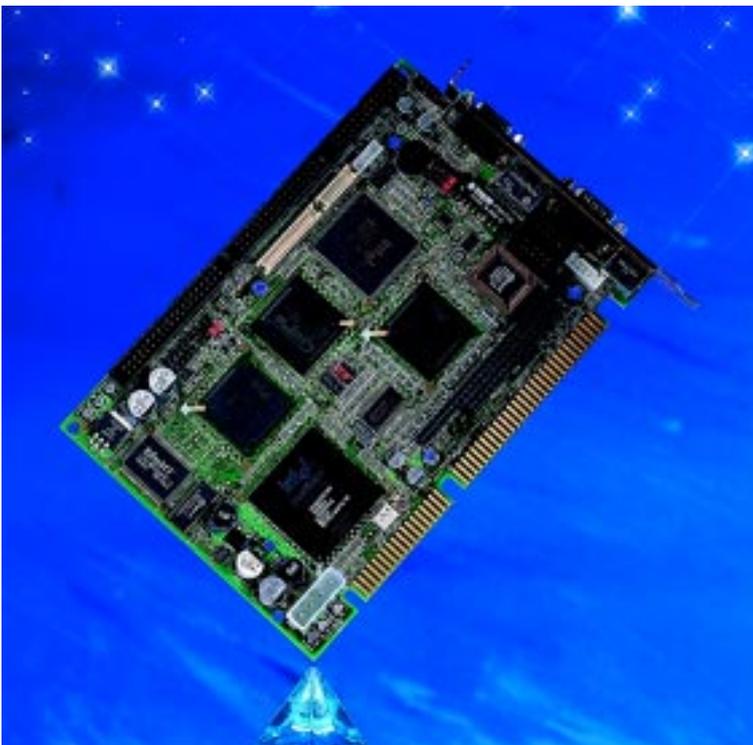


WORLD

Embedded PCs for Life Automation

ADVANTECH www.advantech.com/epc E-mail:EPC@advantech.com.tw Tel:1-886-2-2218-4567 Fax:886-2-2218-3875

ULTRA LOW-POWER CONSUMPTION WITH FANLESS OPERATION



PCA-6751 Half-size Low-power CPU Card with Pentium® processor

Advantech's new half-size CPU card, the PCA-6751, is an extremely low power Pentium® processor-based card which is ideal for embedded applications. This feature allows the PCA-6751 to operate in high-temperature environments without a fan. Fanless operation

completely eliminates the risk of costly and bothersome replacement of broken or malfunctioning fans during the round-the-clock operation of your embedded application.

Truly Low-power Operation

The PCA-6751 is sold in two options: 166 MHz and 266 MHz. Operating with 64 MB of DRAM, this board only consumes 1.49 A @ 5 V with a 166 MHz chip in suspend mode. In standard mode, it

still only uses 2.08 A @ 5 V – much lower than the average Pentium® processor 166 MHz card or board – and, thus produces less heat in the process, obviating the need for a high fault-risk fan. At 266 MHz, this card only uses 1.67 A @ 5 V in suspend mode and

See PCA-6751 on page 2

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2.75 A @ 5 V in standard mode – still quite low in comparison. The following table clearly illustrates this information:

	166 MHz (w/ 64 MB DRAM)	266 MHz (w/ 64 MB DRAM)
Standard Mode	2.08 A	2.75 A
Suspend Mode	1.49 A	1.67 A

Intel® Platform Provider

Besides offering such a low-power embedded solution, the PCA-6751 can also claim to be an important product in the Intel Platform Provider program. This program includes products which sport all-Intel chipsets, the supply of which has been guaranteed by Intel for several years (typically 5 to 7 years). This means that the customer need not worry that their current product will be suddenly phased out due to lack of supply. Intel also pledges to provide technical support for its full set of chips and components. Besides the Intel Pentium® 166 or 266 MHz processor, the PCA-6751 also utilizes Intel's 430TX chipset, Intel's 82558 100Base-T Ethernet chip, C&T (one of Intel's subsidiaries) 69000 VGA/LCD chip with VGA and 36-bit LCD output, and CompactFlash SSD.

