» CP305 «

Intel® Atom™ 3U CompactPCI CPU board

» Low-power CPU based on Intel®'s Atom™ technology

» Fully EN50155 compliant

» Comprehensive I/O capabilities:

Gigabit Ethernet, USB, VGA, SATA, CompactFlash...

CP305
Intel® Atom™ Power on CompactPCI

Discover the possibilities of Intel®'s Atom™ architecture manufactured in the leading 45nm process. Based on an entirely new microarchitecture, the Intel® Atom™ processor is developed specifically for targeted performance at low power consumption while maintaining Intel® Core™ microarchitecture compatibility.

The CP305, a low-power 3U CompactPCI board, supports the highly efficient Intel® Atom™ N270 combined with the Intel® 945GSE Express Chipset and ICH7-M I/O Controller Hub.

The 1.6 GHz Intel® Atom™ Processor N270 delivers high performance combined with low power consumption and minimal cooling requirements. The processor comes with one core supporting two parallel threads (Intel® Hyper-Threading technology) for better performance and increased system responsiveness.

The mobile chipset 945GSE featuring the Intel® 3D graphics accelerator delivers sophisticated graphics performance for high-resolution and dual display applications.

The ICH7-M I/O Controller Hub provides all the necessary interfaces to have a fully PC compatible CPU board.

Low-Power Design
The board comes with an unbeatable thermal design power value of typically 10 W. This ability in conjunction with the specifically heatsink design makes the CP305 predestinated for usage in all systems and applications where additional cooling by fans is not possible or not allowed.

Intel®'s Enhanced SpeedStep® Technology provides additional power- and thermal management capabilities and therefore offers further energy saving possibilities.
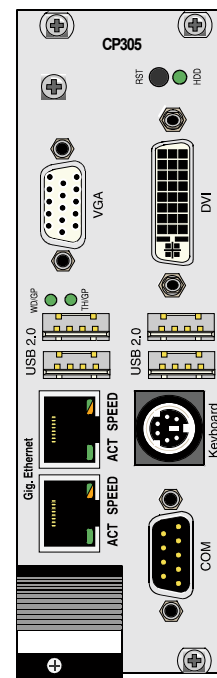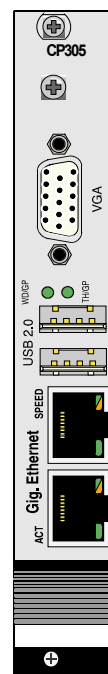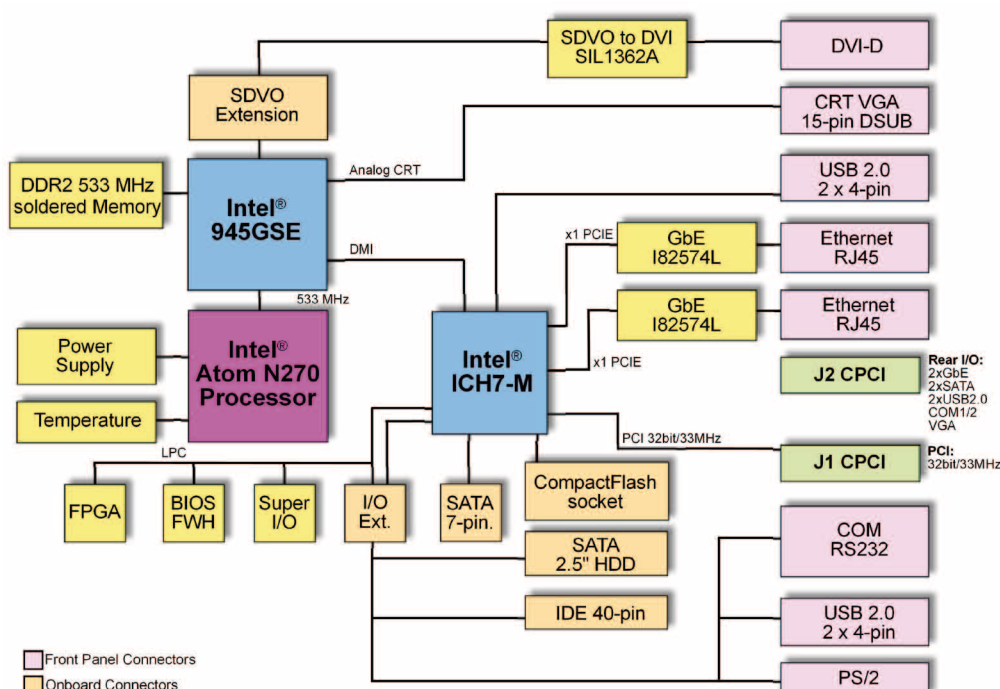
Robust Design
Designed with direct soldered processor and memory to handle the toughest environmental conditions, the CP305 can be used in all low-power and mobile applications. With respect to the transportation market the CP305 is fully EN50155 compliant.

