

# WORLD

Embedded PCs for Life Automation

ADVANTECH [www.advantech.com/epc](http://www.advantech.com/epc) E-mail: [EPC@advantech.com.tw](mailto:EPC@advantech.com.tw) Tel: 1-886-2-2218-4567 Fax: 886-2-2218-3875

## New Full-Function PC/104 CPU Module Gives Full-size Performance



PCM-3346 PC/104 CPU Module

Advantech's new PCM-3346 has all the functions and power of a standard, full-size PC applied into the form factor of an industry-standard PC/104 module. In the tradition of expanding its product line to meet customer needs, Advantech took its industry-proven PCM-3345 486-based PC/104 CPU module and added an on-board LCD controller (C&T 69000) as well as 10/100Base-T Ethernet. The on-board LCD controller supports 36-bit video and

has 2 MB display memory on chip. These additional features give our customers a small, complete and cost effective board solution that allows a myriad of possible embedded applications which require network or LCD panel support in a limited space application. The PC/104 form factor also helps customers avoid some mechanical problems in their system assembling that they might face using larger form factor SBCs.

See PCM-3346 on page 2

### WHAT'S INSIDE

- n New Products (p. 2-4)
- n Product Updates (p. 5)
- n Technology Section (p. 6)
- n Application Story (p. 7)
- n Marketing Kaleidoscope (p. 8)

Comdex Fall '99

Las Vegas, Nevada

Nov. 15th-19th

Booth No. S4347

Powered by  
Microsoft®  
Windows®CE

Intel®  
Applied  
Computing  
Platform  
Provider

- Pentium is a registered trademark of Intel Corporation
- Celeron is a trademark of Intel Corporation
- Other brands and names are the property of their respective owners



## New Product

*PCM-3346 from page 1*

### Small Size, Big on Features

The PCM-3346 is the PCM-3345's big brother. With dimensions of only (90 x 96 mm), it is one of the smallest and most complete PC/104 SBCs on the market. Both models include a 486-class embedded PC and slots for both SO DIMM and CompactFlash cards. Both boards also support VGA with up to 4 MB shared memory. The PCM-3346 supports ATX power (allowing for remote power-on) and watchdog timer protection. The number of ports or connectors is not limited by the small size either. On board are two serial ports and one parallel port, one FDD connector and one EIDE connector. This allows for as much peripheral expansion as most larger size SBCs.

### A Solid Foundation for Expansion

Although the PCM-3346 is small, the PC/104 industry standard ensures module updates that will increase the number of useful applications available to the PCM-3346. For example, Advantech offers a LVDS transmitting and receiving module (PCM-3540T/R) for ranges of up to 12 meters. Increasing the range of LCD displays from 30 cm to 12 meters opens up a whole new range of application possibilities. In the future we can only expect more features and add-ons to become available for the PC/104 form factor.



*PCM-3540 T/R LVDS Transmitter & Receiver*

### Advantech Welcomes your Inquiries

If interested in purchasing or finding out more information about the PCM-3346 or any other Advantech products, please contact Advantech or check out our web site at <http://www.advantech.com/epc> for more detailed specifications and price information.

## Total Solution for Multimedia Embedded Applications

The Advantech PCM-5864 is an all-in-one Pentium® processor-based single board Biscuit PC with various multimedia functions such as video-in, TV-out and AC97 3D surround audio. Its LVDS and 36-bit LCD make it an extremely user-friendly human-machine interface.



*PCM-5864 True Multimedia SBC*

### Features and Specifications

The PCM-5864 supports an Intel Pentium® MMX™ up to 233 MHz or AMD K6-2 up to 333 MHz. Its PCI 32-bit full-duplex, integrated 3D surround audio complies with the AC97 standard, while video capture supports RCA and S-Video connectors via an optional cable kit. Its video-out function generates both NTSC and PAL formats. An on-board slot accommodates up to a 40 MB CompactFlash Card. It also has an infrared port which supports FIR data transfer of up to 4 Mbps as well as a PCI 100/10Mbps Ethernet controller. The on-board PC-104 expansion slot accommodates communication modules, such as modems, ISDN, etc. The PCM-5864 provides audio, video-in and TV-out capabilities along with network functions, all on a single computer board the size of a 5.25" floppy drive.

