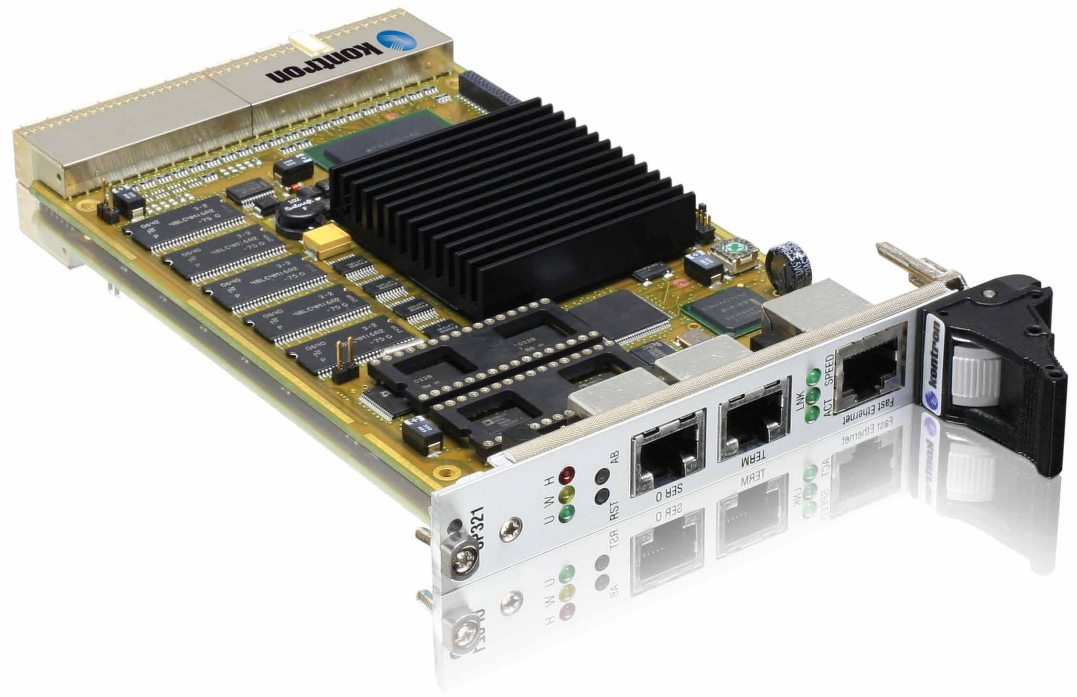
» CP321 «



3U PowerPC CPU

» Optimized design achieving a maximum of computer performance versus power dissipation.

» Designed for mission critical applications.

» The enhanced PowerPC alternative for CompactPCI, built around the Motorola MPC8245.

Looking for a WINTEL alternative?

The CP321 is the answer ...

Kontron's CompactPCI processor board with floating point unit based on the 32bit PowerPC 603e core MPC8245 is designed for mission critical applications.

CPU, Memory and DMA

Anticipating the CP321's use in data critical applications, the memory data path contains a selectable in-line ECC controller which can provide SDRAM single bit error correct or double bit error detect at 133 MHz synchronous access of the direct soldered SDRAM up to 256MB. For boot code and romable RTOS 8MB of direct soldered Flash is provided.
For mass data transmission a dual channel DMA controller is provided. It can be programmed directly or through the use of descriptor chains located in memory. Data can thus be moved from PCI to memory or vice versa, memory to memory, or PCI to PCI.
Two memory expansion sockets allow the addition of Flash (single chip or Disk On Chip) and/or SRAM (or NVSRAM) in a very flexible way.

PCI Expansion

A 100 pin PCI expansion connector can be used to add further functionality to the CP321 without occupying CPCI slots. One or two CP320-IO modules can be plugged together with the CP321 (e.g. two PMC slots can be added) resulting in a total package of either 8HP or 12HP.

CompactPCI interface

The CP321 supports all necessary signals to allow other peripheral boards to be removed or added with power on. The individual clocks for each slot and access to or interrupt on the backplane ENUM# signal are compliant to the PICMG 2.1 Hot-Swap specification.

LAN

The I8255x 10/100 Mbps Fast Ethernet controller is ideal for power and space constrained environments.

Serial ports

Two configurable serial ports (One RS232, one RS232/485 optional opto isolated) are realized with a 16C2550 UART and supports baud rates up to 1.5Mbps.

Parameter storage

A 64Kbit EEPROM one for user settings as well as a coding switch with 16 binary values helps the user to identify the CP321 individually.

