availability

Investing in a new project is always a challenge and risky. Extending the lifetime of an application to the possible maximum is therefore a critical issue to save the development investments. Delivering a stable product based on Intel®'s embedded product line, the CPS3003-SA ensures long-term availability. This eliminates the risk of unplanned design changes and unexpected expensive application modification. While minimizing deployment risks by providing a broad range of software support, the CPS3003-SA eases the process of product integration and maximizes your competitive advantage to meet your time-to-market window.



► TECHNICAL INFORMATION

PROCESSOR			
	<p>3rd Generation Intel® Core™ i7 processor (22nm technology):</p> <ul style="list-style-type: none"> - i7-3612QE: Quad-Core 2.1 GHz, SV, 6MB L3 cache (shared instruction/data cache, shared among all cores) - i7-3555LE: Dual-Core 2.5 GHz, LV, 4MB L3 cache (shared instruction/data cache, shared among all cores) - i7-3517UE: Dual-Core 1.7 GHz, ULV, 4MB L3 cache (shared instruction/data cache, shared among all cores) <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>		
MEMORY	SYSTEM MEMORY	Up to 16GB dual-channel DDR3 SDRAM running at 1600 MHz, with ECC, via two SODIMM sockets	
	BOOT FLASH (UEFI) EEPROM	Two redundant 8 MB SPI boot flashes with fail-over functionality Serial EEPROM (24LC64) 64 Kbit for storing uEFI BIOS settings and serial number	
	SATA NAND FLASH	Up to 32GB SLC NAND Flash on a dedicated SATA NAND Flash module; The SATA NAND Flash option is only available on a 4HP CPS3003-SA	
	HDD	Onboard 2.5" SATA SSD/HDD installation via CP3003-HDD extension, optionally available with two SSD/HDD	
	CFAST	Onboard CFast installation via 8HP extension	
ONBOARD CONTROLLER	PLATFORM CONTROLLER HUB	<p>Mobile Intel® QM77 Platform Controller Hub featuring:</p> <ul style="list-style-type: none"> - USB host interface with ten USB 2.0 and four USB 3.0 ports (nine USB 2.0 ports and four USB 3.0 are used on the CPS3003-SA) - SATA host controller with four SATA 3Gb/s and two SATA 6Gb/s ports with RAID 0/1/5/10 support - Eight x1 PCI Express® 2.0 ports operating at 5.0 GT/s - High-Definition Audio Interface 	
	GRAPHICS	High-performance 3D graphics controller integrated in the processor:	
	GIGABIT ETHERNET	<ul style="list-style-type: none"> - Support for up to three independent graphics outputs - Supports digital display resolutions up to 2560 x 1600 pixels @ 60 Hz - Dynamic Video Memory Technology (DVMT) 	
	UART	Two 1000BASE-T interfaces, both front/rear switchable with WOL (Wake-on-LAN) support, Intel® I210-IT Ethernet controller	
	WATCHDOG	XR16L2750IM-F, dual UART, 16C550-compatible	
	RTC TRUSTED PLATFORM MODULE (TPM)	FPGA-based, timeout ranging from 125ms to 4096s programmable in 16 steps, IRQ, Reset, dual-stage configuration Integrated in PCH, with 256 Byte CMOS RAM Atmel AT97SC3204 TPM 1.2 controller	
FRONT INTERFACES 4HP	VGA	2x 20-pin DisplayPort connectors, DVI/HDMI/VGA capable through cable adapter	
	USB ETHERNET LED'S	2x USB 2.0 ports, 4-pin standard USB connectors 2x RJ-45 with integrated LEDs (ACT, SPEED) 7x LEDs: 4x POST Code or General Purpose, WD, TH, Hot Swap	
ONBOARD INTERFACES	HIGH-SPEED I/O EXTENSION CONNECTOR	One 60-pin high-speed connector holding:	
	SATA EXTENSION CONNECTOR	<ul style="list-style-type: none"> - PCIe x1 - One SATA 3Gb/s - One 3.0 - COMA (TTL) - Reset 	
COMPACTPCI® SERIAL INTERFACE		<p>One 18-pin connector holding one SATA port for the SATA Flash module</p> <ul style="list-style-type: none"> - Compliant with PICMG® CPCI-S.0 R 1.0 CompactPCI® Serial Specification - The CPS3003-SA routes the following interfaces via the P1 to P5 connectors to the backplane: - One PCIe link x8, up to 8GT/s (Fat Pipe) - One PCIe link x4, up to 8GT/s (Fat Pipe) - Five PCIe links x1, up to 5GT/s - Four SATA ports (Two SATA 3Gb/s and two SATA 6Gb/s) - Two USB 3.0 ports - Six USB 2.0 ports - 12 V power supply - Hot swap capability - Capability of operation both in system slot and in peripheral slot: When installed in a peripheral slot, all interfaces except for the Ethernet interfaces and rear I/O interfaces are isolated from the CompactPCI® Serial interface 	