### Applications

The PCM-5864's features make it an ideal system for various video applications where space is a premium. Public Web payphones, video phones, fast Ethernet phone systems for building security systems, ATMs and VR arcade machines are just a few examples. For pricing and order information call an Advantech representative or check out our web site at <http://www.advantech.com/epc>.



### NLX Half-Size Pentium® MMX™ CPU Card Offers ISA/PCI Solution

Advantech is now selling its PCI solution for half-size CPU cards which support both PCI and ISA bus cards. The PCN-6351 is an NLX form factor-based Pentium® MMX™ CPU card with on-board features which include Ethernet, VGA/LCD and an SSD socket. The NLX form factor is an alliance-supported mother board standard which supports both PCI and ISA cards. This provides systems with the option to upgrade to PCI bus devices while maintaining previous ISA investment.



*PCN-6351 NLX Half-size Pentium® MMX™ CPU Card*

#### PCN-6351 Meeting the Needs of Customers

Like the consumer field, the industrial field is moving from using ISA-bus cards to using PCI-bus cards. This is happening because PCI has higher performance of 32-bits at 33 MHz vs. ISA's 8/16-bits at 8 MHz, a smaller slot size than ISA and is now nearly the same price as ISA. However, the ISA-to-PCI transition phase will last several years, the NLX form factor boards can preserve previous ISA investments and also allow the use of new system products that have been made possible with PCI bus implementation. Also, since the NLX alliance is a standard supported by Intel and IBM, the assurance of continued support is there. The PCN-6351 NLX Half-size Pentium® MMX™-based CPU card is another way Advantech provides cost-effective, practical solutions to their customers' needs.

#### PCN-6351 Product Features

The PCN-6351 is a powerful CPU card fit for today's demanding Industrial environments. The range of features include Pentium MMX processors up to 233

MHz; AMD K5, K6, K6-2 CPUs up to 300 MHz; 36 bit VGA/LCD, LVDS, 10/100Base-T Ethernet, USB interface and one DIMM socket that supports up to a maximum of 128 MB of EDO or SDRAM. There is also a socket for a CompactFlash card of up to 40 MB. The PCN-6351 is also equipped with a watchdog timer, SSD and PC/104 socket which are important for embedded and stand-alone applications. The built-in LVDS allows up to 12 m of distance between LCD display panels and the LVDS also offers greatly reduced EMI interference. This flexibility is important when considering innovative limited-space application designs.

#### Advantech Provides Complete NLX Solutions

Advantech can provide complete system solutions for NLX applications. Other Advantech products that are NLX based include the PCA-6106NP3, a 6-slot backplane with 1 NLX, 3 PCI and 2 ISA slots. There is also the PCA-6104NP2, a 4-slot backplane with 1 NLX, 2 PCI and 1 ISA slot. Other products include the IPC-6806SNP3 NLX chassis with PCA-6106NP3 backplane and 100 Watt power unit and the IPC-644NP2-80 which is a NLX chassis with PCA-6104NP2



*PCN-6351 & PCA-6104NP2*

backplane and 80 Watt power unit. So whether you need a complete system engineered to seamlessly integrate the PCN-6351 NLX CPU card, backplane and chassis together as a single unit, or layout your own PCN-6351 centered application, Advantech gives you choices.

#### Call Advantech Today

If you are interested in the PCN-6351 CPU card or NLX system solution, please call your nearest Advantech sales location or check out our web site at <http://www.advantech.com/epc> for more information.



### New PCI-6771 Slot PC Provides High Speed PCI Bus and More

Advantech is constantly monitoring the industry transition from ISA bus products to PCI based products. The introduction of the PCI-6771 is Advantech's latest effort to provide new PCI based solutions to their customers. This SBC is based solely on the PCI bus standard. Advantech offers a combination PCI/ISA SBC solution in its NLX line of products featuring the PCN-6351 SBC and associated backplanes and chassis for a complete system solution.

Advantech will continue to expand its "PCI only" solutions and effectively compete in the SBC market by responding to our customers' changing needs and offering well designed and engineered PCI products at competitive prices. The PCI-6771 represents this ongoing effort.