Windows® CE and Hot Environments – No Problem

This card supports an Advantech-customized version of Windows® CE – a small footprint, easily programmable OS ideal for embedded applications. Also, this card functions well without a fan at temperatures up to 60°C.

Solution on Display

This low-powered solution was recently on display at CeBit '99 in Hannover, Germany. It featured a 166 MHz Pentium® processor and 64 MB of DRAM. It was also hooked up directly to an amperemeter to demonstrate its low-power credentials, to the great interest of passersby and visitors. It will also be on display at Computex '99 in Taipei, Taiwan from June 1-5 (see page 8).

The Card for You

If a low-power, long-term supply guaranteed solution is what you're looking for, then call Advantech or check out our web site at <http://www.advantech.com/epc> for more information.

DC-DC Power Supply for MicroBox Chassis Offers Complete Solution

Advantech has recently added yet another option for the seekers of total embedded PC solutions: the PS-25D. This new product is a 25 W DC to DC power supply built especially for Advantech's MBPC-200 MicroBox 3.5" Biscuit PC Chassis and Advantech's series of 386, 486, and Pentium® processor-based 3.5" HDD-size Biscuit PC.



PS-25D 25 W DC-DC Power Supply

Specifications

This power supply is able to convert a standard industrial environment DC voltage of between 9 and 36 volts (V_{in}) into a DC voltage (V_{out}) which can be used by a PC-based device. Thus, common factory floor voltages of 12 or 24 volts can be used as inputs, whereas the output would be 5 V at 4 A and 12 V at 0.5 A. This amount of power is sufficient for 386 and 486-based SBCs, and Pentium® processor-based ones as well, as long as the number and power of peripherals are limited. For example, the PCM-5820, a Pentium® processor-based SBC, uses 2.9 A of power at 5 V with processor, 64 MB SO DIMM, and a 40 MB CompactFlash card in a typical environment.

A Complete Solution

For a complete embedded PC solution, one can use the PS-25D power supply in conjunction with the MBPC-200 MicroBox chassis and a 386-based SBC (PCM-3860/64), 486-based SBC (PCM-4823/25) or Pentium® processor-based SBC (PCM-5820). If you require an AC to DC power supply, you can consider Advantech's PS-50A 50 W AC-DC power supply. Beyond this basic system, Advantech also offers myriad expansion options with its SSDs and PC/104 modules. Contact Advantech today if you are interested.



New Tiny PC/104 SBC Defies Size Limits for Embedded Applications

At only the size of a industry-standard PC/104 module, Advantech's new PCM-3345 486-based SBC is a fully-featured, industrial-strength SBC fit for the most space critical embedded applications one can think of. Its small size gives it a solid structure, while its PC/104 form factor is small, simple and reliable. It is also easy to expand and rugged enough to function well in harsh environments.



PCM-3345 486 PC/104 CPU Module

Small, but Packed with Features

Even though this card measures in at only 96 x 90 mm, it still features all of the standard capabilities of its much larger SBC card and board competitors. An on-board 486-level CPU simplifies configuration (no need to set voltage or speed jumpers). Also on board is a VGA chip which utilizes 64-bit shared memory, both IDE and FDD connectors, and two RS-232 ports. Easy on-board expansion is also possible with one EDO SO DIMM slot (16 or 32 MB option), a CompactFlash disk socket (4 to 40 MB), and, of course, PC/104 modules. A customized Windows CE version of this board is also available, which includes the board and a 10 MB CompactFlash card preloaded with Windows CE programed with all of the necessary hardware drivers needed for this board, which greatly simplifies the systems integrators job.

Simple Configuration

Besides having a nearly pain-free Windows CE solution option, the PCM-3345 boasts a jumper-free configuration (since the CPU is on-board and the voltage and speed need not be selected or adjusted).