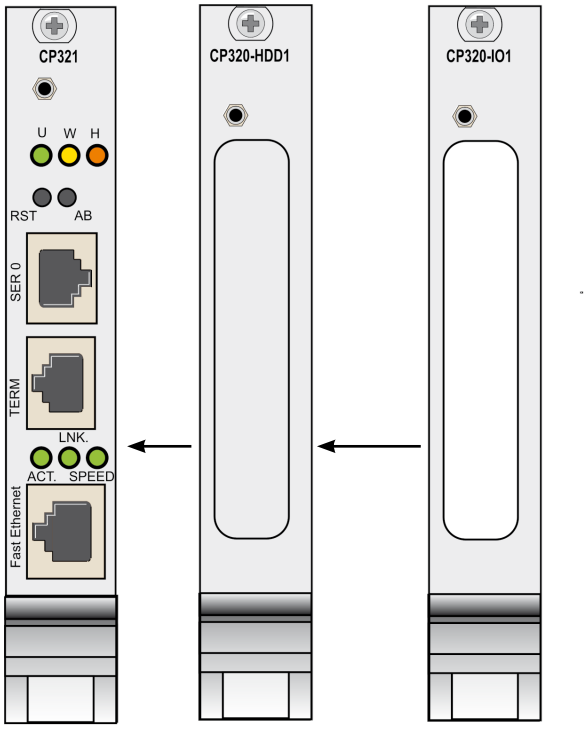
Support

The MPC8245 supports processor control and visibility through the JTAG/COP interface that is accessible as a pin row connector on the CP321. Utilizing third party tools, the developer can access and control the microprocessor. The ECC data path has a mechanism to manually inject errors into memory for use with maintenance and diagnostic utilities. Further a watch point and capture register on the internal bus as well as a set of address attributes on the external memory and PCI buses aid in debugging analysis.

Universal Netboot Loader

The CP321 employs an operating system independent boot loader that enables loading of OS and application software via Ethernet/Internet or serial line. The boot loader is used to update Flash contents and accomplishes an automatic download from Flash to DRAM before booting the OS.

Front Panel



Technical Information

Processor

» Integrated PowerPC microprocessor MPC8245 (330MHz) with 603e core
- L1 cache 2 x 16 kB data/instruction cache
- 7.8 SPECint95
- 6.6 SPECfp95
- 465 Dhrystone (2.1) MIPS

» PCI arbiter
- Two channel controller DMA with chaining
- Programmable IRQ controller
- Multiple timers and counters

Memory

» Up to 256MB direct soldered SDRAM /64bit /133MHz with ECC protection (8 bit parity)
» Up to 8MB direct soldered Flash (Boot Device and Program Storage)
» 2 DIL Sockets for:
- NV-SRAM (up to 512kB) / Cell Storage Life 10 years
- Flash DiskOnChip (up to 144MB)

Front Panel Functions

» Fast Ethernet Channel 10Base-T/100Base-TX; RJ-45
» LAN Status LED´s (Activity, Link, Speed)
» Integrated IEEE 802.3 10BASE-T and 100BASE-TX compatible PHY
» Integrated power management functions
» Dynamic transmit chaining with multiple priorities transmit queues
» Full duplex support at both 10 and 100 Mbps operation
» IEEE 802.3u Auto-Negotiation support
» 3 Kbyte Transmit FIFO and 3 Kbyte Receive FIFO
» Back-to-back transmission support with minimum inter frame spacing
» IEEE 802.3x 100BASE-TX Flow Control support
» TCP/UDP checksum off-load capabilities

» One full modem RS232 port, one configurable RS232/485 port, opto isolation optional, 16550 compatible Dual UART; RJ-45
» IEEETwo push buttons RESET, ABORT (NMI) Board Status LED´s (watchdog active, general purpose)

CompactPCI Bus Interface

» PICMG 2.0 Rev. 3.0 compliant
» 3.3V/5.0V compatible signaling / universal
» 64-bit/33 MHz system master interface
» Rear I/O version 32-bit/33 MHz
» J2 rear I/O: 2x serial ports, Ethernet, LEDs

PCI Expansion Interface

» 32bit/33MHz; 5V Signaling
» Up to two expansion modules are stackable
» 8HP/12HP version with one/two PMC slots or two/four PC*MIP slots
» This port can also be used to add customized functionality

Miscellaneous Functions

Coding switch (read back binary code from 0 to 15)
» Timers:
- Four 32-bit timers, one 16-bit timer, one watchdog timer (0,5 / 1 / 1,5 / 2s)

» RTC:
- Time keeper, counter for s/ h/ m/ d/ date/ month/ years and century
- backup via GoldCap (5days) or optional via replaceable battery (20 years, if RTC only)

» Debug Port:
- JTAG/BDM; 16Pin row connector

Software Support

The CP321 employs an operating system independent boot loader that enables loading of OS and application software via Ethernet/Internet or serial line. The boot loader is used to update Flash contents and accomplishes an automatic download from Flash to DRAM before booting the OS.
» Board Support Packages:
- VxWorks 6.x/5.5, Linux

Reliability

MTBF according to MIL-HDBK 217F

» CP321:	170,400h
» CP320-IO1:	251,000h
» Safety:	EN 60950, IEC 950, UL 1950
» EMI/EMC:	EN 50081-1/EN 50082-2
» Vibration:	IEC 68-2-6, 10-300Hz, 5g
» Continuous Shock:	IEC 68-2-29, 11ms, 15g
» Single Shock:	IEC 68-2-27, 9ms, 30g
» Altitude:	50,000 ft. (15,240 m)

