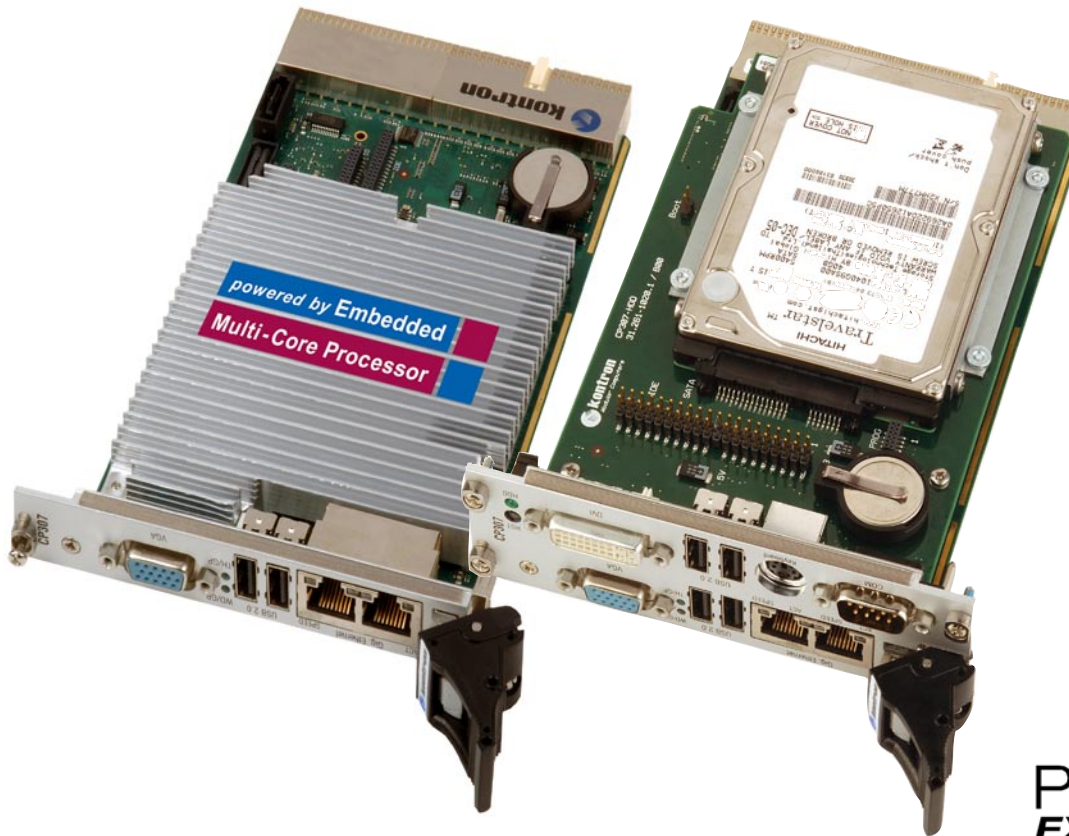# » CP307⁶⁴ «

PCI **EXPRESS**™

3U Core™2 Duo Processor Rugged CPU

» Highest Performance

Intel® Core™2 Duo processor up to 2.16 GHz

» Highest Memory Throughput

Dual channel DDR2 667MHz memory

» Highest Versatility

Comprehensive I/O capabilities:

GigEthernet, USB, VGA, DVI, SATA, CompactFlash...

CP307⁶⁴
3U Core™2 Duo Processor Rugged CPU

Explore the power and the potential of two cores in one processor with Kontron's CP307⁶⁴ based on the Intel® 64-bit Core™2 Duo processor.

Greater Performance / Watt

The CP307⁶⁴, a 3U CompactPCI CPU board incorporates Intel®'s latest processor chip based on a new 65nm technology - the Intel® Core™2 Duo processor - delivering optimized power efficient computing and breakthrough dual-core performance with amazingly low power consumption. With its two execution cores and 64-bit access, the Intel® Core™2 Duo processor is optimized for multi-threaded applications and multitasking. Multiple demanding applications can run simultaneously such as a graphics-intensive program while at the same time serious number-crunching programs can be handled. Furthermore the two cores give the capability to execute two operating systems independently - one core dedicated to one OS - starting a new era of software implementations.

