



HIGH-
PERFORMANCE
CPUs
SINGLE-BOARD
COMPUTERS

CP603

The 850 MHz CompactPCI
Pentium®III CPU



Innovation and Power

- ▶ 850 MHz Pentium®III
- ▶ 64bit CompactPCI interface
- ▶ 100 MHz front side bus
- ▶ Up to 768 MByte SDRAM with ECC
- ▶ On-board AGP/VGA interface
- ▶ Dual Fast Ethernet interfaces
- ▶ UltraWide SCSI, dual Ultra/DMA IDE and standard PC interfaces
- ▶ P1386-compatible PMC interface
- ▶ Extensive Rear I/O support
- ▶ Hardware monitoring
- ▶ Peripheral Hot Swap support
- ▶ Up to 14 peripheral boards
- ▶ BIOS with LAN Boot feature



High performance 850 MHz Pentium®III system controller in 6U CompactPCI format for the most demanding of applications.

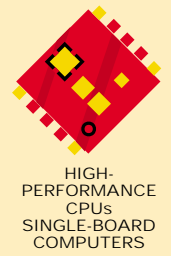


Reg. No. 0548 - 02



Product Overview

CP603



PEP's CompactPCI CP603 CPU is a highly integrated single board computer based on the Pentium®III

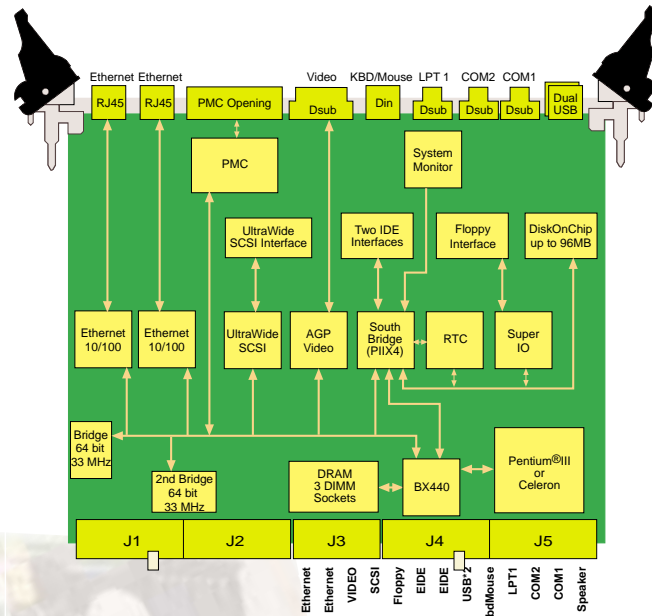
The CP603 CompactPCI CPU is intended for use in the upper performance range. With its innovative technology the CP603 meets the needs of highest application requirements in the fields of telecommunication, the server market, computer intensive automation engineering, image processing and in medical engineering.

The Pentium®III processor in the 370-pin FCPGA housing (Flip Chip Pin Grid Array) used on the CP603 operates with a clock frequency of up to 850 MHz and a 256 kByte on-die full speed L2 cache. It combines outstanding performance with embedded technology.

The latest SDRAM memory technology enables a cache-able memory of up to 768 MByte using ECC (Error Correction Code) which ensures superior reliability and data integrity. The 64-bit CompactPCI interface permits a maximum of transfer rate for highest level of performance and throughput.

Apart from standard PC interfaces such as keyboard, mouse, LPT, IDE, floppy disk, two COM and two USB interfaces, the CPU also offers a comprehensive range of flexible adaptation options. These include memory expansion ranging between 64 MByte and 768 MByte, two Fast Ethernet interfaces, one UltraWide SCSI interface through to a slot for a PMC mezzanine module.

The AGP graphics controller provides a maximum resolution of 1600×1200 pixels.



Optionally, the CPU can also be ordered with an IDE-compatible hard disk module for highest level of integration. An optional FLASH-disk module either as a DiskOnChip™ FLASH or as an IDE-compatible FLASH module meets the needs for use in harsh applications.

Intelligent hardware monitoring with temperature, fan and voltage supervision as well as a battery-buffered real-time clock and a watchdog also handles applications where safety is critical.

