

WORLD

Embedded PCs for Life Automation

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READY TO RUN WINDOWS® CE APP.S ON ADVANTECH'S PLATFORM



Windows® CE is a powerful, yet compact operating system. That's one of the reasons why it has become such a hot trend in embedded system integration. Because of the Microsoft Windows name, most people expect Windows® CE to be as easy to use and flexible as Windows 95/98 or NT, but this is in fact far from the case. Instead of being able to only focus on programming their applications, users

must first address several issues.

Issues in Working with Windows® CE

One difficulty in dealing with Windows® CE is that it is very hardware dependent. There may often be times when no driver is available for the desired device. Secondly, lack of both familiarity and support for Windows® CE development tools may cause

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This newly upgraded Embedded PC World now includes:

Market-driven information in our new Technology Section

Special topics from embedded PC professionals

In-depth articles submitted by vendors

We wish to transform this into a professional periodical for the embedded PC world. Your comments and suggestions can help improve its content and quality.



Windows® CE from page 1

Model	MBPC-200/4823CE	MBPC-200/4825CE	MBPC-4523CE-12D	MBPC-4525CE-12D	MBPC-6145BCE-12D	MBPC-4862CE-12D
Window® CE ver	V2.1	V2.1	V2.1	V2.1	V2.1	V2.1
On-board Storage	12 MB DOC2000	12 MB DOC2000	12 MB DOC2000	12 MB DOC2000	12 MB DOC2000	12 MB DOC2000
On-board DRAM	16 MB EDO Simm	16 MB EDO Simm	none	none	none	none
Chassis	MBPC-200	MBPC-200	none	none	none	none
VGA/LCD resolution,color	320 X2000 640 X480 800 X 600 1024 X 768 each at 256 color	320 X2000 640 X480 800 X 600 1024 X 768 each at 256 color	320 X2000 640 X480 800 X 600 1024 X 768 each at 256 color	320 X2000 640 X480 800 X 600 1024 X 768 each at 256 color	320 X2000 640 X480 800 X 600 1024 X 768 each at 256 color	320 X2000 640 X480 800 X 600 1024 X 768 each at 256 color
Ethernet	10Base-T	none	10Base-T	none	10Base-T	10Base-T
Audio	none	16-bit	none	16-bit	none	none
HDD support	max. 2 HDDs	max. 2 HDDs	max. 2 HDDs	max. 2 HDDs	max. 2 HDDs	max. 2 HDDs
FDD Support	yes	yes	yes	yes	yes	yes
Parallel port	SRR	SRR	SRR	SRR	SRR	SRR
PS/2	mouse & keyboard	mouse & keyboard	mouse & keyboard	mouse & keyboard	mouse & keyboard	mouse & keyboard
Serial port	2 COM ports	2 COM ports	2 COM ports	2 COM ports	2 COM ports	2 COM ports

Comparison Table of Advantech's Windows® CE-ready Products

difficulties. One must also spend time looking for a suitable hardware platform on which to run Windows® CE. Yet another problem may be that system integrators will be too limited by time and know-how to port Windows® CE. Lastly, another potential issue relates with the need to apply to Microsoft for a license to use and sell Windows® CE within your application.

Advantech's Comprehensive Solution

Advantech has spent a lot of time and research trying to alleviate some of these problems for the customer. To begin with, Advantech offers a full range of compact, yet industrial-strength embedded PC boards and cards (with CPUs ranging from 386-based to Pentium II), which are loaded with such on-board features as Ethernet, VGA/LCD, Audio, SSD sockets, watchdog timers, PC/104 expansion slots, etc. Many of these can also support an on-board SSD which can come pre-loaded with Windows® CE ver.2.1. This specially configured version of Windows® CE supports all of the on-board functions and devices of whichever board or card it's sold with. This completely eliminates the need for the systems integrator to worry about hardware porting or configuration, thus allowing him to concentrate his time and resources

on actual application programming. Lastly, Windows® CE solutions bought from Advantech will all have a Microsoft license sticker on each SSD, thereby negating the need to apply to Microsoft oneself for such a license.

Windows® CE: As Easy As It Should Be

With Advantech, using Windows® CE should be as easy as everyone originally thought it should be. To help you find the solution best suited to your needs, please refer to the product comparison table above. Once you have purchased one of these solutions, all you need to do is load up your application and run it. You no longer need to worry about OS porting or hardware configuration.