Greater Graphic Performance

Combined with the Mobile Intel® 945GM Express chipset featuring Intel®'s latest Graphics Media Accelerator the CP307⁶⁴ delivers up to 2x improvement in graphics performance with exceptional 3D graphics performance and enables up to 25% higher data transfer compared to previous platform designs.

As a dual display solution the CP307⁶⁴ offers a standard analog CRT connection with integrated 400 MHz RAMDAC and an independent DVI interface.

Greater Capacity

The CP307⁶⁴ offers a maximum capacity of 4 GB Double Data Rate (DDR2) memory running at 667 MHz dual channel mode via a combination of up to 2 GB soldered memory and a dedicated memory socket for a 2 GB SODIMM module.

Shock Resistance

The direct soldered processor and memory provides a higher shock/vibration - resistance than socket devices can; the fan-less heat sink is tightly screwed on the board enabling the CP307⁶⁴ as an ideal solution for harsh environments.

Comprehensive I/O Connectivity

The CP307⁶⁴ comes with a comprehensive I/O connectivity supporting future oriented interface like 2x Gigabit Ethernet, up to 6x USB 2.0 ports, 4x SATA interfaces. Various versions as 4HP or 8HP - optionally combined with rear I/O support - the CP307⁶⁴ can be adapted to a wide range of different application needs.
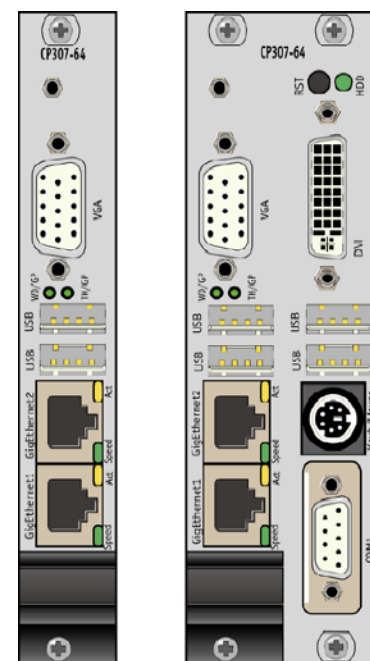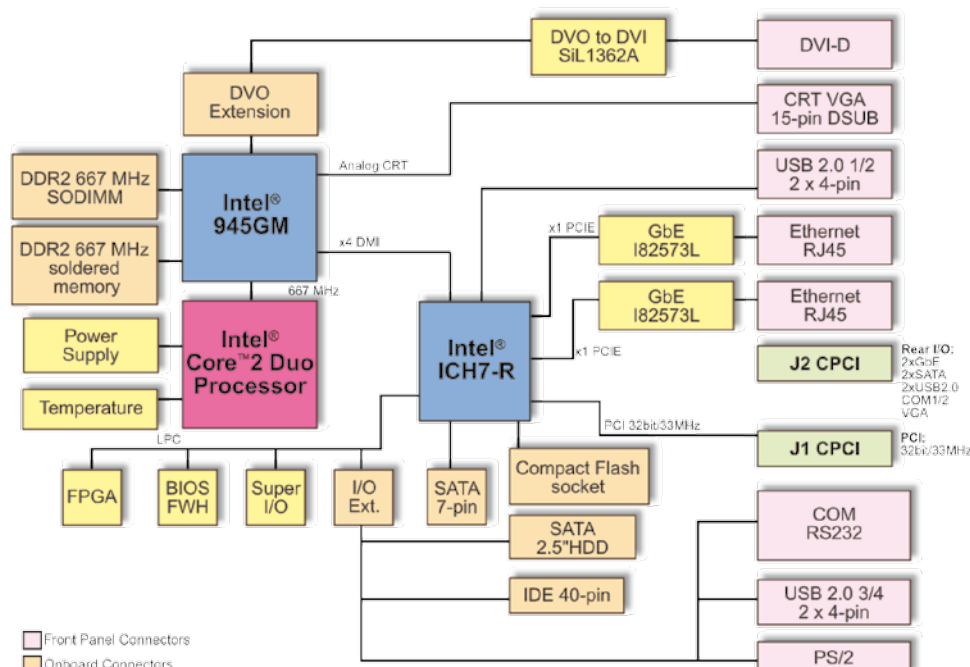
Supporting onboard PCI-Express the CP307⁶⁴ improves I/O performance significantly eliminating the bottle-neck of parallel PCI bus.