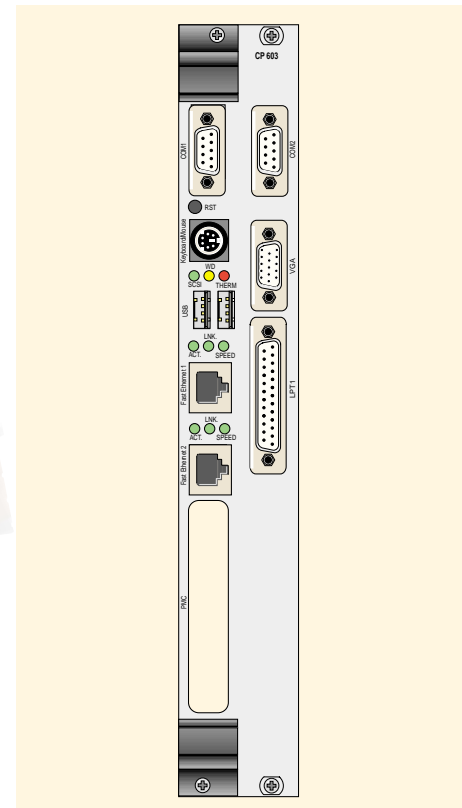
Connections for peripherals are additionally available on the CP603 in the form of a rear I/O at the back, thus simplifying the system cabling. Ordinarily, only seven CompactPCI slots can be addressed from one CPU. However the CP603 board features a second PCI-to-PCI bridge which permits the connection of up to 14 CompactPCI slots.

The CPU is compatible with the following operating systems:

- ▶ Microsoft Windows™ NT
- ▶ VxWorks
- ▶ QNX

and others (like Linux) requiring the standard PC boot configuration are available on request

Front-Panel CP603



Specifications

CP603

CPUs

Intel Pentium®III or Celeron™ processor up to 850 MHz with 128 kByte L2 on-die cache in FCPGA packaging for 370-pin socket

Memory

100 MHz system memory bus
256 kByte L2 on-die full speed processor cache
64 MByte up to 768 MByte SDRAM with ECC via three DIMM sockets
512 kB FLASH (or optional DIL SRAM with 256 kB or 512 kB)
optional DiskOnChip™ module up to 96 MByte

Super I/O

The SMSC FDC37C672 provides the following functions:

- ▶ Two 16C550 compatible UARTs with 16 bytes FIFO
- ▶ Keyboard and mouse interface
- ▶ Floppy disk controller up to 2.88 MB
- ▶ Parallel port ECP/EPP compatible

PCI to ISA Bridge PIIX4E

- ▶ Multifunction PCI to ISA bridge
- ▶ Enhanced DMA controller
- ▶ Interrupt controller based on two 82C59
- ▶ Timer based on 82C84
- ▶ Real-Time clock
- ▶ Power management logic
- ▶ Supports two USB interfaces
- ▶ Supports two IDE interfaces

AGP/VGA Interface

Controller: C&T 69030
Video memory: 4 MByte
Resolution: up to 1600×1200×16 @ 60 Hz

Fast Ethernet Interface

Controller: Intel 82559 Fast Ethernet Controller
Data Rate: 10 & 100 MBit/s
Ethernet: Full 802.2 & 802.3 IEEE compliance supporting 10Base-T and 100Base-TX
Cabling: Category 5 two-pair cabling

UltraWideSCSI Interface

Controller: Symbios SYM53C895
Connector: 68-pin high density SCSI connector

Front-Panel Functions

PS-2 style connector for keyboard/mouse via Y-cable (6-pin mini-DIN)
COM1 9-pin D-Sub (RS232)
COM2 9-pin D-Sub (RS232, RS422, RS485)
USB two 4-pin connectors
Parallel port 25-pin D-Sub

Ethernet two RJ-45 connectors
VGA 15-pin D-Sub SVGA connector
PMC opening for PMC front panel
LEDs ACT, LNK, SPEED Ethernet status per channel
SCSI SCSI activity
TMP thermal control
WDG watchdog timer status
Reset Reset button, guarded

On-board Interfaces

Two IDE interfaces supporting Ultra/DMA each for 2 hard disks or CD-ROM on 40-pin 2.54 mm connectors
One floppy disk interface (up to 2.88 MByte)
68-pin high density SCSI connector for UltraWide SCSI

CompactPCI Bus Interface

Compatible with CompactPCI specification Rev. 2.1
64-bit/33 MHz master interface
3.3V/5.0V compatible

Supervisory Functions

Watchdog: software configurable watchdog generates IRQ, SMI or hardware reset
Reset switch: guarded, on front panel
Hardware monitor: thermal control, on-board voltages (3.3/5.0V)

Clock/Calendar

The real-time clock performs time-keeping functions and includes 128 bytes of general-purpose battery-backed CMOS RAM.