More Solutions to Come

Besides the above listed solutions, more will become available in the near future. For the most updated information, please consult our website at www.advantech.com/epc. Also please take note that the above listed standard solutions were prepared to meet popular demand. If you should need further system integration or OEM support, we would be happy to discuss it with you in a case by case manner. Contact your local representative today!



Let the PCN-6351 Be Your PCI-ISA Solution

Due to the great reaction and numerous inquiries generated from our last issue's article on the PCN-6351 NLX Half-size Pentium® MMX-based CPU card (with Ethernet, VGA/LCD and SSD sockets on board), we have decided to try to provide you all with some more updated information.

Advantech's True PCI-ISA Solution

For half-size CPU cards, Advantech employs NLX form factor cards, on which ISA and PCI-buses are



both supported and physically separated. This reduces signal interference more than PISA (another PCI-ISA solution). NLX is also an alliance standard supported by Intel and IBM. Furthermore, supporting both PCI and ISA is better than a PCI-only solution because this ISA-to-PCI transition phase will last several years. NLX form factor boards can also preserve your previous ISA investments and provide one with the upward growth potential made possible with a PCI bus.

Availability

Because of the strong interest in this new half-size card, Advantech will begin to provide pricing information by the end of January. By February, sample orders will be made available for evaluation purposes. For more detailed information on the specifications and peripheral options of this card, please refer to last issue's article, or Advantech's newly redesigned EPC website (www.advantech.com/epc). If you are interested, don't hesitate to contact an Advantech representative today, while supplies last!

All Intel Half-size Pentium® MMX Card Eases Supply Worries

Advantech's new PCA-6751 is a half-size Pentium® MMX CPU card with VGA/LCD, Ethernet and SSD. It is Advantech's first board with a Pentium® MMX CPU mounted directly on the board. It also features an all-Intel chipset combination-the supply, of which, Intel has guaranteed for several years. Besides this, Intel also stands for high quality, reliability and compatibility.

What's On Board?

This new card is definitely feature packed. A low power consumption Intel embedded solution



Pentium® MMX CPU is mounted directly on board, with a frequency choice of either 166 MHz or 266 MHz. Mounting CPUs directly on-board eases the configuration and installation

process because there is no need to set any jumpers. Also on board is an all-Intel set of support chips. These include an Intel 430TX chipset, an Intel 100Base-T Ethernet chip, and a C&T (also Intel Group) VGA/LCD chip with 2 MB video RAM on chip (C&T 69000). This all-Intel embedded solution is important because Intel guarantees the supply of its embedded chips for several years (typically 5 to 7 years). This means that customers need not worry that this product will be suddenly phased out due to lack of supply. In addition, this chip combination, as well as the entire card itself, have been specially designed for embedded use, which means low power consumption. Lastly, this card supports an SSD socket for Compact Flash Disks ranging from 2-40 MB.

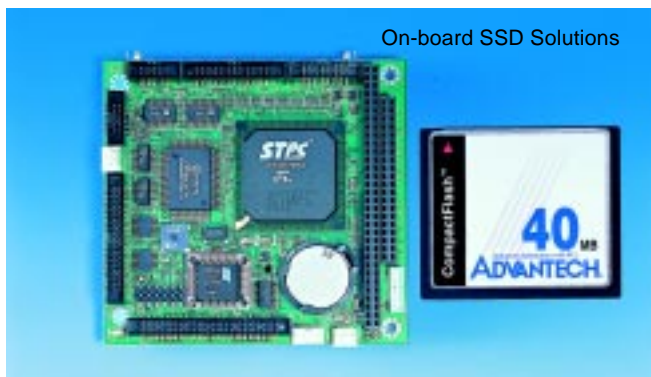
Availability

Pricing information and sample orders should be available by the first quarter of 1999. Call Advantech for more updated information.



Advantech Is Your One-stop, SSD Solution Shop

Advantech has a strong, established line of SSD products to meet your harsh environment and/or embedded needs. Advantech has both on-board and peripheral type SSD solutions. Advantech's on-board solutions include M-Systems' DiskOnChip® 2000 Flash disks and Compact Flash Cards. Advantech's



peripheral solutions include 2.5" and 3.5" HDD-size Flash disk drives, which function exactly like IDE HDDs.