Longterm 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 CP307 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 CP307⁶⁴ eases the process of product integration and maximizes your competitive advantage to meet your time-to-market window. Thanks to the future oriented design the CP307⁶⁴ provides enough headroom for the emerging next generation applications requirements.

Technical Information

System Processor	Intel® Core™2 Duo processor in micro-FCBGA package (65nm manufacturing process):
	  - T7400: 2.16 GHz, 667 MHz FSB, 4 MB L2, FCBGA
	  - L7400 LV: 1.5 GHz, 667 MHz FSB, 4 MB L2, FCBGA
	All board versions are passive cooled with a heatsink within 4HP height.
	Forced air cooling at a specific flow rate is required depending on the processor version.

Memory	
System memory:	Up to 4 GByte dual channel DDR2 667 MHz memory via max. 2 GByte soldered memory and SODIMM-socket for max. 2 GByte memory module (no ECC)
Flash (BIOS):	1 MB Firmware hub (FWH)
EPROM:	Serial EEPROM (24LC64) 64 kbit for CMOS data storing (no battery operation)
CompactFlash:	Type I and II mounting within 4HP via mezzanine modul *or alternatively* Type I and II within 8HP via socket on mezzanine carrier
HDD:	Onboard 2.5" SATA HDD mounting within 8HP mezzanine via carrier
Onboard Controller	
GMCH Graphic Memory Controller Hub:	Intel® 945GM chipset Dual-channel DDR2 memory controller, Internal Graphics controller with dual independent VGA channels
I/O Controller Hub:	Intel® ICH7R Up to 4 x SATA II controller with RAID functionality (0,1,5,10), 6 x USB 2.0, 2 x 1 PCI-Express, 1 x 32-bit/33MHz PCI integrated on CP307
VGA:	Integrated in 945GM max. 2048 x 1536 pixels (QXGA), 16M colors, @75Hz, CRT and DVI, max. 256MByte memory used from system memory
Gigabit Ethernet:	2 x GbE Front or Rear (s/w switchable), 82573L PCI-Express controller
Super I/O:	LPC Super I/O from SMSC SCH3112I-NU with 2x UART, HWMonitor, PS/2
Watchdog:	Timeout 125ms to 256s programmable in 12 steps NMI, IRQ, Reset, dual-stage
RTC:	Integrated in ICH7R with 256 bytes of battery-backed CMOS RAM
Front Panel Interfaces	
4HP version:	
USB:	2 x 4-pin connectors
VGA:	1 x VGA-CRT 15-pin D-Sub connector
Ethernet:	2 x RJ45 with integrated LEDs (ACT, SPEED)
LEDs:	Thermal, Watchdog or both general purpose
8HP version (additional to 4HP):	
DVI:	1 x 29-pin DVI-D connector
USB:	2 x 4-pin connectors
COM:	1 x 9-pin D-Sub connector
PS/2:	1 x 6-Pin shielded mini-DIN connector
Control:	Reset button and HDD LED

Rear I/O via J2	The Rear I/O versions support:
	  - 32-bit/33 MHz CompactPCI interface
	  - Two USB 2.0 ports
	  - Two Gigabit Ethernet ports without LED
	  - Two SATA interfaces
	  - Two COM ports (TTL signalling)
	  - One CRT VGA port
	  - One fan control input
	  - One power management output

CompactPCI Bus Interface	PICMG 2.0 Rev. 3.0 compatible, 32-bit/33MHz System master 5V VI/O (3.3V on request), 7 Req/Gnt & clock lines Version with rear I/O on J2 PICMG 2.0
Supervisory Functions	Watchdog, software configurable, 125ms to 256s in 12 steps, generates IRQ, NMI or hardware reset, two stage configuration for NMI and Reset 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 to 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 1950, UL 94, CSA 22.2 No 950, EN 60950, IEC 950
	  - EMI/EMC: EN 55022 / EN 55024, EN 50081-1 / EN 6100-6-2

General	
Dimensions:	100mm x 160mm
Weight:	320g / 4HP, 400g / 8HP
MTBF:	141,543 h acc. to MIL-HDBK 217FN2, Ground Benign GB, controlled at 30°C

