» CP306 «

Pentium® M Rugged CPU

» More value with Intel® Pentium® M up to 1.8 GHz / 2MB L2 cache (Pentium® M processor 745)

» Less rejected heat through better power saving

» Extended Temperature and shock/vibration resistance

Determined designed CPU

Robustness implemented

Kontron´s CompactPCI CP306 CPU demonstrates high PC computing performance in a first-rate resistant construction.

The CP306 CompactPCI system controller board combines the performance of Intel®'s Mobile Pentium® M processor with the high integration of the 855GME chipset and the I/O Controller Hub ICH4.
Realized as a 3U single slot processor card it contributes to high density packaging.

Computing performance

Pentium® M clock speed statements are not directly comparable to those of Pentium 4. The new low power Pentium® M processors offers at 1.8GHz the same performance as Pentium® 4 at 2.6GHz up to 2.9GHz, but dissipates only half of the thermal. This is achieved by several architectural improvements over Pentium® 4 like larger caches, faster buses, enhanced SpeedStep with aggressive clock gating to turn off circuits not in use very quick and enables real-time dynamic switching between multiple voltage and frequency points to reduce idle power. With the speed of 333MHz up to 1GByte DDR-SDRAM with ECC can be accessed.

Temperature resistance

The Pentium® M architecture allows a high internal temperature and thus make it possible to work up to high extended temperature ranges. Together with its directly soldered thin BGA package it enables sufficient space for a passive heatsink within 4HP.

Shock resistance

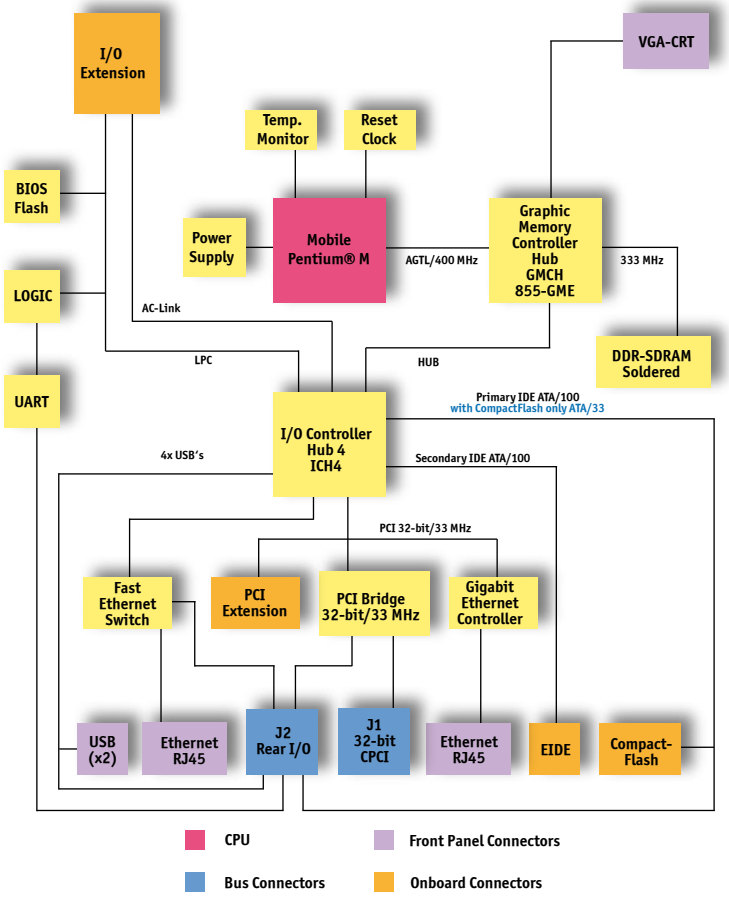
The direct soldered processor and memory provide less weight and a higher shock/vibration- resistance than socket devices can. The fan-less heat sink is tightly screwed on the board.