Watchdog Timer

A software programmable watchdog timer ranging from 125 msec to 256 sec can be configured to generate an IRQ, SMI or system RESET to handle applications where safety is a critical issue.

General

Power Consumption: +5V 15.7W typ.
+3.3V 8.18W typ.
+12V 1W (for fan only)
-12V -

700 MHz CPU with 256 MByte SDRAM

Dimensions: 233.35 mm × 160 mm

Operating temp.: 0 °C to +60 °C
-25 °C to +75 °C

Storage temp.: -55 °C to +85 °C

Operating humidity: 0% to 95% non-condensing
Weight: 690 g

Software Support

256 kByte FLASH with Award BIOS
Due to the standard PC features supported by the BIOS, all PC operating systems may be installed. This includes for example WindowsNT® or real-time operating systems like VxWorks® or QNX®.

Features & Benefits

CP603

AGP/VGA Interface

The CP603 supports an AGP/VGA interface for embedded high performance graphic applications with the Chips&Technology 69030 HiQColor™ Graphics Controller

Fast Ethernet Interface

Automatic switching detection between 10BaseT and 100Base-TX transmission protocols are supported on the two 8-pin RJ-45 interfaces. In addition an intelligent control enables automatic detection between front panel or rear panel connection.

PMC Interface

This is a 32-bit master PCI electrical interface for the Common Mezzanine Card (CMC) form-factor designed to comply with the IEEE P1386 specification. Beside PEP's own range of PMC modules like fieldbus

interfaces 3rd party PMC modules (e.g. E1/T1) allow a very flexible adaption of the CP603 to the application requirements.

Hot-Swap

The CP603 supports all necessary signals to allow other peripheral boards to be removed or added with the power on. The individual clocks for each slot and access to the backplane ENUM# signal comply with the PICMG 2.1 Hot-Swap specification.

Serial I/O

Two 16C550 PC-compatible serial ports are available with 5V charge pump technology eliminating the need for a ±12V supply. The ports include a complete set of handshaking and modem control signals, maskable interrupt generation and data transfers up to 460.8 kBaud.

CompactPCI Expansion

With an optional mezzanine module the CP603 is able to drive a 2nd CompactPCI segment as the system host to address a max. of 14 CompactPCI peripheral slots.

Unique Rear I/O Feature

Rear I/O with CP-RIO6-02

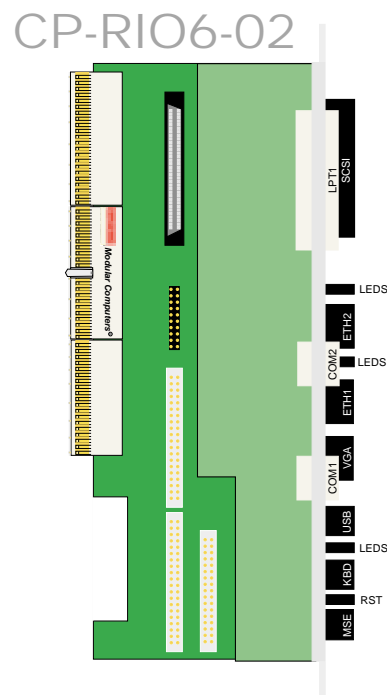
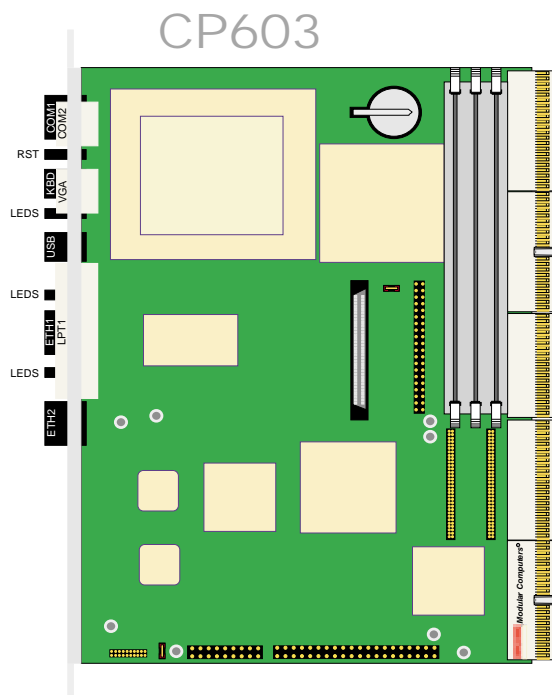
The CP603 has been designed to allow the on-board and front panel I/O interfaces to be accessed via the CompactPCI P3, P4, P5 connector. The rear I/O translation module CP-RIO6-02 allows these signals to be accessed physically simplifying the system cabling.