On-board SSD Solutions: DiskOnChip® 2000

If space is extremely critical in your embedded application, then you may need to use one of Advantech's on-board SSD solutions. One such solution is Advantech's PCD-2000 series, which are really DiskOnChip® 2000 Flash Disk modules. These modules range in size from 2 MB all the way to 144 MB. They are well-known in industrial applications and they support a wide range of uses. Their small size (32-pin DIP package), and the fact that most Advantech EPC boards and cards have on-board sockets that are DOC® 2000 ready, make this solution ultra compact.

On-board SSD Solutions: Compact Flash Card

Another on-board solution is a Compact Flash Card. These cards are popularly used in the consumer market as 'film' for digital cameras. They are also reliable, ideal for use in industrial applications. Lastly, and very importantly, they have an IDE interface. This user friendly attribute allows them to be used with any OS that supports standard IDE HDDs.

Windows® CE Support

Currently, Advantech offers Windows® CE solutions on its DiskOnChip® 2000 Flash Disk modules. These solutions are sold for both individual boards and cards, as well as for complete systems (MBPC-200/4823CE and MBPC-200/4825CE). In the near future, Advantech will also offer Windows® CE solutions with their Compact Flash Cards. In fact, the first board



planned to support Windows® CE on a Compact Flash card will be the PCM-3345 PC/104 486 CPU Module (see following story). Not long after that, any Advantech card or board that supports Compact Flash Cards will also be able to support Windows® CE.

Peripheral SSD Solutions

Advantech also offers peripheral SSD solutions in the form of a 2.5" or 3.5" Flash drive. These drives are exactly the same size as a typical HDD drive. They also employ an IDE interface. Therefore, they can perfectly and easily replace a standard IDE HDD, with no additional installation or configuration problems. These drives come in sizes from 20 MB to 220 MB. Lastly, as Flash prices continue to drop, this solution will become more and more affordable.

Make Advantech Your One Stop SSD Shop

Advantech's wide range of SSD solutions, ranging from ultra-compact on-board solutions such as DOC® 2000 and Compact Flash Cards, to larger capacity peripheral solutions, are sure to meet your SSD demands. Contact your local Advantech representative today to see how we can help you with your SSD and embedded system solutions.

Complete Embedded PC Solution Now Available on a Compact PC/104 CPU Module

With Advantech's new PCM-3345, PC/104 modules should no longer be viewed as mere add-ons or peripherals, but as true embedded PC solutions serving as the base of a complete PC/104 product line. The PCM-3345 is a full-fledged, all-inclusive CPU board, but with a form factor of a standard PC/104 module (90 x 96 mm). It can also perform well in operating temperatures as high as 70° C. This makes it one of the smallest, most robust complete SBC's on the market.



PCM-3345

A Great Deal

This solution is significant for many reasons. Not only is it small, but it also conforms to the international industry standard PC/104 form factor. Furthermore, it is very easy to expand. Advantech alone offers over 15 different PC/104 boards with functions ranging from Ethernet support to GPS global positioning, with nearly endless future development possibilities. Lastly, this PCM-3345 PC/104 CPU module's low cost will certainly be attractive to customers worldwide.

Packed with On-board Features

This module might be tiny, but it contains everything a full-fledged computer requires. Its on-board CPU is a 486 DX 66 MHz equivalent CPU from SGS-

Thomson, unique for a 486-based CPU in that its Front Side Bus runs at a swift 66 MHz, instead of only 33 MHz, as in the case of Intel 486 CPUs. Also, since the CPU is integrated on board, there is no need to configure frequency or voltage. Also included on board are 16 MB of SO DIMM-based RAM (with a 32 MB option). The extra memory comes in handy when you want to take advantage of this board's shared VGA memory capability.

Peripheral Expansion

This module supports ATX power, allowing for remote power-on, and watchdog timer protection. With two serial and one parallel ports, one FDD connector and one IDE connector, the PCM-3345 allows for as much peripheral expansion as most larger size SBC's. To assist you with such expansion, Advantech includes a cable kit in each standard package. The PCM-3345 also supports one Compact Flash Card (PCD-100) for use as an emulated HDD. Advantech provides several Compact Flash Card size options up to 40 MB.