► TECHNICAL INFORMATION (CONTINUED)

COMPACTPCI® SERIAL REAR I/O		The P6 connector holds: - Two Gigabit Ethernet ports without LED signals, according to CPCl-S.0 specification Additionally the following interfaces are available for rear I/O connectivity: - One DisplayPort - One USB 3.0 port - One USB 2.0 port - Two COM ports (LVTTL signal level) - Eight GPIOs (LVTTL signal level) - System write protect signal
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® XP, Windows® 7, Windows® Embedded Standard 7, Linux®, VxWorks (Other OSs may also be used with the CPS3003-SA. Please contact Kontron for further information)
COMPLIANCE		Compliant to: Safety: IEC60950-1, EN60950-1, UL94-V0 EMC: EN55022 Class B, EN55024, EN61000-6-1 / -2 / -3 / -4, EN50121-3-2 (Railway) Designed to meet or exceed: Safety: UL60950-1, CSA 22.2 No. 60950-1 EMC: FCC, VCCI, BSMI
GENERAL	DIMENSIONS WEIGHT	3U 4HP/8HP/9HP, 100 x 160 mm CPS3003-SA with copper heat sink: 530 g CPS3003-SA with aluminium heat sink: 330 g
POWER CONSUMPTION	MTBF	281,447 h acc. to MIL-HDBK-217 FN2, Ground Benign, controlled at 30°C CPS3003-SA with i7-3555LE dual-core 2.5 GHz typ. 21W CPS3003-SA with i7-3612QE quad-core 2.1 GHz typ. 29W
ENVIRONMENTAL	OPERATING TEMPERATURE STORAGE TEMPERATURE CLIMATIC HUMIDITY	0°C to +60°C standard -40°C to +85°C extended temperature E2 (with ULV processor) -40°C to +85°C (without additional components) 93% RH at 40°C, non-condensing (acc. to IEC 60068-2-78)

CPS3003-SA EXPANSION CAPABILITIES

The CPS3003-SA provides various expansion capabilities via specifically designed modules such as the SATA Flash Module, the Smart Extension Module, the CPS3003-EXTIO module and the CPS3003-BRIDGE module.

The 4HP CPS3003-SA can accommodate two modules, the SATA Flash Module and the Smart Extension Module. The SATA Flash Module is available with up to 32 GB SLC NAND flash memory and can be used as storage device for onboard data or operating system data. The SATA Flash Module is specifically designed and optimized for embedded systems providing high performance, reliability and security. The Smart Extension Module expands the onboard I/O capability and provides one additional SATA cable connector plus one USB 2.0 connector thereby facilitating the connection to system-internal USB and SATA devices. Furthermore,

two extension modules are available to expand the CPS3003-SA to a double-slot 8HP/9HP version, the CPS3003-EXTIO module and the CPS3003-BRIDGE module. If more interfaces to the front and an easily accessible storage device are needed, the CPS3003-EXTIO is the right choice. This module provides one USB 3.0 port, one COM interface on the front panel. In addition, the CPS3003-EXTIO module provides a CFast card socket accessible from the front panel. The CPS3003-BRIDGE module provides an easy solution to build up hybrid systems comprising a CompactPCI® Serial part and a classic CompactPCI® part. To realize that, the CPS3003-BRIDGE provides a PCIe-to-PCI bridge that converts one PCI Express® data stream to a PCI data stream and makes all signals available for a fully functional CPCl interface available at the J1 and J2 connectors.