General

» Dimensions:	100mm x 160mm (3U card size)
» Front Panel Height:	128.5mm
» Width:	20mm (0.8inch) / 4HP
» Weight:	200 g

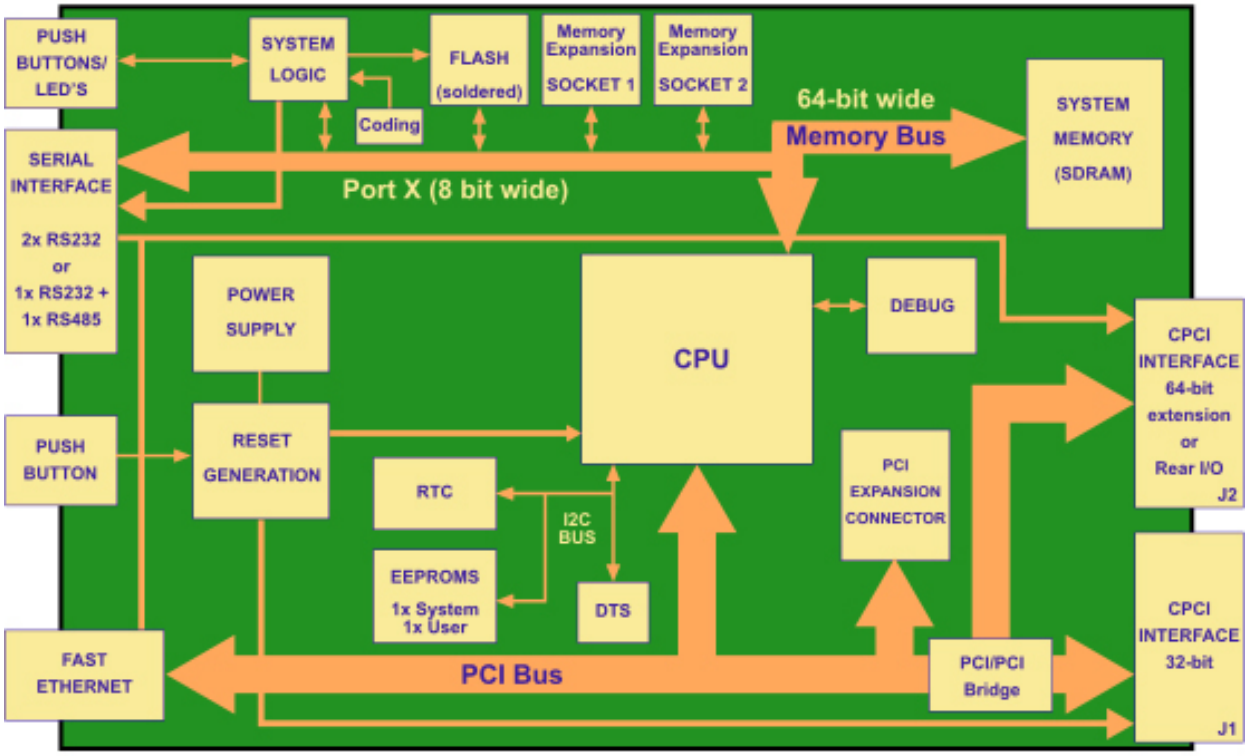
Power Consumption

Power Consumption:	6.5W/*typ.
+5V	4W* /typ.
+3.3V	2.5W* /typ.
+12V	0W*
-12V	0W*

*) Without PCI Expansion Module and at 330MHz, 64MB SDRAM, 8MB Flash

Environmental

» Temp. Ranges:	0°C to + 55°C (standard) -40°C to + 85°C extended) -55°C to + 125°C (storage)
» Operating humidity:	0% to 90% non-condensing
» Altitude:	50,000 ft. (15,240 m)



Ordering Information

Article	Order-No.	Description
CP321	23957	330MHz MPC8245, 64MB SDRAM with ECC, 8MB Flash
CP321-E2	24125	330MHz MPC8245, 64MB SDRAM with ECC, 8MB Flash, Extended temperature range -40°C to +85°C
CP321	25794	330MHz MPC8245, 256MB SDRAM with ECC, 8MB Flash
CP320-IO1	21608	PCI expansion module; one PMC slot
FLD-16	19643	16 MByte FLASH-Disk
FLD-32	19644	32 MByte FLASH-Disk
FLD-96	22146	96 MByte FLASH-Disk
NVSRAM-512	20656	512kByte non volatile SRAM; 32pin DIP
CABLE-SERIAL	10890	Serial interface cable with RJ45 to 9 pin-DSUB (female) for connection to PC, 3 meters long
VXW-BSP-CP320	21288	VxWorks 6.x Board Support Package for CP320/CP321, User's Manual
LIN-BSP-CP320	24106	Linux Board Support Package for CP320/CP321, User's Manual
KIT-CP321	24028	User´s manual

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