Also, with the standard package, all basic cabling is included, thus, simplifying and hastening the systems integrating process. Slots for SO DIMM and CompactFlash also conserve precious space. Moreover, the CompactFlash interface frees the CPU from the software emulation task of DiskOnChip and further increases the PCM-3345's performance, which might be critical for a 486-level 66 MHz CPU. Also space conscious are connectors for industry-standard PC/104 expansion modules. Instead of having to use a backplane or space-wasting expansion cards, one can simply "stack" whatever PC/104 expansion module they desire onto the PCM-3345, keeping space use to a minimum, and opening up a whole new range of application possibilities.

Application Possibilities

The versatility, size and cost of the PCM-3345 allow for space-critical and/or harsh environment applications not even considered possible in the recent past. Additionally, this board can function well without a fan in environments of up to 70°C, opening up even more embedded application possibilities. Applications in vehicles or high vibration/shock environments are well suited to the PCM-3345, as are rugged, hand-held or mobile computing and monitoring devices. Other application possibilities include small business demonstration or exhibition devices, and "hidden" monitoring or data sampling and/or routing devices, among a host of others.



A Small yet Rugged and Reliable Embedded Solution

If Interested, Call Advantech Today

If a complete-feature, PC/104 form-factor-sized SBC solution is what you're looking for, then call Advantech or check out our web site at <http://www.advantech.com/epc> for more product and ordering information.



Riser Cards Are Useful in Space-critical Applications

Advantech offers a large selection of riser cards for both full-size Biscuit PCs and POS control boards. They come in a wide-range of sizes, from one slot to three, and types, from PCI- to ISA-bus. The advantages of using riser cards are 1) multiplying the number of PCI or ISA expansion slots available (possibly saving on-board space in the process), and 2) saving vertical space (above the board) by allowing one to add expansion cards parallel to the main board, verses perpendicular to it).



Riser Cards from Advantech

Riser Cards for Biscuit PCs

Two PCI-slot riser cards are available for Advantech's Pentium® processor-based full-size Biscuit PCs (PCM-5862, PCM-5862E, and PCM-5864). The PCM-110 offers one PCI slot (which mainly saves vertical space), and the PCM-120 offers two PCI slots (which saves vertical space as well as provides additional expansion possibilities). Both allow enough space for the processor, fan, and heatsink on the main board.

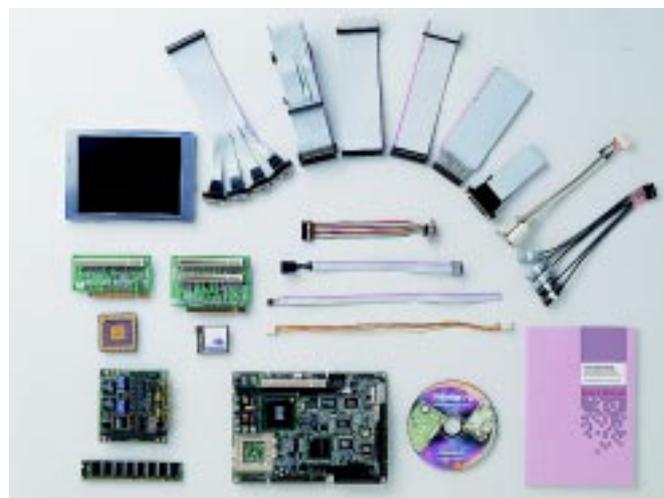
Riser Cards for POS Control Boards

There are three riser cards for Advantech's POS control boards: the POS-102, POS-103 and POS-104. They can be used in various combinations with Advantech's POS control boards (POS-460, POS-560, POS-562) and POS chassis (POS-808 and POS-810). The POS-102 is a 2-slot PCI/ISA riser card that fits in the POS-808 POS chassis and is plugged into a POS-560 or POS-562 Pentium® processor-based POS control board. The POS-103 is a 3-slot ISA riser card, also built for the POS-808 POS chassis, but, unlike

the POS-102, is plugged into a POS-460 486-level POS control board. The third, and most recent addition to the POS riser card series, is the POS-104. This is a 2-slot ISA riser card built to be used with the POS-810 POS chassis and the POS-460 486-based POS control board. These riser cards provide maximum expansion options within a limited space, making them ideal for high-powered and/or space-critical POS applications.