SATA FLASH MODULE

► TECHNICAL INFORMATION

MEMORY	CAPACITY NAND FLASH MEMORY BANDWITH	Up to 32 GB SLC-based NAND Flash memory 32nm Toshiba Single Level Cell Components Up to 60 MB/s read rate Up to 55 MB/s write rate
GENERAL	DIMENSIONS WEIGHT MTBF POWER CONSUMPTION	38 x 27mm Ca. 7 grams 3,848,557 h acc. to MIL-HDBK-217 FN2, Ground Benign, controlled at 30°C Typ. 0.5W, 3.3V supply
ENVIRONMENTAL	OPERATING TEMPERATURE STORAGE TEMPERTURE CLIMATIC HUMIDITY	0°C to +60°C standard -40°C to +85°C extended temperature -40°C to +85°C 93% RH at 40°C, non-condensing (acc. to IEC 60068-2-78)

SMART EXTENSION MODULE

► TECHNICAL INFORMATION

ONBOARD INTERFACES	SATA USB	One onboard angled standard SATA connector, up to SATA 3Gb/s One onboard angled standard USB 2.0 connector
GENERAL	DIMENSIONS WEIGHT MTBF	37 x 48 mm Ca. 11 grams 5,961,900 h acc. to MIL-HDBK-217 FN2, Ground Benign, controlled at 30°C
ENVIRONMENTAL	OPERATING TEMPERATURE STORAGE TEMPERTURE CLIMATIC HUMIDITY	0°C to +60°C standard -40°C to +85°C extended temperature -40°C to +85°C 93% RH at 40°C, non-condensing (acc. to IEC 60068-2-78)