Technical Information

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 be possible, please contact us for information)

Power Consumption

L7400 LV 1.5 GHz and 2GB memory	typ. 25W

Environmental

Operating temp.:	0°C to +60°C (depending on processor version and available airflow in the system)
Storage temp.:	-55°C to +85°C
Climatic Humidity:	non condensing 93% at 40°C (acc. to IEC 60068-2-78)
Altitude:	50,000 ft. (15,240 m)

Ordering Information

Article	Order-No.	Description
CPU Baseboard		
CP307^{64}-F-1.5D-1GS-5V	35817	L7400 1.5GHz LV Core™2 Duo, 4MB L2 cache, Front I/O, 1GB soldered, 5VI/O
CP307^{64}-F-1.5D-2GD-5V	35818	L7400 1.5GHz LV Core™2 Duo, 4MB L2 cache, Front I/O, 1GB soldered + 1GB SODIMM, 5VI/O
CP307^{64}-R-1.5D-2GD-5V	35819	L7400 1.5GHz LV Core™2 Duo, 4MB L2 cache, Rear I/O, 1GB soldered + 1GB SODIMM, 5VI/O
CP307^{64}-F-2.16D-4GD-5V 3)	1027-2544	T7400 2.16GHz Core™2 Duo, 4MB L2 cache, Front I/O, 2GB soldered + 2 GB SODIMM, 5VI/O
CP307^{64}-F-2.16D-1GS-5V 4)	1027-2863	T7400 2.16GHz Core™2 Duo, 4MB L2 cache, Front I/O, 1GB soldered, 5VI/O
CP307^{64}-F-2.16D-2GS-5V 4)	1027-2861	T7400 2.16GHz Core™2 Duo, 4MB L2 cache, Front I/O, 2GB soldered, 5VI/O
Frontpanel		
CP307-EXT-CRT	33661	4HP front panel extension module (2x Ethernet, 2x USB, LED´s, VGA)
CP307-EXT-IOIDE 1)	33662	8HP (additional to 4HP DVI, 2x USB, COM, PS/2, Reset button, SATA HDD mounting option), only for use in conjunction with 1.5 GHz CPU baseboard
CP307-EXT-IOIDE-HP 1)	1022-8301	8HP (additional to 4HP DVI, 2x USB, COM, PS/2, Reset button, SATA HDD mounting option), only for use in conjunction with 2.16 GHz CPU baseboard
Rear IO Module		
CP-RIO3-04	33995	4HP rear I/O module (2x Ethernet, 2x USB, VGA, 2x SATA connectors)
CP-RIO3-04	33996	8HP rear I/O module (additional to 4HP COM1/2)
Software		
KIT-CP307 2)	33997	Windows XP Board Support Package, CP307 User's Manual
LIN-BSP-CP307 2)	33998	Linux Board Support Package, CP307 User's Manual
VXW-BSP-CP307	35811	VxWorks 6.x Board Support Package using CP307^{64} in single-core mode, CP307 User's Manual
VXW-BSP-CP307-SMP	1023-0501	VxWorks 6.6 Board Support Package with SMP Support, CP307 User's Manual
WXPE-BSP-CP307 2)	1022-3521	Windows XP embedded Board Support Package, CP307 User's Manual
Note:		1) HDD must be ordered separately
		2) Free of charge downloadable from the Internet
		3) Available RAM space depends on PCI + PCIe devices in system
		4) Available memory space can be extended by SODIMM modules
		Please contact your local sales representative for other configuration options

CORPORATE OFFICES

Europe, Middle East & Africa
Oskar-von-Miller-Str. 1
85386 Eching/Munich
Germany
Tel.: +49 (0)8165/ 77 777
Fax: +49 (0)8165/ 77 279
info@kontron.com

North America
14118 Stowe Drive
Poway, CA 92064-7147
USA
Tel.: +1 888 294 4558
Fax: +1 858 677 0898
info@us.kontron.com

Asia Pacific
17 Building,Block #1,ABP.
188 Southern West 4th Ring Road
Beijing 100070, P.R.China
Tel.: + 86 10 63751188
Fax: + 86 10 83682438
info@kontron.cn