The pinout of P3 is according to the *CompactPCI 6U Dual System Slot Specification, PICMG 2.7 D0.4*. The remaining signals are routed via P4, P5.

Following Interfaces are supported by the CP-RIO6-02:

On-board Interfaces: two IDE (40-pin), floppy (34-pin), SCSI (68-pin D), speaker

Rear Panel: two serial (9-pin D-Sub), two USB (4-pin), mouse, keyboard (6-pin mini-DIN), two Ethernet (RJ-45), VGA (15-pin D-Sub), bi-directional parallel (25-pin D-Sub), SCSI (68-pin D), LEDs: Ethernet (2× ACT, LNK, SPEED), SCSI control, watchdog, temperature control



Product Assembly

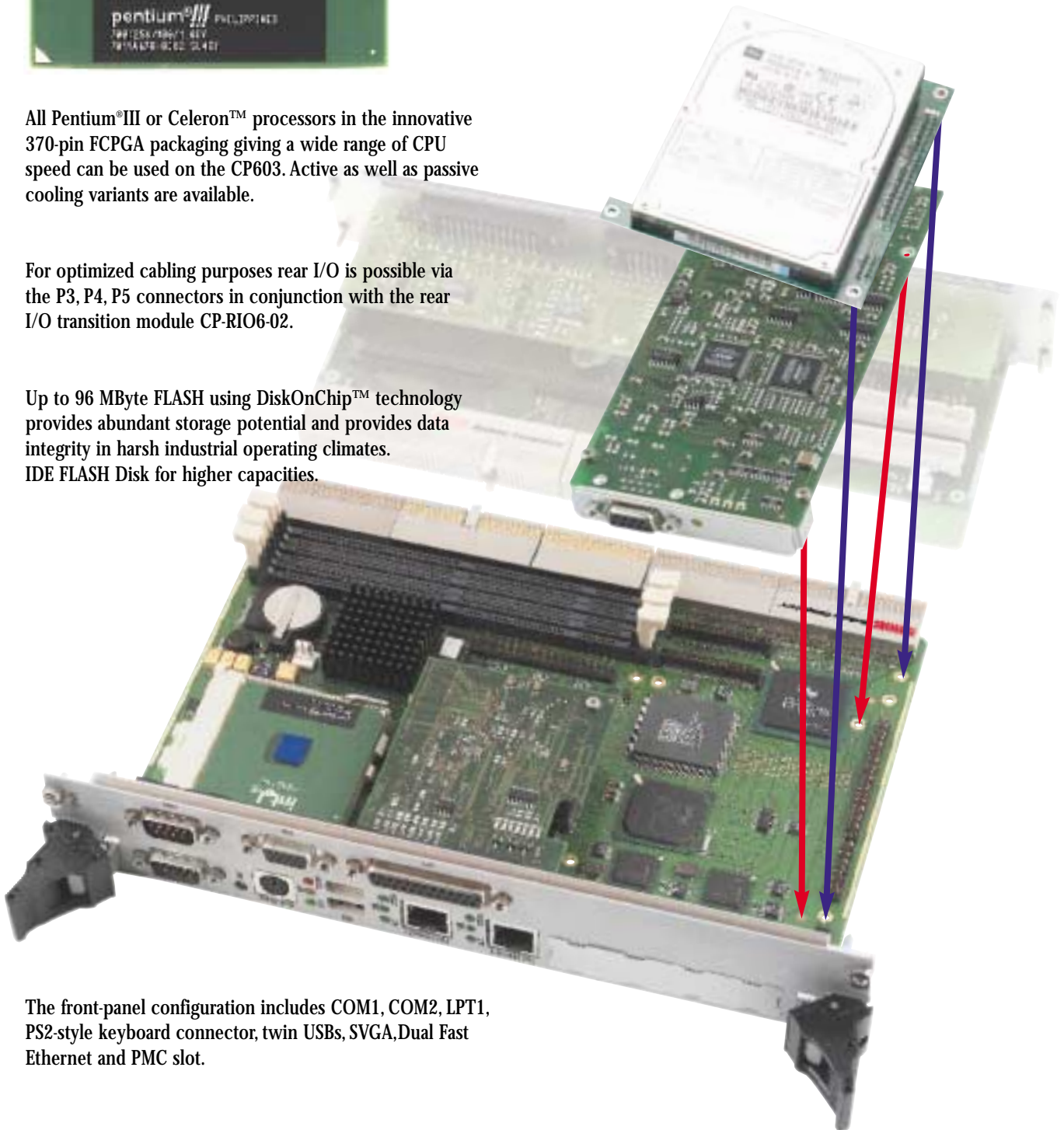
CP603



All Pentium®III or Celeron™ processors in the innovative 370-pin FCPGA packaging giving a wide range of CPU speed can be used on the CP603. Active as well as passive cooling variants are available.

For optimized cabling purposes rear I/O is possible via the P3, P4, P5 connectors in conjunction with the rear I/O transition module CP-RIO6-02.

Up to 96 MByte FLASH using DiskOnChip™ technology provides abundant storage potential and provides data integrity in harsh industrial operating climates. IDE FLASH Disk for higher capacities.



The CP603 is available controlling either one or two CompactPCI buses (depending on version ordered). The version with the 2nd CompactPCI bus is able to address a maximum of 14 slots but at the expense of the PMC-slot.

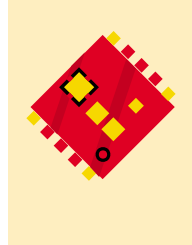
Notebook-style, 2.5" Hard Disks or IDE FLASH Disks with capacities in excess of 6 GByte can be firmly bolted to the base-board.

A variety of off-the-shelf PMC modules provide additional I/O capacity to adapt the CP603 to the application requirements.

The front-panel configuration includes COM1, COM2, LPT1, PS2-style keyboard connector, twin USBs, SVGA, Dual Fast Ethernet and PMC slot.

Ordering Information