Comprehensive I/O Connectivity
The CP305 comes with a comprehensive I/O connectivity supporting various communication interfaces like 2x Gigabit Ethernet, 6x USB 2.0 ports, 2x SATA interfaces and 2x serial ports (RS232). Available as 4HP or 8HP version - optionally combined with rear I/O support - the CP305 can be adapted to a wide range of different application needs.

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 CP305 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 CP305 eases the process of product integration and maximizes your competitive advantage to meet your time-to-market window.

Technical Information

Processor	Intel® Atom™ processor in micro-FCBGA8 package (45nm manufacturing process): - N270: 1.6 GHz, 533 MHz FSB, 512 kB L2 cache
Memory	
System Memory:	Up to 2 GB 533 MHz DDR2 memory, soldered, no ECC
Flash (BIOS):	8 MBit Firmware hub (FWH)
EPROM:	Serial EEPROM (24LC64) 64 Kbit for CMOS data storing (no battery operation)
CompactFlash:	4HP: Type I and Type II, mounting on piggy-back module 8HP: Type I and Type II, mounting on extension via CompactFlash socket
Onboard Controller	
GMCH (Graphics Memory Controller Hub):	Intel® 945GSE chipset Single-channel DDR2 memory controller, Internal graphics controller with dual, independent VGA channels
I/O Controller Hub:	Intel® ICH7-M 2x SATA I, 6x USB 2.0, 4x PCI-Express x1, 1x IDE, 1x 32-bit/33 MHz PCI master interface
VGA:	Integrated in 945GSE max. 2048 x 1536 pixels (QXGA) @75Hz, max. 265 MB memory used from system memory
Gigabit Ethernet:	2x GbE Front or Rear (s/w switchable), 82574L PCI-Express controller
Super I/O:	LPC Super I/O SMSC SCH3112I-NU with 2x UART, HW Monitor, PS/2
Watchdog:	Timeout ranging from 125ms to 4096s programmable in 16 steps IRQ, Reset, dual-stage
RTC:	Integrated in ICH7-M
Front Panel Interfaces	
4 HP version:	
VGA:	1x VGA-CRT 15-pin D-Sub connector
USB:	2x USB 2.0, USB-A connectors
Ethernet:	2x RJ45 with integrated LEDs (ACT, SPEED)
LEDs:	WD/GP: Watchdog or General Purpose TH/GP: Overtemperature Status or General Purpose
8HP version (in addition to 4HP):	
DVI:	1x 29-pin DVI-D connector
USB:	2x USB 2.0, USB-A connectors
COM:	1x 9-pin D-Sub connector
PS/2:	1x 6-pin shielded mini-DIN connector
Control:	Reset button and HDD LED
Onboard Interfaces	
Serial ATA:	2x switchable SATA I ports: 1x onboard standard SATA connector and 1x I/O extension or 2x Rear I/O
I/O Extension Connector (to 8HP):	1x SATA, SDVO, 2x USB, LPC, PS/2, COM, IDE
Rear I/O via J2	The CP305 supports: - 32-bit/33 MHz CompactPCI interface - Two USB 2.0 ports - Two Gigabit Ethernet ports without LED signals - Two SATA ports - Two COM ports (TTL level) - One VGA analog port - One fan control input - One power management output
CompactPCI Bus Interface	PICMG 2.0 Rev. 3.0 compatible, 32-bit/33MHz system master universal 5V and 3.3V PCI signalling voltage supported, 7 Req/Gnt & clock lines
Supervisory Functions	Watchdog, software configurable, 125ms to 4096s in 16 steps, generates IRQ or hardware reset, dual-stage configuration Hardware monitoring SCH3112 for thermal control, fan-sense/control and all important onboard voltages
Hot Swap	Support for all signals to allow peripheral boards to be hot swapped. The individual clocks for each slot and access the backplane ENUM# signal comply with the PICMG 2.1 Hot Swap Specification
Compliancy	CompactPCI Core Specification PICMG 2.0 Rev. 3.0 CompactPCI Hot Swap Specification PICMG 2.1 R2.0 Designed to meet or exceed: - Safety: UL 60950-1, CSA 22.2 No 60950-1, EN60950-1 - EMI/EMC: EN 55022 / EN 55024, EN 50081-1 / EN 61000-6-2 - EN50155