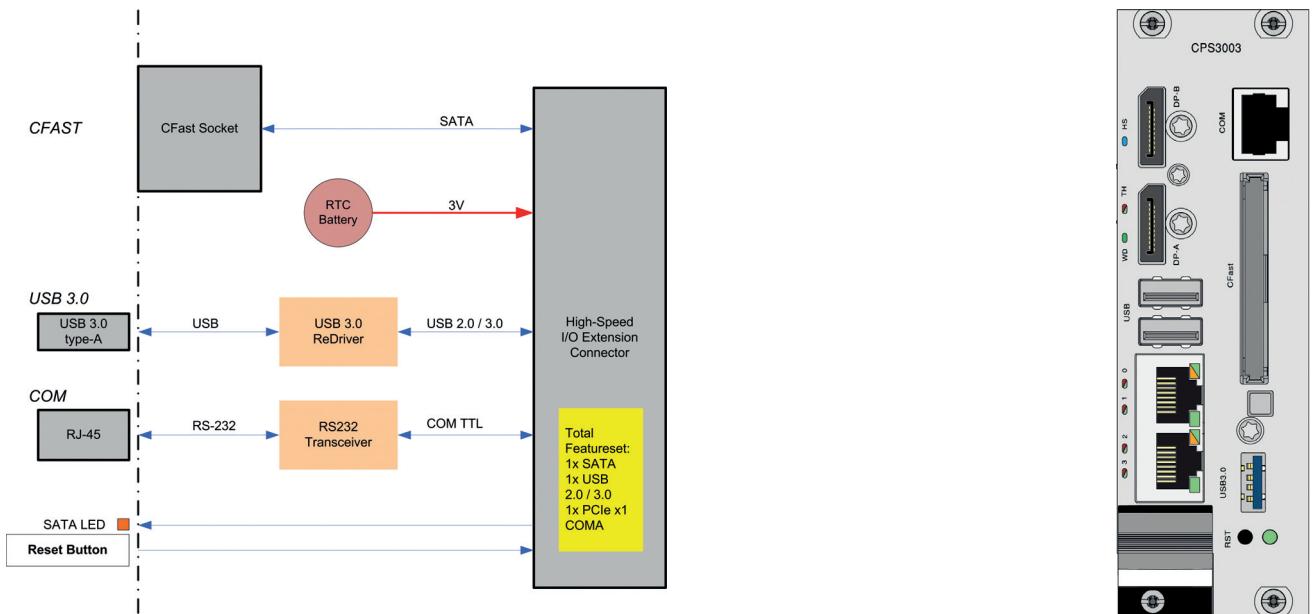


// CPS3003-SA WITH SATA FLASH MODULE



// CPS3003-SA WITH SMART EXTENSION MODULE

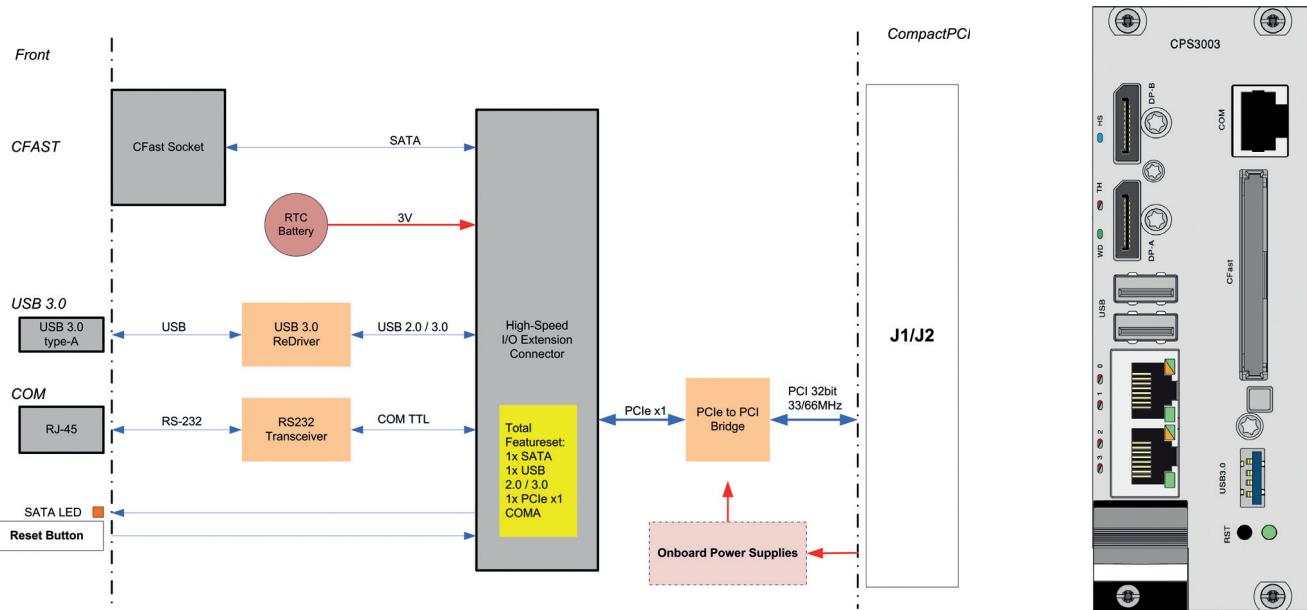
CPS3003-EXTIO



► TECHNICAL INFORMATION

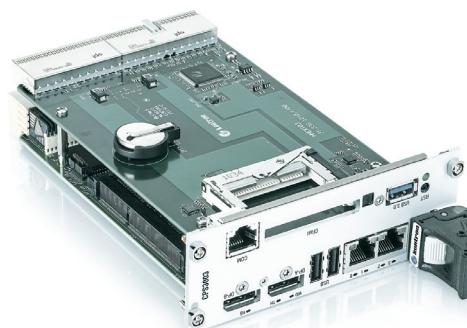
FRONT INTERFACES (8HP)	CFast USB SERIAL PORT CONTROL	One CFast card socket, accessible from the front panel One USB 3.0 port, 9-pin type-A connector One 16C550-compatible serial port, RS232 signalling, RJ-45 Reset button and CFast activity LED
GENERAL	WEIGHT MTBF POWER CONSUMPTION	140 g 1,351,186 h acc. to MIL-HDBK-217 FN2, Ground Benign, controlled at 30°C Typ. 1W, without CFast and 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)

CPS3003-BRIDGE



► TECHNICAL INFORMATION

FRONT INTERFACES (9HP)	CFast USB SERIAL PORT CONTROL	One CFast card socket, accessible from the front panel One USB 3.0 port, 9-pin type-A connector One 16C550-compatible serial port, RS232 signalling, RJ-45 Reset button and CFast activity LED
ONBOARD CONTROLLER	PCIE-TO-PCI BRIDGE	Pericom PCIe-to-PCI bridge, converts a PCI Express® data stream into a PCI data stream
CompactPCI® BUS INTERFACE		32-bit, 33/66MHz, universal 5V and 3.3V PCI signalling voltage supported, 4x Req/Gnt & clock lines
GENERAL	WEIGHT MTBF POWER CONSUMPTION	170 g 1,351,186 h acc. to MIL-HDBK-217 FN2, Ground Benign, controlled at 30°C Typ. 1.5 W, without CFast and 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)