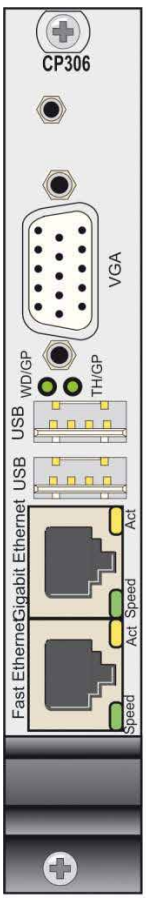
Graphic performance

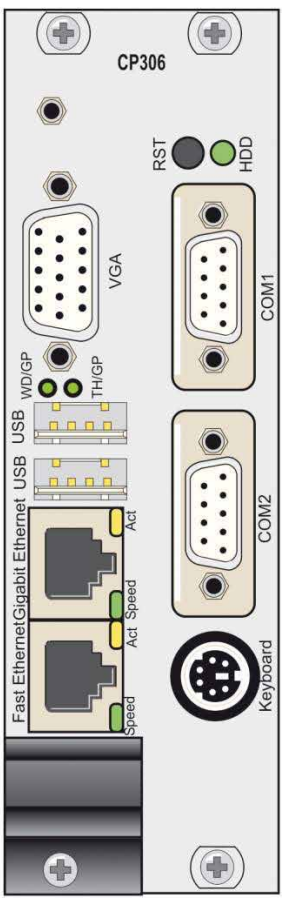
With the 855GME integrated graphics accelerator delivering high performance 2D, 3D and video capabilities it supports intense, realistic 3D graphics with sharp images and enables balanced memory usage between graphics and system for optimal performance (up to 64MB of dynamic video memory allocation).
It further offers display image rotation 90", 180", 270" and follows DirectX and OpenGL pixelization rules.

I/O connectivity

The 4HP version comes with the most important interfaces, the 8HP version supports legacy interfaces as well.
With the PCI and LPC expansion connectors, the CP306 is an ideal platform for 8HP customized CPU's as well.







Technical Information

Processor	Mobile low power Pentium® M processor in Micro-FCBGA 479 package 2x 32KB L1 cache and 2MByte L2 cache, 400MHz processor system bus. Long term available versions: - 1.4 GHz LV low power dissipation, extended temperature range option - 1.8 GHz Maximum internal junction temperature 100°C All board versions are passive cooled with fanless heatsink within 4HP height. Forced air cooling at a specific flow rate is required depending on the processor version.
Memory	333 MHz memory speed, Intel® 82855GME GMCH 512MByte or 1GByte soldered DDR-SDRAM with ECC CompactFlash socket type II Onboard 2.5" HDD mounting within 8HP 1MB Firmware Hub for BIOS 8KByte EEPROM for CMOS data storing (no battery operation)
Connectivity	
4HP board:	
Ethernet	1st: Intel® 82541PI based 10/100/1000MBit/s Gigabit Ethernet controller at front 2nd: Intel® 82801DB ICH4 10/100Base-TX Ethernet controller (based on 82559; front or rear IO)
VGA	Intel® 82855GME GMCH internal VGA controller providing 2048x1536x8bit/60Hz resolution, max. shared memory 64MB
USB	4x USB2.0 channels up to 480Mbit/s, 2x as front IO, 2x as rear IO
COM	UART with two 16C550 compatible RS232 ports at rear IO
IDE	Two EIDE interfaces, Ultra ATA/100, 100MB/sec Primary port ATA/33 connected to CompactFlash socket & rear IO Secondary port ATA/100 40-pin, 2.54mm connector onboard
8HP additions:	
COM	Additional 2x COM ports (front IO), 4x COM ports in total
PS/2	PS/2 for keyboard and mouse legacy support (front IO)
IDE	Secondary port ATA/100 two 40-pin, 2.54mm connector s, one for onboard 2.5" EIDE Flash Disk or HDD mounting option, another one for external devices like CD-ROM
Floppy	Standard Floppy connector
LPT	The parallel port is accessible as onboard 26-pin row connector
Front Panel Interfaces	
4HP version:	
Ethernet	Two RJ-45 with integrated LED´s (ACT, SPEED)
VGA	VGA-CRT 15-pin D-Sub connector
USB	Two 4-pin connectors
LED´s	Thermal, Watchdog or both general purpose
8HP (additional to 4HP):	
COM1/2	Two 9-pin D-Sub (RS232/422/485 jumper selectable)
PS/2	6-pin shielded mini-DIN connector
Control	Reset button and HDD LED
Onboard Interfaces	PCI and LPC build the connection between the basic CPU board with any I/O extension module, resulting in a double slot (8HP) solution.
Rear I/O via J2	The Rear I/O versions support: - 32-bit/33 MHz CompactPCI interface - Two USB ports - One Fast Ethernet port without LED - Primary EIDE Port - Two COM ports (TTL level) - CRT VGA port - One fan control input - One general purpose output - Input for external backup battery
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 monitor LM87 for thermal control, fan-sense and all important onboard voltages ICH4 internal RTC (MC146818 compatible), RTC and 256 Byte CMOS RAM with backup, battery replaceable
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