PC/104 Expansion

PC/104-based expansion is also easy with the PCM-3345. The PCM-3660 PC/104 module, for example, enables Ethernet capabilities, while the PCM-3640 PC/104 Module provides the systems integrator with an additional 4 COM ports. For additional and more updated information, please feel free to check out our web site at:

<http://www.advantech.com/epc>



PC/104 Full Product Line



Steps to Run AP on Advantech's Windows® CE Platform

Microsoft offers the Windows® CE Toolkit for Visual C++ that provides all of the tools needed to develop, emulate, and debug Windows® CE applications on a Windows NT platform. The package also includes all tools needed to cross compile these programs for a particular Windows CE target platform.

The procedure is as follows:

- 1 Setup the host system platform with Windows NT 4.0 and proper software development environment such as Microsoft Visual C++5.0 or above plus Windows® CE Toolkit for C++5.0 or above.
- 2 Develop your own Windows® CE application software. You can choose to test the application with the Windows® CE emulation environment that comes with Microsoft Visual C++ for Windows® CE but since this environment emulates only a feature limited Hand Held PC, chances are that you would like to test your application on a real platform.
- 3 Rename your application as AUTO.EXE.
Copy AUTO.EXE together with necessary DLLs such as MFCCE.DLL (if you are using Visual C++) to a floppy diskette.
- 4 Boot up the Embedded PC platform with a DOS/Win95/Win98 bootable diskette, which appear as drive A:. The DOC® 2000 will appear as C:. Copy the AUTO.EXE from "Windows® CE 2.1 Utility Disk" to C:\

A:>COPY AUTO.EXE C:\
- 5 Take out the diskette and reset the system. Your application will be running automatically when Windows CE has finished loading.

If you want to have a quick run on Advantech's Windows® CE platform, there are some example EXE and source code files on the included utility disk. You can compile or download them yourself to try them out.

What can I do to get a special device driver for my Windows® CE system?

Windows® CE is tied directly to the hardware, so many of the standard PC peripherals requiring drivers have been left out. It is not the case as with Windows 95 or 98 on which you can freely install whichever device drivers one needs.

Advantech has developed hardware-specific drivers for the on-board functions of its single board computers such as FDD, HDD, COM, PS/2, network, VGA, I/O, audio ...etc (but some functions perform less due to Window® CE ver. 2.1 limitations). For the specific Windows® CE platform from Advantech, we have combined all the required drivers for on-board devices into the integrated image file. Due to intellectual property limitations, the drivers are not sold separately.

If customers need anything different from our standard Windows® CE platform package, Advantech and its alliance software vendor also provide customization software development services to meet OEM's particular needs. This includes customized device driver development, modification and driver porting to Advantech's Windows® CE image.

Please feel welcome to contact one of Advantech's local sales representatives for a discussion about your application and how Advantech can help.



Fiber Optic Network Traffic Monitoring System

Advantech has provided a German company with a Pentium®-processor Biscuit PC, the PCM-5860, to serve as an important component of a fiber optic network traffic monitoring system.



Information Traffic Cop

This high-end system is responsible for monitoring network traffic on a fiber optic network. It is also able to locate faults anywhere on the network. Lastly, it is essential for network construction optimization. This system can be used by compa-

nies with fiber optic LANs, phone companies, IP service providers, and virtually any organization which employs any kind of fiber optic network.

Why Advantech?

This system uses remote test units (RTUs) to collect and analyze measurements on the network. Inside each RTU is an Advantech PCM-5860 Pentium®-based Biscuit PC. This board was not only chosen because of its all-on-board, all-in-one solution, but also because of its reliability and Advantech's guarantee of supply for several years to come (based on customer's forecast). Another reason that this company chose Advantech and its product was because of the strong technical support supplied by both the local German branch office and the global headquarters office. In the future, Advantech will help them phase-in the PCM-5862L, an updated equivalent to the PCM-5860. Advantech will also assist this company with other solutions and mass production models. Call Advantech if you think we can help you with your solution.

PC-based Time Card Machine

A traditional clock maker in Germany has entered the computer age now, partly with the help of Advantech and its compact half-size Biscuit PCs.