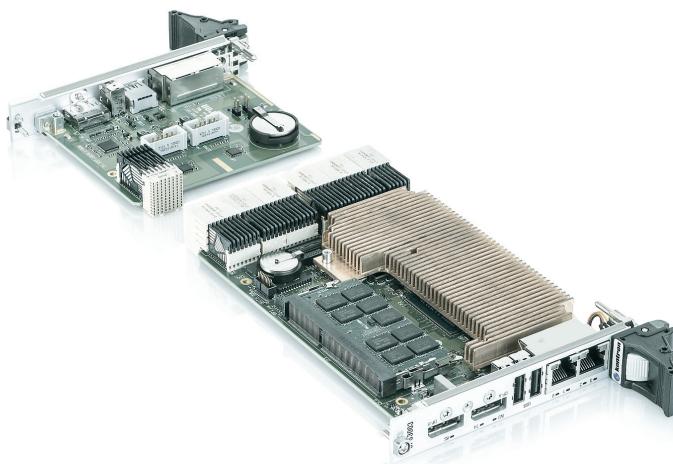


// CPS3003-SA WITH CPS3003-BRIDGE

► ORDERING INFORMATION

ARTICLE	DESCRIPTION
CPS3003-SA CONFIGURATIONS	
CPS3003-SA-2.1Q-4-4R-S32-T	Core i7-3612QE, Quad-Core 2.1GHz, 6MB L3, 4GB (2x 2GB) SODIMM DDR3 with ECC, 4HP, with P6 Rear I/O, with SATA Flash 32 GB, TPM
CPS3003-SA-2.1Q-8-4R-T	Core i7-3612QE, Quad-Core 2.1GHz, 6MB L3, 8GB (2x 4GB) SODIMM DDR3 with ECC, 4HP, with P6 Rear I/O, TPM
CPS3003-SA-2.5D-4-4R-T	Core i7-3555LE, Dual-Core 2.5GHz, 4MB L3, 4GB (2x 2GB) SODIMM DDR3 with ECC, 4HP, with P6 Rear I/O, TPM
CPS3003-SA-2.5D-4-4R-S32-T	Core i7-3555LE, Dual-Core 2.5GHz, 4MB L3, 4GB (2x 2GB) SODIMM DDR3 with ECC, 4HP, with P6 Rear I/O, with SATA Flash 32 GB, TPM
CPS3003-SA-2.5D-4-9BR-T	Core i7-3555LE, Dual-Core 2.5GHz, 4MB L3, 4GB (2x 2GB) SODIMM DDR3 with ECC, 9HP with CPS3003-BRIDGE, with P6 Rear I/O, TPM
FLASH STORAGE	
FLASH-SATA-XGB-CP3002/CP(S)3003	SATA NAND Flash module, various sizes available
CFASTX	Industrial grade CFast, various sizes available
REAR TRANSITION MODULES	
CPS-RIO3-01	4HP rear I/O module providing 1x DisplayPort, 2x Ethernet, 1x USB 2.0, 1x USB 3.0, 2x COMs
DEVELOPMENT SYSTEMS	
CPS-CP-ASM4R-84F-200AC-2B0500-STD	19" 84HP/4U hybrid system, with fan tray, 200W AC PSU, 5-slot CPCI-S.0 backplane plus 5-slot CPCI backplane
CPS-ASM4R-44F-300AC-B0500-STD-TT	44HP/4U tabletop system, with fans, 300W AC PSU, 5-slot CPCI-S.0 backplane
SOFTWARE	
VXW-BSP-CP(S)3003-SA-V6.9.2	VxWorks 6.9.2 Board Support Package

Notes: Windows and Linux BSPs are only available as download on the web page
Please contact your local sales representative for other configuration options.



// CPS3003-SA WITH REAR TRANSITION MODULE CPS-RIO3-01

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