Total Solution Provider

Not only does Advantech provide riser cards for its full-size Biscuit PCs and POS control boards, but also provides the chassis (MBPC-200, MBPC-201, MBPC-300) and power supplies (PS-50A 50 W AC-DC power supply, PS-25D 25 W DC-DC power supply), cabling, SSD and PC/104 expansion modules. On the software and customization side, Advantech provides Windows CE solutions for over a dozen of its CPU cards and boards, BIOS customization, and LCD support to its various customers. In addition, Advantech has a very strong tradition of OEM/ODM experience, modifying such things as jumpers, connectors, BIOS, and chassis, among other things. If you believe that Advantech has a product which meets your application needs, or can help modify one of these products for your particular task, then please feel free to contact Advantech by phone, fax or email, or visit Advantech's Internet web site at www.advantech.com/epc for the most up-to-date product information and news. If you so decide, you could even place an order on our new online store, Advantech-Direct.



Total Solutions at Advantech



Reliable 486-based POS Control Board Revamped

Advantech's popular and long-lasting 486-based POS control board, the POS-460, has recently been revamped, from version A2 to version B1. Several small but important changes have been made. One result is that there is much better keyboard functionality at high temperatures. Another design change was prompted by the phasing out of the DIP package cache memory chip. To replace it, Advantech chose an SOJ (surface mount) chip which features 128 KB or optional 512 KB of cache memory. The third significant modification made was the substitution of the C&T 65545 VGA/LCD controller chip with the newer and more stable C&T 65550. This new chip supports even more types of LCDs and higher resolutions (800 x 600).



POS-460 Rev.B1 486-based POS Control Board

An Economical, All-in-one Solution

With these minor modifications, the POS-460 is now even more able to meet your application demands. It supports 486 DX4 and DX5 CPUs up to 133 MHz, on-board VGA/LCD, SSDs up to 144 MB (DOC 2000), 4 serial ports, 2 parallel ports, and interfaces for 2 IDE devices and 2 FDDs. For an economical, versatile, all-in-one POS solution, consider Advantech as your first embedded PC solution provider. Visit Advantech's website at <http://www.advantech.com/epc> for additional information or Advantech's on-line store at <http://www.advantech-direct.com> for fast and convenient ordering.

MicroBox Chassis Modified to Accommodate Pentium® SBC

Advantech's super-compact MBPC-200 MicroBox 3.5" Biscuit PC Chassis has been modified to accommodate the new PCM-5820 palm-size Pentium® processor-based SBC with audio, processor, VGA/LCD/LVDS and Fast Ethernet. The external shape and dimensions have remained the same at 44 mm x 166 mm x 113 mm, but changes have been made internally to accommodate all of the features and expansion possibilities of the PCM-5820.



MBPC-200-5820

Internal Alterations

The internal mount for the board has been moved up slightly to make room for the SO DIMM and CompactFlash slots on the underside of the board. Space for one PC/104 expansion module exists within the chassis, while attachment hooks are located on the top of the chassis for one to mount a 2.5" HDD if so desired. There are hooks on the bottom of the MBPC-200 to attach a power supply. Two power supply options for this product are currently available: the PS-25D, which is a 25 W DC-DC power supply (see previous article), and the PS-50A, which is a 50 W AC-DC power supply.

Order Today!

Besides this powerful and compact complete solution, Advantech also offers a Windows® CE solution preloaded and configured for the PCM-5820 on a 10 MB CompactFlash card (sold only in combination with the board). Call Advantech, your complete embedded solution provider, today for more detailed information on this or other solutions.



How to Cut Product Costs 40% with QNX OS and Advantech Embedded Boards

Building Embedded Products at Lower Cost

There are many disadvantages to products based on traditional desktop PC's and desktop operating systems. The hardware needed for desktop operating systems is much larger and more expensive. You will usually need a hard disk for common desktop operating systems and even Linux, but unfortunately, a hard disk is not a reliable choice for most products.

And of course the usual desktop operating system is not known for reliability. You can't sell an end product which often requires re-installing software to correct crashes or problems. Variants of desktop operating systems are not 100% compatible anyway, and usually require a lot of development effort as well. In addition, they usually are not a true real time operating system, and so their performance and reliability are similar to desktop systems. The trend is towards migrating to true proven real time operating systems with real performance. These true real time operating systems have been tested and used for many years in real products. The QNX real time operating system is one of these, with performance about 3 times faster.