*PCI-6771 PCI Half-size CPU Card*

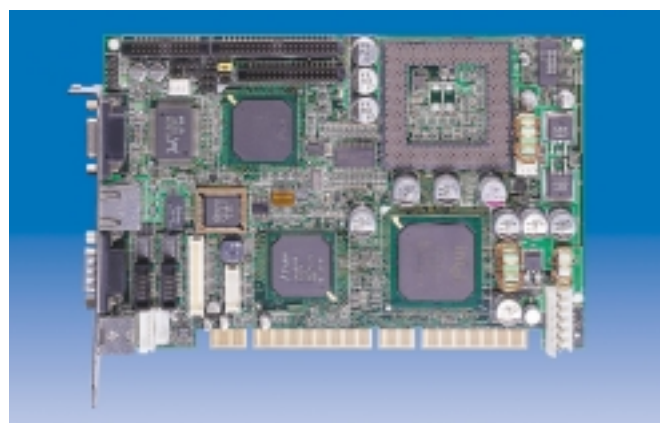
### New Product, Better Performance, Same Reliability

The advantage of using the PCI bus standard is the higher performance of 32-bits at 33 MHz vs. the ISA buses' 8/16-bits at 8 MHz. This increased performance makes PCI cards especially attractive for communication applications. PCI bus cards also provide for easy expansion. For example, adding another Ethernet port could easily be done using a PCI bus card. Also, some high speed add-on communication cards need a PCI interface. So, half-size PCI cards like the PCI-6771 are commonly used in communication related applications. However, nothing is sacrificed for the sake of performance, at the heart of the PCI-6771 is the Intel 440BX System Chipset.

This is the most popular, mature, tried and proven chipset in the industry. Intel also maintains a 5-year supply guarantee for this chipset. All these factors give the new PCI-6771 a rock-solid platform that is critical to any industrial control product. Advantech emphasizes reliability and dependability with every new or existing product they manufacture.

### PCI-6771 Specifications

The PCI-6771 supports Socket 370 for Intel® Celeron™ processors. Celeron™ 300A/333/350/400/433MHz are all supported. There is a Trident Cyber 9525DVD controller that supports up to 1024x 768 resolution as well as 36 bit XGA TFT LCD panels. There are 2 serial ports, one RS-232 and one RS-232/422/485. The PCI-6771's USB interface is USB rev.1.0 compliant. There is a 10/100 Mbps Ethernet interface as well as fast IrDA compliant infrared support. The PCI IDE interface has one enhanced IDE interface that supports 2 IDE devices. Ultra DMA 33 mode up to 33 MB/sec and PIO mode 3,4 with Bus Mastering up to 14 MB/sec. Advanced Notebook level power management is also supported.



*PCI-6771*

### Check with Advantech for your PCI Needs

Advantech is always expanding their PCI Bus product line by introducing new products like the PCI-6771. To purchase this product or inquire about any other PCI solutions, call Advantech or visit Advantech's Embedded PCs' web site at <http://www.advantech.com/epc> for more information.

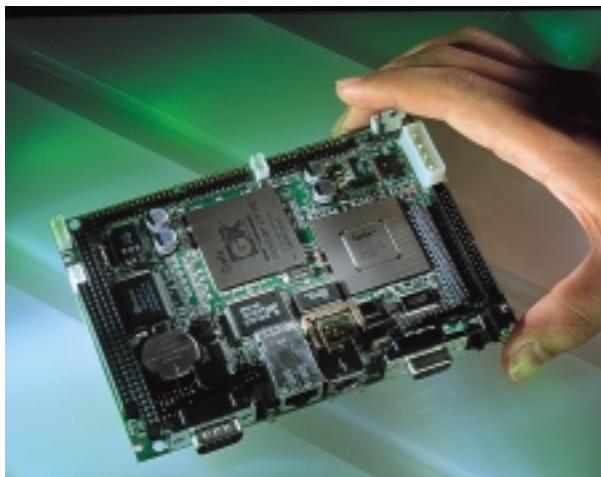


### Power Conscious PCM-5820E Shows Efficiency

Advantech's new PCM-5820E is an "Enhanced" version of the original PCM-5820 introduced earlier this year. Gains made in power consumption and operating temperature make this Embedded palm-size SBC even more attractive for users wanting a 586-level processor-based multimedia solution for space critical applications.

### Still a Worry-free, Fan-less 586-level SBC

The PCM-5820E is a 3.5" HDD-size SBC with an on-board, embedded 586-level low power NS GXM-200 processor. On-board features include VGA/LCD plus LVDS which greatly extends the range of LCD panel FBP displays.