Technical Information

General	
Dimensions	100mm x 160mm
Weight	313g / 4HP, 427g / 8HP
MTBF	117,000h
Software Support	Phoenix BIOS with QuickBoot, QuietBoot, BootBlock, MultiBoot III, PC Health Monitoring, Serial port remote control with CMOS setup access, BIOS parameters saved in EEPROM, diskless, keyboardless, videoless operation. LAN boot support. USB Floppy boot, USB memory stick boot. Plug&Play capability. Board identification number accessible via EEPROM Support for Windows® 2000, Windows® XP, XP Embedded, Linux®, VxWorks®, (other OS's may be possible, please contact us for information).
Power Consumption	
+5V/ 7W, +3.3V/ 6W,	typ. 13W at 1.4GHz
+5V/17W, +3.3V/5W,	typ. 22W at 1.8GHz
Environmental	
Operating temp.:	0°C to +60°C standard -40°C to +85°C E2 (optional, 1.4GHz LV)
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
CP306 [1]	30562	Pentium® M 1.4GHz, LV, 2MByte L2 cache, 512MByte DDR-SDRAM
CP306-E2 [1]	30564	Pentium® M 1.4GHz, LV, 2MByte L2 cache, 512MByte DDR-SDRAM, -40°C to +85°C
CP306-RIO [1]	30566	Pentium® M 1.4GHz, LV, 2MByte L2 cache, 512MByte DDR-SDRAM, Rear I/O routing to J2
CP306-RIO-E2 [1]	30568	Pentium® M 1.4GHz, LV, 2MByte L2 cache, 512MByte DDR-SDRAM, Rear I/O routing to J2, -40°C to +85°C
CP306 [1]	30561	Pentium® M 1.8GHz, LV, 2MByte L2 cache, 512MByte DDR-SDRAM
CP306 [1]	30239	Pentium® M 1.8GHz, LV, 2MByte L2 cache, 512MByte DDR-SDRAM
CP306 [1]	31529	Pentium® M 1.8GHz, LV, 2MByte L2 cache, 1GByte DDR-SDRAM, 3.3 V I/O
CP306-RIO [1]	30565	Pentium® M 1.8GHz, LV, 2MByte L2 cache, 512MByte DDR-SDRAM, Rear I/O routing to J2
CP306-RIO [1]	30567	Pentium® M 1.8GHz, LV, 2MByte L2 cache, 1GByte DDR-SDRAM, Rear I/O routing to J2
CP306-EXT-CRT	26717	4HP front panel extension module (2x Ethernet, 2x USB, LED s, VGA)
CP306-EXT-IOIDE	26718	8HP (additional to 4HP COM1/2, PS/2, Reset button, Floppy port, parallel port, HDD mounting option)
CP306-EXT-IOIDE-E2	27825	8HP (additional to 4HP COM1/2, PS/2, Reset button, Floppy port, Parallel port, HDD mounting option), -40°C to +85°C
CP-RIO3-03	26725	4HP rear I/O module (one Ethernet, COM1/2, onboard IDE connector)
CP-RIO3-03	26726	8HP rear I/O module (additional to 4HP VGA, USB1/2, LED)
CFxxx	various	CompactFlash in various memory sizes available
CP-HDD-2.5-IDE	various	Notebook-style 2.5" Hard disk in various sizes available (to be mounted on CP306-EXT-IOIDE)
KIT-CP306 [2]	26723	Windows® 2000, Windows® XP Board Support Package, CP306 User's Manual
VXW-BSP-CP306	26724	VxWorks® 6.x Board Support Package, CP306 User's Manual
LIN-BSP-CP306 [2]	27617	Linux Board Support Package, CP306 User's Manual
WXPE-BSP-CP306 [2]	1022-2313	Windows® XP embedded Board Support Package, CP306 User's Manual

Notes:

[1] A front panel extension module must be ordered in conjunction with the basic CPU board.
[2] Free of charge, downloadable from the Internet.

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