How to Cut Product Costs 40% or more -QNX is 3 times faster than desktop OS's

The easy method to cut product costs 40% or more is to use an operating system like QNX OS, which is about 3 times faster than traditional desktop operating systems. QNX OS has a task switch time less than 2 microseconds. That is 100 times faster than typical desktop operating systems and their embedded variants. What it means is that you could use a Pentium® 100 MHz CPU with QNX and likely get the same or faster performance as using a Pentium® 233 MHz CPU with a typical desktop operating system or its variant. A Pentium® 100 is much less cost than a Pentium® 233, but your product can have the same performance, even with 40% or so cost down for the CPU or system.

Embedded Boards Cut Cost Also

By switching to an Advantech all-in-one embedded board, you can also cut a lot of cost from a typical PC based product. An example of an all-in-one embedded board is the new PCM-5820 embedded board from Advantech. It is compact and a single board, but it contains video, audio, and most features needed for an Internet or similar embedded application. QNX OS supports this board, and QNX has drivers for the video chip as well. This board has TV output which is suitable for many consumer-based Internet or related products. QNX OS can also make this board perform about 3 times faster compared to desktop operating systems or their embedded variants.

QNX OS Code Size is about ½ of others, Plus Reliable

-Download a 1 Floppy Demo free

In addition, QNX code size is about ½ of other alternatives. In fact, QNX has a one-floppy full Internet demo which contains an Internet browser, file manager, graphics demo, QNX product web pages, dynamic HTML, JAVA script game, dialer, QNX OS, TCP/IP networking, notepad, video drivers, modem drivers, and an internet server, all in just 1 floppy disk. You can try this amazing demo by downloading it from the Internet URL: WWW.QNX.COM. It boots and runs stand-alone, without need for a hard disk. There are also over 3000 free QNX sources and programs which you can download. The result is that you can make a product based on DiskOnChip or other Flash, without the cost of a hard disk, and makes the product much more reliable. QNX is a true fault tolerant operating system, with memory protection for every driver and application program. That is unique among most real time operating systems. It is one of the reasons why QNX OS is much more reliable than typical desktop systems.

Downsize Costs, Upsize Profits

All of this results in substantial cost savings for embedded products, and more reliable products. The result is that by using Advantech embedded boards with QNX, you can reduce your costs considerably and have the advantage of quality hardware platforms with reliable software. You can save a lot of cost by using all-in-one Advantech embedded boards, and save a lot more cost by using the much faster QNX OS with 3 times more performance compared to other desktop choices. You can likely cut at least 40% from your product CPU & board costs, probably more.

Network Communication for Industrial Control

A famous leading industrial controller company in Japan was attracted to Advantech by its reputation for quality, service, and reliability. It chose to work with Advantech on a successful ODM case recently. The product developed was a network communication solution for industrial control.

A Successful Product

The product itself is a communications controller/data router which links several PLC devices (in the field or factory) to an office intranet. This kind of connection enables individuals in the office to monitor, analyze and control the information from the PLC devices. The heart of this controller is Advantech's PCM-4822 3.5" 486-class SBC, which was ODM customized for this particular company.



A Successful ODM Partner

When needed, Advantech is able to customize almost any of its several hundred products to fit a customer's individual need. Such things as connectors, COM ports, and BIOS, among other things, can be modified. With this service, customers are able to dedicate almost all of their resources to software development. Also, with PC-based boards and cards, software is easy and quick to develop. Upgrades in hardware (in this case, from the PCM-4822 to PCM-4823) are virtually seamless, in terms of software and peripheral support.

Contact Advantech Today

If Advantech's wide range of PC-based products and complete ODM services interest you, feel free to contact Advantech today.

Supermarket Scale

Recently, a German systems integration company has used one of Advantech's 486-based 5.25" CPU boards to build a user-friendly supermarket scale with customizable keypads. The scale itself is used to record and automatically compute the price of such items as fruits, vegetables and meats. Price stickers are then printed and stuck on the sealed bag of goods.