**PCM-5820E**

Other on-board features include 16-bit Sound Blaster-compatible Audio, a socket for CompactFlash card, 32 MB of system memory and 100Base-T Ethernet. This board allows system engineers to upgrade their 486-based systems to 586-level without as many worries because a 586-level NS GXM-200 is mounted directly on board. Mounting CPUs directly on board eases the configuration and installation process because there is no need to set any jumpers for speed or voltage differences between various CPUs.

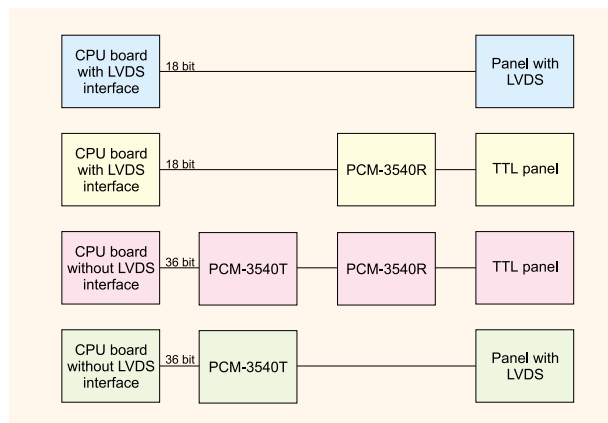
### Modifications Expand Range of Applications

Advantech engineers were able to refine the base PCM-5820's design to reduce power consumption by about 51%. They were also able to apply a new switching Power Supply and a low power GXM-200/

2.2V Processor, which reduced operating temperature by as much as 15°C. Combine these factors with the LVDS's extended LCD panel distance capability and the number of potential application possibilities greatly increase.

### LVDS Extends Capabilities

Traditional LCD configurations are limited in range from 30 to 50 cm. They are also limited in the quality and speed of the transmitted data. By employing LVDS, LCDs can now be placed up to 12 meters away from the computer. Shown below are the various ways the PCM-5820E implements LVDS with combinations of on-board and external (add-on) transmitters and receivers. Advantech's transmitter-cable-receiver combinations exceed CE and FCC Class A EMI standards. The PCM-5820E supports either 18-bit or 36-bit resolutions up to 1024 x 768 TFT LCD. This is yet another way Advantech provides flexible solutions that offer implementation options to our customers during their system hardware updates.



**Advantech PCM-5820 CPU Board LVDS Configurations**

### "E" stands for "Enhanced" in the PCM-5820E

The Advantech Engineers think the "E" stands for "Engineered" because they are always improving and re-engineering new and existing Advantech products. This allows us to always provide our customers with state-of-the-art technology. The PCM-5820E is an example of this. Call us for more information on this and other products Advantech has to offer. You can also visit our web site at <http://www.advantech.com/epc>.

## LVDS and Panel Link

Industrial end users, system designers and the Consumer market in general are focused on LVDS and PanelLink standards and the benefits they can provide. These standards have already been applied to many Advantech products such as Advantech's PCM-5820, PCM-5864, POS-562 and the PCM-9570 (optional). These models demonstrate how digital panel interfaces can have a dramatic affect on the data exchange capability and distance allowed between PC board and FPD display panels. Both these standards are electrical interfaces that can quickly transfer a large amount of data over long cable lengths, i.e. from a Graphics card to a display panel.