A Smart Way to Clock In

This company has designed a system which serves as a time card machine but has a smart card interface. These PC-based terminals, which are placed strategically around an office or workspace, not only record the time that an employee comes and goes, but also is able to provide the employee with pertinent information on a touchscreen, browser-like interface. By using Java-based applications, users can access personnel and employment information, schedules, events, and even Internet-based information.

Why Advantech?

The Advantech product which serves as the heart and brain of this system is an OEM version of the PCM-4823, a 486 SBC with Processor, VGA/LCD and Ethernet. This tiny half-size Biscuit PC is only 145 mm x 102 mm, yet it packs the power of a full-featured 486-based computer. Its on-board Ethernet was essential for the kind of networked time card system this particular customer desired. On-board VGA/LCD also saved the company money and time with integrating this board with its own LCD touchscreen display. Another reason why Advantech was chosen was because it was very accommodating when it came to OEM specifications, such as both SIMM socket and PC/104 connector modifications. Lastly, the fact that this board is Y2K ready eased many worries, since this system is highly concerned with accurate timekeeping.





Advantech will Showcase Total Solutions at CeBit '99

This year's CeBit '99 will be held in Hannover, Germany on March 18 through March 24. Advantech's Embedded PC Group and Panel PC Division will host a joint exhibition. The themes of this exhibition are that Advantech is both an Embedded PC Expert and a Total Solution Provider.

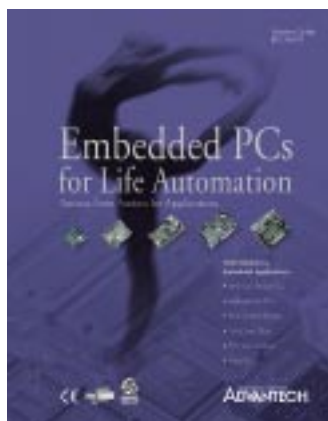
Several solution areas will be presented in this exhibition. The first, OS Solutions, will demonstrate Windows® CE OS in both the PCM-5820 Pentium® SBC and the MPBC-200 MicroBox chassis. Bus Solutions will highlight the PCN-6351 (PCI/ISA-bus, NLX form factor) and Pentium® II PCI-bus half-size CPU cards. Advantech's Performance Solution will showcase Pentium II level products. Finally, System Solutions will describe such total system solutions as the Windows CE system solution, which is composed of a MBPC-200 MicroBox chassis with 50 W power supply, 486-based palm-size Biscuit PC (PCM-4823 with Ethernet or PCM-4825 with Audio), and 12 MB DiskOnChip® 2000 Flash disk with Windows® CE preinstalled. Two other system solutions are the True Multimedia Solution (featuring the PCM-5864 Pentium® SBC) and the NLX System Solution (including NLX form factor-based cards and backplanes).

During this exhibition, on March 23, the Embedded PC Group and the Panel PC Division will have a joint new product launch conference. Visit our website for up-to-the-minute information about this product launch and the rest of the exhibition as the March date draws nearer.

EPC web site: <http://www.advantech.com/epc>

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Windows® CE Forum to be Hosted by Advantech in Paris

Advantech's Embedded PC Group will host the 'Windows® CE Forum' in Paris on January 19 and 20. Attendees should be Advantech's European partners, branch office employees, and European distributors. EPC especially wants to attract Sales Engineers and Application Engineers.

The first day of this Windows® CE Forum will be business oriented. A representative from Microsoft will speak about business trends and opportunities with Windows® CE, while a representative from ITE will talk about developers tools for this OS. Advantech representatives will conclude with information about Advantech's Windows® CE product solutions.

Day two of this forum will concentrate on AE training. We hope that the information and interaction available over these two days will be helpful to all of our partners.

New EPC Web Site Officially Launched in December

Advantech's EPC Group official launched a newly redesigned and expanded web site in December 1998. It not only offers updated product information with application stories, current news and events, but it also provides a wealth of downloadable material, ranging from product datasheets and user manuals to brochures, bulletins, and previously used EPC advertisements. Information is also available concerning Advantech's Y2K solution and Windows® CE product options. Feel free to have a look for yourself at:

<http://www.advantech.com/epc>