What's Inside

The CPU board that this company chose was Advantech's PCM-4862 486 SBC with VGA/LCD, Ethernet and SSD. Besides supporting processors up to DX4-100 or DX5-133, this board also features onboard VGA for monitors (up to 1024x768 @ 16 colors) and flat panels (up to 640x480 @ 256 colors). Also on-board is a 10Base-T Ethernet connector and support chips, as well as three 32-pin sockets for Flash/EPROM or DiskOnChip® 2000 Flash modules. This entire board is only the size of a 5.25" HDD.



Why Advantech?

Advantech was chosen because of its long-term relationship with this company. Several years ago, Advantech assisted this company with the development of an industrial-environment scale, with great success. Besides the current supermarket scale under production, this company already plans to work with Advantech in its next type and generation of product, most probably using one of Advantech's newer Pentium® processor-based SBC (PCM-5862, PCM-5862E, PCM-5864 or PCM-5820, the last of which is only as big as a 3.5" HDD). If you are interested in one of these or other related products, feel free to visit Advantech's web site at <http://www.advantech.com/epc> or contact your local Advantech representative today.



Ambitious Plans for Computex '99

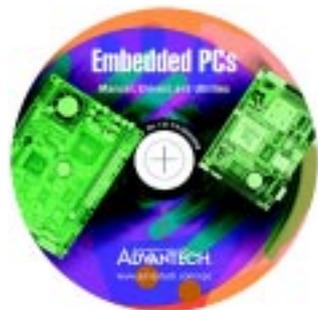
Computex '99 in Taipei, Taiwan is scheduled for June 1-5, 1999, and Advantech's EPC Group has ambitious exhibition and demo plans for it. EPC's theme for the event will be that it is a total solution provider.

The first demo will be that of the PCM-5864 and its video-in/TV-out capabilities. The second will be a working PCA-6751 placed within an oven set at 70°C. This will demonstrate this card's low-power (2.08 A at 166 MHz in standard mode) and tolerance of high-temperature environment attributes. A third demo will showcase MPEG playback and fan-less operation at 60°C of the palm-size Pentium® SBC, the PCM-5820.

A fourth demo will run Windows CE on the PCM-3345 486-based PC/104 module (see story on page 3). Another product to be featured will be the PCM-9570, a Pentium® II processor-based 5.25" HDD-sized SBC installed in a MBPC-300 MicroBox chassis and connected to an LCD with a panel link cable. Yet another demo will feature EPC's NLX backplanes and cards, which offer both PCI and ISA expansion solutions. The final demo will be devoted to POS applications. We welcome you to visit us in June at booth D502, 504 and 506.

All Manuals and Drivers on Two CD-ROMs

A new CD-ROM filled with all of Advantech EPC's current manuals and drivers for its Biscuit and Slot PC products is now available. By putting all of this



EPC's manuals and drivers CD-ROM



EPC promotional CD-ROM

information on one disc, it not only simplifies the production and distribution of product related materials, but it also provides the customer with detailed information helping in possibly choosing a product for their new or next generation application.

EPC Promotional CD-ROM Available Now

A new CD-ROM filled with Advantech Embedded PC Division's marketing material is now available for 3 for US\$1. Each disc contains an EPC video detailing EPC's mission and vision, as well as a complete copy of EPC's Internet website. These discs can be used for mass distribution purposes at trade shows or for mass mailings. Welcome to place your order today!

Embedded PC's Online Store Grand Opening on April 21

Advantech's Embedded PC Division is pleased to announce the grand opening of its Online Store at www.advantech-direct.com. On April 21, 1999, Advantech's Embedded PC Group officially opened an online store featuring products ranging from industrial-quality single board computers, half-size CPU cards, and POS control boards, to PC/104 modules, SSDs, and Windows® CE solutions.

Advantech hopes to be able to simplify and speed-up worldwide sales orders, which in turn will increase customers' shopping convenience. Visit Advantech's Embedded PC On-line Store today at www.advantech-direct.com.



CeBit '99