CP603



Product	Description	Order No.
CP603 ¹⁾	CP603 Baseboard for Pentium®III, 4 MByte Video Ram	22066
CP603 ¹⁾	CP603 Baseboard for Pentium®III, 4 MByte Video Ram, Rear I/O	22065
CP603 ¹⁾	CP603 Baseboard for Pentium®III, 4 MByte Video Ram, Rear I/O, 14 slot support	21967
Pentium-III-700	700 MHz Pentium®III with 256 kB L2 and passive cooling	21969
Pentium-III-850	850 MHz Pentium®III with 256 kB L2 and passive cooling	22071
Pentium-III-850	850 MHz Pentium®III with 256 kB L2 and fan	22072
DIMM-64	DIMM SDRAM 64MByte 168-pin PC100	20078
DIMM-128	DIMM SDRAM 128MByte 168-pin PC100	20079
DIMM-256	DIMM SDRAM 256MByte 168-pin PC100	20080
DIMM-64	DIMM SDRAM 64MByte 168-pin PC100 with ECC	20057
DIMM-128	DIMM SDRAM 128MByte 168-pin PC100 with ECC	20058
DIMM-256	DIMM SDRAM 256MByte 168-pin PC100 with ECC	20059
FLD-16 ²⁾	16 MByte FLASH-Disk	19643
FLD-48 ²⁾	48 MByte FLASH-Disk	19646
FLD-96 ²⁾	96 MByte FLASH-Disk	22146
CP-RIO6-02	Rear I/O module for CP603	20227
CP-HD-6X0	Notebook-style 2.5" ≥ 6.0 GByte Hard-Disk for board mounting	20602
CP-FLD-6X0 ²⁾	IDE FLASH Disk Module, 20 Mbyte	20681
CP-ADAP-PS2-YCABLE	Ycable, PS/2 mouse/keyboard adapter	18803
CP-ADAP-FD	Floppy adapter for connection to standard floppy interface	20536
KIT-CP603	Drivers and Windows NT setup utilities with user's manual documentation in PDF format on 3.5" floppy disk	22118
VXW-BSP-CP603	VxWorks Board Support Package for use with Tornado on CD ROM	21883

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Note: All 370-pin based Celeron™ and Pentium®III processors are supported. Processors, other than the ones listed may be available on request.

¹⁾ The CP603 must be ordered with one of the processor options and DIMM-memory.

²⁾ Higher FLASH-Disks capacity also available on request.

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