Technical Information

General

Dimensions:	100 x 160mm, 3U
Weight:	4HP: 320g 8HP: 540g
MTBF:	307,691 h acc. to MIL-HDBK-217 FN2, Ground Benign GB, controlled at 30°C

Software Support

- AMI BIOS with POST codes, setup console redirection to serial port (VT100 mode) with CMOS setup access, BIOS parameters saved in EEPROM, diskless, keyboardless, LAN boot support
- Board identification number accessible via EEPROM
- Support for Windows® XP, XP Embedded, Linux®, VxWorks
  (Other OSs may also be used with the CP305. Please contact Kontron for further information.)

Power Consumption

N270 1.6 GHz and 2 GB memory:	typ. 10W

Environmental

Operating Temp:	0°C to +55°C, passive module heatsink, convection cooling -40°C to +80°C, passive module heatsink, forced airflow
Storage Temp.:	-55°C to +85°C (without battery)
Climatic Humidity:	93% RH at 40°C, non-condensing (acc. to IEC 60068-2-78)

Ordering Information

Product	Description	Order Information
CPU Baseboard		
CP305-F-1.6S-1GS-U	N270 1.66 GHz, 512 kB L2, 1 GB soldered, Front I/O, universal PCI interface	1035-7016
CP305-R-1.6S-1GS-U	N270 1.66 GHz, 512 kB L2, 1 GB soldered, Rear I/O, universal PCI interface	1035-7013
CP305-F-1.6S-2GS-U	N270 1.66 GHz, 512 kB L2, 2 GB soldered, Front I/O, universal PCI interface	1035-7019
CP305-R-1.6S-2GS-U	N270 1.66 GHz, 512 kB L2, 2 GB soldered, Rear I/O, universal PCI interface	1035-7017
CP305-F-1.6S-1GS-U-E1X	N270 1.66 GHz, 512 kB L2, 1GB soldered, Front I/O, universal PCI interface, extend. temp. range	1036-2086
CP305-R-1.6S-1GS-U-E1X	N270 1.66 GHz, 512 kB L2, 1GB soldered, Rear I/O, universal PCI interface, extend. temp. range	1036-2087
Front Panel/Extension		
CP305-FP-4HP	4HP front panel (2x Gig. Ethernet, 2x USB, 2x LEDs, VGA)	1035-7024
CP305-HDD	8HP (in addition to 4HP DVI, 2x USB, COM, PS/2, Reset button, SATA HDD mounting option)	1035-7025
CP305-HDD-EX1	8HP (in addition to 4HP DVI, 2x USB, COM, PS/2, Reset button, SATA HDD mounting option), extended temp. range	1036-3401
Rear Transition Modules		
CP-RIO3-04	4HP rear I/O module (2x Gig. Ethernet, 2x USB, VGA, 2x SATA connectors)	33995
CP-RIO3-04	8HP rear I/O module (in addition to 4HP COM1/2)	33996
Software		
KIT-CP305 [1]	Windows® XP Board Support Package, CP305 User Guide	1035-8467
LIN-BSP-CP305 [1]	Linux® Board Support Package, CP305 User Guide	1035-8469
WXPE-BSP-CP305 [1]	Windows® XP embedded Board Support Package, CP305 User Guide	1035-8470
VXW-BSP-CP305-V6.7	VxWorks 6.7 Board Support Package, CP305 User Guide	1036-3338
Note:	[1] Free of charge, downloadable from the Kontron web site Please contact your local sales representative for other configuration options.	

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