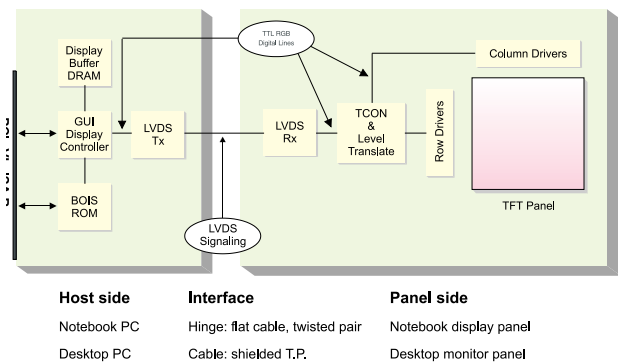
### LVDS Characteristics

When you mention the impressive data rate of 400 Mbps at 15 meters for LVDS, you immediately realize how significant the differences are between analog and digital interfaces. There are several other factors other than significantly increased data transfer rate and image quality that make LVDS (Low-Voltage Differential Signaling) very attractive to industrial users. One is that LVDS drivers and receivers maintain excellent signal levels and performance while operating on supply voltages as low as 2 V. This low voltage allows LVDSs to operate independently from the main power supply voltage. Another factor is that LVDS drivers and receivers have a low swing voltage. This voltage is typically around 345 mV. This allows LVDS devices to achieve high speeds while using relatively little power. This low differential swing voltage together with self-canceling EMI, reduces EMI problems significantly. This is especially important in space-critical applications. This is also why LVDS has already been widely used in Notebook computer panel connections.

### PanelLink Digital Panel Interface Technology

PanelLink technology was developed by Silicon Image of Cupertino, California. They provide transmitter and receiver chips that transfer data using TMDS (Transition Minimized Differential Signaling) which is a standard backed by VESA (Video Electronics Standards Association) for both its Flat Panel Display-2 standard for notebook computers and its Plug and

Display standard for the desktop monitor digital interface. PanelLink proponents suggest that the PanelLink solution is simpler in that their connection depends on fewer pairs of wires than the LVDS connection. PanelLink connections can also be run over standard twisted pairs over distances up to ten meters. One important note is that the Digital Flat Panel (DFP) Working Group and the Digital Display Working Group (DDWG) have chosen TMDS and PanelLink as their Digital Visual Interface (DVI) standard. DDWG is an industry cooperative led by Silicon Image, Intel, Compaq, Fujitsu, Hewlett-Packard, IBM and NEC.



**FPD Application Block Diagram**

### All-Digital FPD Interface Requirements

No matter which digital standard an end user uses for their industrial applications, it will have to provide the following criteria. Be compatible so that system and display products from different suppliers can be made available in an open market. Become a standard for the electronics and PC industry. Be able to transmit data over standard twisted pair cables as well as fiber optic. Maintain a low bit error rate for high quality image while operating at a very low power level. Be scalable.

### The Future is Now

With flat panel displays already a common part of our everyday lives at work, home and industrial/commercial settings, deciding on a standard is a monumental decision that will affect all our lives. Engineers will have to champion their cause by applying both of these digital panel technologies to many practical products. Thus enabling the end user, whether it be in an industrial setting or a consumer setting, to benefit from both of these technologies.

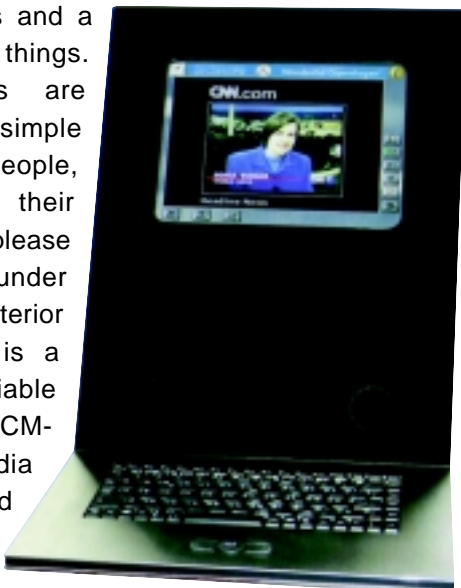


## Sleek Info-Kiosk Touches the Future

Advantech's PCM-5862 Pentium® based- processor biscuit PC board is the heart and brains of this well-designed Info-Kiosk. Advantech is doing its part to bring state-of-the-art communication technology to the public.

### Stylish Info-Kiosk State of the Art

An info-kiosk is a way to give the public access to the internet and on-line commerce. These particular kiosks have been used in European public facilities such as train stations, airports and other locations such as hotel lobbies. They are being used by people to buy theatre, bus, plane and movie tickets, check schedules, make reservations, read e-mail, see advertisements and a host of other things. These kiosks are providing a simple interface to people, no matter their location. But please don't forget, under the elegant exterior of the kiosk is a tough and reliable Advantech PCM-5862 multimedia biscuit PC board that is able to withstand the rigors of 24 hour daily nonstop use.



### Meeting Our Customers' Needs

The European company that designed and manufactured the kiosk required a complete board solution that would integrate well into the sleek sculpture-like shape of the kiosk. They required full multimedia capabilities, Pentium® processor -level speed and capability, full internet and network functionality, integrated touchscreen and keypad ability as well as power management features. All these functions had to be integrated into a very small confined space. Advantech's PCM-5862 offered the functions and flexibility they were looking for.

## Advantech's PCM-5862 Answers the Call

The PCM-5862 is a solution that can be applied to today's applications and tomorrow's dreams. The PCM-5862 supports MMX™ Pentium® processors as well as standard Intel Pentium® processors up to 200 MHz. The board features powerful communication capabilities. It has 4 serial ports, 2 USB interfaces and a Novell NE2000 PCI Ethernet interface capable of 10 Mbit/sec transmission. The board follows the 5.25" form factor, with dimensions of 203 x 146 mm. A built-in sound chip makes this board perfect for multimedia applications where space is critical. The on-board PCI slot and PC/104 interface accommodate feature expansion. There is also an on-board VGA controller with 1 (expandable to 2) MB video memory. It supports LCD resolutions of up to 1024 x 768 at 256 colors. Additional features include an enhanced IDE interface, one multimode parallel port, one floppy drive controller and a keyboard/PS/2 mouse interface. The board also features power management functions and complies with the "Green Function" standard. The computer's power saving modes can be set to Doze, Standby or Suspend Mode. All these features make the PCM-5862 a complete multimedia-ready computer system ideal for limited space applications.



PCM-5862

### Why Advantech?

The Advantech team was able to provide the hardware as well as advice to help make this Kiosk a beautiful and yet functional machine. Advantech prides itself in its ability to help companies apply their products and designs in an endless variety of ways. Call Advantech and let us help you make your embedded PC projects a reality. Or go to our web site at <http://www.advantech.com/epc>



## Cyrix Business Remains Strong

National Semiconductor Corporation announced on August 3<sup>rd</sup>, 1999, it signed a definite agreement for VIA Technologies, Inc. to purchase the assets of the Cyrix stand-alone PC processor business. Advantech would like to clarify this announcement for our customers and emphasize that these changes do not apply to the Cyrix products we buy from National Semiconductor. Let us quote a statement made by Wen-Shone Shiau, PC Business Director, Asia Pacific, National Semiconductor Taiwan Country Manager. In a letter to National Semiconductor Customers, Mr. Shiau states that: "Cyrix's integrated processor cores and peripherals are not part of the stand-alone processor business and hence will not be sold. On the contrary, we will continue to invest heavily in this area, in support of the needs of the information appliance market, using the MediaGX integrated processor and our upcoming MediaPC 'IA-on-a-chip'".

Since National Semiconductor will retain the integrated MediaGX™ processor which forms the core of National's new Geode™ Information Appliance market solution, this will not affect Advantech's use of these products.

## Keeping our Customers Informed

Keeping our customers informed helps Advantech customers make better business decisions and develops the long term relationships that benefit all parties. Advantech is always there for you. Call us or e-mail us anytime at [epc@advantech.com.tw](mailto:epc@advantech.com.tw) to find out more.



Low Power Consumption

## ESC/West Showcases Life Automation Products

The **Embedded System Conference/West** will be held from September 28<sup>th</sup> - 30<sup>th</sup> in San Jose, California. The Embedded Computing Group of Advantech will be in **Booth number 2007** with our displays based on a *Life Automation with PCs* theme. This will be divided into four sub-themes with live demos of Embedded PC products being run continuously. These demos will highlight individual products' main selling points and should make for a lively, yet informative exhibit.

## New Product Interaction

One Sub-theme will be *Lower Power Solution* products. This will be represented by the PCM-5820E (report on page 5) and the PCA-6751. Both these products can also operate in higher than average temperature environments (60°) without a fan and still maintain their levels of efficiency. Another sub-theme will be *Display Solutions*. Representing this will be the PCM-9570 displaying its 3D prowess as well as the PCM-5864 (page 2) demonstrating its video capture (video-in, TV-out) capabilities. The PCM-3346 (page 1) and CPC-2245 both represent the *Compact & Complete* sub-theme that focuses on small size with Full-size PC functions. The last theme is the *PCI Solution* that includes the PCN-6351 (page 3) and PCI-6771 (page 4). These PCI products will demonstrate the reasons why PCI is the future of the Embedded PC industry.



Full-PC Performance on PC/104